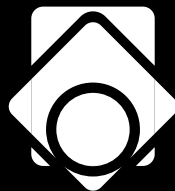


HOLLOW STRUCTURAL SECTIONS

PRINCIPAL PRODUCERS AND CAPABILITIES



**Steel Tube
Institute**
OF NORTH AMERICA

2 0 0 1 R E V I S E D E D I T I O N

What Is HSS?

The term "HSS" stands for Hollow Structural Sections. HSS is a cold-formed welded steel tube used for welded or bolted construction of buildings, bridges and other structures and a wide variety of manufactured products. It is produced in square, rectangular and round shapes to meet design requirements.

In recent years, HSS has experienced

significant growth. Its flexibility has opened up exciting new design concepts...in everything from airport terminals to shopping malls, office buildings to domed stadiums, convention centers to residential housing. It's being called the design material of the 21st Century.

Building construction isn't the only market for HSS. It's just the fastest growing

one. Hollow structural sections have been used for years in bridges, highway signs, guard rails, power transmission towers, oil rigs and other structures. They're also an important material in autos and trucks, construction equipment, farm machinery, railroad cars, office furniture, recreation equipment, warehouse rack and storage systems, plus many other applications.

Benefits of HSS

Here are some principal benefits that you can count on from the use of HSS in construction and other applications:

- Strength - HSS has high strength-to-weight ratios, excellent compression support characteristics and excellent torsional resistance.
- Appearance - In exposed applications, round, square and rectangular HSS becomes an exciting, visual part of the design of buildings and other structures.
- Uniformity - HSS provides a uniformity of size, shape, strength and tolerances that makes its use totally predictable.
- Ease of Fabrication - HSS can be readily bent, formed, punched warped, twisted, and drilled. And new, improved methods to fasten HSS to itself or to other materials are making its use simpler and faster.
- Cost Effectiveness - Because of its superior strength-to-weight ratios, HSS can provide significant weight and cost reductions. Reduced weight can also mean additional savings in fabrication, erection and shipping costs.

- Resistant/Consistent - HSS is fire resistant, dry rot and mildew resistant, as well as termite and carpenter ant resistant.

- Environmentally Friendly - HSS is made from steel, one of the world's most recyclable and recycled materials.

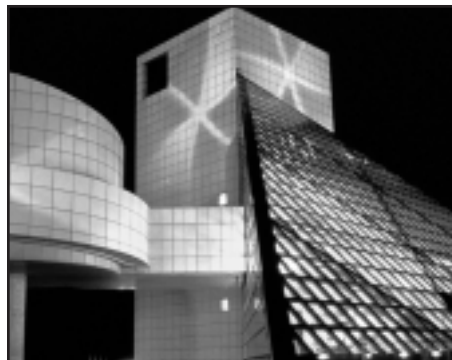


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HSS Committee Member Companies	3	Metric Sizes	12
Rectangular HSS	4	Manufacturing Methods.....	13
Square HSS	8	Growth of HSS	14
Round HSS	10	Design Challenge and Applications.....	15

STI/HSS Member Companies

Atlas Tube, Inc.

200 Clark Street, P.O. Box 970
Harrow, Ontario N0R 1G0
Telephone: (519) 738-3541
(800) 265-6912
Fax: (519) 738-3537

Bull Moose Tube Company

1819 Clarkson Road, Suite 100
Chesterfield, MO 63017
Telephone: (636) 537-2600
(800) 325-4467
Fax: (636) 537-5848

Eugene Welding Company

P.O. Box 249
Marysville, MI 48040
Telephone: (810) 364-7421
(800) 336-3926
Fax: (810) 364-4347

Hanna Steel Corporation

P.O. Box 558, Fairfield, AL 35064
Telephone: (205) 780-1111
(800) 633-8252
Fax: (205) 783-8296

Hannibal Industries, Inc.

P.O. Box 58814, 3851 Santa Fe Ave.
Los Angeles, CA 90058
Telephone: (323) 588-4261
Fax: (323) 589-5640

Independence Tube Corporation

6226 W. 74th Street
Chicago, IL 60638-6196
Telephone: (708) 496-0380
(800) 376-6000
Fax: (708) 563-1950

IPSCO Tubulars Inc.

P.O. Box 18, 2011 7th Avenue
Camanche, IA 52730
Telephone: (563) 242-0000
(800) 950-4772
Fax: (563) 242-9137

LTV Copperweld

1855 East 122nd Street
Chicago, IL 60633
Telephone: (800) 733-5683
Fax: (773) 646-6128
(In Canada)
14 Holtby Avenue
Brampton, Ontario
Canada L6X 2M3
Telephone: (905) 451-2400
(800) 268-3005
Fax: (905) 840-4716

Maverick Tube Corporation

16401 Swingley Ridge Road,
Suite 700
Chesterfield, MO 63017
Telephone: (314) 733-1600
(800) 840-8823
Fax: (314) 733-1677

Novamerican Steel Inc.

2175 Hymus Boulevard
Dorval, Quebec, Canada H9P 1J8
Telephone: (514) 335-6682
(800) 361-1496
Fax: (514) 683-5285
(In United States)
600 Dean Sievres Place
Morrisville, PA 19067
Telephone: (215) 295-8813
Fax: (215) 295-8798

Productos Laminados

de Monterrey, SA de CV
Headquarters & Monterrey Plant
Ave. Lazaro Cardenas 1525 Pte.
Col. Nino Artillero
Monterrey, N.L. Mexico C.P. 64280
Telephone: (8) 351-1625
(8) 351-1070

Fax: (8) 351-0322

(U.S. Office)

Prolamsa, Inc.

