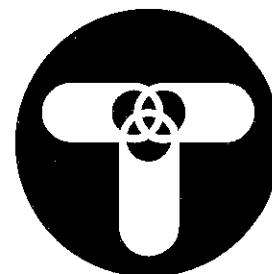


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Design of Buried Corrugated Metal Structures
to BS5400 and BD12/01.
Using :- T70 x 13

Scheme :- Project Regis
Structure :- Pipe

INPUT DATA		
1) Structural Type	= Pipe	NOTES <.65m 305g/m ² /surf Life = 0 yrs Life = 0 yrs
2) Depth to Crown	= 0.480	
3) Diameter	= 0.900 metres	
4) Radius of TOP	= 0.450 metres	
Radius of CORNER	= 0.000 metres	
Radius of BOTTOM	= 0.000 metres	
5) Allowable Soil Pressure	= 300 KN/m ²	
6) Constrained Soil Modulus	= 10 (M*)	
7) Density of Compacted Fill	= 18.850 KN/m ³	
8) Live Loading	= 82 KN/m ² Crown	
9) Base Coating	= Galvanised	
10) Buried Coating	= None	
11) Exposed Coating	= None	
12) Face(s) in Aggressive Environment	= None	
13) Buried Face is Other	Exposed Face is Other	
14) Design Life	= 60 yrs	

Properties used in Calculations.					
Thickness mm.	Area mm ² /m	Inertia mm ⁴ /mm.			
1.25	1350	26.4			
1.5	1620	31.5			
2	2160	41			
2.5	2700	52			
3	3240	64			

RESULTS

Calc No:- MR 1152

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DESIGN DEAD LOADS (Pd)

At Ultimate Limit State	Pd.(uls) =	14.519 KN/m ²
At Serviceability Limit State	Pd.(sls) =	12.285 KN/m ²
For Radial Soil Pressure Check	Pd.(rsp) =	11.169 KN/m ²

DESIGN LIVE LOADING (Pl)

At Ultimate Limit State	is Critical	Pl(uls)= 106.600 KN/m ²
At Service Limit State	is Critical	Pl(sls)= 82.000 KN/m ²
At Rad Soil Press Check	is Critical	Pl(rsp)= 82.000 KN/m ²

RADIAL SOIL PRESSURE CHECK

Pressure at the TOP	=	93.169 KN/m ²
Pressure at the CORNER	=	0.000 KN/m ²
Pressure at the BOTTOM	=	0.000 KN/m ²

DESIGN STRENGTH

In the following Calculations a yield strength of 229 N/mm² is used

Yield Check.

Compressive Hoop Load	C =	54.504 KN.
Max Compressive Hoop Stress	Fa =	176.154 N/mm ²

Metal Thickness Required to Prevent Yield = 0.31514 mm

Seam Strength Check.

Required Seam Strength	=	0.000 KN/m.
Number of Bolts/metre	=	0

Metal Thickness Required for Seam Strength = 0.31514 mm

Buckling Check.

Theoretical Elastic Buckling Stress	Fb =	352.758 N/mm ²
Nominal Buckling Stress	Fc =	138.858 N/mm ²
Compressive Hoop Stress for the Section	Fa =	106.807 N/mm ²
Design Buckling Stress	(Fc/1.3) =	106.814 N/mm ²

Metal Thickness Required for Buckling = 0.51975 mm

DEFLECTION

Calculated Deflection with 0.51975 mm. thickness of Metal	=	31.345 mm
Allowable Deflection	=	45.000 mm

Metal Thickness Required for Deflection = 0.51975 mm

STRUCTURAL METAL REQUIRED = 0.520 mm

DURABILITY**BURIED FACE**

The BURIED face is in an Non-Aggressive environment. Face is Other
 The Base Galvanised coating in this environment gives . . . 10.664 years
 The Secondary protective coating to the BURIED face gives 0.000 years
 Total Life of BURIED coatings = 10.664 years
 Sacrificial metal will be required for 49.336 years

Thickness of sacrificial metal on the BURIED face = 0.30662 mm.

EXPOSED FACE

The EXPOSED face is in an Non-Aggressive environment. Face is Other
 The Base Galvanised coating in this environment gives . . . 10.664 years
 The Secondary protective coating to the EXPOSED face gives 0.000 years
 Total Life of EXPOSED coatings = 10.664 years
 Sacrificial metal will be required for 49.336 years

Thickness of sacrificial metal on the EXPOSED face = 0.30662 mm.

TOTAL SACRIFICIAL METAL REQUIRED = 0.6132 mm

TOTAL METAL REQUIRED = 1.13298 mm

HANDLING AND INSTALLATION

Flexibility Factor F = 0.165 mm/N
 Allowable Fmax = 0.246 mm/N

Metal Thickness Required for Flexibility = 1.13299 mm.

For a Galvanised weight of 305 g/m²/surface

SELECTED METAL THICKNESS = 1.25 mm