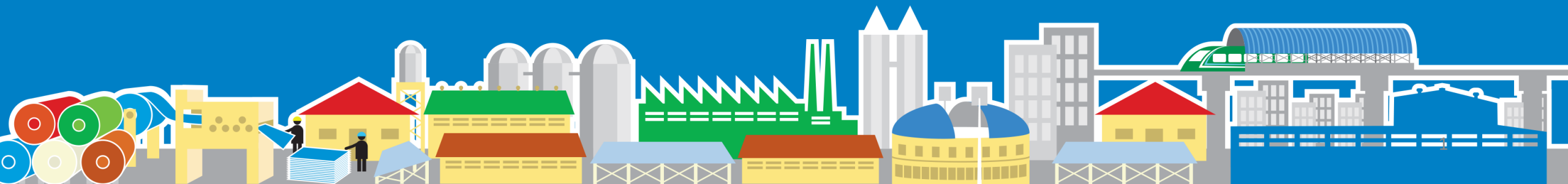


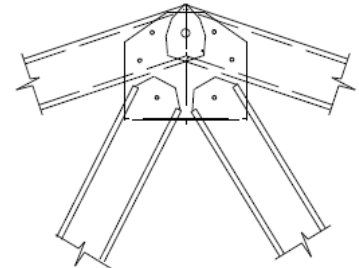
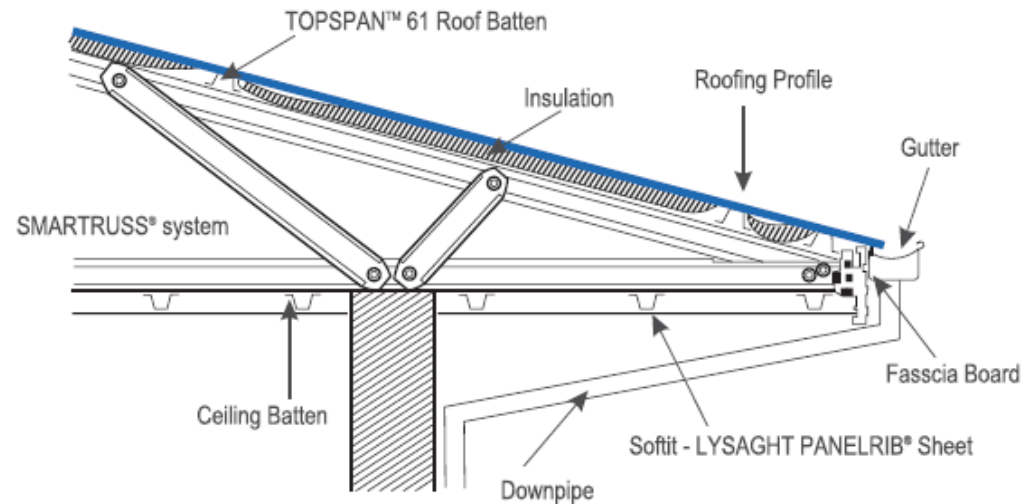
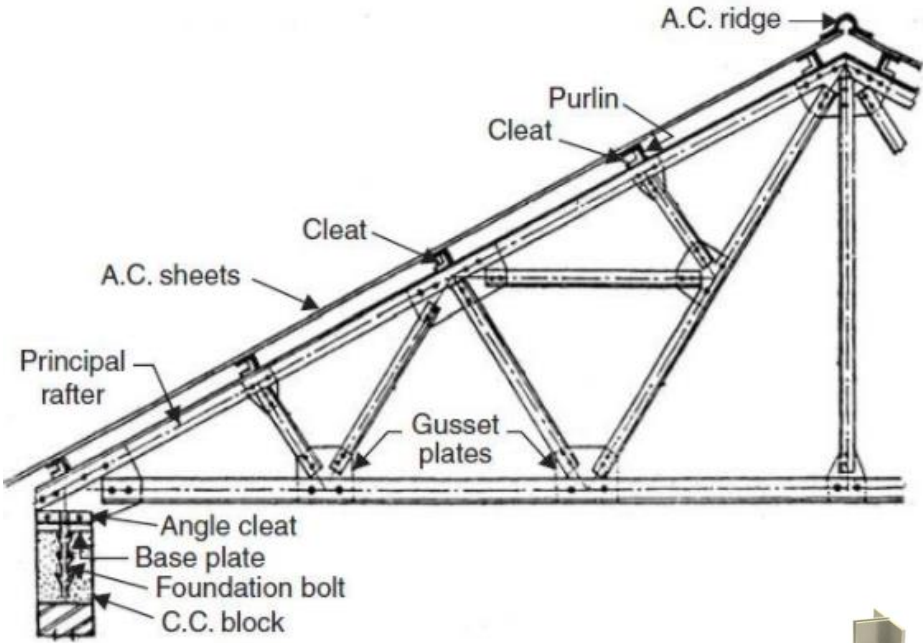
DURABLE AND AESTHETIC LIGHT GAUGE FRAMING SYSTEM IN INDUSTRIAL WAREHOUSING AND RESIDENTIAL BUILDINGS

