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| **Table 1. Showing workspace reference frame variables.** |
| Platform X Displacement: $\left(D\_{X}^{W}\right)$Platform Y Displacement: $\left(D\_{Y}^{W}\right)$Platform Z Displacement: $\left(D\_{Z}^{W}\right)$Platform Displacement Vector:$$\overbar{D}^{W}=[\begin{matrix}D\_{X}^{W}&D\_{Y}^{W}&D\_{Z}^{W}\end{matrix}]^{T}$$Platform X Velocity: $\left(V\_{X}^{W}\right)$Platform Y Velocity: $\left(V\_{Y}^{W}\right)$Platform Z Velocity: $\left(V\_{Z}^{W}\right)$Platform Velocity Vector:$$\overbar{V}^{W}=[\begin{matrix}V\_{X}^{W}&V\_{Y}^{W}&V\_{Z}^{W}\end{matrix}]^{T}$$ | Platform X Rotation: $\left(R\_{X}^{W}\right)$Platform Y Rotation: $\left(R\_{Y}^{W}\right)$Platform Rotation Vector:$$\overbar{R}^{W}=[\begin{matrix}R\_{X}^{W}&R\_{Y}^{W}&0 ]^{T}\end{matrix}$$Platform X Angular Velocity: $\left(\dot{R}\_{X}^{W}\right)$Platform Y Angular Velocity: $\left(\dot{R}\_{Y}^{W}\right)$Platform Angular Velocity Vector:$$\overbar{\dot{R}}^{W}=[\begin{matrix}\dot{R}\_{X}^{W}&\dot{R}\_{Y}^{W}&0 ]^{T}\end{matrix}$$ |
| Cable Workspace Origins Matrix:$$\overbar{A}^{w}=\left[\begin{matrix}0\\0\\0\end{matrix} \begin{matrix}1000\\0\\0\end{matrix} \begin{matrix}1000\\1000\\0\end{matrix} \begin{matrix}0\\1000\\0\end{matrix} \begin{matrix}0\\0\\600\end{matrix} \begin{matrix}1000\\0\\600\end{matrix} \begin{matrix}1000\\1000\\600\end{matrix} \begin{matrix}0\\1000\\600\end{matrix}\right]$$$$=[ A\_{1}^{W}……A\_{8}^{W} ]$$Cable Lengths Matrix:$$\overbar{L}^{w}=\left[\begin{matrix}L\_{1,X}^{W}\\L\_{1,Y}^{W}\\L\_{1,Z}^{W}\end{matrix} \begin{matrix}L\_{2,X}^{W}\\L\_{2,Y}^{W}\\L\_{2,Z}^{W}\end{matrix} … \begin{matrix}L\_{8,X}^{W}\\L\_{8,Y}^{W}\\L\_{8,Z}^{W}\end{matrix}\right]$$$$=\left[L\_{1}^{W}…. L\_{8}^{W}\right]$$ |