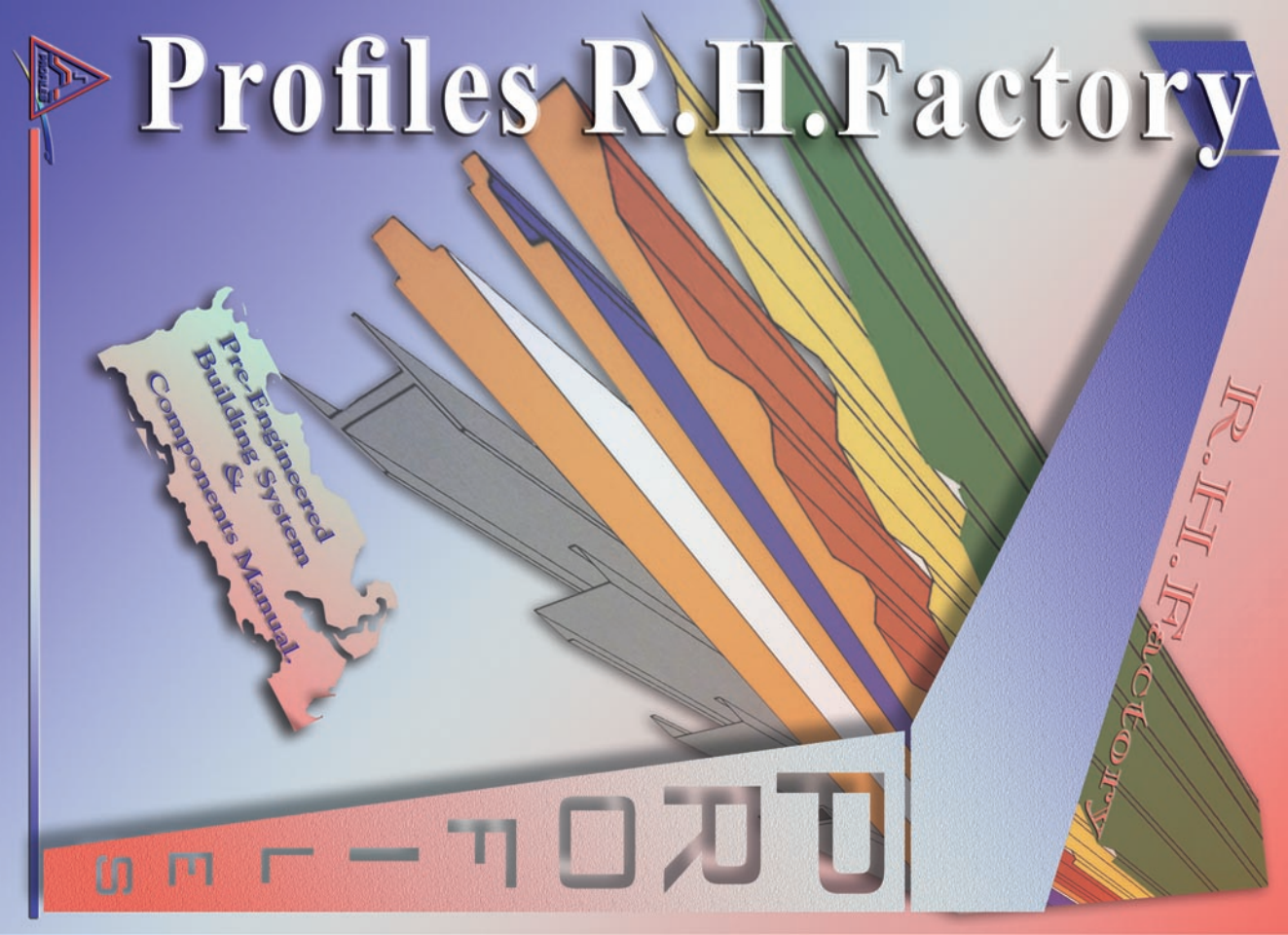
Profiles R.H.Factory



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INTRODUCTION

1.1 About Profiles R.H. Factory (L.L.C)

Profiles R.H.Factory L.L.C., was founded in 1990 in a joint effort by its owners. Since its inception, Profiles has become the fast growing, pre-engineered building systems and components manufacturer in the U.A.E., thriving not only in the U.A.E. market, but also in the Middle East. Its corporate head quarter is located in Sharjah, U.A.E.

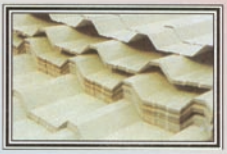
We believe that this unprecedented growth is a direct result of a philosophy of sound business practices that has not changed since profiles establishment:-

Range of Products by Profiles R.H. Factory L.L.C.,

1. **Pre-engineered steel structures**
   Capacity – 9000 Tons/year
   Full range of Pre-engineered structures up to a clear span of 70 meters and maximum height of 16 meters.

2. **Turnkey construction division (Sharjah and Dubai)**
   Capacity – Dhs.400 Million/year
   This division caters the needs of our clients who want to build Warehouses, Factories, Shopping complex and Labour accommodations.With our range of production and expertise we offer the most economical turnkey package with shortest possible duration.

3. **Cladding – Single skin**
   Capacity – 9000m²/DAY
   Material – Aluminum, G.I and Aluzinc
   Thickness – 26 gauge to 20 gauge
   Complete range of cladding with different type of Profiles to choose from.



4. **Cladding – Insulated panels**
   Capacity – 6000m²/day
   Material – Polyurethane
   Thickness – 35mm to 100mm
   Injected Polyurethane panels with thickness ranging from 35mm to 100mm.

5. **Rolled Z sections**
   Capacity – 2000L.mt/day
   Thickness – 1.5mm to 2.5mm
   Depth of section – 100mm to 350mm.
   Material – G.I

6. Rolled C – Sections
Capacity 1000L.mt/day
Material – G.I.
Thickness – 1.0 to 3.0mm
Depth of section – 100mm to 300mm

7. Coil Powder Coating
Capacity – 800L.mt/day
Material – Polyester powder
Base material – Aluminum and G.I
Thickness – 0.5mm to 2.0mm
Colour range – 80 different RAL colours to choose from.
Coating thickness – 40 to 60 microns D.F.T.

8. Coil Pre-painting (Toll Coating)
Capacity – 13000m2/Day
Base material – Aluminum
Thickness – 0.5 to 0.9mm
Coating material – Polyester and P.V.F2 paint from BECKER/ AKZO NOBEL
Colour range – Std. – R.A.L colour on the top and white or clear primer on the Inner side.
Coating thickness – D.F.T. 20 micron on top and 5 micron on Reverse side.

9. Cold room panels
Capacity – 1000m²/day
Thickness of outer skin – 0.9mm
P.U. thickness – 50mm to 200mm

10. Aluminum coil manufacturing (Rolling Mill)
Capacity – 36,550 tons/year
Material – Aluminum
Thickness – 0.5mm to 0.7mm

11. Erection division for pre-engineered buildings
Capacity – 225,000m² of cladding/year
And – 2500 tons of steel/year

12. Installation of cold rooms and Refrigerated trucks
Capacity – 500m² cold room panel/day

files R.H.Factory L.L.C., believes in delivering a quality product at a competitive
offering a professional service to each and every client."

The implementation of this philosophy is done by incorporating the following principles:

- Giving each project the time, attention and craftsmanship it deserves.
- Fair, equitable and honest pricing for our product.
- Employing highly skilled and qualified professionals to guide each project through every department in the company.
- Creating a safe working environment which rewards excellence.
- Delivering our product on time to exacting standards, utilizing state-of-art technology.
- Providing technical assistance to the customer, after delivery to ensure the successful completion and customer satisfaction of each project.

As a privately owned and operated business, we regard each project as reflection of our company. Our name and reputation characterize the buildings we deliver; therefore, we design and fabricate our products accordingly.

Profiles Headquarters in Sharjah

Profiles Rolling Mill. 354m. long, 57m Wide, 15m. Height.
Designed to carry 40 ton crane and 2 numbers 10 ton Cranes.

Profiles Rolling Mill

Inside Cladding Factory

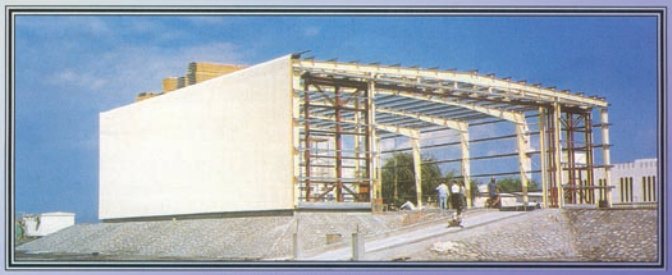
Inside Drafting Section

What makes Profiles R.H. Factory Pre-engineered building system different from other low rise building systems manufacturers?

SERVICE!

It's true! At Profiles R.H. Factory L.L.C we don't claim that our buildings are significantly better than the other manufacturers in the region. However, at Profiles, we can guarantee that the SERVICE the client receives is second to none in the metal building industry.

