



IAYAO COL,TD. is a leading professional manufacturer and exporter in the field of communication tower, telecom infrastructure products and services including delivery of towers, our main products are Angular steel tower, Tubular steel tower, Monopole tower, Guyed tower, Telescopic tower, Camouflange tower which are widely used in domains of china mobile, china unicom, china telecom, broadcast,television, electricity. Our products are facing immense demands from every corner of the globe due to our commitment to high-quality services and our competitive prices.

Our company is a new and high-tech enterprise in China, which has attained approval certificate of ISO9001 international quality system. Supported by the team of professional engineers, technicians, skill workers, we successfully undertake designing, fabrication, galvanizing and erection work of towers.

Steel towers workshops professionally produce Angular steel towers, Tubular steel towers and Monopole towers. We have gained a full set of Manufacturing Licenses of Telecommunication Tower. The annual output has reached 60,000 tons. Our company possesses different kinds of advanced equipment for producing and testing . The high-level automation and specialization greatly improve the superiority rate and the precision.

Galvanization workshops have the first class scale and output in China, adopting the advanced automatically controlled assembly lines of hot dipped galvanization. The new-type products have features of surface reinforcement, surface prevention and surface beautification.

Our company is located in Hengshui City, Hebei province. It takes two hours to Tianjin port, a big sea port in China, and three hours toBeijing. We are always here to provide our customers with support and assistance to ensure that they can get the best value for the money they invested in towers.







Main categories: Angular Steel Communication Tower, 3 Leg Tubular Steel Tower, Monopole Tower, Guyed tower, Telescopic tower, Camouflange tower, Telecom infrastructure products and service.



JIAYAOcontracting activities include design, production, and after-sales services for:

- Self supported and guyed type GSM towers for telecommunication system
- Poles, Towers and Masts for Lighting and Flood Lighting
- FM / TV Broadcasting Towers and Poles
- Microwave Towers and Poles
- SDH /WLL Towers
- Camouflaged Trees for the GSM sector
- Radar Towers
- Surveillance Towers
- · Wind Observation Towers

JIAYAOs certififed with ISO 9001: 2008 Quality Management System and ISO/TS 16949: 2002 Quality Management , and ISO 14001:2004

Environmental Management System and OHSAS 18001:2007Occupational Health and Safety Management also achieved DAST022 Class Galvanization Certificate. and Welding Certificate





Rash.m.m.Trade manufactures a variety of different types of telecom towers for different demands, including 4 leg angular steel lattice towers, 3 leg tubular steel lattice towers, 3 leg tubular steel towers, monopole tower, rooftop poles and camouflange tower, along with guyed towers & masts.

The production capacity is around 5, 000 tons per month and 60,000 tons per year. Depending on the quantity and nature of the customer order, Rash.m.m.Trade can fabricate in satisfactory leadtimes or may supply directly from available stocks.

In line with the customer requests,

Rash.m.m.Trade also designs and manufactures tailor-made products like radar towers,antenna towers as well as meteorological towers and lattice towers.

Along with the towers, Rash.m.m.Trade supplies related accessories like paint, air craft warning light, cable runways, grounding and lightning protection systems, antenna mounts, safety climbing systems etc.







what do we produce for a better living?



towers, poles, aircraft warning light systems, cable runways, paint, earthing and lightning protection system, antenna mounts, safety climbing systems...



medium duty towers

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load	Twist & Sway
m	m	m	km/h	m ²	degree
20	2.250	1.500	160	10	<0.5
30	3.200	1.500	160	10	‹0.5
40	4.150	1.500	160	10	<0.5
50	5.100	1.500	160	10	‹0.5
60	8.000	1.500	160	10	<0.5
70	9.250	1.500	160	10	‹0.5
80	10.500	1.500	160	10	<0.5
90	11.750	1.500	160	10	‹0.5
100	13.000	1.500	160	10	<0.5

