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FLI structures

Shared Rural Network

T3B Lattice Slimline Tower

ATS 1300 Heavy Duty Tower

SLP4 Slimline Parallel Tower

Tree Masts

Foundation Options

FLI structures

T3B Slimline Lattice Tower

Slim tube tower, developed specifically for the Shared Rural Network project.

Designed for installation in the most remote sites and sensitive environments.

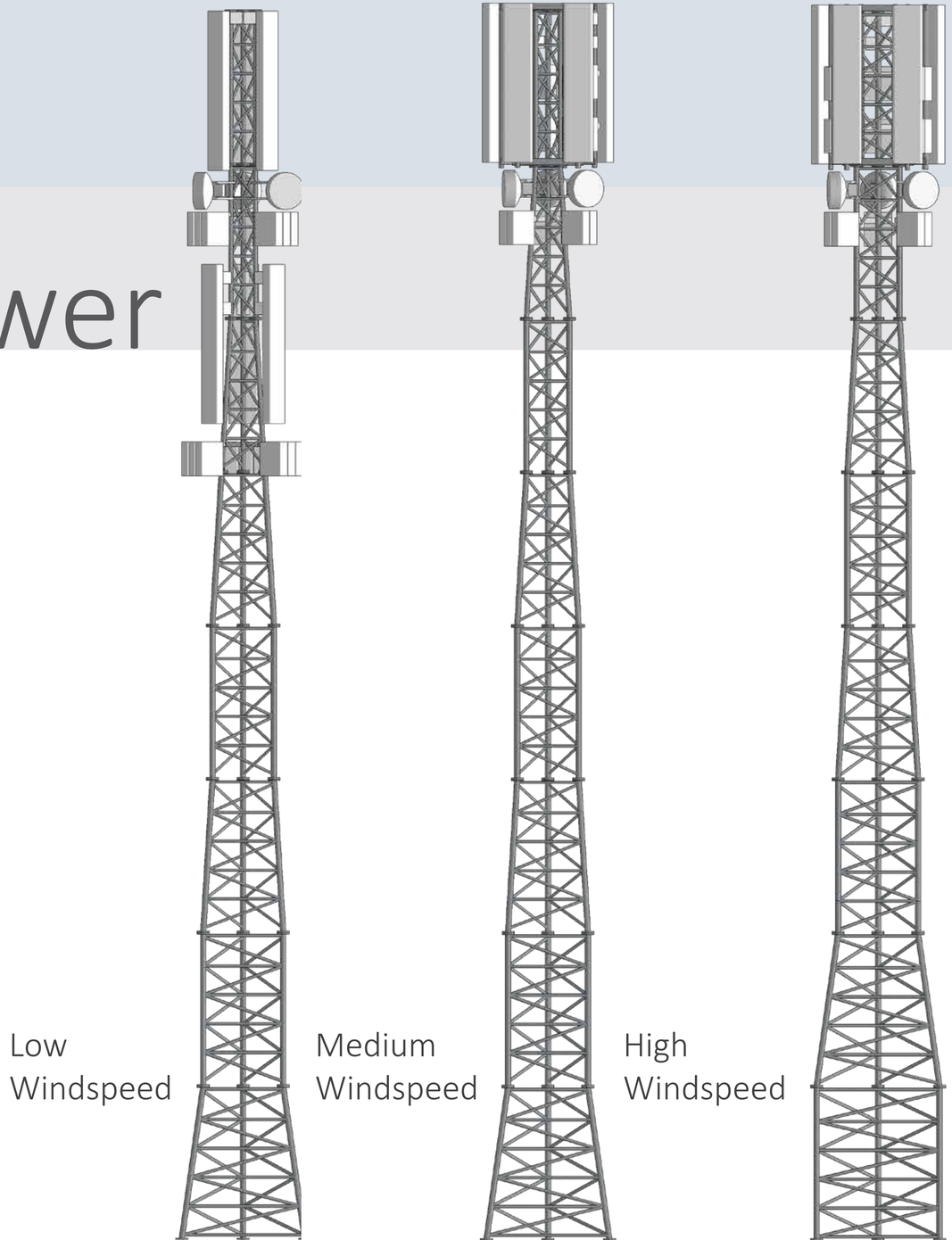
Flexibility to insert parallel sections in between tapered sections to suit loading for maximum efficiency and ease of antenna mounting.

Heights to 30m, modules in 2.5m increments.

400mm face width on top modules.

Hand build possible, with no crane or off-loading equipment.

No trackway, no helicopter.



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FLI structures

T3B Headframe Options

Headframe options for SRN loadings and multiple users.

Ultra slim profile.

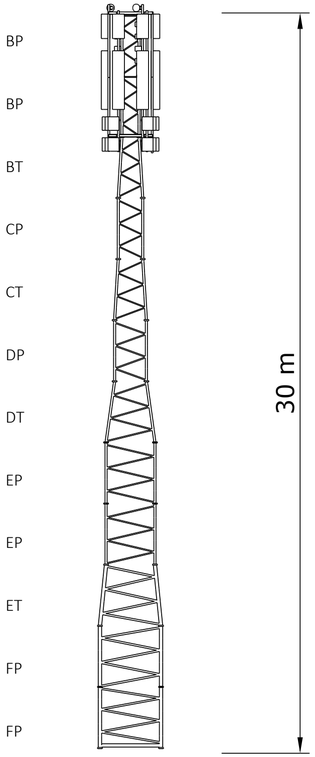
Integrated ladder with climbing access to the top.

T3B Planning Drawings

T3B

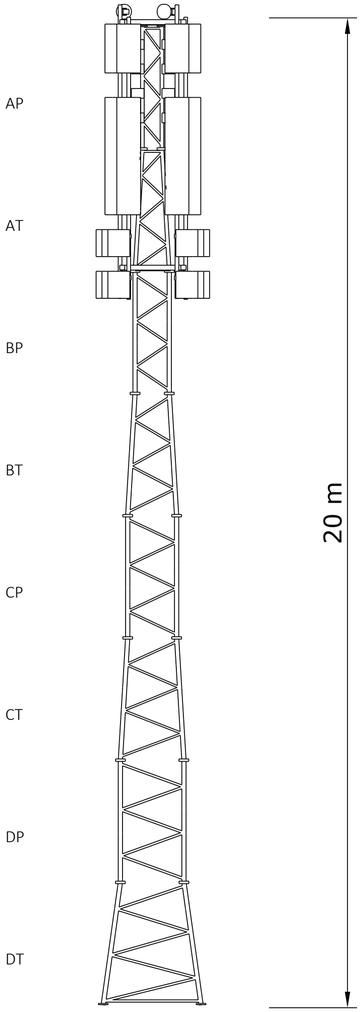
5G Loading
Medium Wind Speed

Altitude: 100m



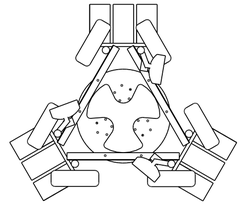
30m T3B Medium Tower
Wind Speed: 26m/s (Hourly Mean)
Min Foundation size: 5.1x5.1x1.2m
Face Width Top: 0.7m
Face Width Base: 2.5 m