SERVICE means being FLEXIBLE: moving up Approval Drawing dates to meet a client's needs, or meeting with an architect at the planning stages of a project to suggest structural framing concepts to help meet the client's needs.



Helicopter Hanger - Fujairah

SERVICE is delivering a QUALITY product on time, engineered and fabricated to exacting standards. SERVICE is providing clients with competitive prices for buildings with liners, partitions, fascia, canopies, and so much more . . . in a matter of minutes! Upon initiation of a contract, Profiles state of the art program provides computerized design, erection drawings and bill of materials to expedite delivery.

Since Profiles R.H. Factory L.L.C's, inception in 1990, SERVICE has been the cornerstone of our business philosophy. As you review our manufacturing capabilities and product line nd evaluate a few of our industrial, commercial, institutional, self-storage and design build projects, remember . . .

Profiles R.H. Factory L.L.C., *believes in delivering a quality product at a competitive price and offering professional service to each and every client.*

Medical Stores - Ministry of Health, Dubai

Red Sea Housing - Jebel Ali Freezone

Total Automotive
Car Showroom and Workshop, Dubai

Food Factory - Sharjah Freezone
38 Meter Clear Span

No. CL06020014

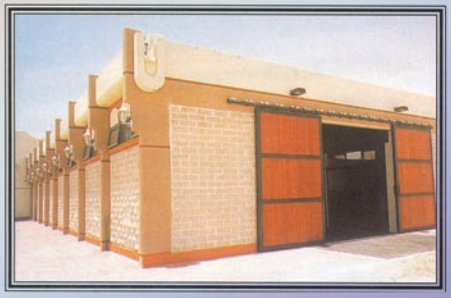
ISO 9001
BUREAU VERITAS
Certification

Suzuki Showroom - Dubai

The economical advantages of utilizing pre-engineered building systems have enabled architects to revolutionize t he commercial building industry. By combining conventional wall finishes, such as brick, pre-cast wall and rock-wall panel and along, with Profiles R.H. Factory L.L.C., range roof systems, it is possible to create attractive and functional structures while greatly minimizing project costs. Mezzanine floor framing can also be integrated into the design of a structure if additional floor space is required. This provides an economical way to ensure the maximum use of the building's interior.

Knowledge School - Azra - Sharjah

Due to effective use of high strength steel and Profiles capability to economically fabricate tapered members, large clearspan areas can be created utilizing fewer interior support columns. This allows the architect the flexibility to design of open space concept and uniquely-shaped structures.



Ganthoot Horse Stables

Other projects include retail stores, restaurants, office complexes, automotive and aviation facilities. The time and craftsmanship that Profiles gives each of these projects are reflected by the quality of the structures that they supply. The capability to deliver a quality product on time at a competitive price distinguishes Profiles R.H. Factory L.L.C., from other building systems manufacturers.

Al Ghandi Showroom - Dubai

Al Rashideen Trading - Office and Warehouse
Al Qusais, Dubai

Architects are now turning towards pre-engineered buildings systems as an economical way to supply institutional projects for city, state, and federal purposes. These include projects such as schools, and recreational facilities. The large learspan areas that pre-engineered structures can supply also make these buildings suitable for any institutional application.

Profiles has also designed and supplied feature fascias of different combinations.

G+2 Building - Dubai

ENGINEERING PRACTICES

2.1-General

Design responsibility

It is the responsibility of Profiles R.H. Factory L.L.C., to design the pre-engineered building to meet the specifications including the design criteria and design loads incorporated by the client in to the contract document. Profiles RH Factory L.L.C., is not responsible f or making an independent determination of any local codes or any other requirements which is not part of the contract documents.

Profiles RH Factory L.L.C., is not responsible for the design of any components or materials not sold by it or their interface in connection with the P.E.B system unless such design responsibility is specifically required by the contract documents.

In the event of discrepancy between the plans and specifications for the P.E.B. systems, the specifications govern. In the event of discrepancy between scaled dimensions and numerical dimension on the plans, included as part of the contract documents, the numerical dimensions govern.

Al Rawda Poultry Farms - Meat Processing Plant - Dubai

NOTE: All printed tables, data sheets in this catalogue should not be taken as specifications unless they are in writing by Profiles R.H. Factory L.L.C. Customers should always get copy of mill certificate in order to find out the material available & allocated for their jobs.
Profiles R.H. Factory L.L.C., reserves right to change any data/details without prior notice.

2 – Engineering Practices

2.2 - Design codes

Profiles R.H.Factory L.L.C., uses the following codes for analysis, design and fabrication of its pre-engineered buildings and components.

1) A.I.S.C. – "American Institute of Steel Construction" - Manual of Steel Construction 1989 edition and its revisions.
1 East wacker drive suite 3100
Chicago Illinois – 60601 – 2001
This Manual is used for the design of all built up sections, hotrolled sections and welded plates.

2) A.I.S.I – "American Iron and Steel Institute" - Specification for design of cold formed msteel structural members - 1996 Edition and its revisions.
1101, 17th street N.W.
Washington D.C. 20036
This manual is used for the design of all cold formed sections.

3) A.W.S. – "American Welding Society manual" 2006 edition
550 N.W. Leijeune road
P.O. Box 351040
Miami F1-33135
This manual is used for all welding specifications and procedures.

4) M.B.M.A – "Metal Building Manufactures Association "manual 1996 edition / 2002 edition
Metal building dealers association.
1300 Sumner Ave.
Cleveland – Ohio - 44115
This manual is used for all loading conditions, fabrication tolerances and is considered as a guideline for pre-engineered buildings.

Its Profiles R.H. Factory's policy to adhere to all the latest updates of the above code. Apart from the above mentioned codes Profiles R.H. Factory L.L.C., is capable of designing the structures in accordance with B.S. 5950 and B.S. 449. For concrete design and related subjects Profiles R.H. Factory L.L.C., follows B.S. 8110 as the design code.

Bel Ramaitha Sports Club - Rashidiya - Dubai

Al Rawda Meat Processing - Dubai

2.3 - Design Loads

As a minimum requirement, a building must be designed to withstand its own dead weight, a specified live load and a specified wind load.
Other loads such as collateral loads, crane loads, seismic loads, mezzanine loads or thermal loads are considered only when specifically required. Following are brief description of type of loads.

1. Dead load consists of the total weight of the building system and its components. This includes main frames, purlins, girts, cladding, bracing, connections, etc.

2. Live load includes all loads produced during erection or maintenance by workers, equipment and materials and loads produced during the life of the structure by movable objects. Live load does not include wind, snow, seismic, crane or other dead loads.

   For design purpose, live load is determined by the applicable code by which the structure is being designed. The configuration of live loads which that result in the maximum stresses in the supporting members is considered in the design for live loads.

   Unless other loads are specified by the customer. Profiles R.H. Factory 's applicable design live load is 0.57 kN/M2 as recommended by the MBMA Manual.

3. Wind speed is considered as specified by the customer or as per local body regulations. Profiles R.H. Factory L.L.C., uses the MBMA Manual for wind pressure calculations. From the basic wind speed velocity pressure is calculated. This velocity pressure and a peak combined pressure coefficient are used to determine the design wind pressure according to following equations:

   $q = 0.00256\ V2\ (H/33)2/7$

   $P = q\ (GCp)$

Where:

q = velocity pressure in pounds per square foot.
V = s pecified basic wind speed in miles per hour.
H = mean roof height above ground in feet or 15 ft., Whichever is greater.

Eave height may be substituted for mean roof height if roof slope is not greater than 10°.

GCp = Peak combined pressure coefficient for main framing or Parts, as given inTables 5.2 (a) and (b), and Figures and Tables 5.4 through 5.7 of 1996 MBMA Manual.

Note: A 33% increase in allowable stresses is permitted for Stresses resulting from load combinations including Wind loads.

4. Collateral load is the weight of additional materials (other than the building's dead load and live load) such as sprinklers, mechanical systems, electrical systems, false ceilings and Air conditioners.

5. Crane load is accounted for in accordance with Section 6 of the 1996 MBMA Manual. Crane loads and their corresponding vertical, lateral and l ongitudinal impacts are applied in accordance with the above noted section.

6. Combination of Live, crane and wind loads are considered as stipulated in the M.B.M.A. code.

Seismic load is caused by earthquakes and are applied horizontally at the center of mass of the main structure. It is normally applied at the eave location for buildings without other heavy structural members such as mezzanines and cranes: (Otherwise the horizontal forces will be applied proportional to the mass of each individual component and at it's center of mass).

The structure should be designed and constructed to resist a minimum total lateral seismic force assumed to act nonconcurrently in the direction of each of the main axis of the structure in accordance with M.B.M.A. manual section 7.

7. Mezzanine load is the dead load of the mezzanine framing including concrete and all finishes in addition to the live load applied on the mezzanine according to its occupancy and usage.