heavy duty towers

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load	Twist & Sway
m	m	m	km/h	m ²	degree
20	2.850	2.000	160	20	<0.5
30	3.900	2.000	160	20	‹0.5
40	4.950	2.000	160	20	<0.5
50	6.000	2.000	160	20	<0.5
60	8.800	2.000	160	20	<0.5
70	10.250	2.000	160	20	‹0.5
80	11.700	2.000	160	20	<0.5
90	13.150	2.000	160	20	‹0.5
100	14.600	2.000	160	20	<0.5

very heavy duty towers

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load	Twist & Sway
m	m	m	km/h	m ²	degree
20	2.850	2.000	160	30	<0.5
30	3.900	2.000	160	30	<0.5
40	4.950	2.000	160	30	<0.5
50	6.000	2.000	160	30	<0.5
60	8.800	2.000	160	30	<0.5
70	10.250	2.000	160	30	<0.5
80	11.700	2.000	160	30	<0.5
90	13.150	2.000	160	30	<0.5
100	14.600	2.000	160	30	<0.5

* design code according toTIA/EIA-222-G





h = 12m



RASH.M.M.TRADE AND SERVICES 2020 MMC manufactures a variety of different types of telecom towers for different needs, other than its own standard tower families. triangular & square penetrating and non-penetrating type rooftop lattice towers and rooftop poles



RASH.M.M.TRADE AND SERVICES 2020 MMC

Rooftop Lattice Towers

Triangular & square lattice towers with different heights can be supplied. Climbing and cable ladders are normally integrated units. A safety climbing system can be used upon demand.

Antenna Support Poles

Galvanised steel tubular poles can be fixed directly to the roof by means of chemical anchoring system, or anchors embedded in a rooftop foundation.

4 LEG ANGULAR MODULAR TOWER

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load
m	m	m	km/h	m ²
9	1.100	1.100	180	5
12	1.100	1.100	180	5
15	1.100	1.100	180	5
18	1.100	1.100	180	5

RT - POLE

Structure Height	Base Width	Max. Design Wind Speed	Max. Antenna Load
m	m	km/h	m ²
3	1.500	160	2
6	3.000	160	2
9	4.000	160	2

standard towers & poles design, material, supp

S - RT1

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load
m	m	m	km/h	m ²
9	2.100	1.000	160	5
12	2.100	1.000	160	5
15	2.100	1.000	160	5
18	2.100	1.000	160	5
21	2.000	1.000	160	5

S - RT2

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load	
m	m	m	km/h	m ²	
9	2.500	0.800	180	5	
12	2.500	0.800	180	5	
15	2.500	0.800	180	5	
18	2.500	0.800	180	5	
21	2.500	0.800	180	5	







4 leg angular modular tower S - RT1





T - RT1				
Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load
m	m	m	km/h	m ²
9	3.325	0.796	160	9
12	3.325	0.796	160	6
15	3.325	0.796	160	3
18	3.325	0.796	160	1

T-RT2

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load			
m	m	m	km/h	m ²			
9	2.800	0.796	160	15			
12	2.800	0.796	160	12			
15	2.800	0.796	160	6			
18	2.800	0.796	160	3			
21	2.800	0.796	160	2			
* design code according to TIA/FIA-222-G							

triangular & square rooftop lattice towers and rooftop poles...

			L	
T-RT3 Structure Height (<u>H)</u>	Base Width (BW)	Top Width (TW)	Max. Design Wind Spe <u>ed</u>	Max. Antenna Load
m	m	m	km/h	m ²
9	2.800	1.100	160	10
12	2.800	1.100	160	10
15	2.800	1.100	160	10
18	2.800	1.100	160	10

Triangular tubular towers are mainly fabricated with tubular or polygonal leg members and angular bracing members. Triangular tubular towers are designed especially for heavy loads and are generally suitable for MW backbone sites.These towers are designed,manufactured and supplied with a variety of accessories.Standard triangular towers have internal ladders with safety cage,safety rail or safety wire systems.

The bottom connection is anchor type.