16 AUGUST 2017

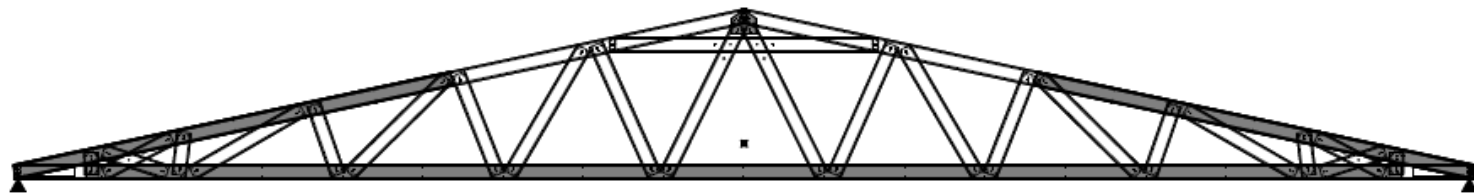
INDIAN INSTITUTE OF METAL, DELHI



HOT ROLLED STRUCTURE vs COLD ROLLED LIGHT GAUGE STRUCTURE



TRUSSTITE + 4X12-14X20 HEX SCREWS



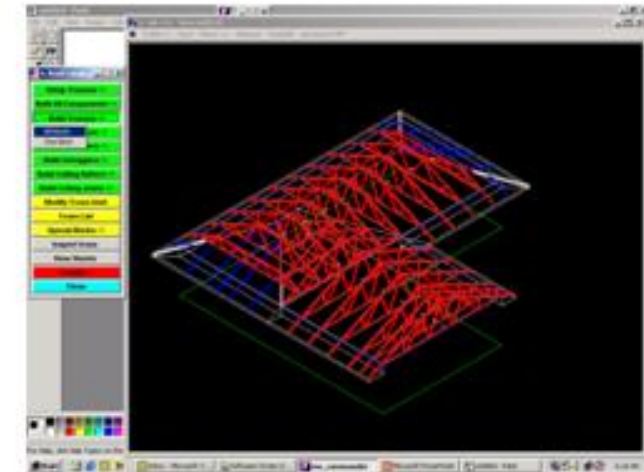
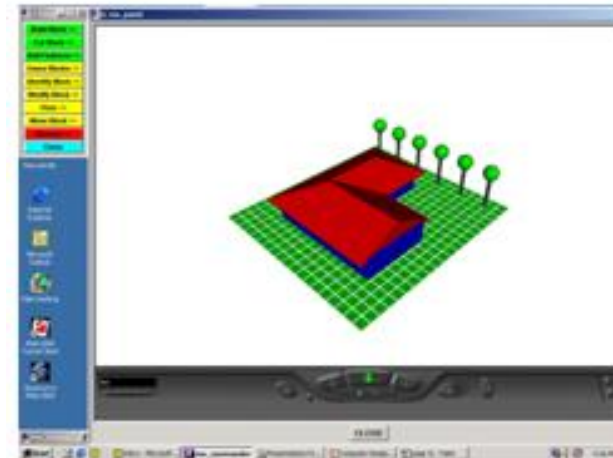
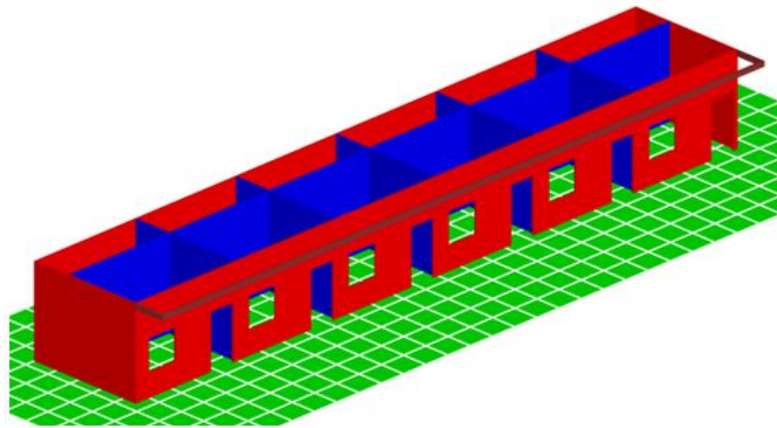
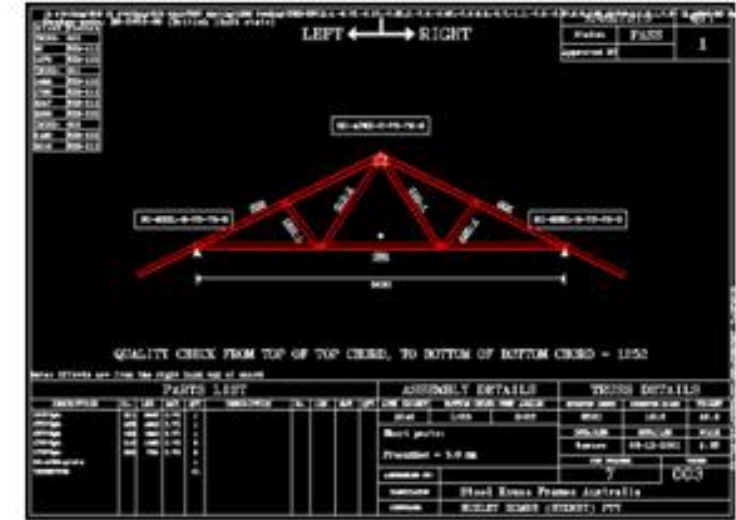
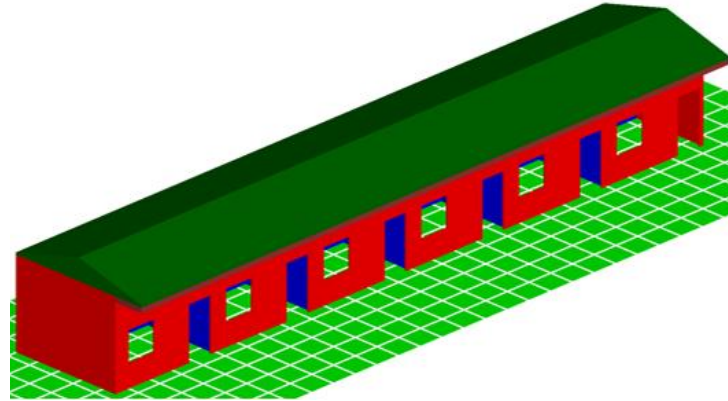
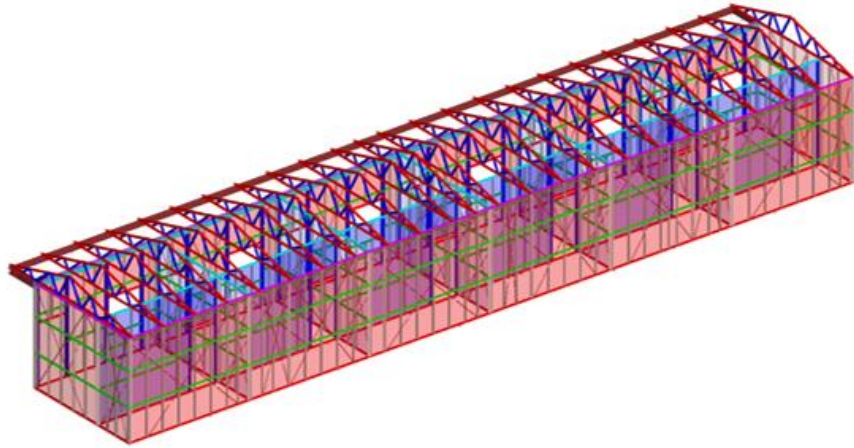
TRUSS:009, SPAN=10259

HOT ROLLED STEEL STRUCTURE

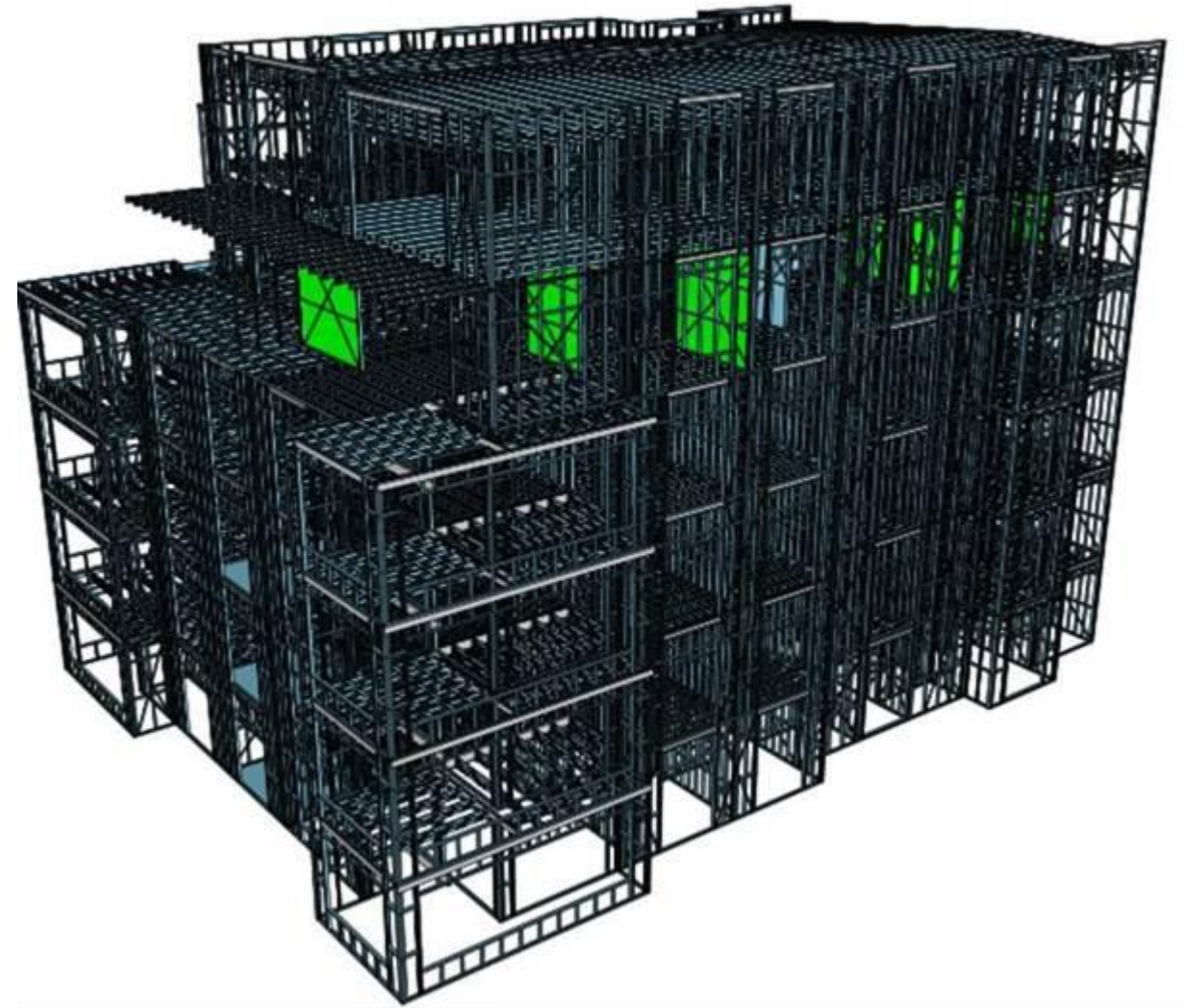
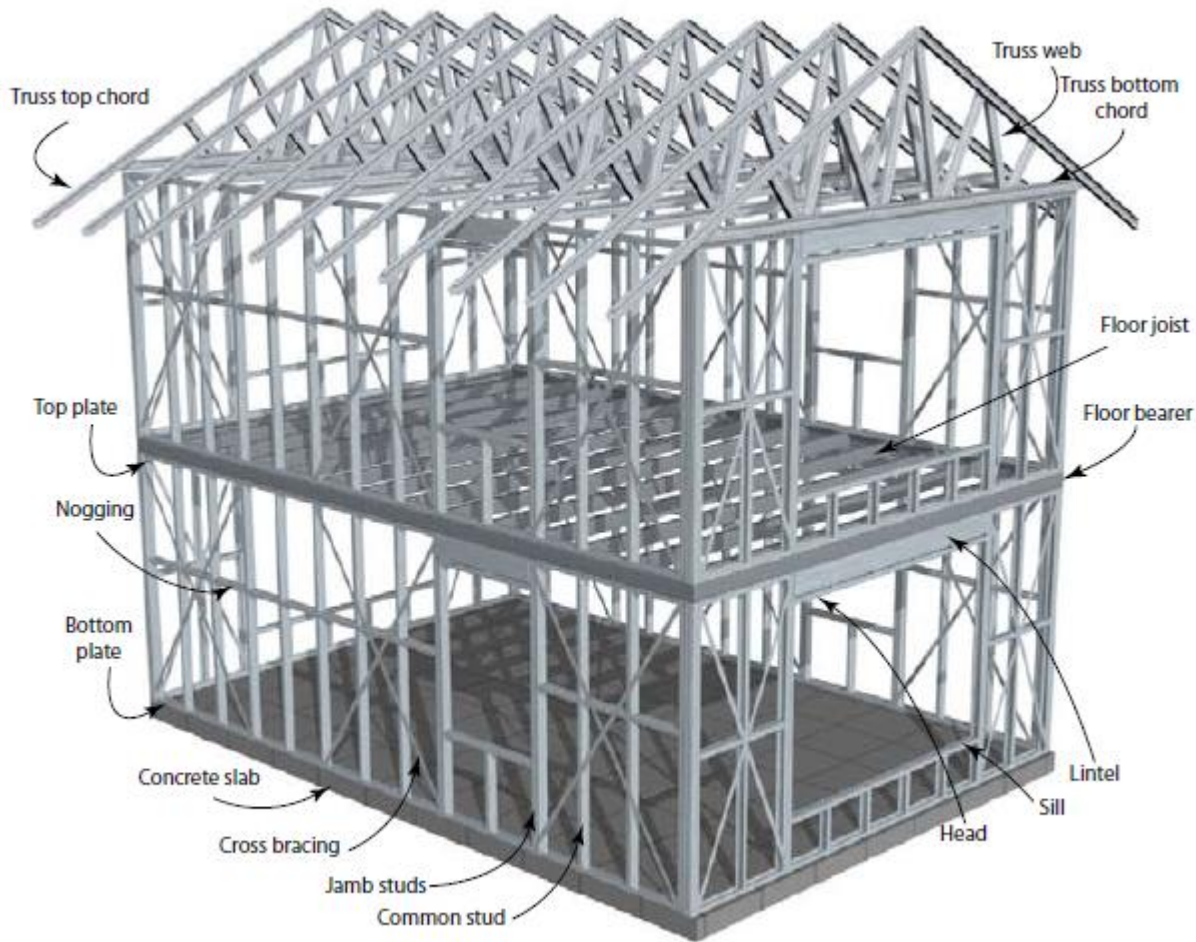
COLD ROLLED STEEL STRUCTURE