Moment: 1021kNm Shear: 52kN
Dead Load: 79kN
Scale: 1:200 on A3

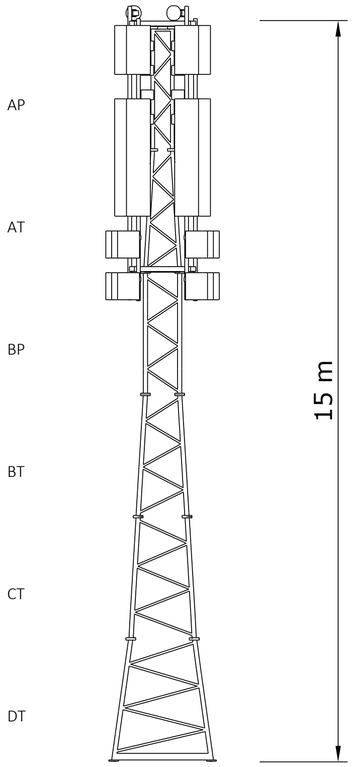


20m T3B Medium Tower
Wind Speed: 28m/s (Hourly Mean)
Min Foundation size: 4.1x4.1x1.2m
Face Width Top: 0.4m
Face Width Base: 2.0m

Moment: 500kNm Shear: 34kN
Dead Load: 36kN
Scale: 1:100 on A3



400mm Compact 2 pole Headframe
Scale: 1:50 on A3



15m T3B Medium Tower
Wind Speed: TBC
Min Foundation size: 3.5x3.5x1.2m
Face Width Top: 0.4m
Face Width Base: 2.0m

Moment: 312kNm Shear: 28kN
Dead Load: 26kN
Scale: 1:100 on A3

DO NOT SCALE
IF IN DOUBT ASK

UNLESS OTHERWISE STATED:-
MATERIAL: GRADE AS PER FLI LTD FORM 11G
FINISH: GALVANISED TO BS EN ISO 1461
DIMENSIONS: MILLIMETRES (mm)
WELD INSP: AS PER NSSS LATEST EDITION ANNEX 'B'
TOLERANCES:-
CUT LENGTH = ±2mm
HOLE CENTRE = ±2mm
ANGULAR CUT = ±0.25°
FABRICATED ASSY = ±3mm
PCD = ±1mm

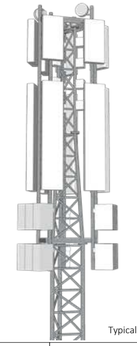
CERTIFIED TO EXECUTION CLASS EXC2.
NON PRELOADED BOLTING ASSEMBLIES TO BS EN 15048-1.

ALL DRAWING NOTES ARE FOR GUIDANCE ONLY. FOR INSTALLATION INSTRUCTIONS REFER TO THE RELEVANT METHOD STATEMENT.

BOLTS SHALL BE MADE 'SNUG TIGHT' BEING THAT TIGHTNESS ACHIEVABLE BY THE EFFORT OF ONE MAN USING A NORMAL SIZE SPANNER.

Loading - Standard and Alternative Antenna/Feeder Compliment:

6No. Antenna 2.4m tall
18No. RRUs
12No. LDF5-550 Feeders
6No. Fibre cables
3No. 300mm Dishes
9No. BOBs
6No. Massive MIMOs 1m tall



Typical Equipment Layout

ISSUE	DATE	MODIFICATION	CKD
A	16/07/21	FIRST ISSUE	

FLI structures
FRANCIS & LEWIS INTERNATIONAL LTD
TEL: +44 (0) 1452 722200 WEB: WWW.FLI.CO.UK

DATE: 16/07/21	SCALE: NTS	FLI REF:
DRN:	CKD:	APP'D:
CUSTOMER:		
ORDER No:		

T3B Tower with 5G loading, for Medium Level wind speed.

DRG No: REV: A

FLI structures

ATS1300 Lattice Tower

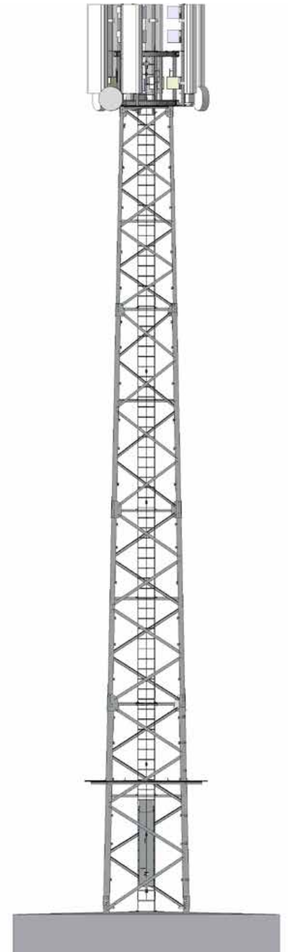
ATS1300 has a slim planning-friendly profile designed for larger 5G antenna ancillaries.

Ideally suited for 2 operators with full 5G or SRN loading.

Heights 15m- 50m in 2.5m increments.

Concrete foundation sizes on page 20, also suited to screw piles & grillage foundations.

Tower includes internal ladder, Latchway Fall Arrest, anti-climb protection, feeder brackets and lightning finials along with various headframe options.



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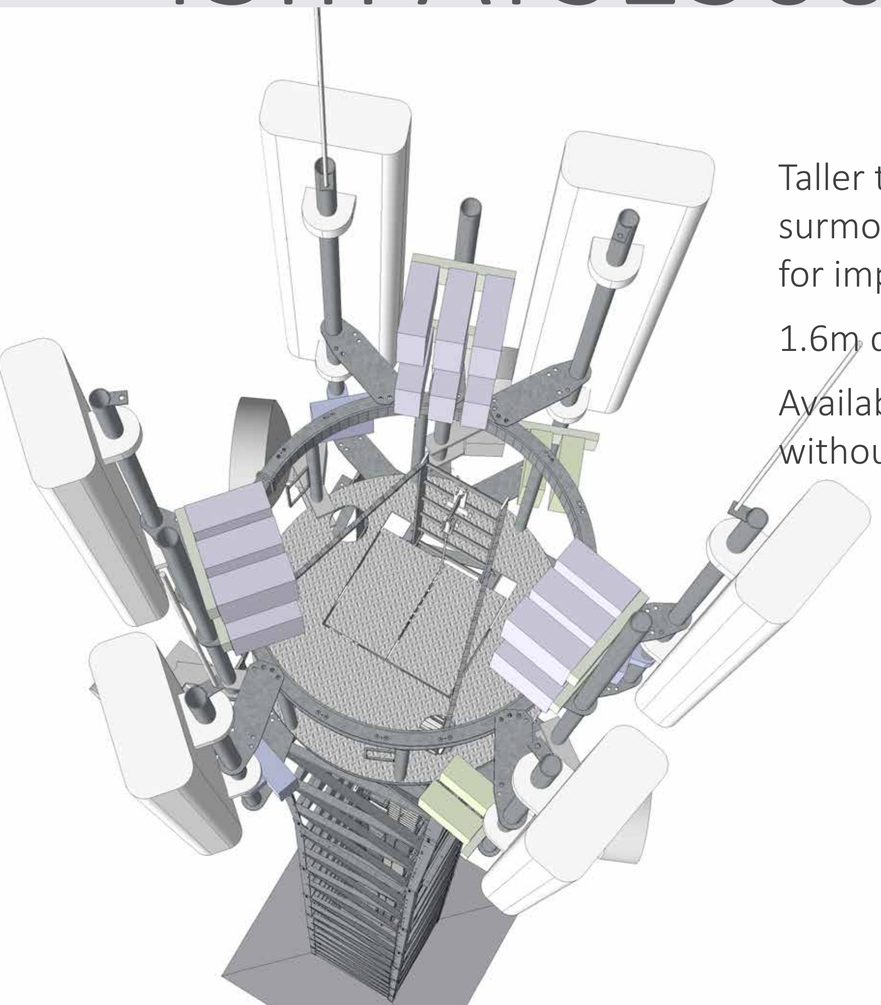
FLI structures