Design TIA/EIA-222-F,TIA/EIA-222-G,AISC,BS8100 Eurocode3

MaterialTubular and polygonal leg membersQ355BorQ235BBolt classISO8.8

Galvanising All steel elements are hot-dip galvanised. (ASTM A123, EN ISO 1461)

triangular tubular lattice towers

design, material, supply

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load	Twist & Sway
m	m	m	km/h	m ²	degree
20	2.200	1.400	160	10	<1.0
25	2.400	1.400	160	10	<1.0
30	2.600	1.400	160	10	<1.0
35	2.800	1.400	160	10	<1.0
40	3.000	1.400	160	10	<1.0
45	3.200	1.400	160	10	<1.0

BEU

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load	Twist & Sway
m	m	m	km/h	m ²	degree
20	3.680	2.000	180	9	<1.0
30	4.510	2.000	180	9	<1.0
40	5.340	2.000	180	9	<1.0
50	6.170	2.000	180	9	<1.0
60	7.000	2.000	180	9	<1.0

EU

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load	Twist & Sway
m	m	m	km/h	m ²	degree
20	3.680	2.000	180	18	<1.0
30	4.510	2.000	180	18	<1.0
40	5.340	2.000	180	18	<1.0
50	6.170	2.000	180	18	<1.0
60	7.000	2.000	180	18	<1.0

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load	Twist & Sway
m	m	m	km/h	m ²	degree
15	2.570	1.800	160	10	<1.0
20	3.000	1.800	160	10	<1.0
25	3.420	1.800	160	10	<1.0
30	3.840	1.800	160	10	<1.0
35	4.270	1.800	160	10	<1.0
40	4.700	1.800	160	10	<1.0
45	5.130	1.800	160	10	<1.0
50	5.560	1.800	160	10	<1.0
55	6.000	1.800	160	10	<1.0
60	6.400	1.800	160	10	<1.0

* design code according to TIA/EIA-222-G















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Inside

Outside

Triangular angular towers are fabricated from 90 degree hot rolled angular leg members \pounds -connection plate and 90 degree angular bracing members. These types of towers are another alternative for general telecommunication uses. It has the advantages of light weight and low cost, maximizing the interests of investors. These towers are designed, manufactured and supplied with a variety of accessories. The bottom connection can be anchor type.

MUD 2

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load	Twist & Sway
m	m	m	km/h	m ²	degree
15	2.570	1.800	144	12	<1.0
20	3.000	1.800	144	12	<1.0
25	3.420	1.800	144	12	<1.0
30	3.840	1.800	144	12	<1.0
35	4.270	1.800	144	12	<1.0
40	4.700	1.800	144	12	<1.0
45	5.130	1.800	144	12	<1.0
50	5.560	1.800	144	12	<1.0
55	6.000	1.800	144	12	<1.0
60	6.400	1.800	144	12	<1.0

* design code according to TIA/EIA-222-G

triangular angular lattice towers

design, material, supply

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IVI	U	D	

Structure Height (H)	Base Width (BW)	Top Width (TW)	Max. Design Wind Speed	Max. Antenna Load	Twist & Sway
m	m	m	km/h	m ²	degree
15	2.570	1.800	160	10	<1.0
20	3.000	1.800	160	10	<1.0
25	3.420	1.800	160	10	<1.0
30	3.840	1.800	160	10	<1.0
35	4.270	1.800	160	10	<1.0
40	4.700	1.800	160	10	<1.0
45	5.130	1.800	160	10	<1.0
50	5.560	1.800	160	10	<1.0
55	6.000	1.800	160	10	<1.0
60	6.400	1.800	160	10	<1.0







The bottom connection can be anchor type.