HOT ROLLED STRUCTURE vs COLD ROLLED LIGHT GAUGE STRUCTURE

HOT ROLLED STRUCTURE	LIGHT GAUGE COLD FORMED STRUCTURE
FABRICATION AT SITE AS PER DESIGN	FABRICATION AT SHOP THROUGH AUTOMATED DESIGN SOFTWARE LINKED WITH MACHINE
NEED OF GUZZETTE PLATES	PRE NOTCHED MEMBERS AND DOES NOT REQUIRE ADDITIONAL GUESSETTE PLATES
WELDED / RIVETTED / BOLTED STRUCTURE	PRE PUNCHED HOLES & PRE NOTCHED SECTIONS ENABLE THE ERECTOR TO ASSEMBLE AS PER DRAWING. CONNECTIONS USING SELF DRILLING SCREWS.
REQUIRES LOTS OF MAN HOURS AND SKILLED MAN POWER	REQUIRES LESS MAN HOUR AND LOW SKILLED MAN POWER.
REQUIRES HEAVY CRANES AND MATERIAL HANDLING EQUIPMENTS	DOES NOT REQUIRE ANY HEAVY MATERIAL HANDLING EQUIPMENTS
PAINTING REQUIRED (BOTH PRIMER AND FINISH COAT NEED TO BE PAINTED AT SITE)	PRE GALVANIZED / ZINCALUME COATED STEEL COILS USED FOR MAKING STRUCTURAL MEMBERS
GENERATES NOICE AND AIR POLLUTION DURING SITE FABRICATION	NO POLLUTION GENERATES DURING SITE ASSEMBLING



MULTI STOREY STRUCTURES IN LIGHT GAUGE STEEL



DESIGN CODES

- AS/NZS: 1170.0:2002 General principles.
- AS/NZS: 1170.1:2002 Permanent, imposed & other actions.
- AS/NZS:1170.2.2002 and IS 875 : Part 3 Wind Actions.
- AS: 4055-2006 Wind Loads for Housing.
- AS/NZS: 4600-2005 Cold formed Steel Structures.
- NASH Standard: Residential & Low-Rise Steel Framing part: 1 Design criteria 2005.
- NCC Building Code of Australia BCA-2012
- Lysaght Technology design Philosophy Doc.Report-4



PRE DESIGNED LOAD TABLES

Topspan 61 Quick Selection Chart (Non-cyclonic Areas)

		Maximum Allowable TOPSPAN 61 Purlin span (mm)															
		Single Span				Double Span				Lapped Span							
Profile BMT (mm)	Spacing (mm)	W28N	W33N	W41N	W50N	W28N	W33N	W41N	W50N	W28N	W33N	W41N	W50N	W28N	W33N	W41N	W50N
TS61 0.75	600	3700	3350	2850	2350	3750	3400	2900	2350	4000	3750	3100	2550				
	800	3400	3050	2500	2050	3450	3050	2500	2050	3800	3300	2700	2200				
	1000	3150	2750	2250	1800	3200	2800	2250	1800	3450	3000	2400	1950				
	1200	2950	2500	2050	1650	3000	2500	2050	1650	3200	2700	2200	1800				
	1400	2750	2350	1900	1550	2800	2350	1900	1550	2950	2500	2050	1650				
	1600	2550	2200	1750	1450	2550	2200	1750	1450	2800	2350	1900	1550				
TS61 1.00	600	4000	4000	3150	2700	4000	4000	3250	2750	4000	4000	3700	3000				
	800	4000	3350	2800	2350	4000	3450	2900	2350	4000	3950	3150	2600				
	1000	3550	3050	2250	2150	3700	3150	2250	2100	4000	3550	2850	2300				
	1200	3250	2850	2350	1950	3350	2950	2350	1950	3800	3200	2600	2100				
	1400	3050	2650	2200	1800	3150	2700	2200	1750	3500	3000	2400	1850				
	1600	2900	2500	2050	1700	3000	2500	2050	1500	3300	2800	2250	1600				

		Maximum Allowable TOPSPAN 61 Girt span (mm)															
		Single Span				Double Span				Lapped Span							
Profile BMT (mm)	Spacing (mm)	W28N	W33N	W41N	W50N	W28N	W33N	W41N	W50N	W28N	W33N	W41N	W50N	W28N	W33N	W41N	W50N
TS61 0.75	600	3950	3650	3150	2700	4000	3700	3200	2750	4000	4000	3500	2900				
	800	3700	3350	2850	2350	3750	3400	2900	2350	4000	3750	3100	2500				
	1000	3450	3100	2550	2100	3500	3100	2550	2100	3850	3350	2750	2250				
	1200	3250	2900	2350	1900	3300	2900	2350	1900	3650	3150	2500	2050				
	1400	3100	2700	2150	1750	3100	2700	2150	1750	3350	2900	2350	1900				
	1600	2950	2500	2000	1650	2950	2500	2000	1650	3200	2700	2150	1750				
TS61 1.00	600	4000	4000	3550	3000	4000	4000	3750	3100	4000	4000	4000	3450				
	800	4000	4000	3150	2700	4000	4000	3250	2700	4000	4000	3650	3000				

Maximum Rafter Span (simple spans)