8. Thermal load is load introduced into structural members as result of temperature variations. Thermal loads increase the unit stresses in the members. This increase in unit stress is calculated from the following formula:

Changes in unit stress = E t

Where:

E = Steel modullus of elasticity = 20340 KN/cm2
= Coefficient of thermal expansion = 0.0000117 for each degree celsius
t = Difference in temperature in degrees celsius.

National Trading - Rashidiya, Dubai

Zabeel Tower Warehouses - Jebel Ali

No. CL06020014
ISO 9001
BUREAU VERITAS Certification

2.4 - Building design certification

Upon the request of client, Profiles R.H. Factory L.L.C., will provide a letter of certification towards the integrity of design. The Engineering Manager and the Administration Manager will duly authorize this letter
Format of such letter is shown below.

Building Design Certification

Ref. **Date**
Job no.
Client
Project
Coverage – Structural Steel Design
Issue date – Day of Project handing Over / Completion.

This is to state that the structure of the above-referred project is designed to withstand the following loads.

Live load on roof cover = 0.57 KN/m2
Live load on frame = 0.57 KN/m2
Wind speed = 130 Km/Hr.
Dead load = Total self weight of structure and components
Collateral = 0 KN/m2

The above loads have been applied in accordance with the 1996 edition of M.B.M.A manual. The structure is designed in accordance with A.I.S.C code 1989 editions and A.I.S.I code 1996 edition

Note

1. The certification does not hold good incase actual loads exceed design loads, the structure corrodes due to lack of proper maintenance.

2. Design certification does not cover the design of the foundation or any other item which is not covered in the contract document as a part of Profiles R.H. Factory's scope of supply.

Sincerely yours
For **Profiles RHF LLC**

Engineering Manager **Administration Manager**

Section – 3

STANDARD BUILDING SYSTEMS

3.1 – General

Idex Abu Dhabi 50 mt clear span

This section gives guidelines on the most commonly used structural frames by Profiles R.H. Factory L.L.C. These are considered to be the most economical designs and cater to a wide variety of usages.

For each type of frame (section 3.2 to 3.7), a load table is given showing the clearance and reactions. This is a very handy data for the preliminary design of foundations and pedestals.
Section – 3.8 to 3.10 is load table for canopies generally used for parking bays.

For special conditions Profiles R.H. Factory L.L.C., can provide the designer/consultant with data required for preliminary designs.

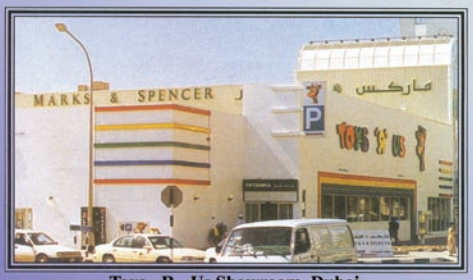
Design Loads

Design loads considered are live load of 0.57Kn/m and wind load 130km/hr.

Bay Spacing

Bay spacing is considered as 7.5meters from the point of view of economy. Spacing as wide as 12 meters and as low as 4meters can be accommodated but will be at the overall increase in cost.

Eave height
Eave heights of 4meters, 6meters and 8meters are considered in this section. These are the height requirement for most of the structures. However heights up to 16 meters can be produced by Profiles R.H. Factory L.L.C.



Toys - R - Us Showroom, Dubai

ISO 9001
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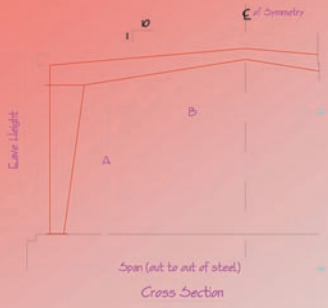
No. CL06020014

3.2 – Clear Span

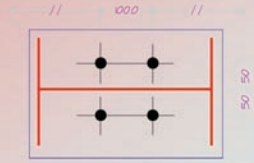


Cross Section

Reactions

NOTES:

1. Arrows indicates positive direction of loads and reactions.
2. Wind load applied in accordance with MBMA 1996.
3. For 6m bays multiply col. Reactions by 0.80.
4. For 9m bays multiply col. Reactions by 1.2.

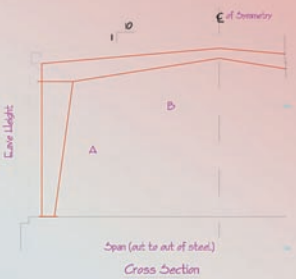


Typical Anchor Bolt Plan Up to 36 M Span

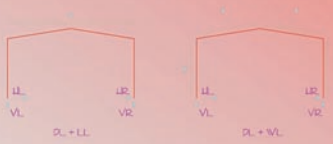
SPAN (mm)	EAVE HEIGHT (mm)	MINIMUM CLEARANCE (mm)	
		A	B
12,000	4000	3613	11142
	6000	5529	10956
	8000	7343	10596
15,000	4000	3456	13794
	6000	5458	13743
	8000	7348	13443
18,000	4000	3318	16489
	6000	5390	16536
	8000	7300	16336
21,000	4000	3290	19485
	6000	5296	19384
	8000	7195	19384
24,000	4000	3201	22231
	6000	5181	22130
	8000	7183	22079

REACTION (KN)					
DL + LL		DL + WL			
VL=VR	(+)HL(-)HR	VL	HL	VR	HR
33.8	13.8	-21.8	-13.2	-11.9	-1.1
34.3	9.3	-27.2	-15.2	-9.5	-8.6
35.3	7.9	-34.6	-19.3	-15.5	-4.6
42.1	26.0	-26.3	-19.5	-16.3	5.4
42.7	16.5	-31.3	-19.2	-15.8	-4.3
43.7	13.3	-37.9	-22.5	-11.7	-12.8
50.6	40.1	-30.7	-26.5	-20.2	12.7
51.2	26.3	-35.7	-24.7	-19.8	1.5
52.2	20.2	-42.1	-26.7	-18.0	-7.5
59.6	55	-34.8	-33.5	-23.5	19.9
60.3	37.2	-39.8	-30.3	-23.8	7.3
61.2	27.2	-46.3	-30.7	-23.2	-3.2
68.3	71.7	-39.2	-41.3	-27.0	28.0
69.2	48.8	-44.2	-36.2	-27.9	13.5
70.1	36.4	-50.9	-36.1	-28.2	2.5

Section – 3.2 – Clear span (Contd.)



Cross Section



Reactions

Typical Anchor Bolt Above 36 M Span
Up to 48M Span

NOTES:

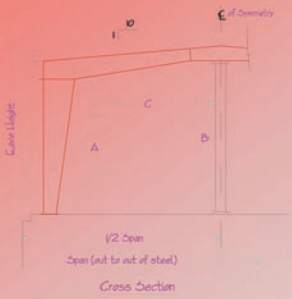
1. Arrows indicates positive directions of loads and reactions.
2. Wind load applied in accordance with MBMA 1996.
3. For 6m bays multiply col. Reactions by 0.80.
4. For 9m bays multiply col. Reactions by 1.20.

SPAN (mm)	EAVE HEIGHT (mm)	MINIMUM CLEARANCE (mm)	
		A	B
30,000	4000	2969	27774
	6000	4917	27603
	8000	6892	27552
36,000	6000	4886	33544
	8000	6692	33110
42,000	6000	4688	39110
	8000	6688	39157
48,000	6000	4686	45102
	8000	6686	45098

REACTION (KN)					
DL + LL		DL + WL			
VL=VR	(+)HL(-)HR	VL	HL	VR	HR
85.8	112.1	-48.0	-60.2	-33.9	47.4
86.8	78.1	-53.6	-51.3	-35.9	29.2
87.9	59.4	-60.7	-49.1	-37.6	16.1
105.9	113.2	-61.8	-67.5	-42.2	45.9
106.7	85.9	-69.9	-63.0	-45.5	30.6
125.2	153.2	-69.9	-85.0	-48.2	63.9
127.2	121.6	-77.2	-80.2	-51.6	48.4
147.2	201.1	-75.3	-100.9	-51.4	80.4
151.0	161.7	-82.4	-94.3	-54.2	63.1

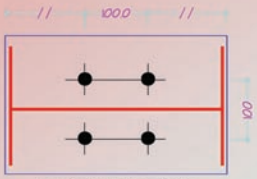
ISO 9001
BUREAU VERITAS Certification
No. CL06020014

3.3 – Multi Span - I



Cross Section

Reactions



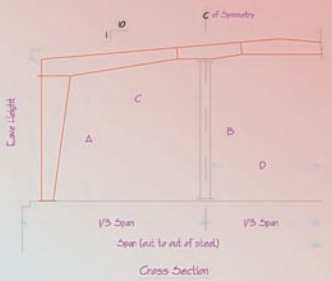
Typical Anchor Bolt

NOTES:

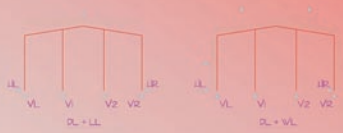
1. Arrows indicates positive direction of loads and reactions.
2. Wind load applied in accordance with MBMA 1996.
3. For 6m bays multiply col. Reactions by 0.80.
4. For 9m bays multiply col. Reactions by 1.25.Typical