12603 SW Freeway, Suite 521
Stafford, TX 77477
Telephone: (281) 494-0900
Fax: (281) 494-0990

Valmont Industries

(Structural Tube Division)
P.O. Box 2620
Tulsa, OK 74101
Telephone: (918) 583-5881
(800) 331-3002
Fax: (918) 585-1927

Vest, Incorporated

6023 Alcoa Avenue
Los Angeles, CA 90058
Telephone: (323) 581-8823
(800) 421-6370
Fax: (323) 581-3465

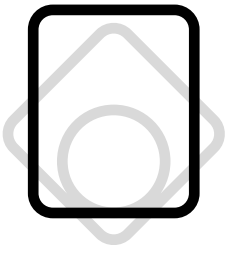
Welded Tube of Canada Limited

111 Rayette Road
Concord, Ontario,
Canada L4K 2E9
Telephone: (905) 669-1111
(800) 565-8823
Fax: (905) 738-4070

Please Note:

We've tried to make this brochure as comprehensive and factual as possible. It contains the most popular sizes, shapes and gauges of HSS. Please check our member companies for other, or special order sizes, shapes and gauges. Some information may have been updated since the time of printing. Your HSS producer is your best source for up-to-date information.



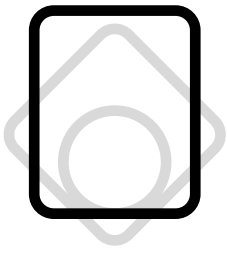


RECTANGULAR HSS

	32 x 24			30 x 24			28 x 24			26 x 24			24 x 22			22 x 20			20 x 18			20 x 16			20 x 12				20 x 8				20 x 4				18 x 16				
	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/16	5/8	1/2	3/8	5/16	1/2	3/8	5/16	1/4	5/8	1/2	3/8					
Atlas Tube, Inc.																																					●	●	●	●	
Bull Moose Tube Co.																																									
Eugene Welding Co.																																									
Hanna Steel Corp.																																									
Hannibal Industries, Inc.																																									
Independence Tube Corp.																																									
IPSCO Tubulars Inc.																																									
Leavitt Tube																																									
LTV Copperweld																									●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Maverick Tube Corp.																																									
Northwest Pipe Co.																																									
Novamerican																																									
Prolamsa																																									
Valmont Industries*	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●										●	●	●		
Vest, Incorporated																																									
Welded Tube of Canada Ltd.																																									

	18 x 12			18 x 6					16 x 12				16 x 8					16 x 4					14 x 12		14 x 10					14 x 6				14 x 4													
	5/8	1/2	3/8	5/8	1/2	3/8	5/16	1/4	5/8	1/2	3/8	5/16	5/8	1/2	3/8	5/16	1/4	1/2	3/8	5/16	1/4	3/16	1/2	3/8	5/8	1/2	3/8	5/16	1/4	5/8	1/2	3/8	5/16	1/4	3/16	5/8	1/2	3/8	5/16	1/4	3/16						
Atlas Tube, Inc.				●	●	●	●	●					●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Bull Moose Tube Co.				●	●	●	●	●					●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Eugene Welding Co.																																															
Hanna Steel Corp.																																															
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Independence Tube Corp.																																															
IPSCO Tubulars Inc.																																															
Leavitt Tube																																															
LTV Copperweld					●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
Maverick Tube Corp.					●	●	●	●					●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Northwest Pipe Co.																																															
Novamerican																																															
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Valmont Industries*	●	●	●						●	●	●								●	●																											
Vest, Incorporated																												●	●	●	●																
Welded Tube of Canada Ltd.																																															

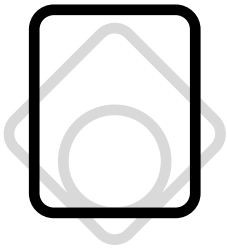
*Sizes shown are manufactured by submerged arc welding (SAW) process.



RECTANGULAR HSS

	12 x 10			12 x 8					12 x 6					12 x 4					12x3½		12 x 3			12 x 2		10 x 8					10 x 6										
	1/2	3/8	1/4	5/8	1/2	3/8	5/16	1/4	3/16	5/8	1/2	3/8	5/16	1/4	3/16	5/8	1/2	3/8	5/16	1/4	3/16	1/4	3/16	5/8	1/2	3/8	5/16	1/4	3/16	5/8	1/2	3/8	5/16	1/4	3/16						
Atlas Tube, Inc.				•	•	•	•	•	•	•	•	•	•	•	•									•	•	•	•	•	•	•	•	•	•	•	•	•	•				
Bull Moose Tube Co.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
Eugene Welding Co.																																									
Hanna Steel Corp.					•	•	•	•	•		•	•	•	•	•		•	•	•	•	•					•	•	•	•	•		•	•	•	•	•	•				
Hannibal Industries, Inc.																																									
Independence Tube Corp.				•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•				
IPSCO Tubulars Inc.																																					•	•	•	•	
Leavitt Tube					•	•	•	•			•	•	•	•			•	•	•	•				•	•		•	•	•	•		•	•	•	•	•	•	•			
LTV Copperweld				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•	•	•	•	•			
Maverick Tube Corp.	•	•	•		•	•	•	•	•								•	•	•	•	•																•	•	•	•	
Northwest Pipe Co.																																									
Novamerican																																									
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Valmont Industries																																									
Vest, Incorporated					•	•	•	•	•								•	•	•	•	•																	•	•	•	•
Welded Tube of Canada Ltd.																	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		