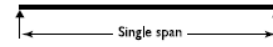
Wind Category	FIRMILOK Beam Size	Rafter Load Width																					
		1500		1800		2100		2400		2700		3000		3300		3600		3900		4200		4500	
No. of Int. purlins		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
W33	F10011	4389	4207	4131	3959	3924	3761	3753	3597	3608	3458	3484	3339	3375	3235	3278	3142	3192	3059	3114	2985	3043	2917
	F15015	6740	6460	6342	6079	6025	5774	5762	5523	5541	5310	5349	5127	5182	4967	5034	4825	4901	4698	4782	4583	4673	4479
	F20020	8090	8980	7682	8450	7353	8027	7080	7678	6848	7382	6646	7127	6469	6904	6312	6707	6170	6530	6042	6371	5926	6226
W37	F10011	4389	4207	4131	3959	3924	3761	3753	3597	3608	3458	3484	3339	3375	3235	3278	3142	3192	3059	3114	2985	3043	2917
	F15015	6446	6460	6116	6079	5839	5774	5598	5523	5386	5310	5198	5127	5028	4967	4876	4825	4736	4698	4609	4583	4492	4479
	F20020	7579	8980	7197	8450	6889	8027	6634	7678	6416	7382	6228	7127	6062	6904	5914	6707	5780	6530	5656	6371	5541	6226
W41	F10011	4389	4207	4131	3959	3924	3761	3753	3597	3576	3458	3418	3339	3280	3235	3158	3142	3049	3059	2945	2985	2840	2917
	F15015	6032	6460	5704	6079	5426	5774	5187	5523	4978	5310	4794	5127	4629	4967	4481	4825	4347	4698	4225	4583	4113	4479
	F20020	7102	8755	6745	8297	6457	7909	6217	7574	6013	7279	5837	7018	5677	6785	5531	6574	5397	6382	5273	6207	5157	6046
W50	F10011	3833	3826	3550	3600	3322	3420	3134	3271	2975	3079	2814	2905	2676	2754	2555	2623	2448	2506	2353	2402	2267	2308
	F15015	5271	5874	4948	5528	4679	5251	4452	5022	4256	4760	4085	4487	3933	4252	3797	4045	3675	3863	3565	3699	3464	3551
	F20020	6300	7692	5984	7236	5725	6856	5502	6532	5304	6252	5128	6006	4968	5788	4824	5593	4692	5416	4570	5256	4458	5089

Reduction factor	0.81	0.84	0.80	0.83	0.79	0.82	0.78	0.81	0.78	0.80	0.77	0.79	0.76	0.78	0.76	0.77	0.75	0.76	0.75	0.74	0.74	0.74
------------------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

Maximum Rafter Span (continuous spans)

Wind Category	FIRMILOK Beam Size	Rafter load width																					
		1500		1800		2100		2400		2700		3000		3300		3600		3900		4200		4500	
No. of Int. purlins		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
W33	F10011	5530	5301	5204	4988	4944	4738	4728	4532	4546	4357	4389	4207	4252	4075	4131	3959	4022	3855	3924	3761	3834	3665
	F15015	7455	8139	7078	7659	6774	7275	6522	6959	6307	6691	6117	6460	5946	6258	5789	6079	5644	5919	5511	5774	5387	5617
	F20020	8764	9970	8321	9468	7965	9064	7668	8725	7416	8431	7198	8166	7006	7927	6835	7708	6682	7507	6543	7322	6417	7151
W37	F10011	5496	5301	5148	4988	4861	4738	4619	4532	4411	4281	4229	4041	4069	3833	3926	3651	3798	3491	3682	3347	3570	3217
	F15015	6983	7797	6630	7314	6346	6914	6105	6575	5893	6283	5703	6028	5531	5803	5375	5602	5231	5384	5100	5158	4978	4954
	F20020	8210	9342	7795	8872	7462	8485	7184	8150	6948	7853	6744	7589	6564	7350	6405	7134	6261	6937	6131	6756	6013	6588
F10011	5040	5128	4725	4710	4450	4333	4219	4077	4022	3773	3851	3557	3700	3370	3558	3206	3403	3038	3265	2921	3140	2633	

tested using LR5ABR1 components.



Span types

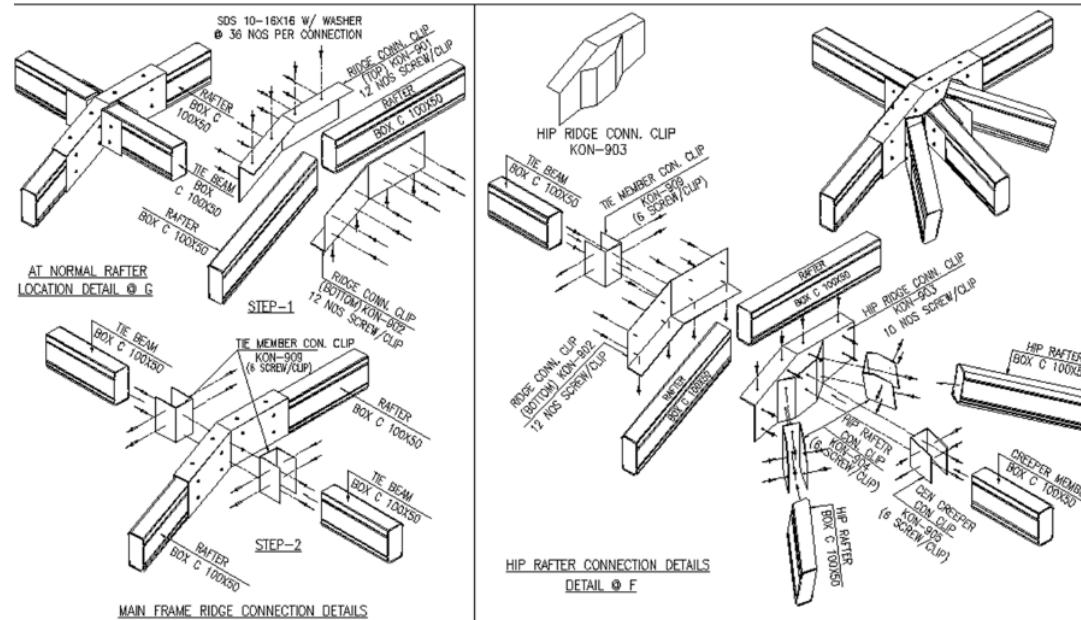
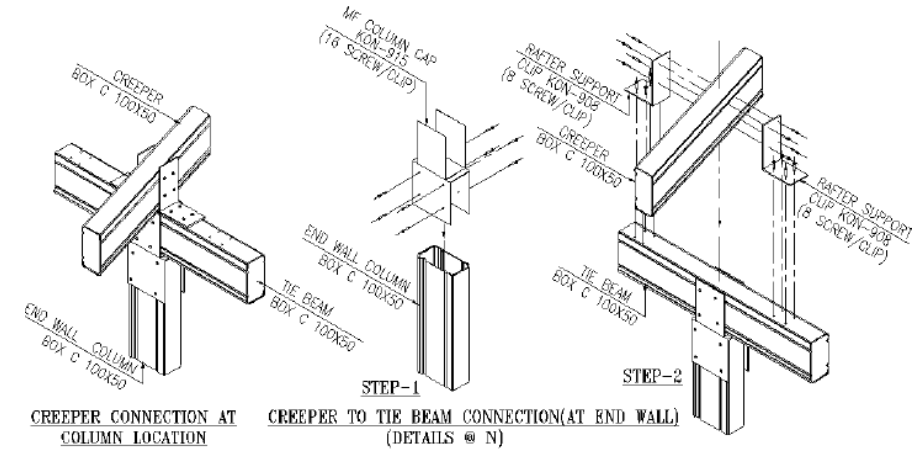
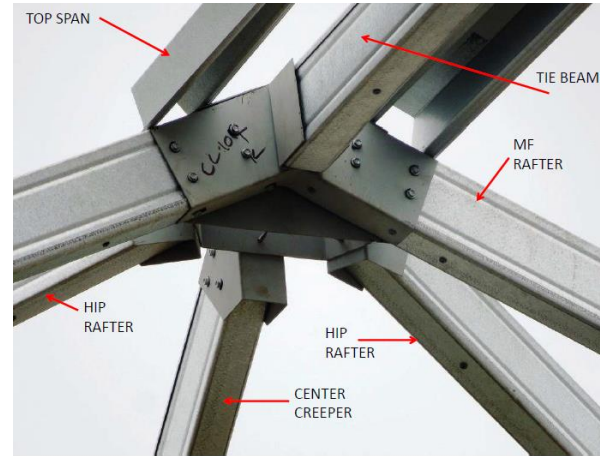
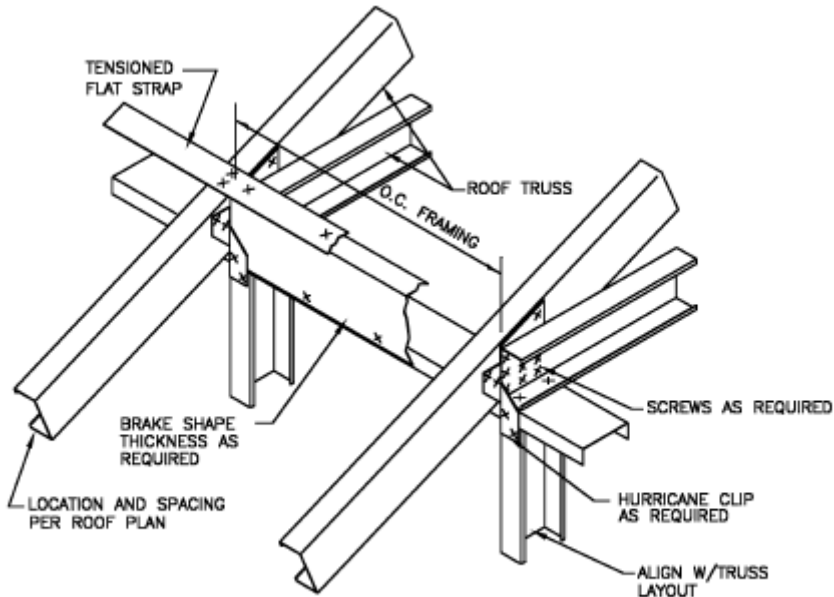
- 1: Metal wall cladding - is cyclonic conditions only.