SPAN (mm)	EAVE HEIGHT (mm)	MINIMUM CLEARANCE (mm)		
		A	B	C
24,000	4000	3524	4673	11528
	6000	5524	6673	11528
	8000	7389	8675	11374
30,000	4000	3527	4866	14499
	6000	5524	6815	14528
	8000	7391	8815	14349
36,000	-			
	6000	5524	6959	17526
	8000	7433	8884	17428
42,000	-			
	6000	5339	7133	20268
	8000	7502	9016	20420
48,000	-			
	6000	5109	7353	22990
	8000	7299	9327	23116

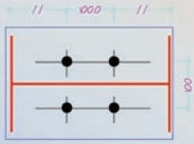
REACTIONS (KN)							
DL + LL			DL + WL				
VL=VR	HL=HR	VI	VL	HL	V1	VR	HR
33.0	11.0	70.3	-22.2	-11.2	-34.1	-10.1	-2.1
32.1	5.8	74.2	-25.1	-12.8	-38.4	-8.7	-9.8
35.4	5.8	70.8	-31.1	-17.8	-38.4	-8.3	-15.8
40.6	18.2	88.8	-27.1	-14.7	-43.3	-13.0	1.9
38.1	8.9	95.9	-29.1	-14.3	-50.6	-11.4	-7.8
41.9	9.1	91.7	-35.2	-19.5	-51.4	-12.0	-13.5
--	--	--	--	--	--	--	--
44.6	13.1	117.4	-33.3	-16.4	-62.1	-13.8	-5.2
45.8	10.4	117.3	-20.0	-38.5	-67.4	-14.1	-12.4
--	--	--	--	--	--	--	--
59.5	31.5	122.5	-42.2	-26.5	-64.2	-20.6	5.4
52.6	14.4	137.2	-43.2	-22.2	-81.0	-17.1	-9.6
--	--	--	--	--	--	--	--
75.1	53.7	128.1	-50.7	-38.0	-65.2	-26.8	17.5
68.4	31.4	141.8	-52.9	-32.2	-82.4	-24.7	1.0



Cross Section



Reactions



Typical Anchor Bolt Plan

NOTES:

1. Arrows indicates positive direction of loads and reactions.
2. Wind load applied in accordance with MBMA 1996.
3. For 6m bays multiply col. Reactions by 0.80.
4. For 9m bays multiply col. Reactions by 1.25.

SPAN (mm)	EAVE Height (mm)	MINIMUM CLEARANCE (mm)			
		A	B	C	D
36,000	4000	3473	4625	11538	12000
	6000	5473	6625	11538	12000
	8000	7338	8625	11374	12000
45,000	4000	3479	4923	14473	15000
	6000	5479	6923	14473	15000
	8000	7386	8923	14399	15000
54,000	-				
	6000	5385	7087	17319	18000
	8000	7429	9064	17370	18000
63,000	-				
	6000	5222	7240	20141	21000
	8000	7293	9217	20192	21000

REACTIONS (KN)								
DL + LL			DL + WL					
VL-VR	HL-HR	V1-V2	VL	HL	V1	V2	VR	HR
34.3	11.1	68.0	-22.2	-10.9	-41.4	-24.2	-11.6	-1.4
33.4	5.6	70.1	-25.4	-12.2	-43.1	-30.4	-10.0	-9.3
35.7	5.6	70.2	-31.4	-17.1	-41.1	-35.9	-8.7	-15
44.4	21.6	83.4	-16.0	-27.9	-52.1	-28.4	-16.1	4.4
44.4	21.6	83.4	-27.9	-16.0	-52.1	-28.4	-16.1	4.4
43.8	9.1	87.4	-36.3	-18.9	-57.0	-41.4	-14.3	-12
55.1	27.0	99.7	-37.9	-24.0	-67.5	-37.0	-21.8	4.0
53.0	16.9	103.3	-23.5	-41.9	-72.5	-46.3	-20.2	-7.1
66.8	41.6	114.6	-44.2	-31.7	-78.6	-39.9	-27.2	12.6
63.9	26.9	120.5	-48.3	-29.4	-84.2	-48.0	-26.3	-0.3

3.5 – Multi Span III

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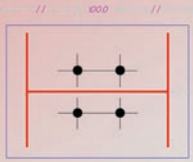
BUREAU VERITAS Certification

Cross Section

Reactions



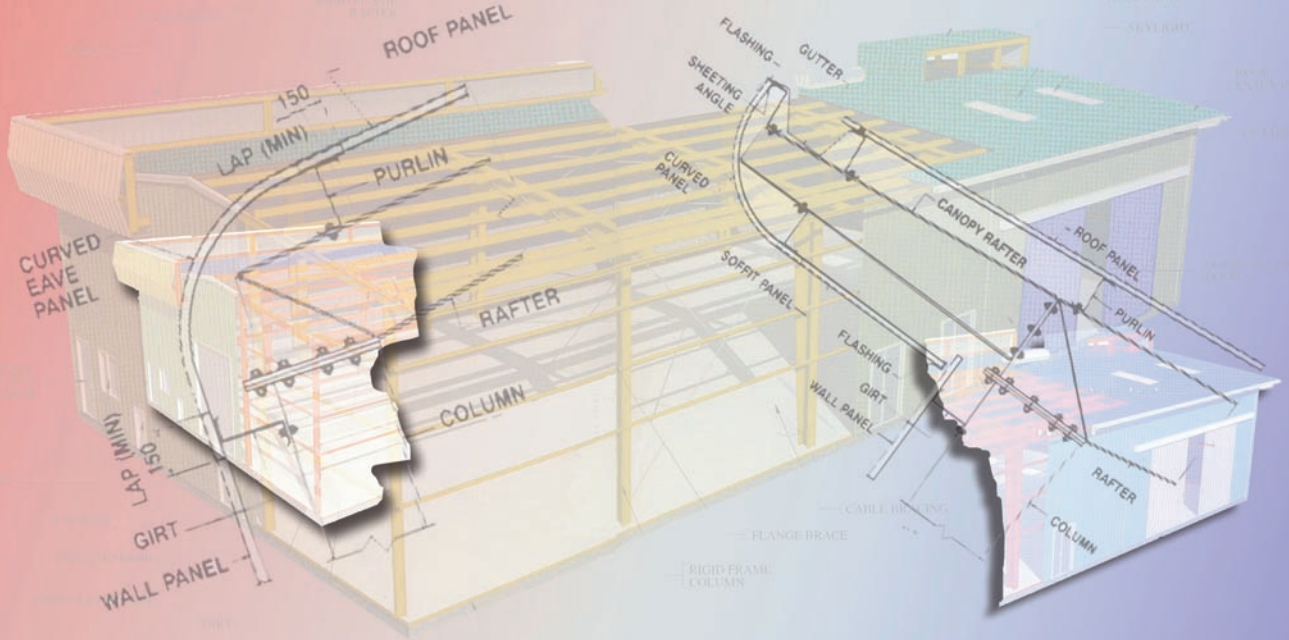
Typical Anchor Bolt Plan

NOTES:

1. Arrows indicates positive directions of loads and reactions.
2. Wind load applied in accordance with MBMA 1996.
3. For 6m bays multiply col. Reactions by 0.80.
4. For 9m bays multiply col. Reactions by 1.25.

SPAN (mm)	EAVE Height (mm)	MINIMUM CLEARANCE (mm)				
		A	B	C	D	E
48,000	4000	3524	4675	5875	11528	12000
	6000	5524	6675	7875	11528	12000
	8000	7441	8675	9875	11353	12000
60,000	4000	3524	4877	6394	14526	15000
	6000	5524	6877	8419	14524	15000
	8000	7389	8854	10443	14374	15000
72,000	--	--	--	--	--	--
	6000	5456	6966	8940	17397	18000
	8000	7437	8966	10966	17348	18000

REACTIONS (KN)										
DL + LL				DL + WL						
VL = VR	HL= HR	V1+ V3	V2	VL	HL	V1	V2	V3	VR	HR
34	12	70	64	-22	-11	-47	-30	-24	-12	-1
34	7	71	65	-25	=12	-50	-33	-29	-11	-8
36	7	70	67	-30	-17	-49	-37	-33	-10	-14
42	19	90	77	-26	-14	-61	-35.	-30	-16	-4
40	10	93	79	-28	-14	-66	-38.	-35	-15	-6
43	9	92	81	-34	-18	-68	-43	-40	-15	-12
--	--	--	--	--	--	--	--	--	--	--
49	19	113	91	-33	-18	-81	-44	-41	-19	-0.4
49	13	113	95	-37	-20	-87	-47	-48	-19	-9


ROOF PANEL
150
LAP (MIN)
PURLIN
CURVED EAVE PANEL
RAFTER
COLUMN
LAP (MIN)
150
GIRT
WALL PANEL
FLASHING
GUTTER
SHEETING ANGLE
CURVED PANEL
CANOPY RAFTER
ROOF PANEL
SOFFIT PANEL
PURLIN
FLASHING
GIRT
WALL PANEL
RAFTER
COLUMN

Section – 3.6 Multi Gables - 1

Multi gable building consists of two or more gable buildings having a common sidewall columns.