Design

TIA/EIA-222-F, TIA/EIA-222-G, AISC, BS8100 Eurocode 3

Material

Legs are made of 90 degree hot rolled angle profiles. Bracings are made of hot rolled 90 degree angle profiles Q420B Q 355B or Q235 B Bolt class ISO8.8

Galvanising All steel elements are hot-dip galvanised. (ASTM A123, EN ISO 1461)



Jiayao Co., Ltd. designs, manufactures and installs self-supporting or guyed type towers to be used for different purposes in the wind energy sector.



wind towers design, material, sup

Guyed Met Masts

These are light weight and practical guyed masts which are generally used to house the anemometric wind equipment that collect wind data for meteorological measurement applications. These towers are often used for the purposes of checking on field the feasibility of high power wind fields. RASH.M.M.TRADE AND designs manufactures and installs Met Masts in line with the regulations of specific Meteorological Service.







Jiayao Co., Ltd. supplies tailor-made solutions for different needs depending on customer requests. Some custom designed tower types are;

Guyed Towers

Guyed towers mostly require tailor-made solutions. According toloading requirements,towers are designed as modules. These structures are supported with a set of steel guyed wires of high strength steel.

Radar Towers

Jiayao Co., Ltd. has been designing and manufacturing radar towers for the Military,Meteorology and Civil Aviation Industries for decades.The deflection limits on these types of structures are very low due to the working ability of the radar system and the loads on the tower structure are relatively higher.The engineering of these type of towers needs experience and care. Jiayao Co., Ltd. design group is well experienced on such type of radar tower design sand provides the most economical and safe solutions.



custom designed towe

design, material, sup





tailor-made solutions for different needs...

Broadcast Towers

Jiayao Co., Ltd. provides site-specific designs for broadcast towers with different height sand antenna configurations









Antenna Supports Jiayao Co., Ltd. provides antenna supports for microwave antennas, cellular & PCS antennas, CATV, VHF, UHF, etc. Custom designed antenna mounts are also available.

Ice Shields

Jiayao Co., Ltd.pro vides ice shields for protection of antennas, obstruction lights and ground level facilities against the falling of ice.

Lightning & Grounding Kits

Jiayao Co., Ltd.prov ides lightning and grounding protection systems. A typical kit contains the followings:

- Lightning rods
- Grounding rods
- · Clamps with hardware
- Copper or galvanised wires

Horizontal & Vertical Feeder Racks

Jiayao Co., Ltd.pr ovides feeder racks to hold the feeders both horizontally and vertically.



FoundationTemplates Jiayao Co., Ltd.provides templates for proper anchor bolt orientation during foundation stage, available for all self support, guyed and custom design towers.

Work / Rest Platforms

Towers are equipped with resting and working platforms with standard or heavy duty gratings. In standard towers, there are platforms at certain heights but additional platforms are designed at customer specified locations. Foldable rest platforms and adjustable work platforms are also available.

Aircraft Warning Light Systems Jiayao Co., Ltd.providesAircraft WarningLight Systems in compliance to European standards aswell as interna tional recommendations IEC 79.1 for all t ower types. Aircraft Warning Light Syste ms comply with ICAO Annex 14, Chapte r 6 and FAAAd.Cir. 150/5345-43E.







tower accessories and much more



Jiayao Co., Ltd. provides accessories together with the supplied towers.

Anti-climbing Systems Jiayao Co., Ltd. can provide anti-climbing systems along with the towers, to prevent unauthorized access.

Safety Climb Systems Jiayao Co., Ltd. provides the tower ladders equipped with safety cage. Upon request, additional antifall protection systems are also provided.

Paint Material and Painting

Jiayao Co., Ltd. can provide the paint material together with the towers. Manufactured towers can also be painted in the factory and packed with utmost care to withstand the transportation conditions.





Jiayao Co., Ltd. provides Engineering, Construction and Consultancy Services.

Jiayao Co., Ltd. has a wide variety of its own self developed designs and solutions with its expertise in the communication field over decades.



