TOWERS (PTY) LTD
P.O. BOX 43
FERNDALE 2160
SOUTH AFRICA
Tel (011)793-7460
Telex 4-31046 SA.

TOWER 12m GALAXY ZSGNSD12

TOWER DESIGN CRITERIA

WIND DESIGN CODE	SABS 0160-1980
ALTITUDE	1000m
TERRAIN CATEGORY	2/3 CLASS B
BASIC WIND SPEED	45m/sec (162km/hr)
MEAN RETURN	25 YEARS

TOWER DESIGN PERFORMANCE

AERIAL OR ANTENNA LOADING

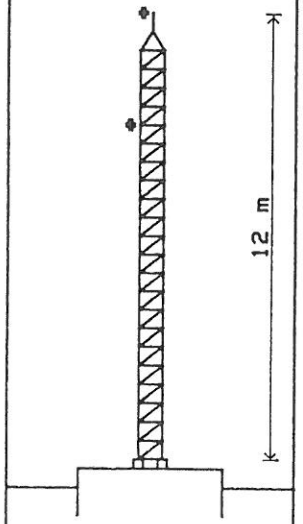
MAXIMUM AREA of EACH	1 m^2
MAXIMUM MASS of EACH	18 kg
WIND LOAD @ 12 m	93.84 kg
DEFLECTION @ 12 m	13.88 cm
WIND LOAD @ 9 m	93.84 kg
DEFLECTION @ 9 m	9.04 cm

TOWER DESIGN DATA

MAST PROPERTIES at	BASE SECTION
LEG SIZE	38 o/d x 3 mm
SOLID ROD BRACING	12 mm
Ixx=Iyy=	3926.979 cm^4
Zxx=	130.825 cm^3
Zyy=	149.599 cm^3
rxx=ryy=	19.920 cm
FACE AREA of MAST	.103 m^2/m
Mass/m of MAST	14.427 kg/m

FOUNDATION LOADINGS

MAXIMUM VERTICAL LOAD	2.415 kN
MAXIMUM HORIZONTAL SHEAR	3.036 kN
MAXIMUM OVERTURNING MOMENT	26.850 kNm



ELEVATION

Designed by :- ROSNOVANU & ASSOCIATES
Consulting Engineers

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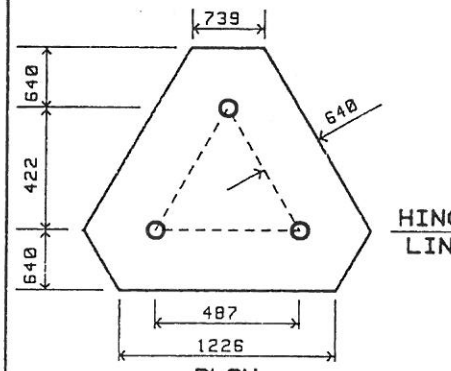
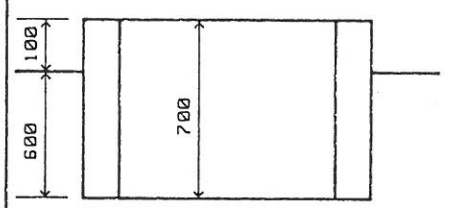
TOWER 12m GALAXY ZSGNSD12



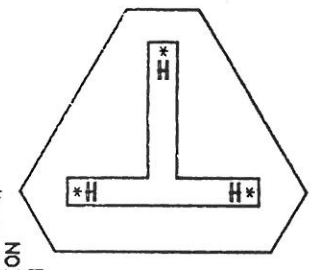
PLAN



SECTION

HINGE LINE

TOWER LIES IN THIS DIRECTION FOR ERECTION



PLAN on TEE HINGED BASE

VOLUME of CONCRETE is 1.72 m^3

ANGLE of REPOSE of SOIL is 30.00 deg

ACTUAL BEARING PRESSURE is 167.33 kN/m^2

FOUNDATION LOADINGS

MAXIMUM VERTICAL LOAD	2.42 kN
MAXIMUM HORIZONTAL SHEAR	3.04 kN
MAXIMUM OVERTURNING MOMENT	26.85 kNm

FOUNDATION CRITERIA :-

MASS of CONCRETE	24Kn/m^3
MASS of SOIL	17.5kN/m^3
MAXIMUM BEARING PRESSURE on SOIL is LIMITED to	200kN/m^2
RESISTANCE TO OVERTURNING FACTOR is	1.50
MINIMUM CONCRETE STRENGTH REQUIRED is	20Mpa @ 28 days
PART No of FOUNDATION is	ZSG4SF70
PART No of FOUNDATION TEMPLATE is	ZSG4SF**