Though multi gable buildings may be more aesthetic in appearance than multi-span buildings there are some arguments to discourage their use.

1. Drainage at the valley between gables require more frequent maintenance. Valleys tend to accumulate residue such as sand, etc…which has to be washed and cleaned more regularly than a normal eave gutter.
2. In long buildings, down pipes have to be provided inside the building and horizontal drain pipes or concrete channels have to be embedded in the concrete along the length of the building, under each valley to carry the water from the roof to an exterior location. Clogging of these pipes can cause flooding inside the building.
3. Wind bracing design often requires the provision of diagonal wind bracing between interior columns along the length of the building, which, if not allowed, would necessitate the substitution of the more expensive portal bracing. This is unsightly and often uneconomical.

Section – 3.7 Single slopes

Single slope buildings are economical for small spans of less than 12 meters, mainly due to fewer gutters and downspouts, lesser shop fabrication time for the rafters and shorter erection time for the roof sheeting, which is the result of fewer sheet laps.

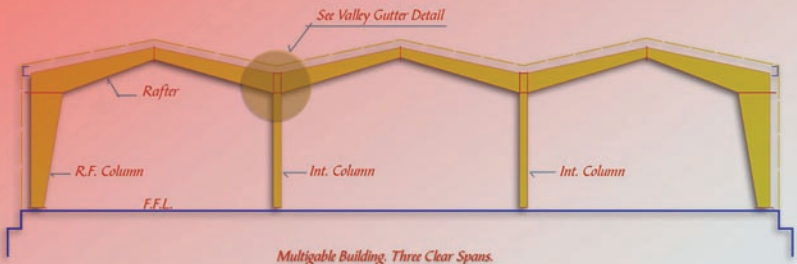
In specialized applications such as offices or showrooms the columns of single slope buildings are often required to be straight for aesthetic reasons.

National Trading Logistics Center - Rashidiya, Dubai

The most common applications for using single slope buildings are:

1. When the building is located at the edge of a property and the local building code demands that the rainwater from the building roof is drained away from the property line.
2. When a building is located such that it's length is parallel to a main road and the customer does not want to invest in a fascia, but, wants to conceal the sloping roof by making the higher eave side face the road.

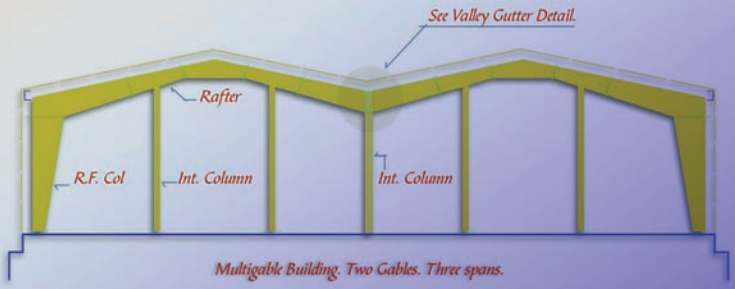
No. CL06020014
ISO 9001
BUREAU VERITAS
Certification



Multigable Building. Three Clear Spans.

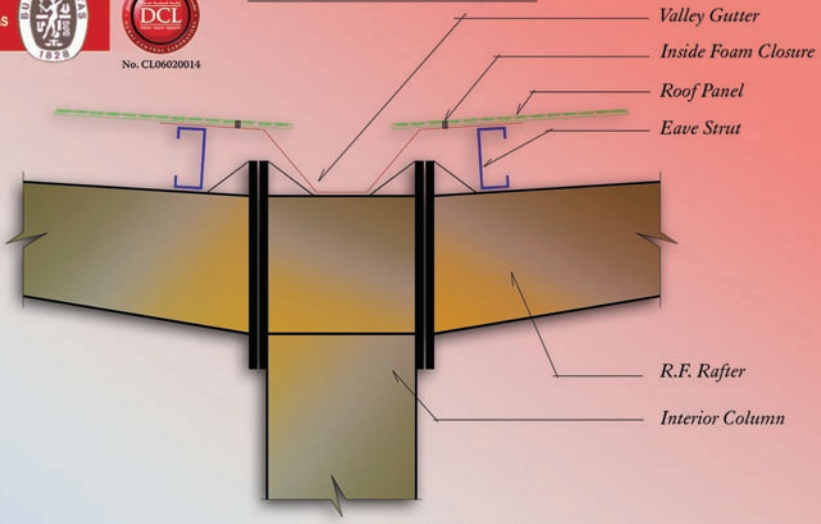
Mawarid Warehouse - Shj.

Zinal Warehouse - Shj.

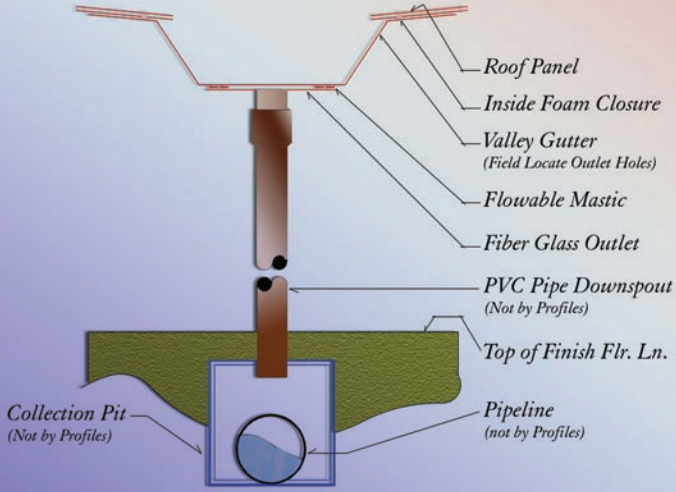


Multigable Building. Two Gables. Three spans.

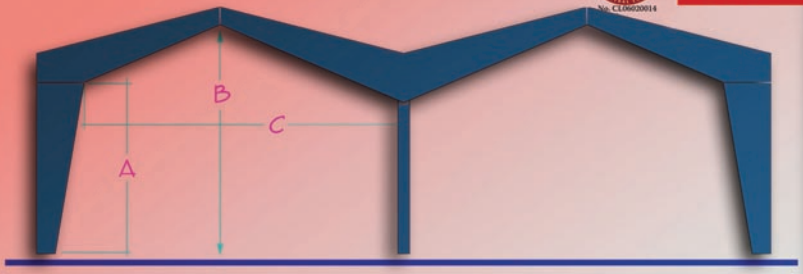
Section – 3.6 – Multi Gables (contd.)

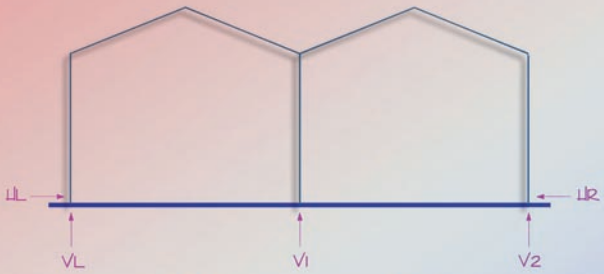


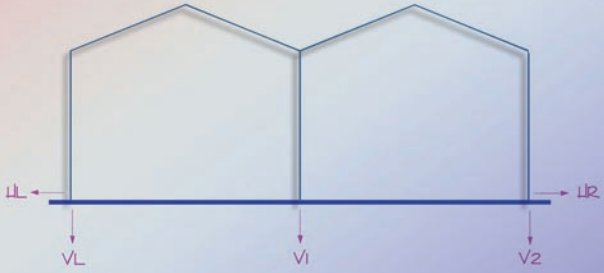
TYPICAL STRUCTURAL DETAIL @ VALLEY



VALLEY GUTTER & DOWNSPOUT DETAIL



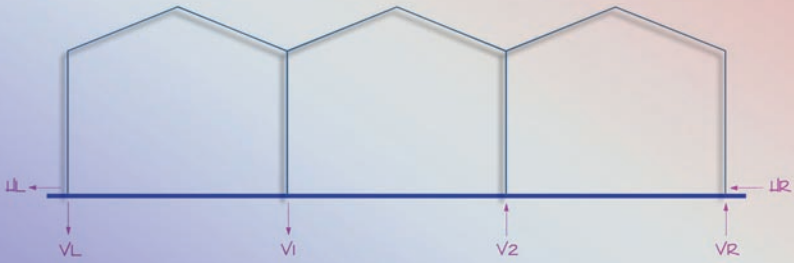




SPAN (mm)	EAVE HEIGHT (mm)	MINIMUM CLEARANCE (mm)		
		A	B	C
20,000	6000	5198	6472	19197

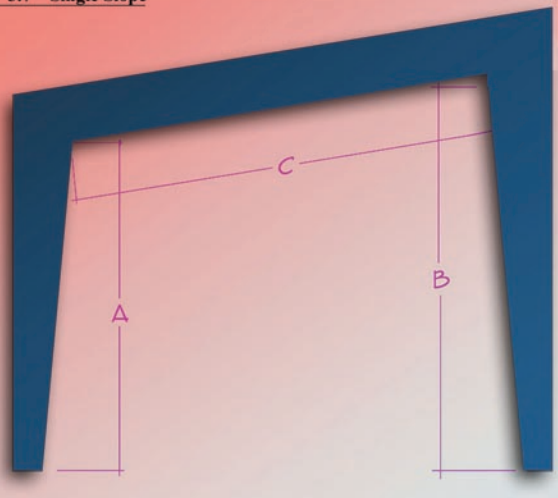
REACTIONS (KN)							
DL + LL			DL + WL				
VL-VR	HL-HR	V1	VL	HL	V1	VR	HR
48.9	26.2	120	37	25	54.2	19.3	1.3