All towers and accessories can be delivered and assembled at site.



services

on communicatio expertise



















engineerin services

Jiayao Co., Ltd.

has self developed GSM tower designs and solutions according to international codes such as TIA/ EIA-222-For TIA/ EIA-222-G. Depending on client's requirements, JIAYAOdesign engineers select the suitable series from JIAYAOdesign database and modify it by using CAD software. If the database does not have a suitable design that can be used with modifications, then, a new tower is designed according to customer specifications. The main responsibilities of engineering department are;

- Determination of design inputs, forming structural geometry and performing structural analysis for various types of self supporting and guyed towers,
- Foundation design
- Preparation of production drawings and cards
- Preparation of erection drawings
- Preparation of foundation drawings
- Verification of prototypes
- Research and development related with tower design and foundation design
- Geotechnical supervision
- Site supervision



The software used in the company are worldwide recognised programs as below;

- PLS Tower Structural analysis program for lattice towers
- RISA Tower Structural analysis program for lattice towers
- SAP 2000 Structural analysis program for general purpose
- PLS Pole Structural analysis program for polygonal poles
- AutoCAD, GStarCAD General purpose drawing program
- X-Steel 3D Drawing program for steel structures
- ALLPILE Foundation design program
- Various tower and foundation calculation programs developed by **RASH.M.M**











construction services



Jiayao Co., Ltd . performs site construction activities as well as tower and accessory supply, including creation of all the civil infrastructure and engineering works required to develop a site. We work swiftly to ensure your project is completed correctly and on-time. Our projects are fully insured.

Our fields of Operation in Telecommunication are; • GSM Mobile Communication Systems,

- Microwave Communication Systems,
- Radio and TVBroadcasting Systems,
- Radar Towers,
- Antenna Tower Installation, Equipment Installation and Civil Works,
- Project Engineering, Design, Installation and Commissioning Services

Our main construction activities are;

Site Evaluation

We evaluate the site to find the most cost effective solution for the towers and facilities, site accessibility and overall site layout. We provide soil investigation services and site specific foundation designs to provide the right type of foundation safely and economically.

Site Construction and Engineering

We construct the access roads, clear and level the site area including demolution, surface stabilization, and the construction of structures like retaining walls, drainage systems, utility ditches, base concrete and fencing. Besides the civil activities, electrical and mechanical design and installations are also performed.

Tower Installation & Services

With our experienced crews, we construct the tower foundations, erect and paint the towers, and install all related accessories including grounding and lightning protection systems, Aircraft Warning Lights, safety climb sytems, antenna and feeder installations etc. The construction and installation activities are followed by the execution of acceptances and comprehensive "As-built" documentation.



Maintenance & Upgrades We provide maintenance, repair and site inspection for all types of communication towers

The primary services are:

- Structural inspection by performing a detailed analysis with specific recommendations
- Plumbing and tension
- Foundation analysis and repair
- Tower troubleshooting and repairing
- Guyed tower tension tensioning
- Lightning protection system, grounding, and AWLS inspection and maintenance
- Galvanised coating, paint inspection and maintenance.

Inspections are done to inventory and evaluate existing antenna sites. An inspection can include preparing a written and photographic report, checking tower plumb and guy tension, making recommendations for needed repairs and maintenance, and setting up a schedule of maintenance.

consultancy services

RASH.M.M.TRADE AND . Specialists

help our customers by providing consultancy services to design, develop and implement the solutions. We provide technical consultancy services for design, and installation activities.

Our trained specialists offer supervision services in the site during implementation of the works in various projects and contracts.

Design philosophy and design software courses are given to customers by our experienced engineers either in our training facilities or at the customers' premises.