	10 x 5				10 x 4					10x3½					10 x 3					10 x 2					9 x 7					9 x 5											
	3/8	5/16	1/4	3/16	5/8	1/2	3/8	5/16	1/4	3/16	1/8	1/2	3/8	5/16	1/4	3/16	1/8	3/8	5/16	1/4	3/16	1/8	3/8	5/16	1/4	3/16	1/8	5/8	1/2	3/8	5/16	1/4	3/16	5/8	1/2	3/8	5/16	1/4	3/16		
Atlas Tube, Inc.												•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Bull Moose Tube Co.	•	•	•	•		•	•	•	•	•	•				•	•	•	•							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
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Hannibal Industries, Inc.																																									
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IPSCO Tubulars Inc.							•	•	•	•	•																														
Leavitt Tube							•	•	•	•	•														•	•	•														
LTV Copperweld					•	•	•	•	•	•														•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Maverick Tube Corp.	•	•	•	•		•	•	•	•	•					•	•	•	•						•	•																
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Vest, Incorporated							•	•	•	•	•																														
Welded Tube of Canada Ltd.							•	•	•	•	•					•								•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

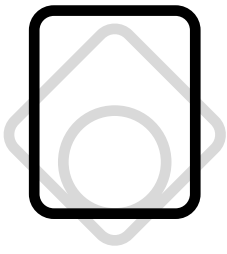


RECTANGULAR HSS

	9 x 3					8 x 6					8 x 4					8 x 3					8 x 2					7 x 5									
	1/2	3/8	5/16	1/4	3/16	5/8	1/2	3/8	5/16	1/4	3/16	5/8	1/2	3/8	5/16	1/4	3/16	1/8	1/2	3/8	5/16	1/4	3/16	1/8	3/8	5/16	1/4	3/16	1/8	5/8	1/2	3/8	5/16	1/4	3/16
Atlas Tube, Inc.							•	•	•	•	•		•	•	•	•	•		•	•	•	•	•	•	•	•	•		•	•	•	•	•	•	•
Bull Moose Tube Co.			•	•	•	•	•	•	•	•		•	•	•	•	•	•			•	•	•	•					•	•	•	•	•	•	•	
Eugene Welding Co.																																			
Hanna Steel Corp.							•	•	•	•	•		•	•	•	•	•		•	•	•	•	•	•	•	•			•	•	•	•	•	•	
Hannibal Industries, Inc.																																			
Independence Tube Corp.	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•	•	•		•	•	•	•	•	•	•	
IPSCO Tubulars Inc.							•	•	•	•	•		•	•	•	•	•								•	•	•	•		•	•	•	•	•	•
Leavitt Tube							•	•	•	•	•		•	•	•	•	•		•	•	•	•	•	•	•			•	•	•	•	•	•	•	
LTV Copperweld		•	•	•	•	•	•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
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Northwest Pipe Co.																																			
Novamerican														•	•	•	•													•	•	•	•		
Prolamsa																																			
Valmont Industries																																			
Vest, Incorporated**							•	•	•	•	•		•	•	•	•	•		•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	
Welded Tube of Canada Ltd.		•	•	•	•		•	•	•	•	•		•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

	7 x 4						7 x 3					6 x 5					6 x 4					6 x 3					6 x 2							
	1/2	3/8	5/16	1/4	3/16	1/8	1/2	3/8	5/16	1/4	3/16	1/8	1/2	3/8	5/16	1/4	3/16	1/2	3/8	5/16	1/4	3/16	1/8	1/2	3/8	5/16	1/4	3/16	1/8	3/8	5/16	1/4	3/16	1/8
Atlas Tube, Inc.	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Bull Moose Tube Co.	•	•	•	•	•	•			•	•	•	•	•	•	•	•		•	•	•	•	•	•	•				•	•	•	•	•	•	•
Eugene Welding Co.																																		
Hanna Steel Corp.		•	•	•	•	•		•	•	•	•	•						•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•
Hannibal Industries, Inc.																																		
Independence Tube Corp.		•	•	•	•	•	•	•	•	•	•		•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
IPSCO Tubulars Inc.**																			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Leavitt Tube	•	•	•	•	•													•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•
LTV Copperweld	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Maverick Tube Corp.																																		
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Prolamsa																																		
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Vest, Incorporated**		•	•	•	•	•													•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Welded Tube of Canada Ltd.		•	•	•	•	•		•	•	•	•	•		•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