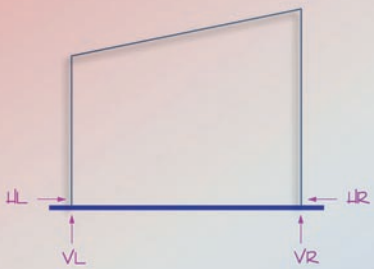
Section – 3.6 - Multi Gable III



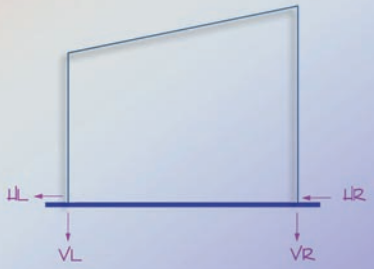
SPAN (mm)	EAVE HEIGHT (mm)	MINIMUM CLEARANCE (mm)			
		A	B	C	D
20,000	6000	5498	6472	5259	19446

REACTIONS (KN)								
DL + LL			DL + WL					
VL-VR	HL-HR	V1-V2	VL	HL	V1	V2	VR	HR
55	34	106.5	39.5	29.6	50	-47	-22.7	-6





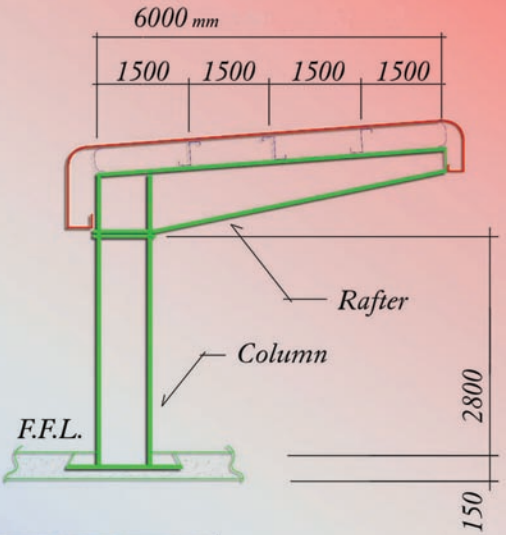
(DL+LL)



(DL+VIL)

SPAN (mm)	EAVE HEIGHT (mm)	MINIMUM CLEARANCE (mm)		
		A	B	C
15,000	6000	5389	6808	13773

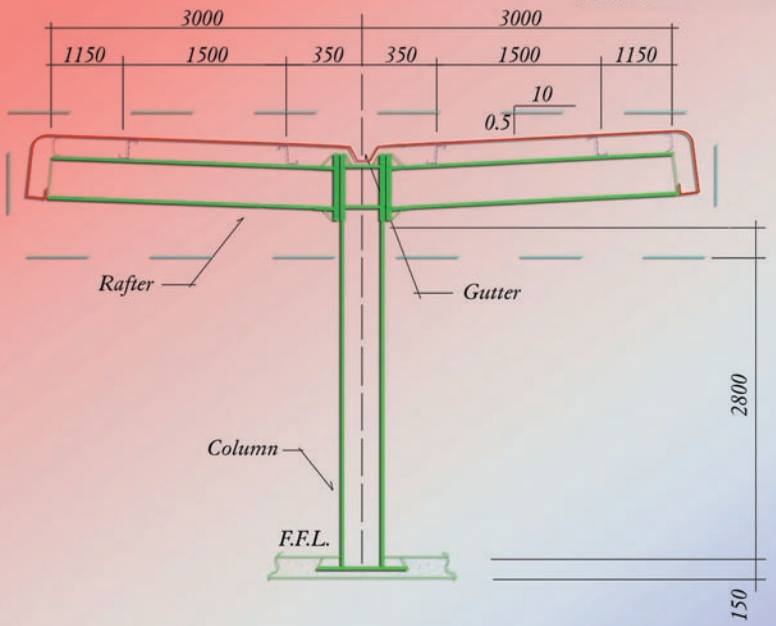
REACTIONS (KN)							
DL + LL				DL + WL			
VL=VR	HL=HR	VR	HR	VL	HL	VR	HR
41.5	6.8	42.5	6.8	26.5	14	17.5	8.8



CAR PARK - DUBAI AIRPORT
FREEZONE (DAFZA) - DUBAI

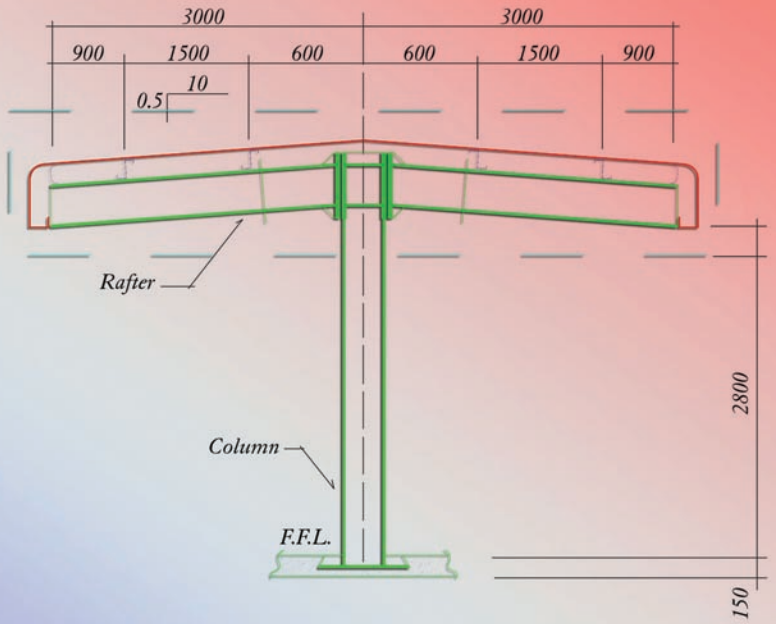
LOAD COMBINATION	REACTION (KN) KN-M		
	V	H	M
DEAD + LIVE	32	0	96
DEAD + WIND (R)	-5	15	-52

BAY SPACING = 6000mm
DEAD LOAD = 0.10KN/m²
LIVE LAOD = 0.57KN/m²
WIND LOAD = 130 KM/HR



LOAD COMBINATION	REACTION (KN) KN-M		
	V	H	M
DEAD + LIVE (FULL SPAN)	35	0	0
DEAD + WIND (1/2 SPAN)	20.5	0	20.77
DEAD + WIND (CASE 1)	-5	-10	37

BAY SPACING = 6000mm
DEAD LOAD = 0.1 N/m²
LIVE LAOD = 0.57KN/m²
WIND LOAD = 130 KM/HR



LOAD COMBINATION	REACTION (KN) KN-M		
	V	H	M
DEAD + LIVE (FULL SPAN)	35	0	0
DEAD + WIND (1/2 SPAN)	20.5	0	20.77
DEAD + WIND (CASE 1)	-5	-10	33