	F	Page 1 of 25	
ASPECTION REPORT Nr INS/NR/SHOP-23/266		F	Revision Nr 0
Initial 🗌 Interim 🖾 Final 🗌 Resident			
nspection requested by: Jiayao Co., Ltd	Mar		1.81-
Inspection performed as Recognised Authority: K BV Job Nr: INS/NR/SHOP-23/266	Yes		NO
Project: TPI FOR STEELL TOWER	IPO Ref (If app (BV internal P)	licable):	
BV Client: Jiayao Co., Ltd	P/o nr: INS/N	// R/SHOP-23/26	6
• • •	(client to BV)		-
Manufacturer/Vendor: JIAYAO CO., LTD	P/o nr:	(actume)	
Sub-Vendor (If applicable):	Tomora to mana	estimet/	
Inspection Location: Guangchuan Industrial Zone, Jingxian	Previous Insp	ection (If applic	able):/
Previous Inspection (If applicable):N County Hangebui Habai Province	A (Late)		
Inspection performed on:	Next Inspectio	n (If applicable)	2
(Date(s)) June 5~6, 2023	(Date)NA		
MATERIAL / SUBJECT OF INSPECTION	ITEM / TAG Nr	OTY	OTY
		As per P/	O Offered for
Refer to attachment section J instead			inspection
(indicate il separate material list is provided in attachment)	70m-TA-140kph-		
Self-supported angular steel tower	12sqm	17Pcs	17Pcs
A – INSPECTION RESULT			
Satisfactory		Not Satisfa	ctory
(Without comments) (Any of trailing Punch or Non Cor	formity (1	ICR raised dur	ing the
items is still open)	ir	spection)	
Inspection Summary: (for details refer to section F)			
(in a state of a state			
	alar steel tower acc	ording to drawing	ng, standards
BV inspector performed the final inspection for self-supported ang			
BV inspector performed the final inspection for self-supported ang and client requirement. The main activity as following:			
BV inspector performed the final inspection for self-supported ang and client requirement. The main activity as following: 1. Document review Satisfactory 2. The angearance inspection Satisfactory			
BV inspector performed the final inspection for self-supported ang and client requirement. The main activity as following: 1. Document review Satisfactory 2. The appearance inspection Satisfactory 3. Dimensional inspection Satisfactory			
BV inspector performed the final inspection for self-supported ang and client requirement. The main activity as following: 1. Document review Satisfactory 2. The appearance inspection Satisfactory 3. Dimensional inspection Satisfactory. The inspection and test results were satisfactory.			
BV inspector performed the final inspection for self-supported ang and cleant requirement. The main activity as following: 1. Document review Satisfanctory 2. The appearance inspection Satisfanctory 3. Dimensional inspection Satisfanctory. The inspector found that the Zino layer had detachment, and weld	ng spatter. The ma	inufacturer repa	ired them with
BV inspector performed the final inspection for self-supported ang and client requirement. The main activity as following: 1. Document review Satisfactory 2. The appearance inspection Satisfactory 3. Dimensional inspection Satisfactory The inspection and set results were assistancity. The inspection and set results were assistancity.	ng spatter. The ma	nufacturer repa	ired them with
BV inspector performed the final inspection for self-supported ang and client requirement. The main activity as following: 1. Document review Satisfactory 2. The appearance inspection Satisfactory 3. Dimensional inspection Satisfactory The inspector and test results were satisfactory. The inspector found that the Zinc layer had detachment, and weld acceptable result. Open Non Conformities: Yes, details in section G	ng spatter. The ma	inufacturer repa	ired them with
BV inspector performed the final inspection for self-supported ang and client requirement. The main activity as following: 1. Document review Satisfactory 2. The appearance inspection Satisfactory 3. Dimensional inspection Satisfactory the inspection and set results were assistantized by the structure assistant and the set of the set of the acceptable result. The set of the set of the set of the depen Non Conformities: Ves, details in section H Deen Purch List Imms. Ves details in section H	ng spatter. The ma	No No	ired them with
BV inspector performed the final inspection for self-supported ang and client requirement. The main activity as following: 1. Document review Satisfactory 2. The appearance inspection Satisfactory 3. Dimensional inspection Satisfactory The inspector and the treature wave assistancery. The inspector found that the Zinc layer had detachment, and weld acceptable result. Open Non Conformities: Yes, details in section H Open Punch List laws: Yes, details in section H Relates Note Issued: Yes, marbeir(s), <i>Charlason Note</i>	ng spatter. The ma	Inufacturer repa	ired them with









"RASH.M.M. TRADE AND SERVICES-2020"MMC VÖEN : 1303449481

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