**Wall thickness for tubing listed as 1/8" is 11 gauge, or .120".



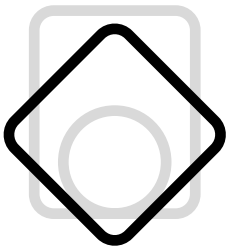
RECTANGULAR HSS

	5 x 4						5 x 3					5 x 2½			5 x 2					4 x 3					4 x 2½			4 x 2					3½ x 2½										
	1/2	3/8	5/16	1/4	3/16	1/8	1/2	3/8	5/16	1/4	3/16	1/8	1/4	3/16	1/8	3/8	5/16	1/4	3/16	1/8	3/8	5/16	1/4	3/16	1/8	5/16	1/4	3/16	3/8	5/16	1/4	3/16	1/8	3/8	5/16	1/4	3/16	1/8					
Atlas Tube, Inc.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				•	•	•	•	•						•	•	•	•	•
Bull Moose Tube Co.	•	•	•	•	•	•			•	•	•	•	•	•	•			•	•	•	•	•	•	•	•				•	•	•	•	•						•	•	•	•	•
Eugene Welding Co.										•	•	•	•	•	•			•	•	•	•	•	•	•	•				•	•	•	•	•								•	•	•
Hanna Steel Corp.							•	•	•	•	•	•						•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Hannibal Industries, Inc.										•	•	•						•	•	•	•	•	•	•	•						•	•	•						•	•	•	•	•
Independence Tube Corp.		•	•	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•					
IPSCO Tubulars Inc.**	•	•	•	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•				•	•	•	•	•										
Leavitt Tube							•	•	•	•	•	•						•	•	•	•	•	•	•	•						•	•	•						•	•	•	•	•
LTV Copperweld	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Maverick Tube Corp.				•	•		•	•	•	•	•	•						•	•	•	•	•	•	•	•						•	•	•										
Northwest Pipe Co.																																	•										
Novamerican									•	•	•	•	•	•	•			•	•	•	•	•	•	•	•						•	•	•						•	•	•	•	•
Prolamsa										•	•																				•	•	•										
Valmont Industries																																											
Vest, Incorporated**		•	•	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Welded Tube of Canada Ltd.	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

	3 x 2½				3 x 2				3½ x 1½			3 x 1½			3 x 1		2½ x 2			2½ x 1½			2½ x 1		2 x 1½		2 x 1				
	5/16	1/4	3/16	1/8	5/16	1/4	3/16	1/8	1/4	3/16	1/8	1/4	3/16	1/8	3/16	1/8	1/4	3/16	1/8	1/4	3/16	1/8	3/16	1/8	3/16	1/8	3/16	1/8			
Atlas Tube, Inc.					•	•	•	•		•	•	•	•	•	•		•	•	•	•	•	•	•			•	•	•	•		
Bull Moose Tube Co.		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•			•	•	•	•		
Eugene Welding Co.			•	•	•	•	•	•				•	•	•	•			•	•	•	•	•	•	•			•	•	•	•	
Hanna Steel Corp.					•	•	•	•				•	•	•	•				•	•	•	•	•	•	•			•	•	•	•
Hannibal Industries, Inc.					•	•	•	•				•	•	•	•	•	•										•	•	•	•	
Independence Tube Corp.					•	•	•	•	•	•	•	•	•	•	•	•	•									•	•	•	•		
IPSCO Tubulars Inc.**					•	•	•	•				•	•	•	•											•	•	•	•		
Leavitt Tube		•	•	•	•	•	•	•	•	•	•	•	•	•	•											•	•	•	•		
LTV Copperweld	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•											•	•	•	•		
Maverick Tube Corp.					•	•	•	•						•	•											•	•	•	•		
Northwest Pipe Co.												•	•	•	•											•	•	•	•		
Novamerican					•	•	•	•	•	•	•	•	•	•	•											•	•	•	•		
Prolamsa						•	•	•																		•	•	•	•		
Valmont Industries					•	•	•	•																		•	•	•	•		
Vest, Incorporated**					•	•	•	•				•	•	•	•											•	•	•	•		
Welded Tube of Canada Ltd.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		



**Wall thickness for tubing listed as 1/8" is 11 gauge, or .120"

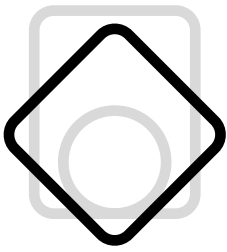


SQUARE HSS

	32 x 32			30 x 30			28 x 28			26 x 26			24 x 24			22 x 22			20 x 20			18 x 18			16 x 16			14 x 14			12 x 12						
	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/8	1/2	3/8	5/16	1/4	3/16	5/8	1/2	3/8	5/16	1/4	3/16	1/8
Atlas Tube, Inc.																															•	•	•	•	•		
Bull Moose Tube Co.																																•	•	•	•	•	
Eugene Welding Co.																																					
Hanna Steel Corp.																																					
Hannibal Industries, Inc.																																					
Independence Tube Corp.																																					
IPSCO Tubulars Inc.**																																					
Leavitt Tube																																					
LTV Copperweld																								•	•	•	•					•	•	•	•	•	
Maverick Tube Corp.																																			•	•	
Northwest Pipe Co.																																					
Novamerican																																					
Prolamsa																																					
Valmont Industries*	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Vest, Incorporated																																					
Welded Tube of Canada Ltd.																																					

	10 x 10						9 x 9						8 x 8						7 x 7						6 x 6						5 1/2 x 5 1/2								
	5/8	1/2	3/8	5/16	1/4	3/16	5/8	1/2	3/8	5/16	1/4	3/16	1/8	5/8	1/2	3/8	5/16	1/4	3/16	1/8	5/8	1/2	3/8	5/16	1/4	3/16	1/8	5/8	1/2	3/8	5/16	1/4	3/16	1/8	3/8	5/16	1/4	3/16	1/8
Atlas Tube, Inc.	•	•	•	•	•	•								•	•	•	•	•	•	•	•	•	•	•	•														
Bull Moose Tube Co.	•	•	•	•	•	•								•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Eugene Welding Co.																																							
Hanna Steel Corp.		•	•	•	•	•								•	•	•	•	•	•	•		•	•	•	•	•										•	•		
Hannibal Industries, Inc.																																							
Independence Tube Corp.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
IPSCO Tubulars Inc.**		•	•	•	•	•								•	•	•	•	•	•	•		•	•	•	•	•										•	•		
Leavitt Tube		•	•	•	•									•	•	•	•	•	•	•		•	•	•	•	•													
LTV Copperweld	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Maverick Tube Corp.		•	•	•	•	•								•	•	•	•	•	•	•		•	•	•	•	•													
Northwest Pipe Co.																																							
Novamerican																											•	•	•	•	•								
Prolamsa																																							
Valmont Industries																																							
Vest, Incorporated**		•	•	•	•	•								•	•	•	•	•	•	•		•	•	•	•	•													
Welded Tube of Canada Ltd.														•	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		

*Sizes shown are manufactured by submerged arc welding (SAW) process.
 **Wall thickness for tubing listed as 1/8" is 11 gauge, or .120".