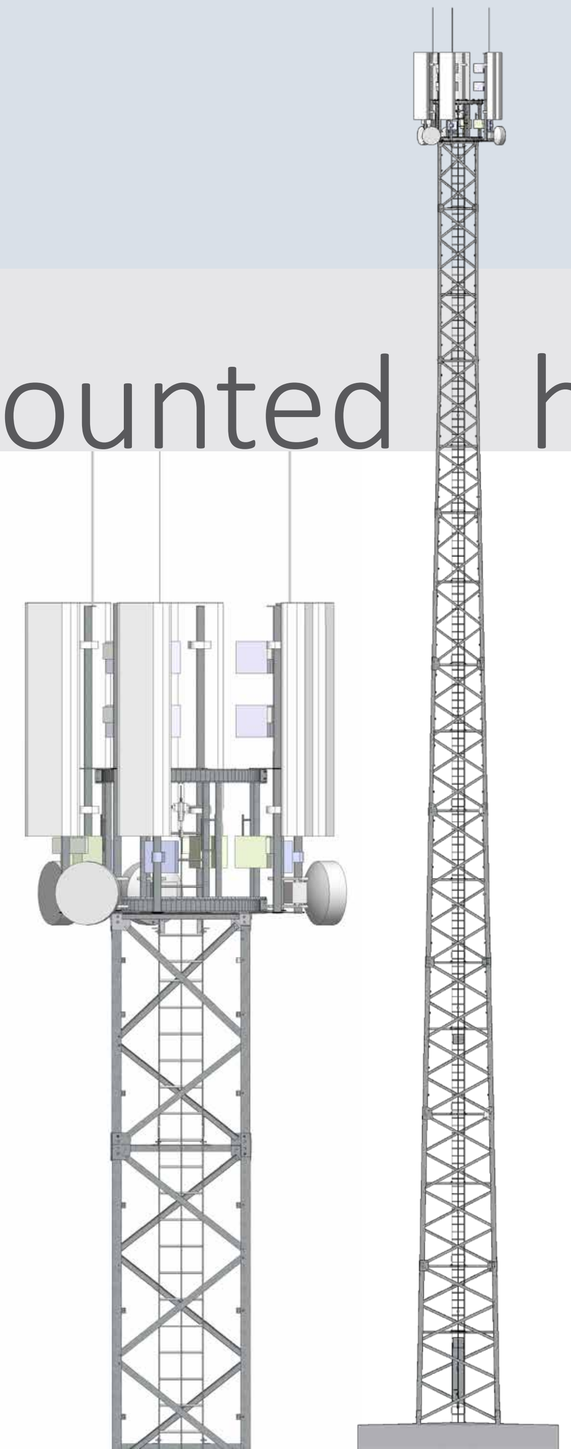
45m ATS1300 surmounted headframe

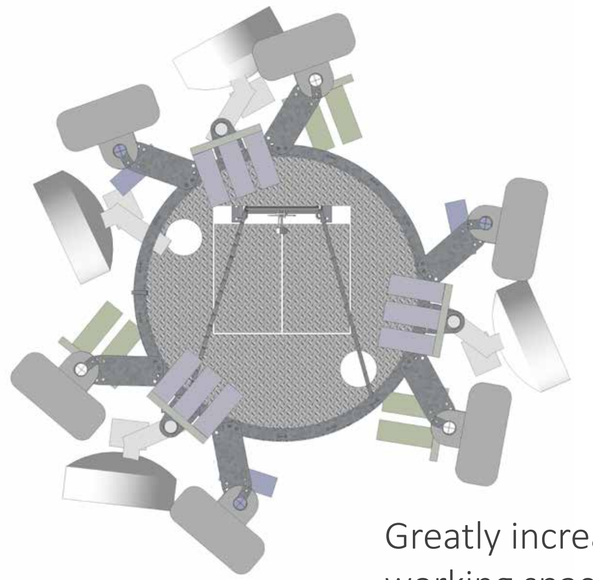


Taller tower with a surmounted headframe for improved access.

1.6m diameter rings.

Available with or without flooring.





Greatly increased working space.

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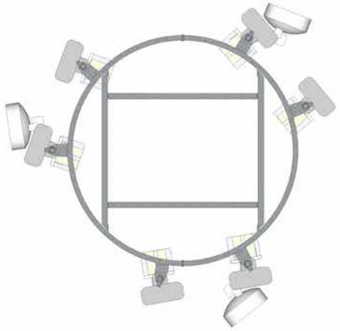
FLI structures

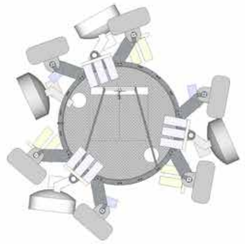
ATS1300 Headframe Options

Ring headframes for multiple operators or surmounted headframes giving improved access and a reduced height tower lattice.

2.2m Ø headframe.



3.0m Ø headframe.



1.6m Ø headframe.

FLI structures

ATS1300 for Single Operators

1.3m face width sufficient
for riggers to work inside the tower.

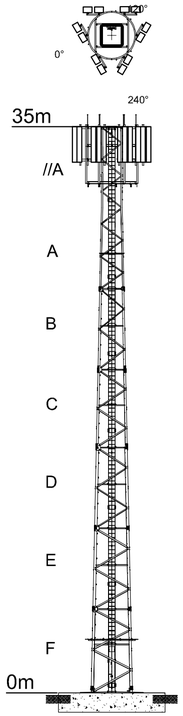
Slim profile and lower cost
with leg and face mounts only.

Suitable for any UK windspeeds.

Simple upgrade path by
installing a larger 5G headframe.