BAY SPACING = 6000mm
DEAD LOAD = 0.1 N/m²
LIVE LAOD = 0.57KN/m²
WIND LOAD = 130 KM/HR

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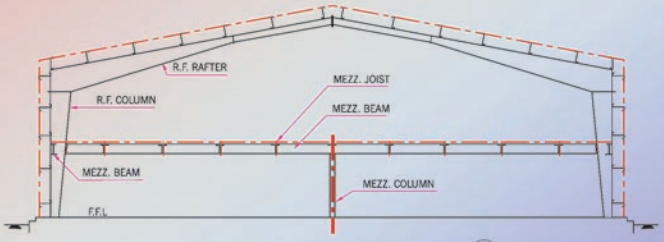
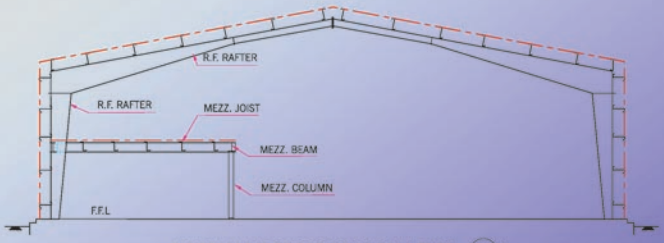
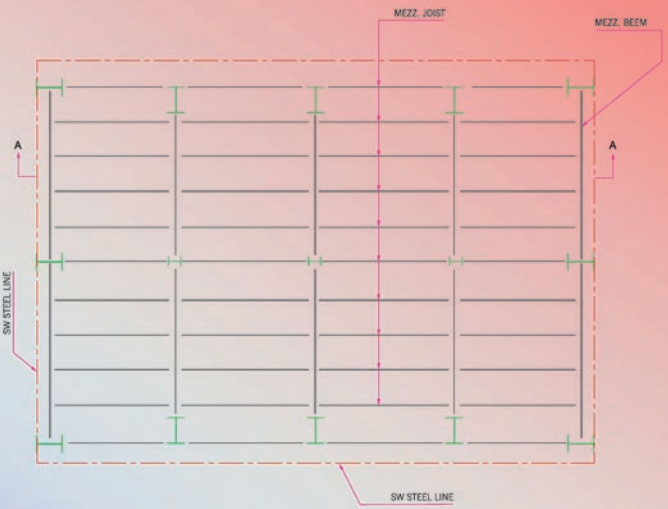
Profile R.H. Factory L.L.C., mezzanine system is a very fast in construction and economical on the coast part. It comprise of decking sheet acting as permanent shuttering for R.C.C., supported on joists and main beams Joists can be built up sections or cold form section.



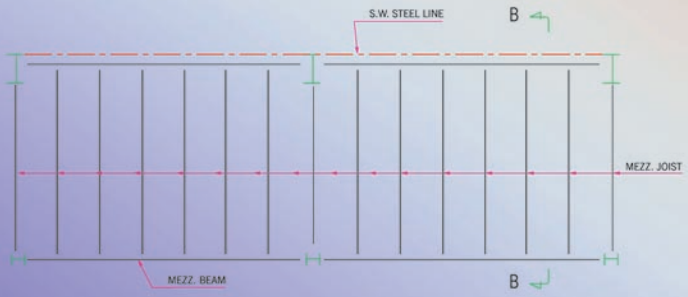
MEZZANINE CROSS SECTION (TYPE (A))



MEZZANINE CROSS SECTION (TYPE (B))

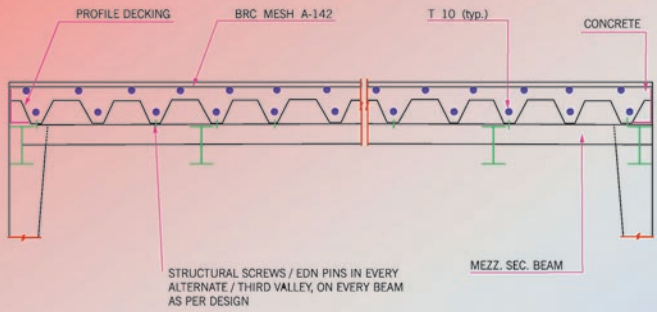


MEZZANINE PLAN (TYPE (A))

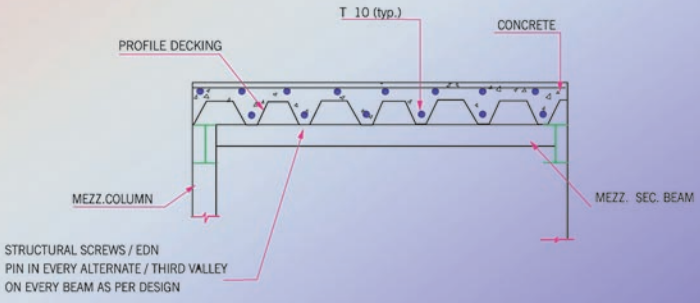


MEZZANINE PLAN (TYPE (B))

Typical detail of deckslab with Profile decking sheet acting as permanent-shuttering R.C.C. is designed as ribbed slab.



SECTION A-A



SECTION B-B

SECTION – 4

Z Section and C sections

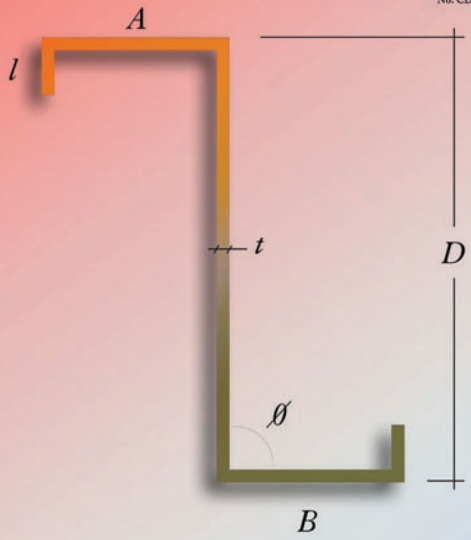
4.1. General

Z sections structural members are designed for use as secondary supports for roof and wall sheeting with or without insulation. Apart from its role to support sheeting it also acts as restraints for Rafters/columns and also act as struts in wind Bracing system. Design of Z purlins and Girts are based on A.I.S.I code. Z sections are manufactured from Pre hot dipped galvanized steel comforming to A.S.T.M. A653 - Z275 structural quality with a minimum guaranteed yield strength of 345 N/mm2. Profiles can roll Z sections of any depth starting from 100mm to 350mm. Length is limited to 15 meters fromtransportation point of view. Thickness range is 1.5mm to 2.5mm.

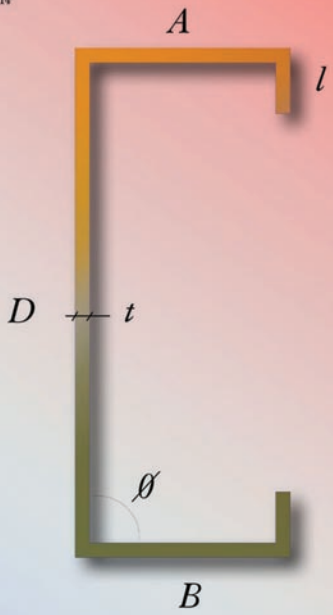
C sections are mainly used as Girts, Eave struts, Gable end columns and Gable Rafters. Design is based on A.I.S.I code and material description is same as for Z sections. Profiles can roll C section of any depth starting from 120mm to 300mm. Length is limited to 12 meter. Thickness range is from 1.5mm to 2.5mm. Following sections gives the sectional properties for Z section and C section.

Smoker Center - Dubai

Al Rawda Poultry Farms - Meat Processing Plant Dubai



SECTION	20215	20220	20225	23215	23220	23225	25015	25020	25025
DEPTH Dmm	202	202	202	232	232	232	250	250	250
THICKNESS t mm	1.5	2.0	2.5	1.5	2.0	2.5	1.5	2.0	2.5
TOP FLANGEA mm	55	55	55	75	75	75	65	65	65
BtmFLANGEB mm	50	50	50	67	67	67	60	60	60
Liplength l mm	16.000	16.000	16.000	16.000	16.000	16.000	16.000	16.000	16.000
Inside Radius mm	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000
Angle ø (deg)	90.000	90.000	90.000	90.000	90.000	90.000	90.000	90.000	90.000
Weight Kg/m	3.93	5.24	6.56	4.79	6.38	7.97	4.79	6.39	7.99
Area Cm^2	4.77	6.31	7.83	5.77	7.65	9.50	5.79	7.67	9.53
Ixx Cm^4	270.40	354.800	436.320	4.52	594.900	733.500	500.800	658.900	812.720
Zx Top Cm^3	27.200	35.690	43.890	39.10	52.360	64.620	40.590	53.410	65.870
Zx Bottom Cm^3	26.360	34.580	42.530	38.10	50.240	61.960	39.560	52.050	64.180
Rxx mm	75.300	74.980	74.660	88.50	88.080	87.870	93.020	92.680	92.360
Iyy Top Cm^4	11.930	15.320	18.440	27.35	35.400	43.000	18.910	24.410	29.530
Iyy Bottom Cm^4	10.220	13.090	15.720	22.90	29.590	35.850	16.520	21.290	25.700
Zyy Cm^3	4.160	5.360	6.470	6.92	8.990	10.900	5.590	7.250	8.790
Ryy mm	21.550	21.220	20.890	29.50	29.150	28.800	24.740	24.410	24.080