Maximum spans (mm), for wind loading on attached and free roofs.

For structures attached on 1 side or $\le 50\%$ of cross sectional area blocked. Flat and Pitched (No Foot Traffic)

Profile	BMT	Minimum Roof Pitch	Span Type	N2(W33)		N3(W41)		N4(W50)		Allowable overhang
				Flat/Pitched	Flat/Pitched	Flat/Pitched	Flat/Pitched			
FLATDEK/FLATDEK II (Old only)	0.42	2° (1 in 30)	Single	5100	5100	4500	3300			600
			End/Internal	4800	4800	4500	3300			
CUSTOM ORB	0.42	5° (1 in 12)	Single	1800	1800	1800	1800			300
			End/Internal	2700	2700	2700	2500			350
TRIMDEK every rib	0.48	2° (1 in 30)	Single	2400	2400	2400	2400			300
			End/Internal	3000	3000	3000	3000			350
SPANDEK	0.42	3° (1 in 20)	Single	3000	3000	2950	2550			600
			End/Internal	3000	3000	3000	2200			
KL700HS clip fixed	0.48	1° (1 in 50)	Single	3000	3000	3000	2850			600
			End/Internal	3000	3000	3000	3000			
	0.42	2°	Single	3300	3300	3200	2550			450
			End/Internal	3600	3600	3600	3100			
	0.48	(1 in 50)	Single	3300	3300	3300	2850			500
			End/Internal	3600	3600	3600	3350			
	0.42	2°	Single	3900	3900	3800	3450			450

TRUSS AND WALL CONNECTIONS



FLOOR DESIGN AND DETAILING

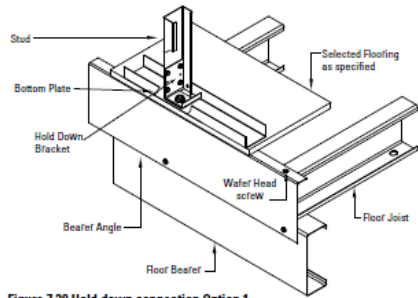


Figure 7.30 Hold down connection Option 1

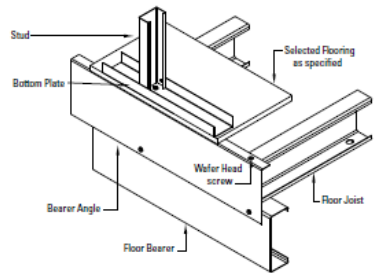
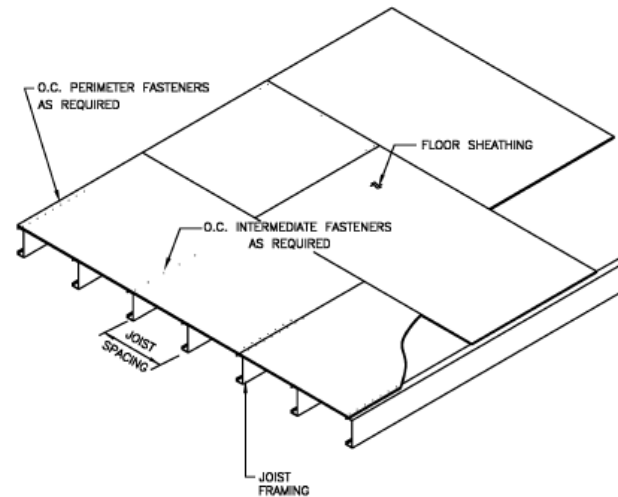
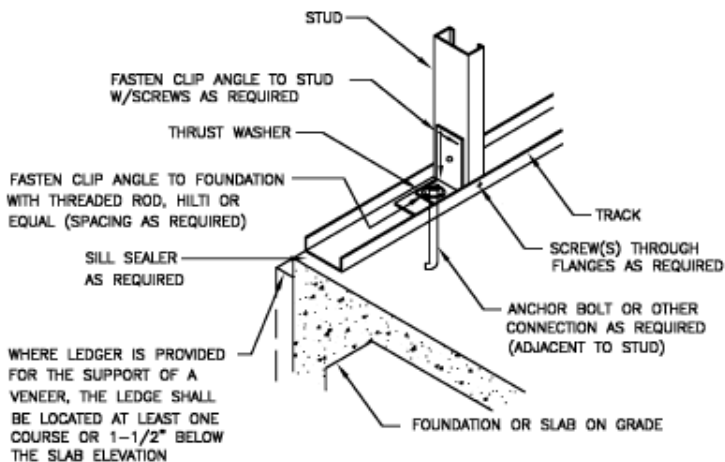
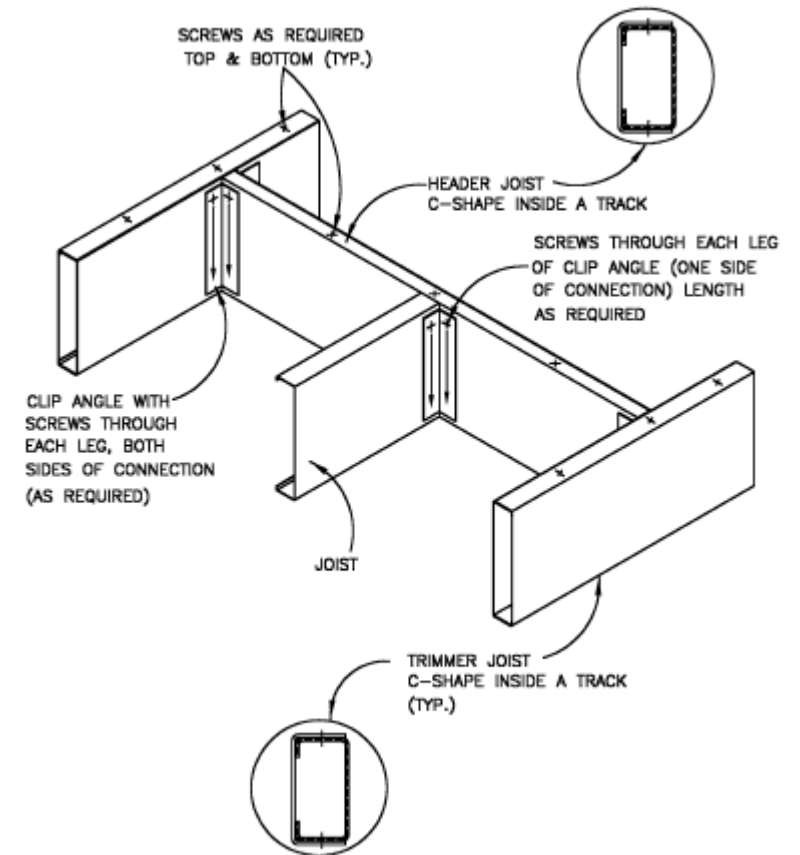
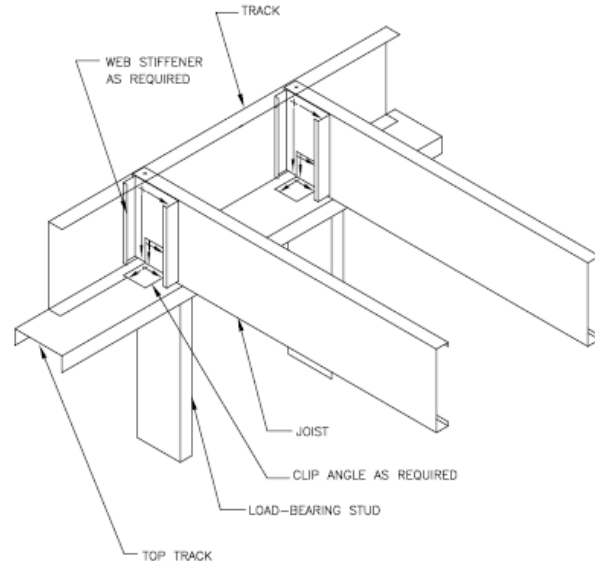
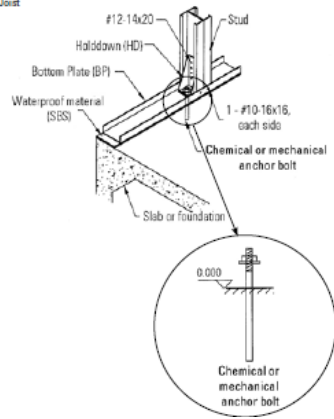