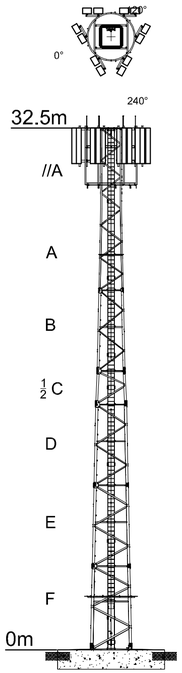
ATS1300 Planning Drawings 20m-35m

RING HEADFRAME



MOMENT = 2460 kNm
SHEAR = 112 kN
DEAD LOAD = 98 kN

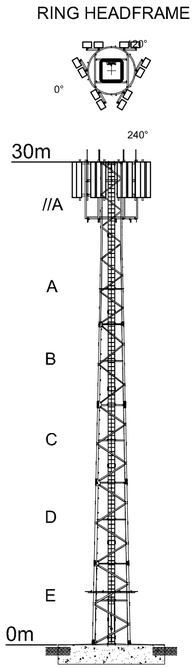
RING HEADFRAME



MOMENT = 2150 kNm
SHEAR = 105 kN
DEAD LOAD = 88 kN

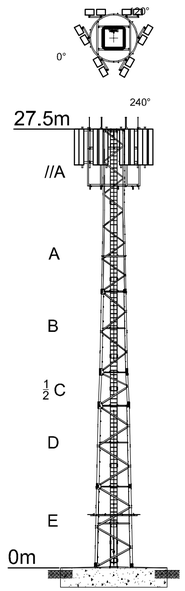
FOUNDATION SIZE:
6.85m SQ x 1.2m DP

RING HEADFRAME



MOMENT = 1825 kNm
SHEAR = 94 kN
DEAD LOAD = 78 kN

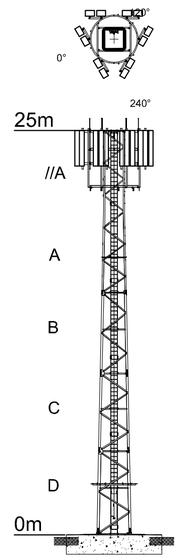
RING HEADFRAME



MOMENT = 1550 kNm
SHEAR = 86 kN
DEAD LOAD = 68 kN

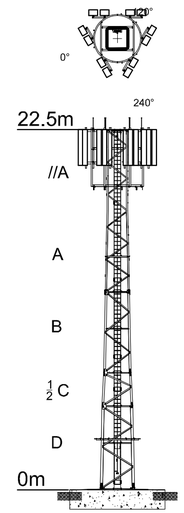
FOUNDATION SIZE:
6.25m SQ x 1.2m DP

RING HEADFRAME



MOMENT = 1300 kNm
SHEAR = 76 kN
DEAD LOAD = 67 kN

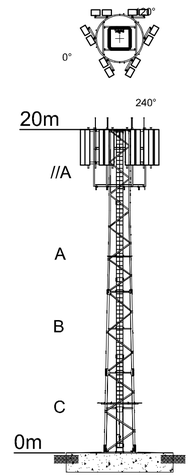
RING HEADFRAME



MOMENT = 1060 kNm
SHEAR = 70 kN
DEAD LOAD = 55 kN

FOUNDATION SIZE:
5.6m SQ x 1.2m DP

RING HEADFRAME



MOMENT = 872 kNm
SHEAR = 64 kN
DEAD LOAD = 57 kN

FOUNDATION SIZE:
5.0m SQ x 1.2m DP

ANTENNA / FEEDERS COMPLIMENT

- 6 No 4400 x 550 x 350 ANTENA APERTURES
- 24 No RRU UNITS
- 12 No MHA UNITS
- 6 No ROUTERS
- 6 No BOB
- 24 No FEEDERS
- 6 No COMBINED DC & FIBRE
- 4 No Ø600 MICROWAVE DISHES

EACH TOWER SUPPLIED WITH:

- FOUNDATION DESIGN
- BASE STUBS
- 4 No EARTH LUGS
- INTERNAL FLI HD LADDER
- LATCHWAYS FALL ARREST SYSTEM
- LEG MOUNTED FEEDER BRACKETS
- LIGHTNING FINIALS.

EQUIPMENT MOUNTING OPTIONS:

- Ø3000 RING HEADFRAME c/w
- 6 No Ø76.1 POLES x 6m LG - FOR ANTENNA APERTURE
- 9 No. Ø76.1 POLES x 2.6m lg - 6 No. FOR EQUIPMENT SUPPORT & 3 No. FOR MW DISH MOUNTING.

ORIGINAL SIZE A3

DO NOT SCALE
IF IN DOUBT ASK

UNLESS OTHERWISE STATED:-

MATERIAL:- GRADE AS PER FLI LTD FORM 11G
FINISH:- GALVANISED TO BS EN ISO 1461
DIMENSIONS:- MILLIMETRES (mm)
WELD INSP:- AS PER NSSS LATEST EDITION ANNEX 'B'
TOLERANCES:-

CUT LENGTH	= ±2mm
HOLE CENTRES	= ±2mm
ANGULAR CUT	= ±0.25°
FABRICATED ASSY	= ±3mm
PCD	= ±1mm

CERTIFIED TO EXECUTION CLASS EXC2

NON PRELOADED BOLTING ASSEMBLIES TO BS EN 15048-1

NOTES:-

1. ALL DRAWING NOTES ARE FOR GUIDANCE ONLY. FOR INSTALLATION INSTRUCTIONS REFER TO THE RELEVANT METHOD STATEMENT

2. SITE PARAMETERS:
- WIND SPEED = 26 m/s (10 MINUTE MEAN)
- ALTITUDE = 100m ABOVE MEAN SEA LEVEL.
- TERRAIN CATEGORY = 3 (Kv = 1.0)

ISSUE	DATE	MODIFICATION	CKD
A	16/04/21	FIRST ISSUE	BP

FLI structures
FRANCIS & LEWIS INTERNATIONAL LTD
TEL: +44 (0)1452 722200 WEB: WWW.FLI.CO.UK

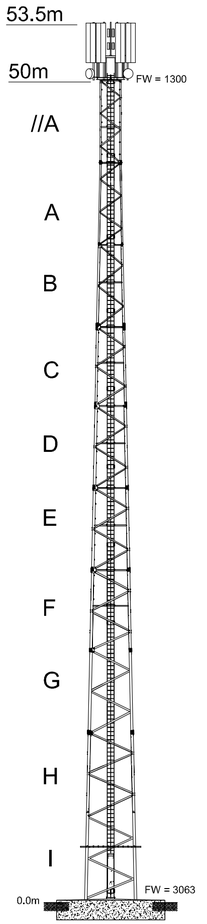
DATE: 16/04/21	SCALE: N.T.S	F&L REF: -----
DRN: BP	CKD:	APP'D:
CUSTOMER FLI		
ORDER No.		