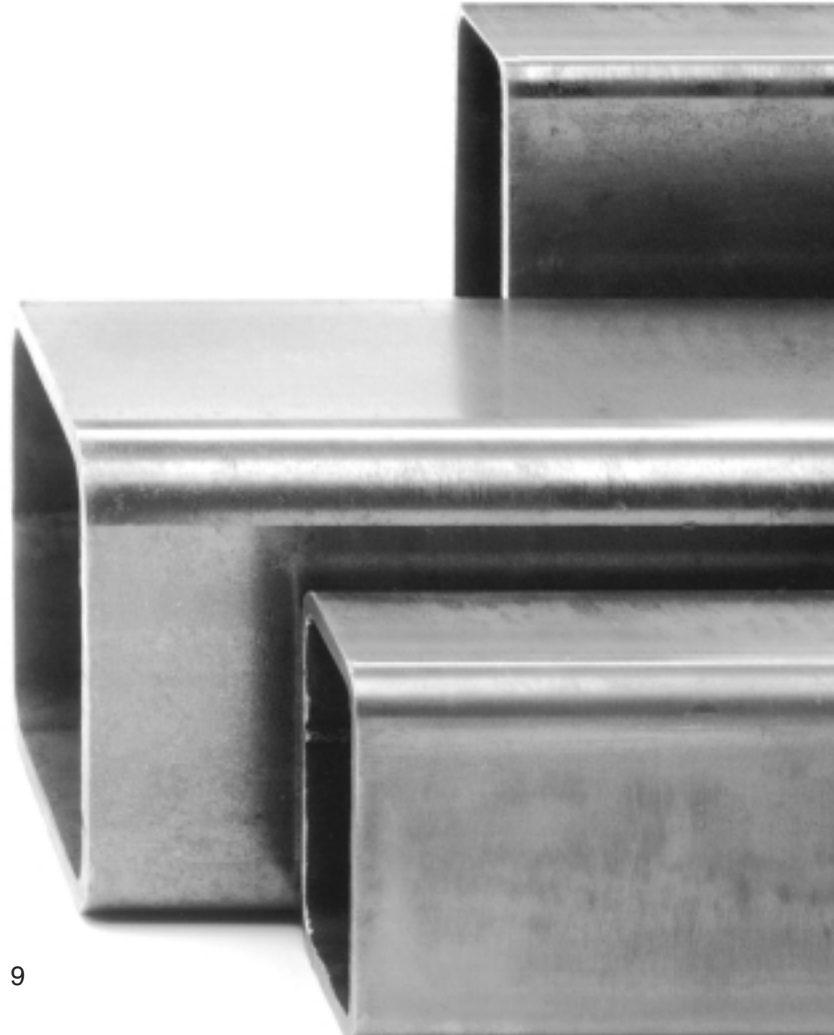


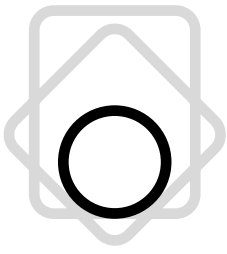
SQUARE HSS

	5 x 5						4 1/2 x 4 1/2						4 x 4						3 1/2 x 3 1/2						3 x 3						2 1/2 x 2 1/2				2 1/4 x 2 1/4				
	1/2	3/8	5/16	1/4	3/16	1/8	1/2	3/8	5/16	1/4	3/16	1/8	1/2	3/8	5/16	1/4	3/16	1/8	3/8	5/16	1/4	3/16	1/8	3/8	5/16	1/4	3/16	1/8	5/16	1/4	3/16	1/8	5/16	1/4	3/16	1/8	1/4	3/16	1/8
Atlas Tube, Inc.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Bull Moose Tube Co.	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Eugene Welding Co.																																							
Hanna Steel Corp.		●	●	●	●	●			●	●	●	●	●																										
Hannibal Industries, Inc.																																							
Independence Tube Corp.	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
IPSCO Tubulars Inc.**	●	●	●	●	●	●																																	
Leavitt Tube	●	●	●	●	●	●																																	
LTV Copperweld	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Maverick Tube Corp.	●	●	●	●	●	●																																	
Northwest Pipe Co.																																							
Novamerican		●	●	●	●	●																																	
Prolamsa				●	●																																		
Valmont Industries																																							
Vest, Incorporated**	●	●	●	●	●	●																																	
Welded Tube of Canada Ltd.	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

	2 X 2			1 3/4 x 1 3/4		1 5/8 x 1 5/8		1 1/2 x 1 1/2		1 1/4 x 1 1/4		
	1/4	3/16	1/8	3/16	1/8	3/16	1/8	3/16	1/8	1/4	3/16	1/8
Atlas Tube, Inc.	●	●	●						●	●		
Bull Moose Tube Co.	●	●	●		●			●				●
Eugene Welding Co.		●	●	●	●			●	●	●		
Hanna Steel Corp.	●	●	●	●	●				●	●		
Hannibal Industries, Inc.	●	●	●						●	●		●
Independence Tube Corp.	●	●	●									
IPSCO Tubulars Inc.**	●	●	●									
Leavitt Tube	●	●	●		●				●	●		●
LTV Copperweld	●	●	●		●				●	●		●
Maverick Tube Corp.	●	●	●						●	●	●	
Northwest Pipe Co.			●		●					●		●
Novamerican	●	●	●						●	●		●
Prolamsa												
Valmont Industries	●	●	●						●	●		●
Vest, Incorporated**	●	●	●		●				●	●		●
Welded Tube of Canada Ltd.	●	●	●	●	●				●	●		

