Figure 18. Complete 30-Section 225liter capacity spherical tank developed

Figure 19. Body-filed 30-Section 225liter capacity spherical tank developed

Figure 20. Grey-Coated 30-Section 225liter capacity spherical tank developed

5. CONCLUSIONS

This paper has developed mathematical and procedural frameworks that will facilitate the development of spherical storage tanks. The effect of the number constituent sections on the sphericalness obtainable was also illustrated by developing a 225-litre capacity spherical storage tank using ten and twenty sections respectively. It is hoped that the framework developed will encourage the development and usage of spherical tanks when they are needed and not approximate them to cylindrical tanks with hemispherical caps.

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NOMENCLATURE

$\tau_{r\upsilon}$, $\tau_{\upsilon r}$, $\tau_{r\theta}$, $\tau_{\theta r}$, $\tau_{\theta\upsilon}$, $\tau_{\upsilon\theta}$	Shear Stresses in different planes in N/m^2
σ_{rr}	Normal Stress in N/m^2
n_1	Number of Sections
n_2	Number of Minor Circles
X_0	Equivalent base (arc) length of each section of the sphere in mm
R	Great Circle Radius in mm
α	Angle substended by an arc of the section in degrees
L	Length of an Arc of a constituent great circle
C_0, C_n	Equivalent Chord Length in mm
β	Angle substended by a minor arc