TITLE
ATS1300
35m,32.5m,30m,27.5m 25m,22.5m & 20m
GREENFIELD SITES
PROPOSED TOWER RANGE

DRG No. SK4222 REV. A

ATS1300 Planning Drawings 35m-50m + 3.5m headframe

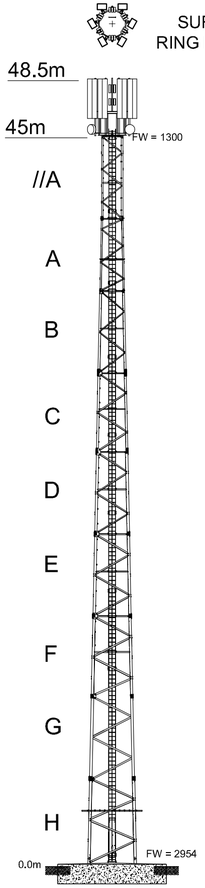
SURMOUNTED RING HEAD FRAME



FOUNDATION SIZE:
8.0 x 8.0 x 1.2 DP
BASE FORCES:
MOMENT: 3923 kNm
VERTICAL: 118 kN
SHEAR: 129 kN

WIND SPEED 26.5 m/s
HOURLY MEAN
ALTITUDE 0m

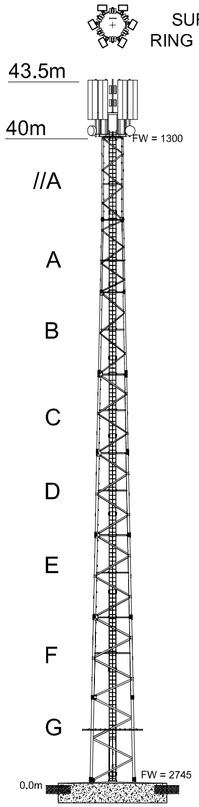
SURMOUNTED RING HEAD FRAME



FOUNDATION SIZE:
7.4 x 7.4 x 1.2 DP
BASE FORCES:
MOMENT: 3154 kNm
VERTICAL: 102 kN
SHEAR: 118 kN

WIND SPEED 26.5 m/s
HOURLY MEAN
ALTITUDE 0m

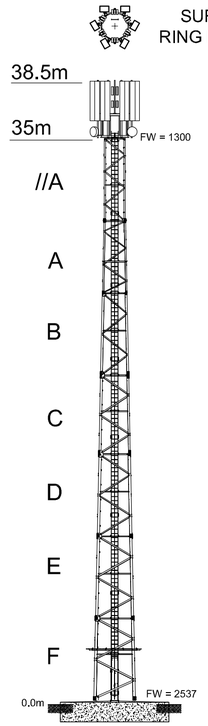
SURMOUNTED RING HEAD FRAME



FOUNDATION SIZE:
7.0 x 7.0 x 1.2 DP
BASE FORCES:
MOMENT: 2619 kNm
VERTICAL: 93 kN
SHEAR: 103 kN

WIND SPEED 26.5 m/s
HOURLY MEAN
ALTITUDE 0m

SURMOUNTED RING HEAD FRAME



FOUNDATION SIZE:
6.5 x 6.5 x 1.2 DP
BASE FORCES:
MOMENT: 2042 kNm
VERTICAL: 84 kN
SHEAR: 89 kN

WIND SPEED 26.5 m/s
HOURLY MEAN
ALTITUDE 0m

HEADFRAME LOADING ALLOWANCE

- 6 No ANTENNA MAX SIZE 2400x550x350
- 18 No RRU UNITS MAX SIZE 600x400X250
- 6 No DC & FIBER SPLITTER BOXES (BOB)
- 2 No. GPS ANTENNAS
- 4 No Ø600 MICROWAVE DISHES

EACH TOWER SUPPLIED WITH:

- FOUNDATION DESIGN
- BASE GRILLAGE
- 4 No EARTH LUGS
- INTERNAL FLI HD LADDER
- LATCHWAYS FALL ARREST SYSTEM
- LEG MOUNTED FEEDER BRACKETS
- LIGHTNING FINIALS.

OPTION 2 HEADFRAME: EQUIPMENT MOUNTING

- Ø1600 RING HEAD FRAME c/w
- 9 MOUNTING POLES FOR ANTENNA AND ANCILLARY EQUIPMENT.

ORIGINAL SIZE A3

DO NOT SCALE
IF IN DOUBT ASK

UNLESS OTHERWISE STATED:-

MATERIAL:- GRADE AS PER FLI LTD FORM 11G
FINISH:- GALVANISED TO BS EN ISO 1461
DIMENSIONS:- MILLIMETRES (mm)
WELD INSP:- AS PER NSSS LATEST EDITION ANNEX 'B'
TOLERANCES:-

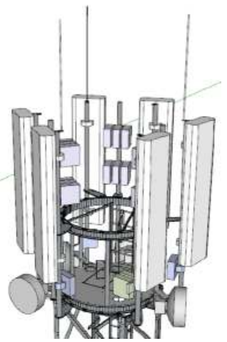
CUT LENGTH	= ±2mm
HOLE CENTRES	= ±2mm
ANGULAR CUT	= ±0.25°
FABRICATED ASSY	= ±3mm
PCD	= ±1mm

CERTIFIED TO EXECUTION CLASS EXC2

NON PRELOADED BOLTING ASSEMBLIES TO BS EN 15048-1

NOTES:-

1. ALL DRAWING NOTES ARE FOR GUIDANCE ONLY. FOR INSTALLATION INSTRUCTIONS REFER TO THE RELEVANT METHOD STATEMENT
2. FOR FOUNDATION DETAILS REFER TO DRAWING No. (TBC)



3D VIEW OF HEADFRAME

ISSUE	DATE	MODIFICATION	CKD
C	09/12/21	FND & BASE FORCES ADDED	BP
B	30/11/21	50m TWR ADDED	BP
A	08/11/21	FIRST ISSUE	BP

FLI structures
FRANCIS & LEWIS INTERNATIONAL LTD
TEL: +44 (0)1452 722200 WEB: WWW.FLI.CO.UK

DATE: 08/11/21	SCALE: N.T.S	F&L REF: ------	
DRN: BP	CKD: TP	APP'D: TCB	
CUSTOMER: FLI			
ORDER No.			
TITLE: ATS1300 50m,45m,40m & 35m ATS1300 TOWER RANGE WITH SURMOUNTED HEADFRAME.			
DRG No. SK4269			REV. B

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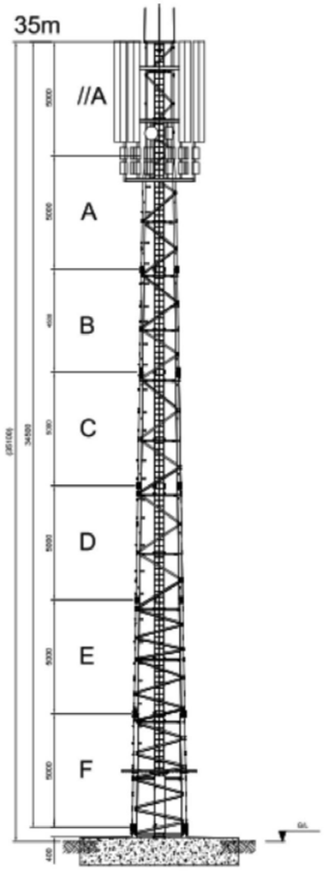
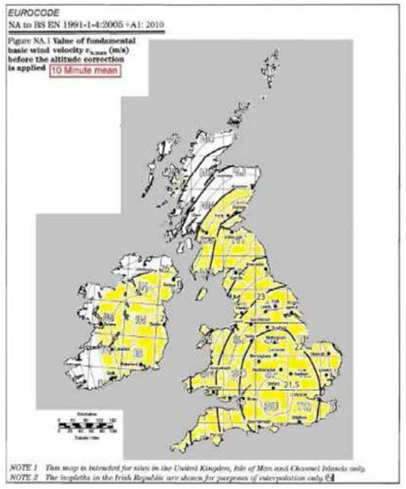
01452 722200