Figure 7.31 Hold down connection Option 2



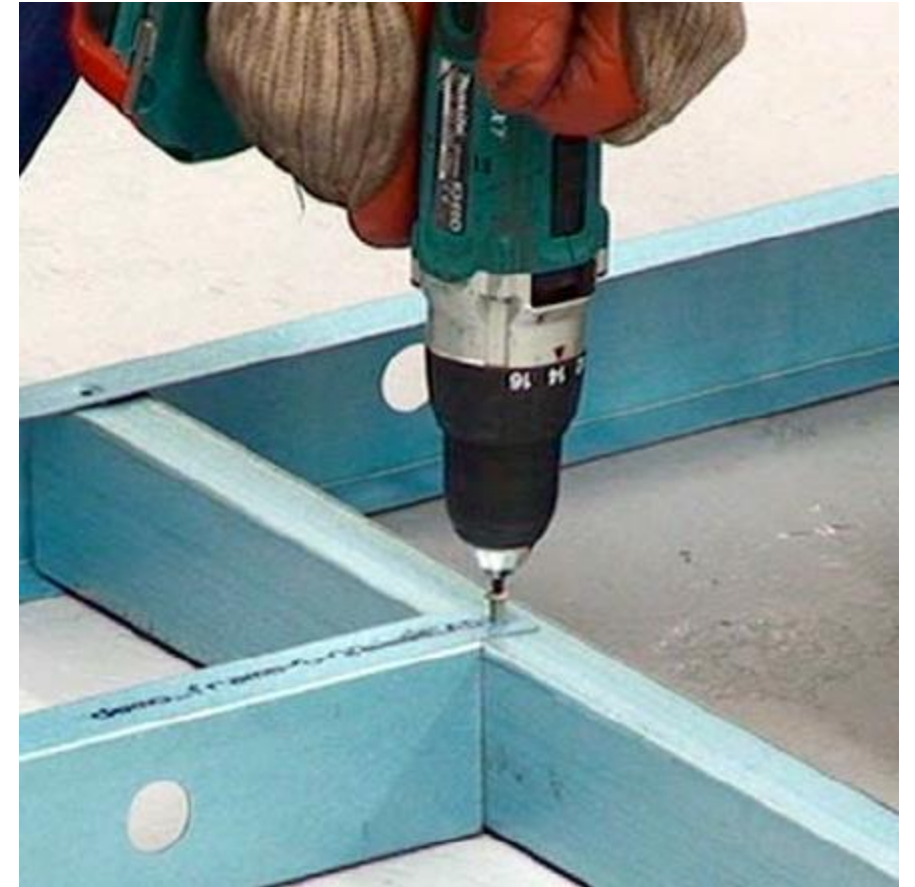
JOISTS MEMBERS ARE LIPPED CEE AND OPEN WEB JOISTS. PRE DESIGNED AND USED IN SOFTWARE

SMARTRUSS® & SMARTWALL® ASSEMBLY



Figure 6.1 Marking and branding

Job name/number is Test_Walls, 5 is the panel number, 001 is the part number and TOPPLATE is usage.



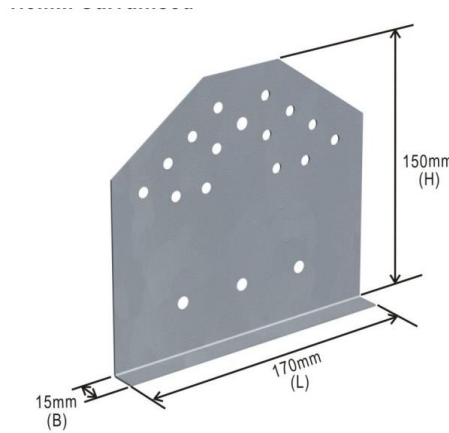
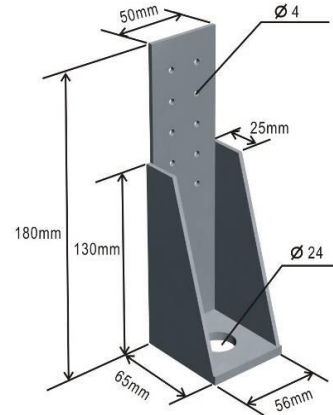
**PREPUNCHED & PRE NOTCHED
MEMBERS AS PER DESIGN THROUGH
FULLY AUTOMATED MACHINE**

SMARTRUSS® & SMARTWALL® ASSEMBLY

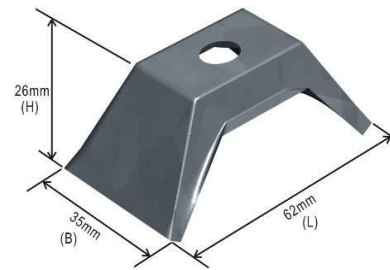
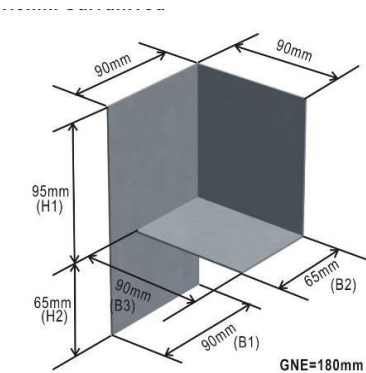
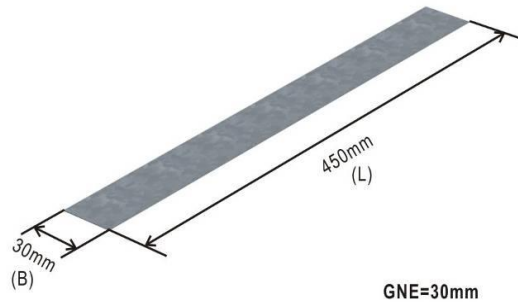


WALLS ARE TESTED FOR THEIR CAPACITY BASED ON HEIGHT AND SPAN AND THESE CAPACITIES ARE FED IN TO SOFTWARE

SMARTRUSS® & SMARTBUILD® – Accessories



Smart Steel Structures



**Specially
Designed and
Precisely
Manufactured
Connections**

SMARTRUSS® & SMARTBUILD® – Roof Shapes



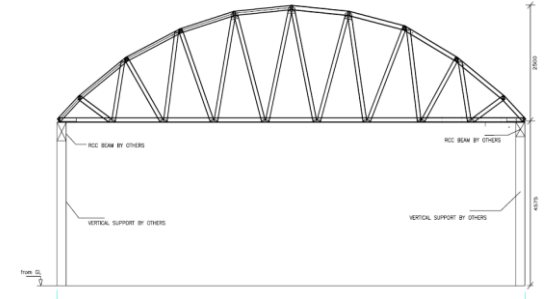
DUTCH ROOF



BELL ROOF



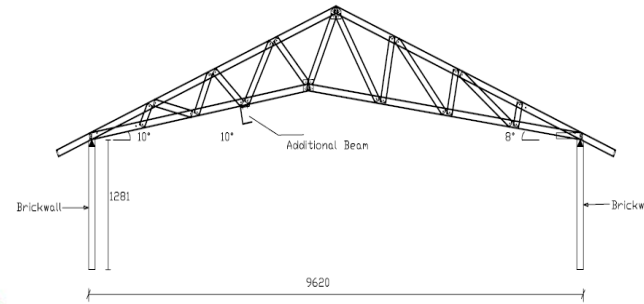
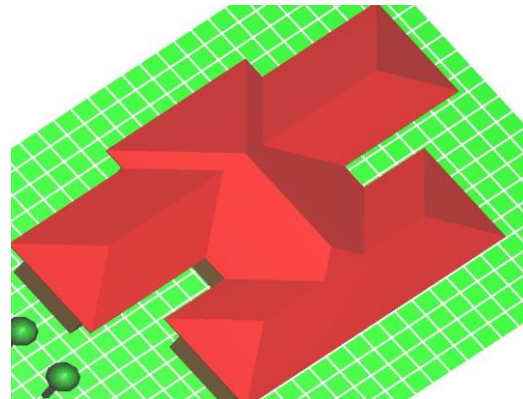
GABLE ROOF



CURVED ROOF



HIPPED ROOF



SCISSOR ROOF



MANSARD ROOF

SMARTRUSS® & SMARTBUILD® – APPLICATIONS



RESIDENCIAL HOUSE (G+1)

- RESIDENTIAL
- SCHOOLS, ANGANWADIS, ASHRAMS
- RECREATION HALLS, CAFETERIAS, OFFICE
- RESORTS, COTTAGES, GUEST HOUSES, FARM HOUSES

***STRONG, DURABLE &
AESTHETICALLY
PLEASING EZYBUILD®
SOLUTIONS***



GUEST HOUSE – SRI CITY



RESORT – AMBY VALLEY



FARM HOUSE G+1
(ANDAMAN)



FARM HOUSE (G+1)
Tamil Nadu



GUEST HOUSE –
ARUNACHAL PRADHESH

SMARTRUSS® & SMARTBUILD® – APPLICATIONS



CLASS ROOF BUILDING - RAIPUR

Hospital Building



Roof top Class Rooms



BUILDING RANGE

Clear Span = 6.0m to 22.0 m

Multi Span = Maximum 40m.