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TOWER 18m GALAXY ZSGNSD18

TOWER DESIGN CRITERIA

WIND DESIGN CODE	SABS 0160-1980
ALTITUDE	1000m
TERRAIN CATEGORY	2/3 CLASS B
BASIC WIND SPEED	45m/sec (162km/hr)
MEAN RETURN	25 YEARS

TOWER DESIGN PERFORMANCE

AERIAL OR ANTENNA LOADING

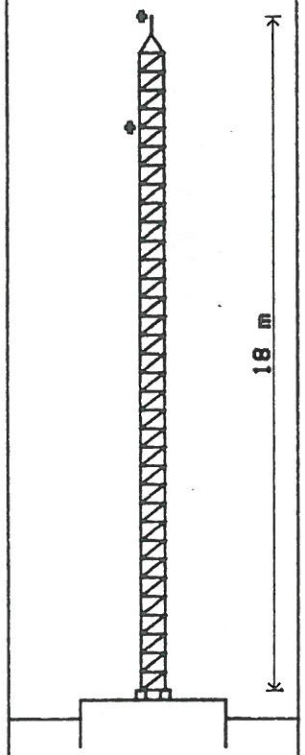
MAXIMUM AREA of EACH		.22 m^2
MAXIMUM MASS of EACH		5 kg
WIND LOAD @	18 m	24.48 kg
DEFLECTION @	18 m	28.95 cm
WIND LOAD @	15 m	24.48 kg
DEFLECTION @	15 m	22.32 cm

TOWER DESIGN DATA

MAST PROPERTIES at	BASE SECTION
LEG SIZE	38 o/d x 3 mm
SOLID ROD BRACING	12 mm
Ixx=Iyy=	3926.979 cm^4
Zxx=	130.825 cm^3
Zyy=	149.599 cm^3
rxx=ryy=	19.920 cm
FACE AREA of MAST	.103 m^2/m
Mass/m of MAST	14.427 kg/m

FOUNDATION LOADINGS

MAXIMUM VERTICAL LOAD	3.182 kN
MAXIMUM HORIZONTAL SHEAR	2.426 kN
MAXIMUM OVERTURNING MOMENT	26.730 kNm



ELEVATION

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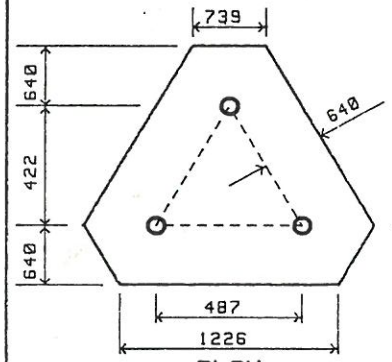
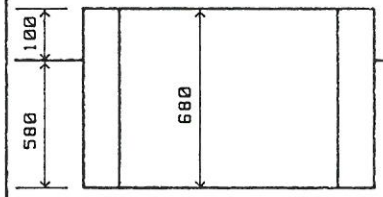
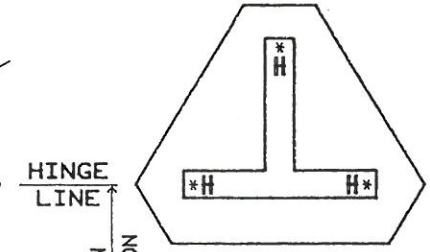
TOWER 18m GALAXY ZSGNSD18



PLAN



SECTION



PLAN on TEE HINGED BASE

HINGE LINE

TOWER LIES IN THIS DIRECTION FOR ERECTION

VOLUME of CONCRETE is 1.67 m^3

ANGLE of REPOSE of SOIL is 30.00 deg

ACTUAL BEARING PRESSURE is 155.42 kN/m^2

FOUNDATION LOADINGS

MAXIMUM VERTICAL LOAD	3.18 kN
MAXIMUM HORIZONTAL SHEAR	2.43 kN
MAXIMUM OVERTURNING MOMENT	26.73 kNm

FOUNDATION CRITERIA :-

MASS of CONCRETE	24Kn/m^3
MASS of SOIL	17.5kN/m^3
MAXIMUM BEARING PRESSURE on SOIL is LIMITED to	200kN/m^2
RESISTANCE TO OVERTURNING FACTOR is	1.50
MINIMUM CONCRETE STRENGTH REQUIRED is	20Mpa @ 28 days
PART No of FOUNDATION is	ZSG4SF60
PART No of FOUNDATION TEMPLATE is	ZSG4SF**

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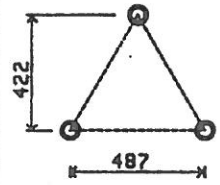
SOUTH AFRICA

MAST TYPE 18m GALAXY ZSGNSD18

MAST DESIGN CRITERIA

WIND DESIGN CODE	SABS 0160-1980
ALTITUDE	1000m
TERRAIN CATEGORY	2/3 CLASS B
BASIC WIND SPEED	45m/sec (162km/hr)
MEAN RETURN	25 YEARS