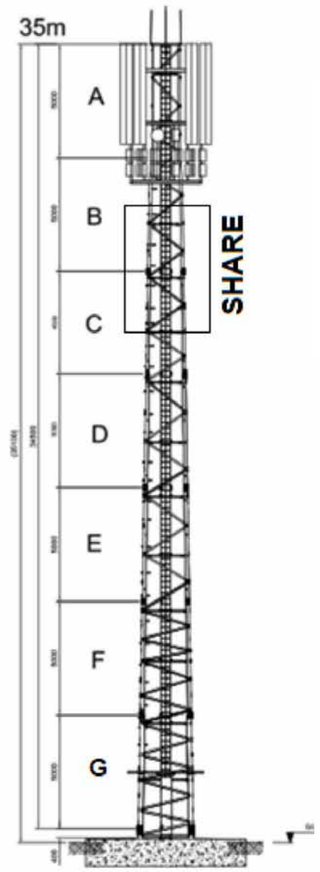
FLI structures

Wind Loadings

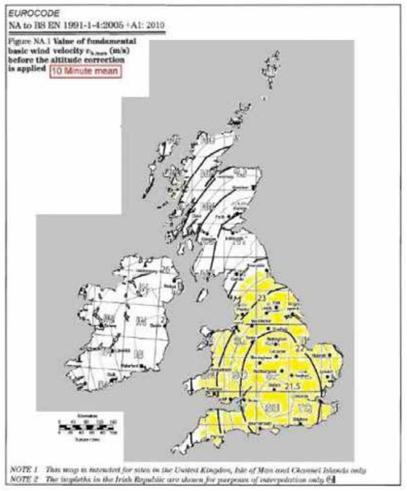


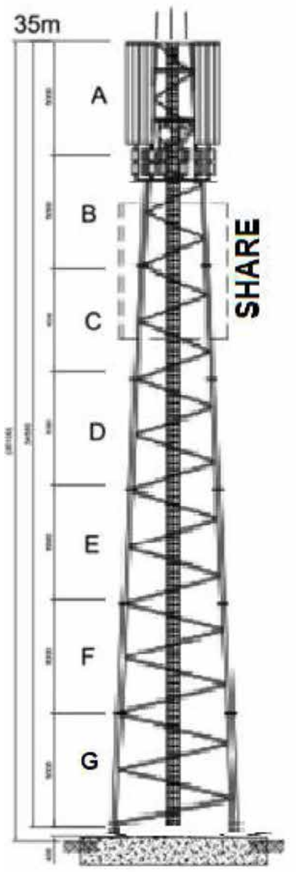
Slimline Tower
35m ATS 1300 Modules//A-F
Vb: 26m/s (EC)
Alt: 100m



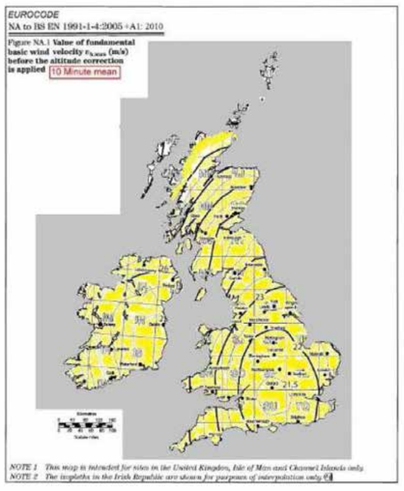


SITE SHARE Slimline Tower
35m ATS 1300 Modules A-G
Low Windspeed
Vb: 23.5m/s (EC)
Alt: 100m





SITE SHARE Heavy Duty
35m T3A Modules A-G
High Windspeed
Vb: 28m/s (EC)
Alt: 200m



FLI structures

SLP4 Slimline Lattice Tower

Parallel tower with a 1.2m face width, tubular legs and angle bracing.

Lower profile than the ATS1300. Suited to sensitive planning sites.

Options for derrick build and hand-buildable gravity base, so the SLP4 can be installed without plant in re-mote locations.

Available in heights up to 30m, in 2.5m increments.

More robust SLP4E tower with tapered base sections extending up to 40m.

SLP4 Planning Drawings 15m-25m

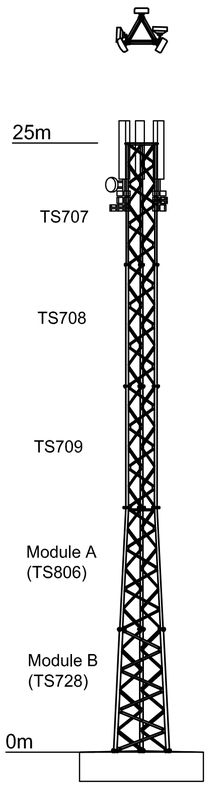
SRN - SLP4 Range- 25m- 15m

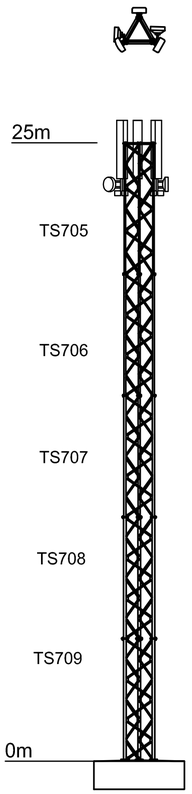
EACH TOWER SUPPLIED WITH:

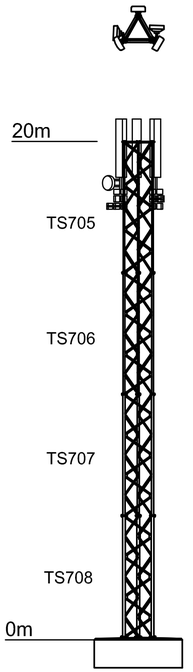
- FOUNDATION DESIGN
- BASE STUBS
- 3 No EARTH LUGS
- IN-FACE CLIMBING LADDER
- LATCHWAYS FALL ARREST SYSTEM
- LEG MOUNTED FEEDER BRACKETS
- LIGHTNING FINIALS.

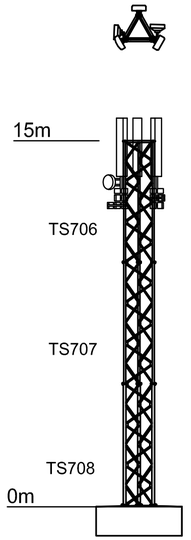
LOADING ALLOWANCE

- 3 No. ANTENNA 2.7m
- 15 No. RRU
- 6 No. COMBINERS
- 18 No. COMBINED POWER + FIBRE CABLE
- 2 No.0.6m MW DISH
- 9 No. BREAK OUT BOXES
- 3no GPS









25m SLP4 (Gold)

Maximum Windspeed

OTM:	1026 kNm
VERTICAL WEIGHT:	82 kN
SHEAR:	60 kN

FOUNDATION DIMENSIONS:
5.2m X 5.2m X 1.2m DP

25m SLP4 (Bronze)

Medium Windspeed

OTM:	407 kNm
VERTICAL WEIGHT:	59 kN
SHEAR:	27 kN

FOUNDATION DIMENSIONS:
3.8m X 3.8m X 1.2m DP

20m SLP4 (Gold)

Medium Windspeed

OTM:	374 kNm
VERTICAL WEIGHT:	48 kN
SHEAR:	27 kN

FOUNDATION DIMENSIONS:
3.7m X 3.7m X 1.2m DP

15m SLP4 (Gold)

Medium Windspeed

OTM:	328 kNm
VERTICAL WEIGHT:	38 kN
SHEAR:	33 kN

FOUNDATION DIMENSIONS:
3.6m X 3.6m X 1.2m DP

ORIGINAL SIZE A3

DO NOT SCALE
IF IN DOUBT ASK

UNLESS OTHERWISE STATED:-
MATERIAL:- GRADE AS PER FLI LTD FORM 11G
FINISH:- GALVANISED TO BS EN ISO 1461
DIMENSIONS:- MILLIMETRES (mm)
WELD INSP:- AS PER NSSS LATEST EDITION ANNEX 'B'
TOLERANCES:-

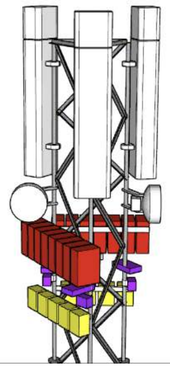
CUT LENGTH	= ±2mm
HOLE CENTRES	= ±2mm
ANGULAR CUT	= ±0.25°
FABRICATED ASSY	= ±3mm
PCD	= ±1mm