Eave Height = 2.5m to 7.0m

Bay spacing = Max 4.0m

Length = Minimum 6.0m to Any length



Accessories

Rollup Shutters, Personal Doors, Windows, Louvers, Skylights, Wall Lights, Roof vents, Insulation

Assembly

Primary & Secondary – Bolt & Nut system

Roof & Wall – Self drilling fasteners

NO WELDING



PEB Lite[®] Building



PEB Lite® Building

- 1) **IS : 801-1975** – Code of Practice for Use of Cold Formed Light Gauge Steel Structural Member in General Building Construction
- 2) **IS:875-(Part-3) 2015**–Design Loads (other than Earthquake) for Building and Structures.
- 3) **IS:1893 (Part -1) 2002** – Criteria for Earthquake Resistant Design of Structures
- 4) MBMA "Metal Building Manufacturers Association" Low Rise Building Systems manual-1996 Edition, for Application of the following Loads;
 - Dead Load = 0.1 KN/m²
 - Live Load on Roof = 0.57 KN/m²
 - Collateral load= 0.1 KN/m²
 - Wind Speed= As per Indian Code.[IS:875 (PART-3)-2015]
 - Seismic Load= As per Indian Code [IS:1893(PART-1)-2002]
- 5) AISI "American Iron & Steel Institute" Cold Formed Steel Design manual, 1996 Edition, for Design of Cold Formed Steel Structural Members.
- 6) AISC "American Institute of Steel Construction" Manual of Steel Construction-Allowable Stress Design, 1989 Edition, for design of Hot Rolled Section & built-Up components.



COLUMN



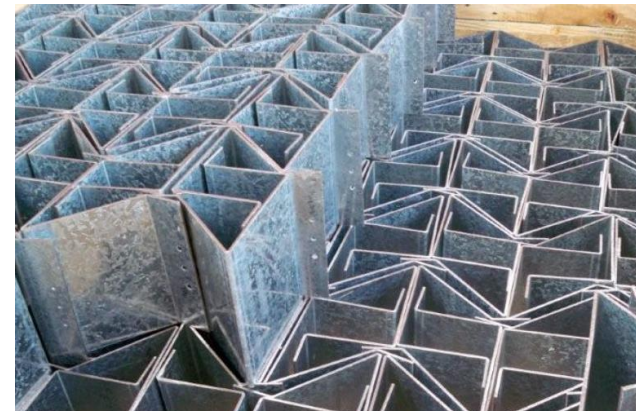
RIDGE



KNEE



PRE FABRICATED CONNECTIONS WITH HOLES AND BENDS



CLAMPS

PEB Lite[®] Building Benefits

COST SAVING	<ul style="list-style-type: none">✓ REDUCED FOUNDATION COST BY 15%✓ LESS ERECTION COST MIN 10%✓ EARLY RETURN OF INVESTMENT DUE TO SHORTER LEAD TIME✓ NO MAINTANANCE COST
EASY WORKING	<ul style="list-style-type: none">✓ PRE DESIGNED✓ READY TO INSTALL✓ CUSTOMIZATION POSSIBLE
RIGHT CHOICE	<ul style="list-style-type: none">✓ EASY TO RELOCATE✓ PLEASING AESTHETICS✓ LONG LIFE✓ EXPANSION POSSIBLE✓ HIGH QUALITY✓ BRAND ASSURANCE

PEB Lite[®] APPLICATION



PROCESSING UNIT (COIMBATORE)



OFFICE BUILDING (AP)



MES SPORT COMPLEX



COMMUNITY HALLS - PATNA



WARE HOUSE (SASAN)



MSW STATIONS

PEB Lite[®] APPLICATION



LNT SHIPYARD CANTEEN



NIT IMPAL – WORK SHOP



LABOUR SHED - HUBLI



GRANITE FACTORY - ONGOLE



LNT SHIPYARD WORKSHOP



FACTORY - AP

SOLAR SUPPORTING STRUCTURES



**OPTIMIZED DESIGN USING HIGH STRENGTH
COLD FORMED STEEL MEMBERS**

**DURABILITY ENSURES WITH ZINCALUME® Steel WITH HIGHER
METALLIC COATING**



SMARTRUSS® & SMARTBUILD® steel members are 100% ZINCALUME® Coated.

PEB Lite® Purlins are ZINCALUME® coated.

ZINCALUME® steel -55% Al-Zinc Alloy Coated Steel

Developed in the 1972's, BlueScope Steel started making it in 1976

It is coated with a Zinc/aluminium alloy (55% Al, 43.4% Zn, 1.6% Si)

It offers excellent barrier-coating protection combined with galvanic protection.

Provides a very good balance between galvanic and barrier protection.

Silicon is added to control the alloy-layer growth rate. Improves adhesion during forming.

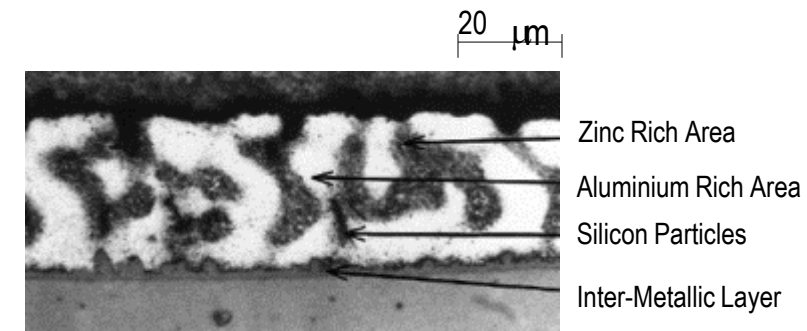
Much higher resistance to corrosion than galvanize coatings in most environments. Long term durability has been demonstrated.