**Wall thickness for tubing listed as 1/8" is 11 gauge, or .120".





ROUND HSS

	20.000		18.000		16.000				14.000				12.750			12.313				11.250				10.750			10.000						
	0.500	0.375	0.500	0.375	0.625	0.500	0.438	0.375	0.312	0.250	0.625	0.500	0.375	0.312	0.250	0.625	0.500	0.375	0.312	0.250	0.188	0.625	0.500	0.375	0.250	0.625	0.500	0.375	0.312	0.250	0.188		
Atlas Tube, Inc.					•	•	•	•	•	•	•	•	•	•	•	•	•	•					•	•	•								
Bull Moose Tube Co.																																	
Eugene Welding Co.																																	
Hanna Steel Corp.																																	
Hannibal Industries, Inc.																																	
Independence Tube Corp.																																	
IPSCO Tubulars Inc.	•	•	•	•				•	•				•	•	•									•	•								
Leavitt Tube																																	
LTV Copperweld	•	•	•	•		•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Maverick Tube Corp.						•		•	•	•		•	•	•	•									•	•	•							
Northwest Pipe Co.									•					•		•									•						•	•	
Novamerican																																	
Prolamsa																																	
Valmont Industries																															•	•	•
Vest, Incorporated																																	
Welded Tube of Canada Ltd.																								•	•	•		•	•	•	•	•	

	9.625					8.750				8.625					7.625		7.500				7.000					6.875				6.625																	
	0.500	0.375	0.312	0.250	0.188	0.500	0.375	0.312	0.250	0.188	0.625	0.500	0.375	0.322	0.250	0.188	0.375	0.328	0.500	0.375	0.312	0.250	0.188	0.500	0.375	0.312	0.250	0.188	0.125	0.500	0.375	0.312	0.250	0.188	0.500	0.432	0.375	0.312	0.280	0.250	0.188	0.125					
Atlas Tube, Inc.	•	•	•	•	•						•	•	•	•	•	•							•	•	•	•	•								•	•	•	•	•	•	•	•	•	•			
Bull Moose Tube Co.																																															
Eugene Welding Co.																																															
Hanna Steel Corp.																																															
Hannibal Industries, Inc.																																															
Independence Tube Corp.																																															
IPSCO Tubulars Inc.														•	•	•	•																														
Leavitt Tube	•	•	•	•	•							•	•	•	•	•																															
LTV Copperweld						•	•	•	•	•	•	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
Maverick Tube Corp.	•	•	•											•	•	•																															
Northwest Pipe Co.															•	•																															
Novamerican																																															
Prolamsa																																															
Valmont Industries															•	•	•																														
Vest, Incorporated																																															
Welded Tube of Canada Ltd.	•	•	•	•	•							•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

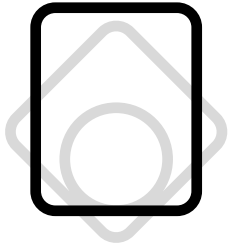
tubing is also furnished in most gauges between 5 and 11 in most of the sizes shown.

METRIC SIZES OF HSS

The following tables show the STI's member companies that produce hard metric sizes. All HSS sizes listed in this publication can be converted to soft metric.

The HSS Committee of the Steel Tube Institute also produces two publications, relating to metrics, *Recommendations for Soft Conversion of HSS Sizes from U.S. Customary Units to Metric (SI) Units* and *Metric Dimensions and Section Properties*. Both are available on the Steel Tube Institute website (www.steeltubeinstitute.org) or by contacting the Steel Tube Institute: (440) 974-6990, fax: (440) 974-6994, e-mail: sti@apk.net.

The STI member companies are the best sources for production capabilities and up-to-date information about metric size HSS.



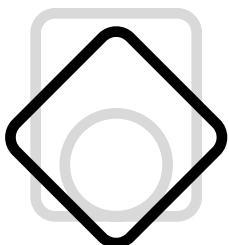
Rectangular HSS

Minimum and Maximum Thickness

	30 x 60		30 x 90		40 x 60		40 x 100		40 x 120		45 x 75		50 x 120		60 x 80		60 x 120		80 x 140		90 x 100	
	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T
Bull Moose Tube Co.	1.6	4.0	2.0	3.0	1.6	6.0	2.0	3.0	3.0	6.0	2.0	3.0	4.0	6.0	6.0	6.0	3.0	6.3	5.0	6.0	5.0	6.0
LTV Copperweld																						

	98 x 118		100 x 150		100 x 180		100 x 200		100 x 250		100 x 300		100 x 400		150 x 200		150 x 250		150 x 350		150 x 450	
	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T
Bull Moose Tube Co.	10.0	11.0	5.0	12.5	5.0	12.5	5.0	12.5	5.0	12.5	5.0	12.5	5.0	12.5	5.0	16.0	5.0	16.0	5.0	16.0	6.0	16.0
LTV Copperweld			5.0	12.0			5.0	12.0									5.0	12.0				

	200 x 300		200 x 400		250 x 350	
	Min T	Max T	Min T	Max T	Min T	Max T
Bull Moose Tube Co.	5.0	16.0	6.0	16.0	6.0	16.0
LTV Copperweld	5.0	12.0				



Square HSS

Minimum and Maximum Thickness

	60 x 60		90 x 90		100 x 100		125 x 125		140 x 140		150 x 150		160 x 160		180 x 180		200 x 200		250 x 250		300 x 300	
	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T	Min T	Max T
Bull Moose Tube Co.	1.6	4.0	2.0	3.0	3.0	12.5	5.0	12.5	5.0	12.5	5.0	12.5	6.0	12.5	5.0	16.0	5.0	16.0	5.0	16.0	6.0	16.0
LTV Copperweld	3.0	5.0			5.0	12.0	5.0	12.0			5.0	12.0					5.0	12.0	5.0	12.0		

All nominal dimensions are in millimeters.