CERTIFIED TO EXECUTION CLASS EXC2

NON PRELOADED BOLTING ASSEMBLIES TO BS EN 15048-1

NOTES:-

MAXIMUM WINDSPEED:
30m/s 10 MINUTE MEAN / 200m ALTITUDE
MEDIUM WINDSPEED:
26m/s 10 MINUTE MEAN / 150m ALTITUDE



ISSUE	DATE	MODIFICATION	CKD
A	30/06/22	FIRST ISSUE	JL

FLI structures
FRANCIS & LEWIS INTERNATIONAL LTD
TEL: +44 (0)1452 722200 WEB: WWW.FLI.CO.UK

DATE: 28/06/22	SCALE: N.T.S		F&L REF: 14288/01
DRN: RM	CKD: JL	APP'D: NC	
CUSTOMER: FLI			
ORDER No.: (TNS)			

TITLE: SLP4 TOWER RANGE

DRG No. SK4348 REV. A

Sales@fli.co.uk
01452 722200

FLI structures

Tree Masts- Sensitive Planning Locations

Cypress & Pine Trees in service for over 20 years, across Europe.

Approved by all major operators.

UK’s only 5G tree.

Accommodates up to 4 users (Pine Tree).

Wind tunnel tested foliage.

Climbable / non climbable options.

Tested for RF transparency.

Fire Resistant foliage.

Photostable foliage.

FLI structures

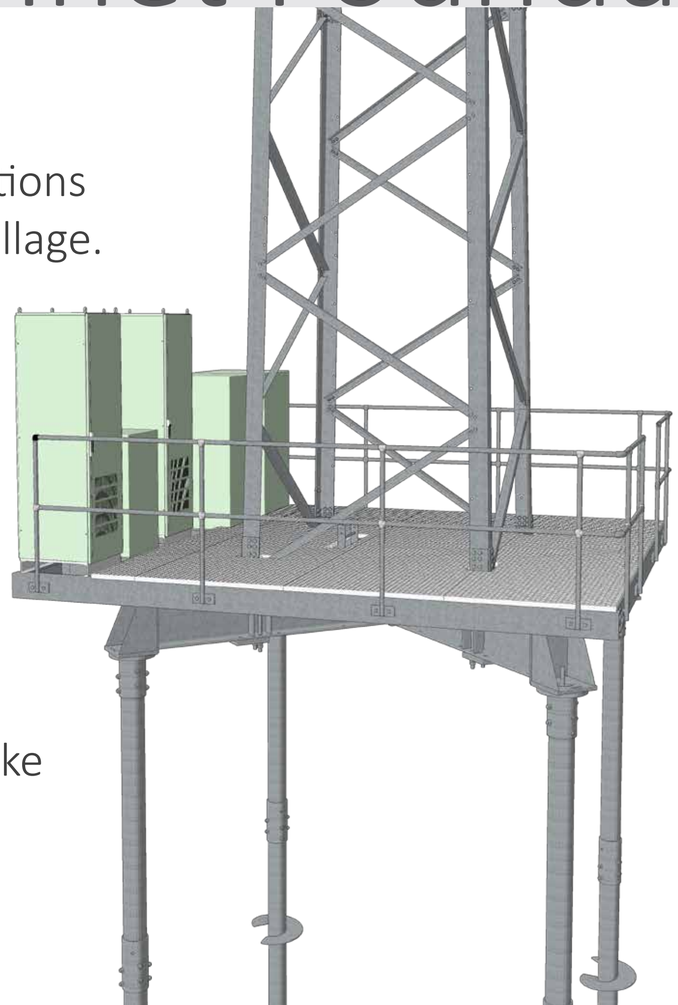
Tower & Cabinet Foundations

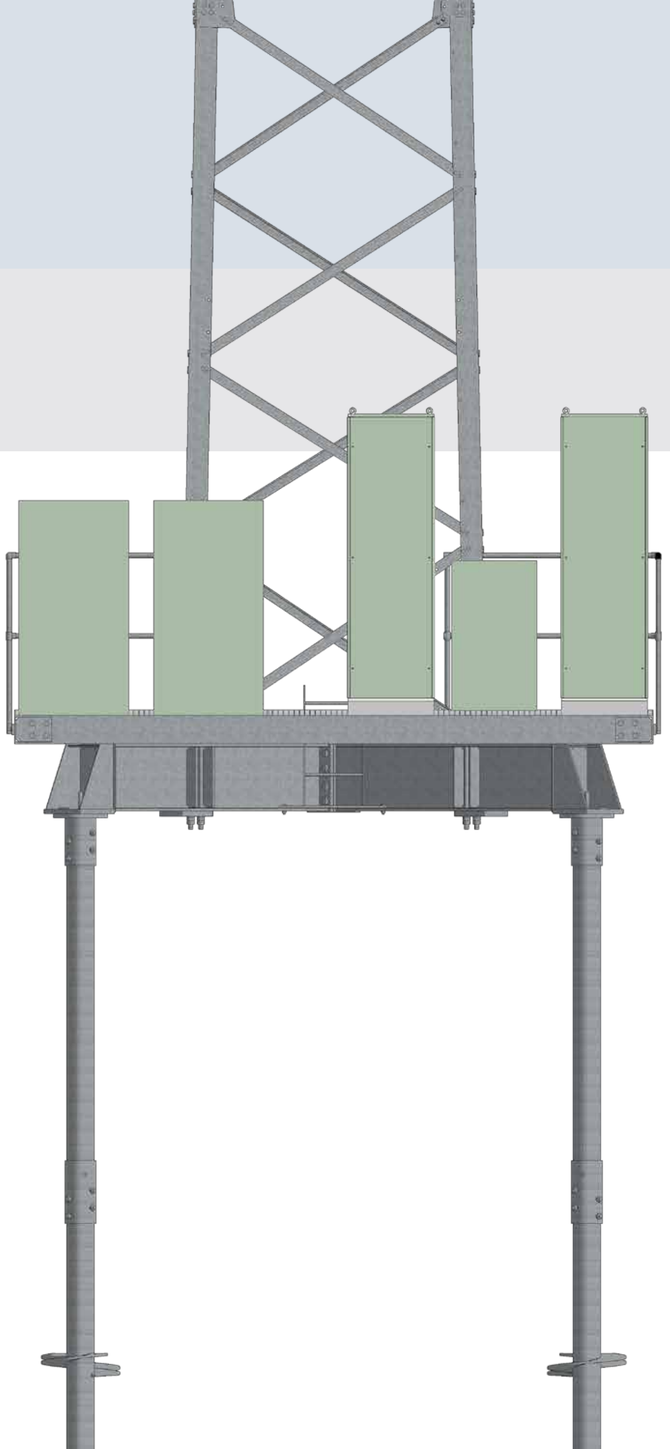
Screwpile, Micropile or ballast solutions available with load transfer via a grillage.

Footprint minimised.

Cabinets mounted on optional platform over grillage to further reduce compound size, ground intrusion and environmental impact.

Can bridge existing foundations for upgrade sites to avoid extra land-take and limit outages.