MAST

MAST DESIGN PERFORMANCE

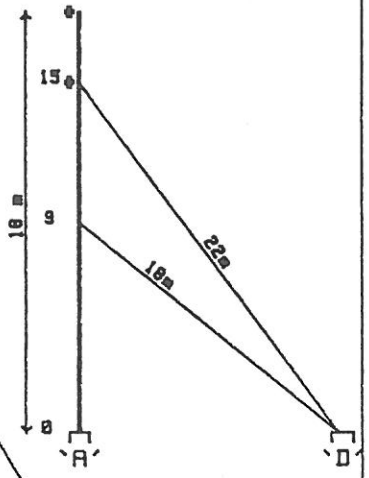
AERIAL OR ANTENNA LOADING

MAXIMUM AREA of EACH	.615 m^2
MAXIMUM MASS of EACH	64 kg
WIND LOAD @ 18 m	66 kg
DEFLECTION @ 18 m	3.127 cm
WIND LOAD @ 15 m	62 kg
DEFLECTION @ 15 m	2.061 cm

MAST DESIGN DATA

MAST PROPERTIES

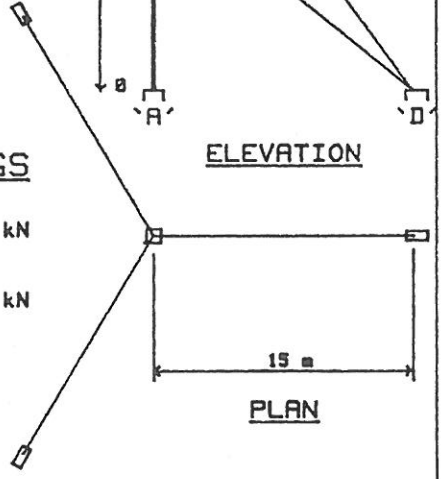
LEG SIZE	38 o/d x 3 mm
ROD BRACING	12 mm
Ixx=Iyy=	3926.979 cm^4
Zxx=	130.825 cm^3
Zyy=	149.599 cm^3
rxx=ryy=	19.920 cm
NETT FACE AREA	.103 m^2/m
MASS/m of MAST	8.201 kg/m



ELEVATION

FOUNDATION LOADINGS

REACTIONS @ 'A'
Av = 10.750 kN Ah = .269 kN
Bending Moment 1.432 kNm
REACTIONS @ 'D'
Dv = 4.288 kN Dh = 5.187 kN



PLAN

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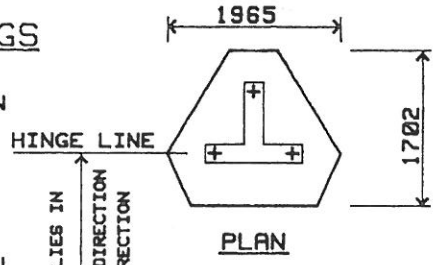
MAST TYPE 18m GALAXY ZSGNSD18

FOUNDATION LOADINGS

REACTIONS @ 'A'
Av = 10.75 kN Ah = .27 kN
Bending Moment 1.43 kNm

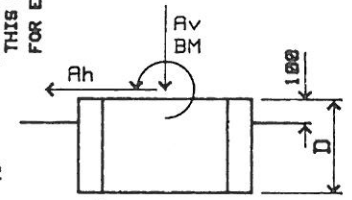
REACTIONS @ 'D'
Dv = 4.29 kN Dh = 5.19 kN



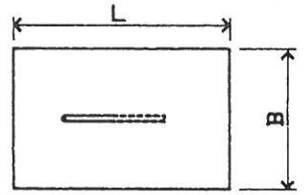
PLAN

FOUNDATION TYPE 'A'

DEPTH	=	.50 m
CONCRETE VOLUME	=	.51 m^3
CONCRETE MASS	=	12.28 kN
BEARING PRESSURE	=	29.07 kN/m^2



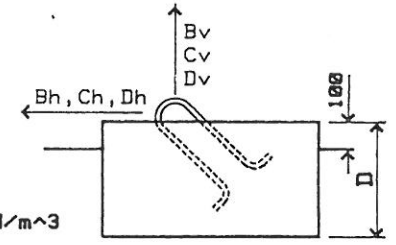
SECTION



PLAN

FOUNDATION TYPE 'D'

L = .95 m	B = .65 m	
D = .55 m		
CONCRETE VOLUME	=	.34 m^3
CONCRETE MASS	=	8.15 kN
BEARING PRESSURE	=	42.96 kN/m^3



TOTAL VOLUME of CONCRETE = 1.53 m^3

SECTION

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