Coating range available: 150 – 200 g/m² total both sides

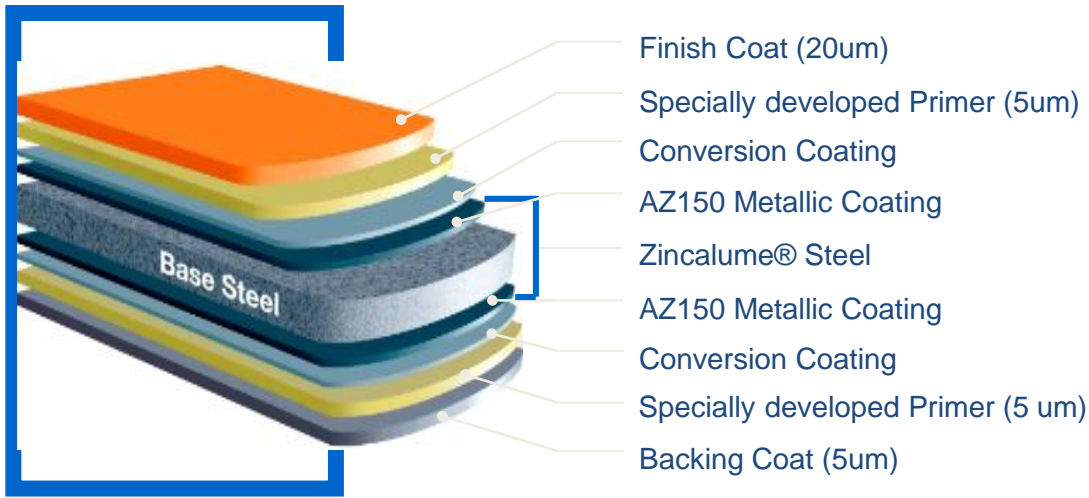
Cross section



Microstructure



Colorbond®



Achieve Higher SRI VALUE even in darker colors

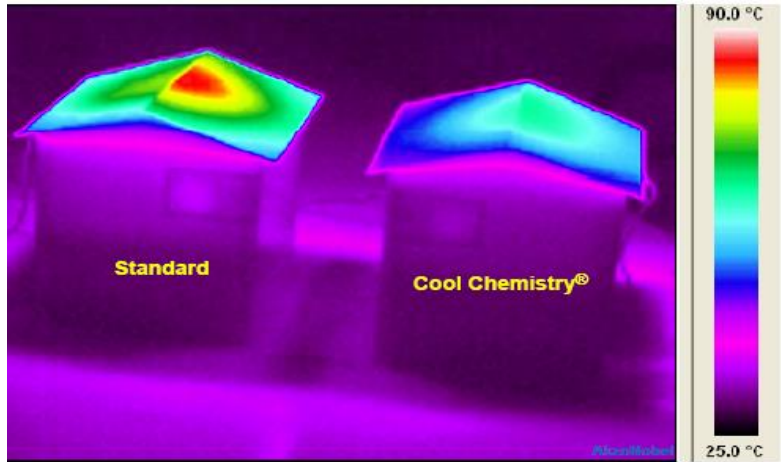
Lower roof temperature by up to 6 deg C

Reduce electrical consumption by up to 15 %

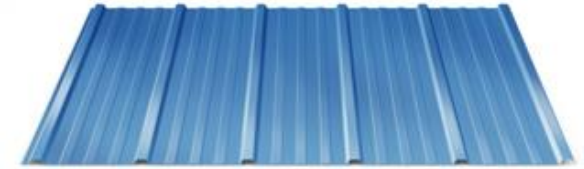
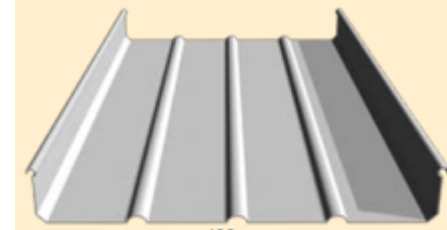
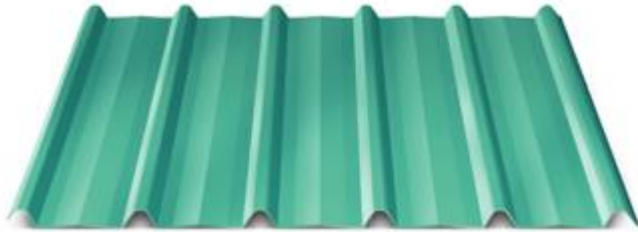
It retain Paint Color and gloss for Longer

Lower Thermal Expansion & Contraction

THERMATECH™



Roofing and Walling - LYSAGHT® Profiles



TRIMDEK®1015

Industrial/Residential/
Commercial applications

ROOF & WALL PROFILE

KLIP-LOK®700

Concealed fastener Roof
Industrial/Residential/
Commercial applications.

ROOF PROFILE

FLEX-LOK®400

Seaming Profile
Industrial/Infrastructure/
Commercial applications.

ROOF PROFILE

FLEXICAD®1110

Residential Wall and
Interior Wall applications.

WALL PROFILE

PANELRIB®1110

Residential Wall,
Interior Wall, False ceiling
applications.

WALL PROFILE

Architectural Roofing and Walling - LYSAGHT® Profiles



SPANDEK®900

Industrial/Residential/
Commercial applications
ROOF & WALL PROFILE

CUSTOMORB®990

Industrial/Residential/
Commercial applications
ROOF & WALL PROFILE

TILE PROFILE 1000

Residential/Resorts
applications
ROOF PROFILE

**LOOKS ELEGANT WHILE HORIZONTALLY LAID
AND FOR CURVED ROOFS AND WALLS**

SOLAR MODULE MOUNTED LYSAGHT® PROFILES



ON TOP OF KL-700



ON TOP OF TRIMDEK-1015



← ON TOP OF FLEXLOK® 400

TATA BLUESCOPE STEEL - Business

BUSINESS VERTICAL

BRANDS

PRODUCTS

CUSTOMERS

Coated Steel

Zincalume®

Colorbond®



- Roll Formers
- PEV Manufacturers

Inner sheet shall be fixed directly to side runners and Z spacers made out of at least 2 mm thick galvanized steel sheet of grade 375 as per IS:277. Inner sheet

Building Products

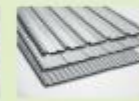
durashine®

LYSAGHT®
Global Excellence since 1857

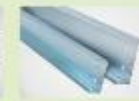
EZYBUILD®
SOLUTIONS



Roof & Wall



Satin Silver



Purlins



Roof & Wall Cladding



Purlins



Decking



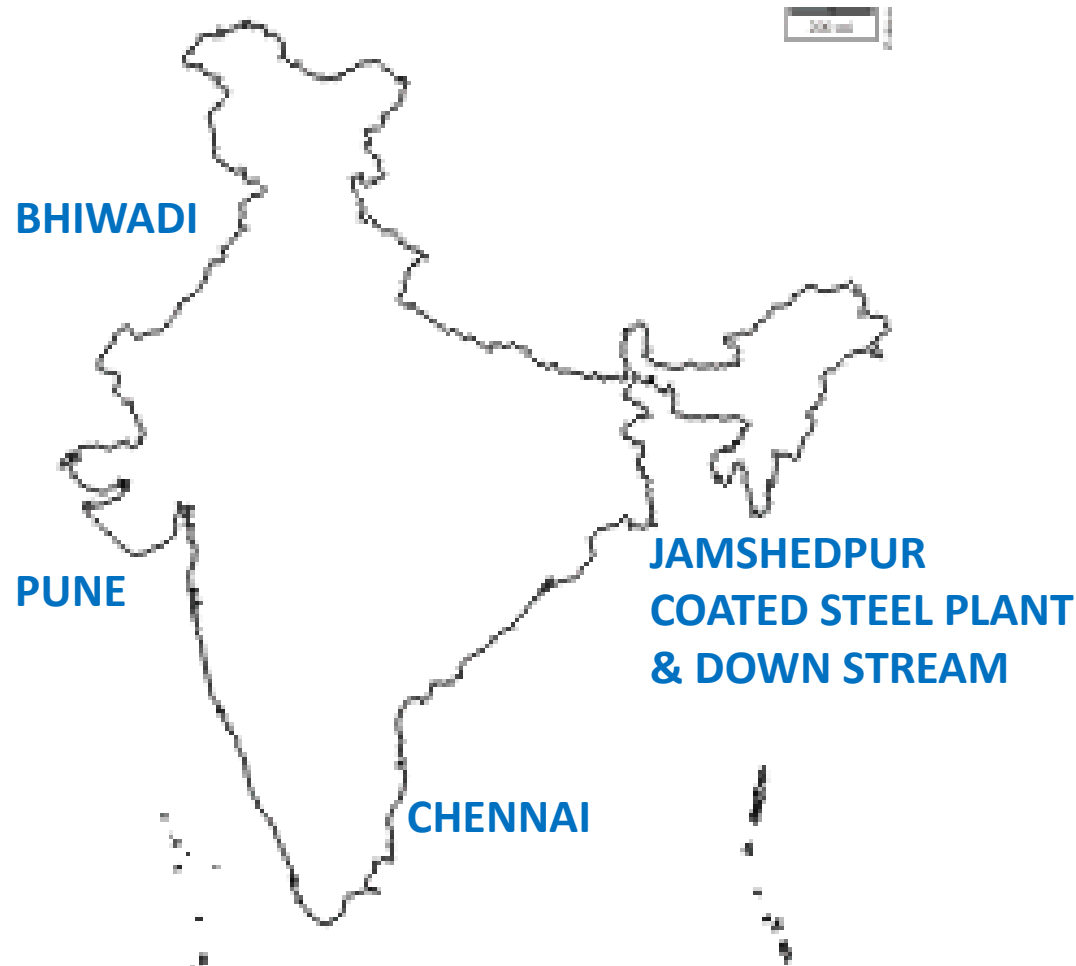
Light Structural Buildings



- Residential
- Small Industries & Commercial Projects

- EPC
- Industrial & Infrastructure Projects

- Light Pre-Engineered Buildings



TATA BLUESCOPE STEEL ESTABLISHED WITH 5 MANUFACTURING UNITS FOR LYSAGHT & EZYBUILD BUSINESS AND ONE COATED STEEL PLANT IN INDIA AND ONE PLANT IN SRI LANKA TO SERVE ACROSS INDIA AND IN SAARC REGION

TATA BLUESCOPE STEEL ENSURE ON TIME DELIVERY AND COST EFFECTIVE SUPPLY CHAIN MECHANISM



50 - 50 Joint Venture between Tata Steel & BlueScope Steel Australia

Thank You