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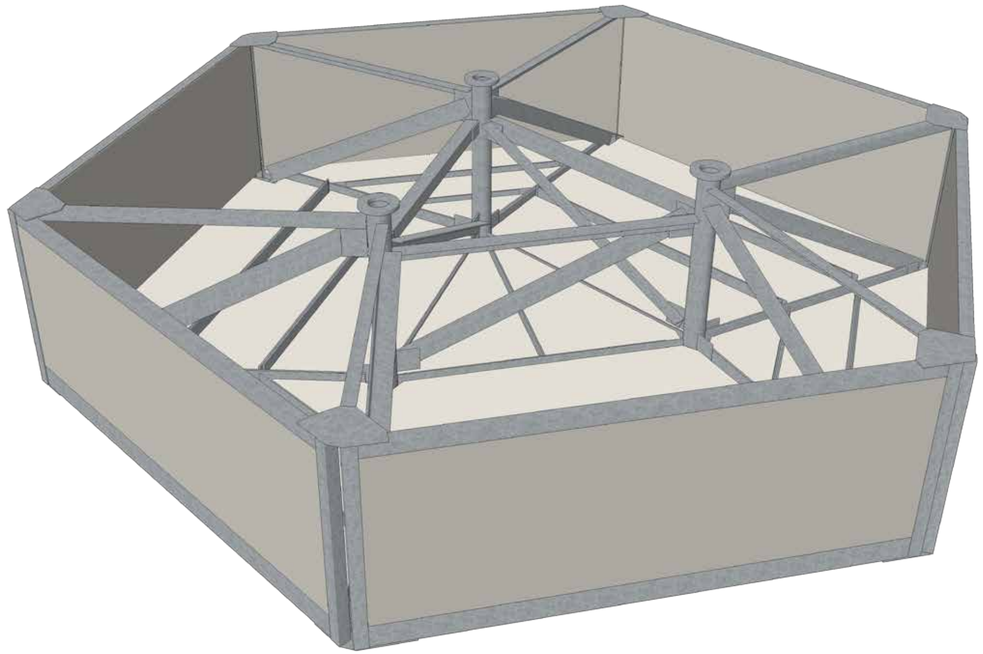
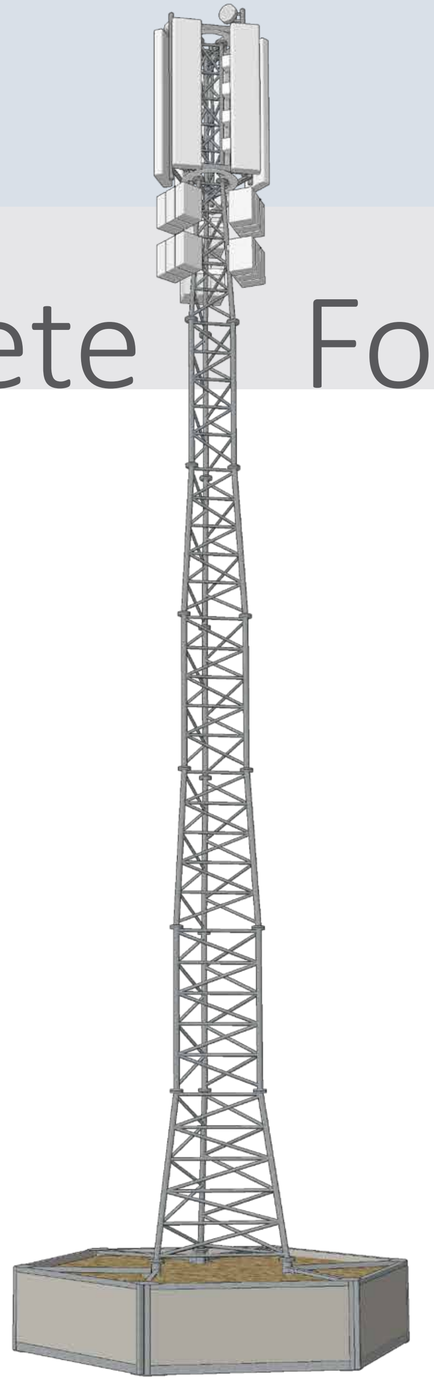
FLI structures

Hand-Install Complete Foundation





SRN grillages developed alongside towers for installation in the most remote sites and sensitive environments.

Both grillage and tower can be completely installed by hand.

No concrete / wet trades.

No crane or mechanical off-loading.

No trackway.

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FLI structures

Remote Location Gravity Grillage

Gravity grillage with all components small enough to be unloaded and assembled by hand.

Loose stone ballast which can be taken to site by any agricultural vehicle or pick up if necessary.

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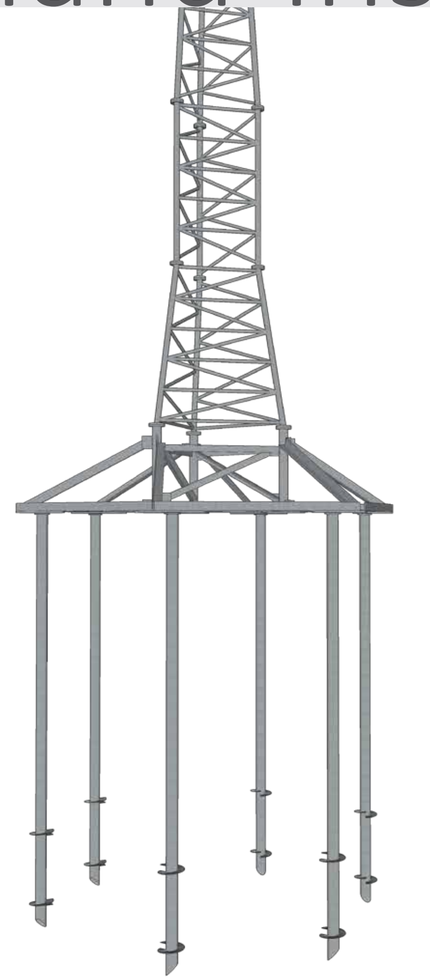
FLI structures

Hand-Install Screw Pile Grillage



Screw pile grillage that can be assembled without lifting equipment.

Particularly suited to soft ground or enviromentally sensitive sites.

Minimal ground disturbance.

Can be completely and quickly removed and recycled at the end of life, without major removal of concrete or leaving it on site, alleviating planning concerns.

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FLI structures

Gravity Grillage

Gravity grillage using heavy beams and a large base plate. Very fast deployment, using plant.

No wet trades and minimal excavation.

Excellent solutions for environmentally sensitive locations.

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01452 722200

FLI structures

ATS1300 Concrete Foundations

BASE MODULE	DIM 'A' O/ALL	DIM 'B' FACE WIDTH	MEMBER	BAR MARK	(N)	TYPE & SIZE	No. MEMBERS	No. IN EACH	TOTAL No.	BAR LENGTH (mm)	A (mm)	VOLUME 'C' m³	STOOL QTY (03)
C	5000	1912	BASE	01	26	H20	1	54	54	5050	5050	32.4	25
			BASE	02	A393 MESH								
D	5600	2121	BASE	01	28	H20	1	58	58	5450	5450	37.60	30
			BASE	02	A393 MESH								
E	6250	2329	BASE	01	31	H20	1	64	64	6100	6100	46.9	39
			BASE	02	A393 MESH								
F	6850	2537	BASE	01	34	H20	1	70	70	6700	6700	56.3	47
			BASE	02	A393 MESH								
G	7250	2746	BASE	01	36	H20	1	72	72	6700	7100	63.1	53
			BASE	02	A393 MESH