Nominal thickness, T, may be specified equal to or greater than Min T and equal to or less than Max T.

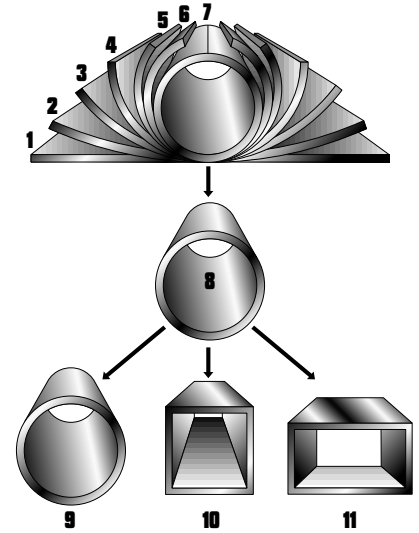
Availability of metric size HSS should be confirmed with the producing mill.

HSS Manufacturing Methods

The transformation of steel strip into hollow structural sections (HSS) is the result of operations including forming, welding and sizing. Currently three methods are being used in North America for the manufacture of HSS. These methods, including two ERW methods and an SAW method, are described below. Both ERW methods meet ASTM A 500 and CSA G-40.21 requirements for the manufacture of HSS, and the ERW sizes included in this publication may be produced to either standard. The SAW method is not included as a manufacturing process in the ASTM or CSA specification. SAW sizes listed in this publication can be specified to meet desired physical and dimensional criteria of ASTM A500 and CSA G-40.21

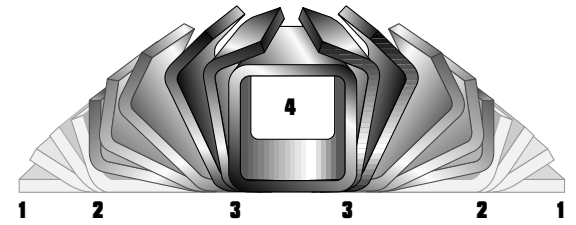
Electric Resistance Welding (ERW) Process

In the tube mill, flat steel strip (1) is formed continuously around its longitudinal axis to produce a round tube. This is done by moving the strip through a progressive set of rolls (2-6). The strip edges (7) are heated by either high frequency induction or contact welding and then forged together by weld rolls to create a continuous longitudinal weld without the addition of filler metal. The weld seam (8) is then cooled and processed through a set of sizing/shaping rolls which cold-form it into a round (9), square (10) or rectangular (11) section.



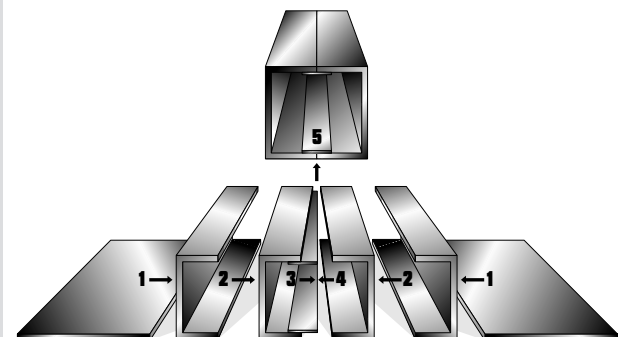
Form-Square Weld-Square (ERW) Process

In the weld mill, driven forming dies progressively shape the flat strip (1) by forming the top two corners (2) of the square or rectangular tube in the initial forming station. Subsequent stations form the bottom two corners (3) of the shape. No cold working of the sides of the shape is performed, and the shape's seam is welded by high-frequency contacts when the tube is near its final shape and size. The welded tube (4) is cooled and then driven through a series of sizing stations which qualifies the tube's final dimensions.



Submerged Arc Weld (SAW) Process

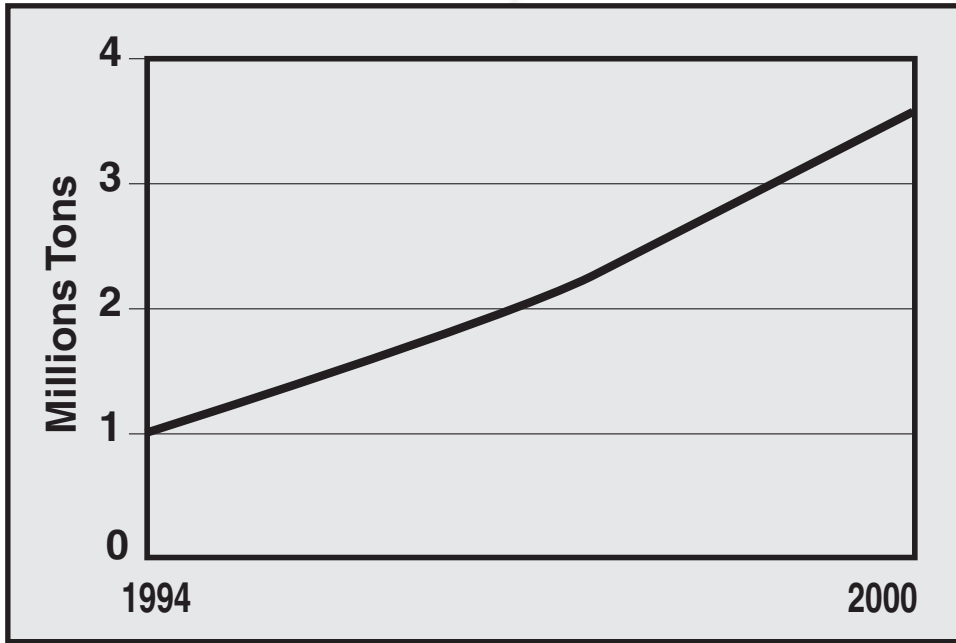
Two identical pieces of flat strip (1) are placed in a press brake and formed into two identical halves (2) of a finished tube size. A backup bar is tack welded to each leg of one of the half-sections (3). The two half-sections are fitted together toe-to-toe (4) and welded by the submerged arc process to complete the square or rectangular section (5).