SECTION	2101.0	2102.0	2102.5	2401.5	2402.0	2402.5	2581.5	2582.0	2582.5
DEPTH Dmm	210	210	210	240	240	240	250	250	250
THICKNESS t mm	1.5	2.0	2.5	1.5	2.0	2.5	1.5	2.0	2.5
TOPFLANGE A mm	45	45	45	67	67	67	55	55	55
Btm FLANGE B mm	45	45	45	67	67	67	55	55	55
Liplength mm	16	16	16	16	16	16	20	20	20
Inside Radius mm	4	4	4	4	4	4	4	4	4
Angle ø (deg)	90	90	90	90	90	90	90	90	90
Weight Kg/m	3.75	4.95	6.15	4.62	6.118	7.60	4.64	6.15	7.64
Area Cm^2	4.768	6.308	7.824	5.878	7.788	9.674	5.90	7.82	9.72
Ixx Cm^4	284.429	373.131	458.830	488.474	642.920	793.237	53.6	70.5	870
Zxx Top Cm^3	27.089	35.536	43.698	40.706	53.577	66.103	41.5	54.7	67.4
ZxxBottom Cm^3	27.089	35.536	43.698	40.706	53.577	66.103	41.5	54.7	67.4
Rxx mm	77.239	76.909	76.577	91.164	90.858	90.550	95.2	94.9	94.60
Iyc Top Cm^4	7.848	10.031	12.013	22.525	29.133	35.312	15.0	19.4	23.4
Iyc Bottom Cm^4	7.848	10.031	12.013	22.525	29.133	35.312	15.0	19.4	23.4
Zyy Cm^3	3.547	4.560	5.492	6.800	8.828	10.741	5.4	7.1	8.70
Ryy mm	18.145	17.834	17.523	27.685	27.352	27.019	22.5	22.2	22.93

No. CL06020014
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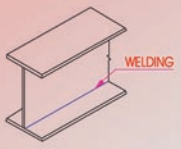
BUREAU VERITAS
Certification

5. Material specification for components

5.1 Hot rolled and built-up sections

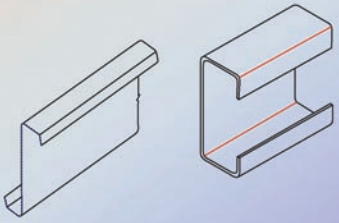


(a) Hot rolled and built-up sections are used for primary members such as rigid frame columns and rafters, gable end columns and rafters, mezzanine columns and beams and portal bracings.

(b) All built-up members will be fabricated from hot rolled plates and coils conforming to ASTM A-572 grade 42 or grade 50 or their equivalent with minimum yield strength of 265 N/sq.mm. for grade 42 and 345 N/sq.mm. for grade 50. Joining web and flange plates on one side of web plate using continuous welding process will form built-up members. Size of welding will be according to design requirements. Welding will be carried out according as per the Structural Welding Code of American Welding Society.

(c) All hot rolled sections shall conform to BS 4360 grade 43 specifications or equivalent with minimum yield strength of 265 N/sq.mm.

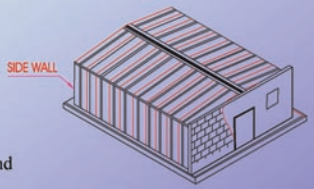
5.2 Cold formed Z and C sections



Cold-formed C sections are used for primary structural members like gable end columns and rafters and for secondary members like eave struts. Cold-formed Z sections are essentially used as secondary members like purlins and girts.

Material used for cold-formed sections will be those conforming to ASTM A-653 structural quality with minimum yield strength of 345 N/sq.mm.

5.3 Aluminium cladding



Aluminium sheets used for roof and wall cladding will be made from Aluminium coils with minimum yield strength of 130 N/sq.mm. and conforming to Aluminium Association standards specification no. 40. The same material will be used for curves, flashing, closer, gutters and ridge ventilators.

5.4 G. I. Cladding

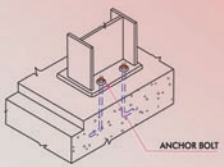
Galvanized steel ribbed sheets used for roof and wall cladding will be produced from hot dipped galvanized steel coils conforming to ASTM A-446 (grade D) or equivalent specifications. The base material will be hot dipped galvanized with zinc coating of as per ASTM A653-Z180 (180g/m² total both sides), subject to availabilty. The same material will be used for curves, flashing, closer, gutters and ridge ventilators.

5.5 Alunzic Cladding

Aluzinc coated steel ribbed sheets are used for roof and wall cladding. Base material shall be coated in AZ150 (150g/m² of Aluminium Zinc Coating)

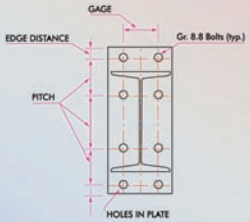
5.6 Anchor bolts

Anchor bolts will be made from galvanized iron rods having a minimum yield strength of 230N/mm²



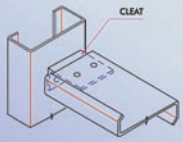
5.7 Primary connection bolts

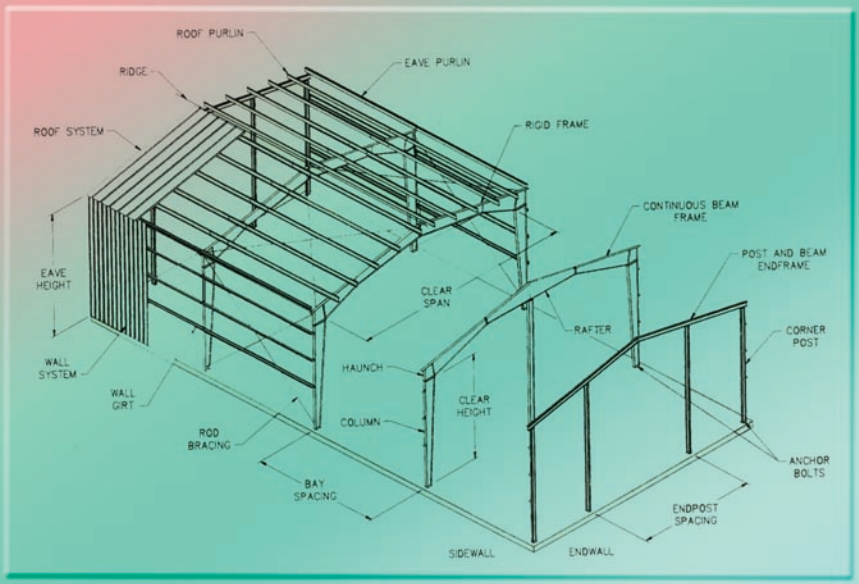
All bolts for primary connections will be high strength precision hexagon bolts of grade 8.8 conforming to physical specifications of BS 3692 or equivalent.



5.8 Secondary connection bolts

All bolts for secondary connections will be grade 8.8 bolts confirming to physical specifications of BS 3692 or equivalent.





APPLICATIONS OF PRE-ENGINEERED BUILDINGS:

* Factories
* Commercial Showrooms
* Supermarkets
* Office Buildings
* WareHouses
* Convention Halls
* Sports Halls
* WorkShops
* Labor Camps
* Distribution Centers
* AirCraft Hangars
* Schools & Restaurants

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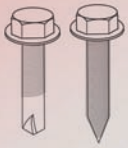
5.9 Cladding fasteners

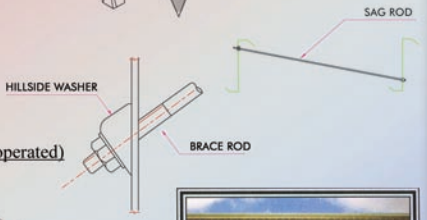
Screws for fixing sheets to purlins will be self-tapping metal screws with metal and neoprene washers conforming to the American Standard Association (ASA) specifications. All screws will be zinc plated with hex heads.

POP rivets used for fixing side and end laps will be blind rivets sealed type made from 99.5% Aluminium material conforming to BS 1475.

5.10 Bracing rods and Sag rods

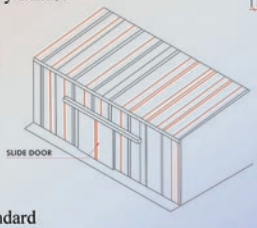


Standard bracing system will be with diagonal rods. Bracing rods and anti sag rods used for roof and wall-bracing system will be those conforming B. S. 4360 with minimum yield strength of 245 N/mm².



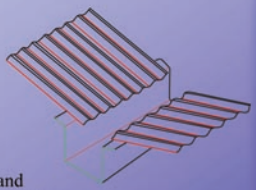
5.11 Sliding Doors (Top suspended-Manually operated)

Standard Profiles R.H. Factory L.L.C. Sliding Door, Outer door frame &internal members shall be made of suitable hot rollered sections with same colour as for main frame steel structure or cold formed G.I sections (left unpainted)-Meadium duty. Door shall be cladded on one side with standard colour profile sheet. (Colour matching) with wall cladding or flashing)



Available door sizes are 3 to 6m. widths and 3 to 6m.heights and are supplied with two leaf single or double sliding arrangement.

5.12 Eave gutters



Standard Profiles eave gutter will have girth of either 610 mm or 1220 mm and will be produced from 26 gauge GI sheets or 0.7 mm. Aluminium sheets. The colour will match that of roof and/or wall cladding and flashing.

Standard down spouts for gutter are 75, 100 or 150 mm in diameter and 100 mm in length and are produced from clear GRP material of 1 mm thickness.