Inlet Slope Drawing Script

layerslopes2 - Layer_new creates a new light grey layer "inletslopes."

layerslopes2 <- layer_new("inletslopes",ltgrey)

inletslopes - Calls the Sedimentation Tank Inlet Slopes Program to draw inlet slopes based on given inputs.

inletslopes <- Inletslope(inletslopes_origin,L_Sed,L_SedTopInlet,L_SedSlopeInlets,H_SedInlet,T_SedInletSlope,N_SedSlopeInlets,AN_SedTopInlet)

inletslopes_origin =
  • x: PlantOrigin0 - L_Sed
  • y: PlantOrigin1 + W_Sed/2
  • z: PlantOrigin2 + outerdiameter(ND_SedSludge)

L_Sed = 2.658m
L_SedTopInlet = 43.363deg
L_SedSlopeInlets = L_SedInletSlope
H_SedInlet = 0.057m
T_SedInletSlope = 0.05m
N_SedSlopeInlets = 1
AN_SedTopInlet = 43.464deg

layerset - Layer_set selects the layer "0".

layerset <- layer_set("0")

layerfreezeinslope - Layer_freeze locks the layer "inletslopes" so that it cannot be edited.

layerfreezeinslope <- layer_freeze("inletslopes")

layerslopes - Layer_new creates a new light grey layer "slopes."

layerslopes <- layer_new("slopes",ltgrey)

slopes - Calls the AutoCAD Sedimentation Tank Slopes Program to create tank slopes based on three inputs.

slopes <- sedslope(PlantOrigin,p1,AN_SedBottom~)

Note: p1 is a dummy variable used only in the program help section to designate the matrix below.

PlantOrigin =

p1 =
  • x: L_Sed
  • y: W_Sed
  • z: H_Sed
AN_{SedBottom} = 10\text{deg}

**moves** - *Move_all* shifts all the objects in the workspace.

```r
moves <- move_all(PlantOrigin, p1)
```

```r
PlantOrigin =
```

```r
p1 =
```

- x: PlantOrigin[0]
- y: PlantOrigin[1]

**inletslopesridge** - Calls the Sedimentation Tank Inlet Slopes Program to create inlet slopes based on given inputs.

```r
inletslopesridge <- Inletslope(inletslopesorigin, LSed, \text{L}_{SedTopInlet} + (T_{SedInletSlope} \times \tan(AN_{SedTopInlet})), L_{SedSlopeInlets}, L_{SedTopInlet}, \text{T}_{SedInletSlope}, N_{SedSlopeInlets}, AN_{SedTopInlet})
```

```r
inletslopesorigin =
```

- x: PlantOrigin[0] - LSed

```r
LSed = 2.658m
```

```r
L_{SedTopInlet} = 43.363\text{deg}
```

```r
T_{SedInletSlope} = 0.05m
```

```r
\tan(AN_{SedTopInlet}) = \tan(43.464\text{deg})
```

```r
L_{SedSlopeInlets} = L_{SedInletSlope}
```

```r
N_{SedSlopeInlets} = 1
```

```r
AN_{SedTopInlet} = 43.464\text{deg}
```

**tankthaw** - *Layer thaw* unlocks the layer "tank" so that it can be edited.

```r
tankthaw <- layer thaw("tank")
```

**bigunion** - *UnionAll* selects all the objects in the workspace and unions them into a single object.

```r
bigunion <- unionAllA
```

**box1** - Creates a box based on two points.

```r
box1 <- box(sedtankbox1origin, sedtankbox1origin + sedtankbox1dim)
```

```r
sedtankbox1origin =
```

- x: PlantOrigin[0] - LSed
- y: PlantOrigin[1] + \text{W}_{Sed}/2 - \text{outerradius}(ND_{SedSludge})
- z: PlantOrigin[2]

```r
sedtankbox1dim =
```

- x: LSed
- y: \text{outerdiameter}(ND_{SedSludge})
- z: 3\text{outerdiameter}(ND_{SedSludge})
**subtractbox** - *SubtractK* subtracts one object from the other based on three points.

\[
\text{subtractbox} \leftarrow \text{subtractK}(\text{Plant}_{\text{Origin}} - zc, p1, p2)
\]

\[
p1 =
\begin{align*}
&\text{x: Plant}_{\text{Origin0}} - L_{\text{Sed}}/4 \\
&\text{y: Plant}_{\text{Origin1}} + W_{\text{Sed}}/4 \\
&\text{z: Plant}_{\text{Origin2}} + H_{\text{Sed}}/4
\end{align*}
\]

\[
p2 =
\begin{align*}
&\text{x: Plant}_{\text{Origin0}} \\
&\text{y: Plant}_{\text{Origin1}} + W_{\text{Sed}}/2 \\
&\text{z: Plant}_{\text{Origin2}}
\end{align*}
\]

**layerfreezeslope** - *Layer\_freeze* locks the layer "slopes" so that it cannot be edited.

\[
\text{layerfreezeslope} \leftarrow \text{layer}\_\text{freeze}("\text{slopes}")
\]