The Use of HSS is Growing Rapidly

HSS has shown phenomenal growth, especially in the construction market, in the past few years. This chart shows the growth of U.S. shipments of HSS since 1994.

Shipments of HSS



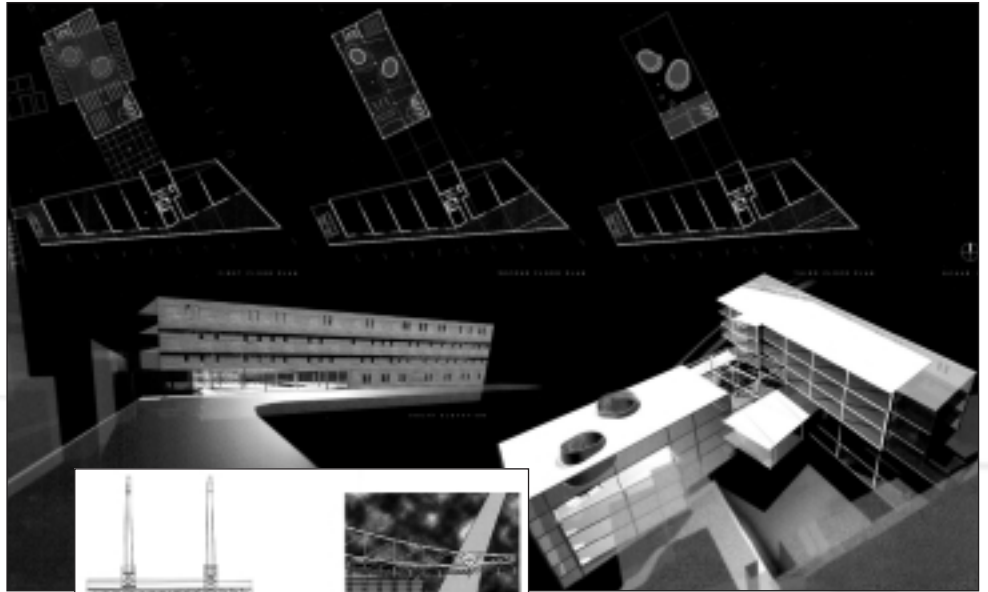
HSS Design Aids

The Steel Tube Institute offers a wide variety of technical publications, load tables and design aids. They are available on the STI website, www.steeltubeinstitute.org. The Steel Tube Institute also employs a Technical Consultant who is available to answer questions and assist with technical data. Contact Fred Palmer: Fax: 412-221-9119 or Email: fjpalmerpe@aol.com



The Design & Engineering Challenge

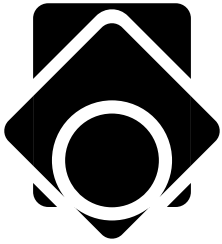
Each year, the HSS Committee of the Steel Tube Institute sponsors a student design competition in conjunction with the Association of Collegiate Schools of Architecture. The winners of this year's Design and Engineering Challenge, and their winning projects, can be viewed on the Steel Tube Institute's website: www.steeltubeinstitute.org.



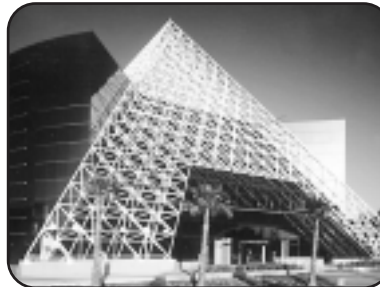
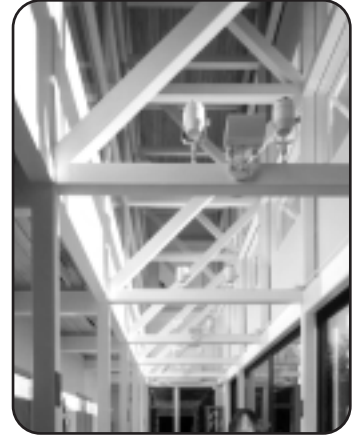
HSS Applications

The Steel Tube Institute has produced a series of case studies that show a variety of HSS applications and benefits. They are available at no charge on the STI website, www.steeltubeinstitute.org.





HSS APPLICATIONS



**Steel Tube
Institute**
OF NORTH AMERICA

8500 Station Street, Suite 270, Mentor, Ohio 44060
Tel: (440) 974-6990 • Fax: (440) 974-6994
E-mail: sti@apk.net • Website: <http://www.steeltubeinstitute.org>

