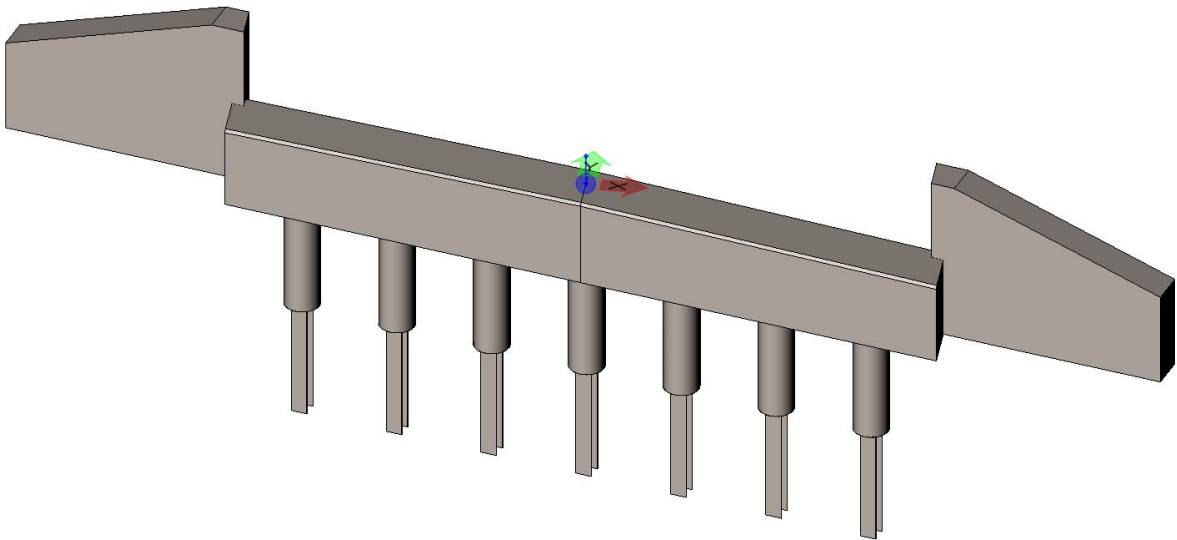




Illinois Department
of Transportation

Illinois Deck Beam Abutment

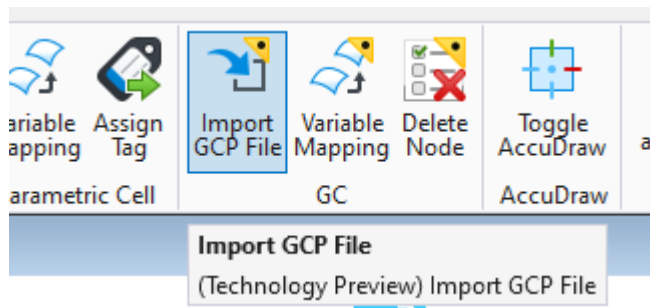
Generative Component for OpenBridge Modeler



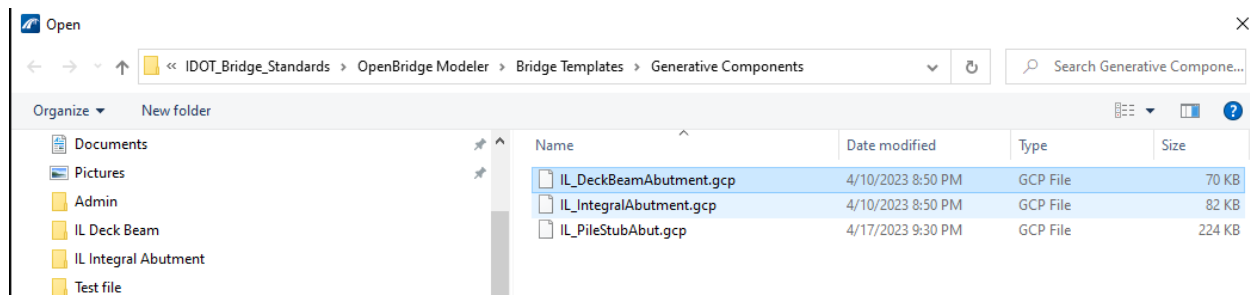
9-12-2023

Illinois Deck Beam Generative Component Placement

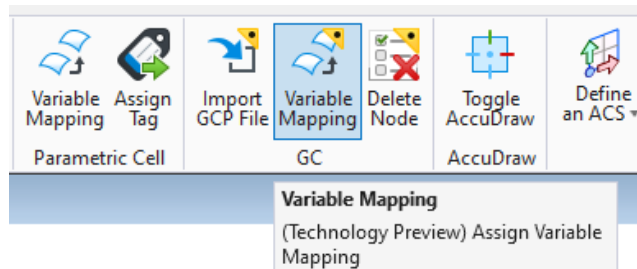
- 1) Open “OpenBridge Modeler Generative Components”.
- 2) Open the dgn containing your OBM 3D model.
- 3) From within the “OpenBridge Modeler” workflow, go to the “Utilities” tab and select “Import GCP File” within the “GC” group.



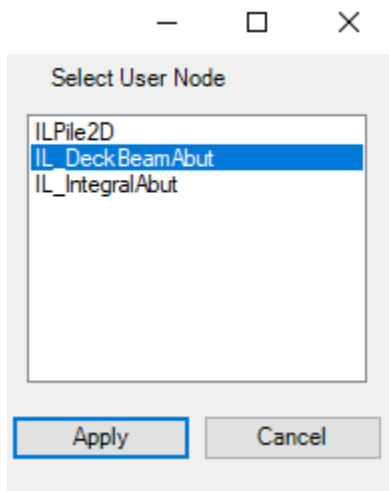
- 4) Map to “c:\IDOTCAD_ORD\Configuration\Organization\Organization-Civil\IDOT_Bridge_Standards\OpenBridge Modeler\Bridge Templates\Generative Components\” and select the file “IL_DeckBeamAbutment.gcp”.



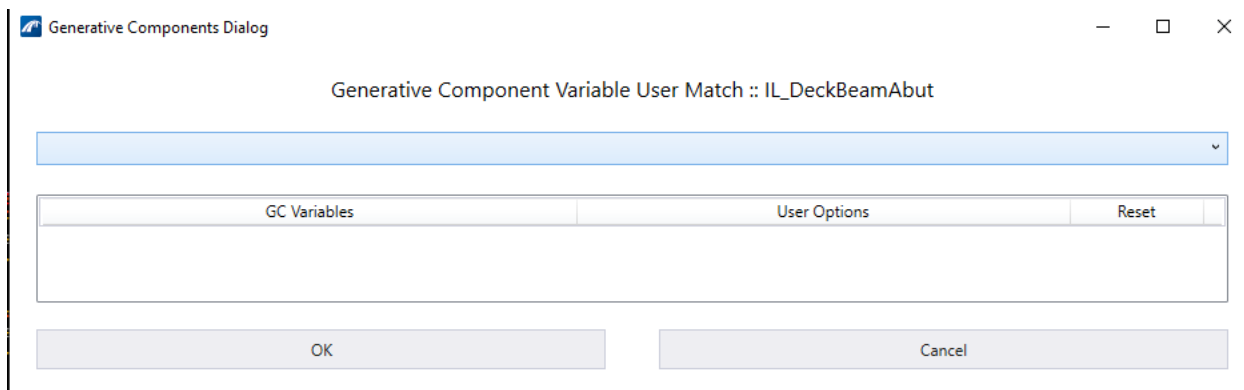
- 5) Click “Open”.
- 6) In the “GC” group, select “Variable Mapping”.



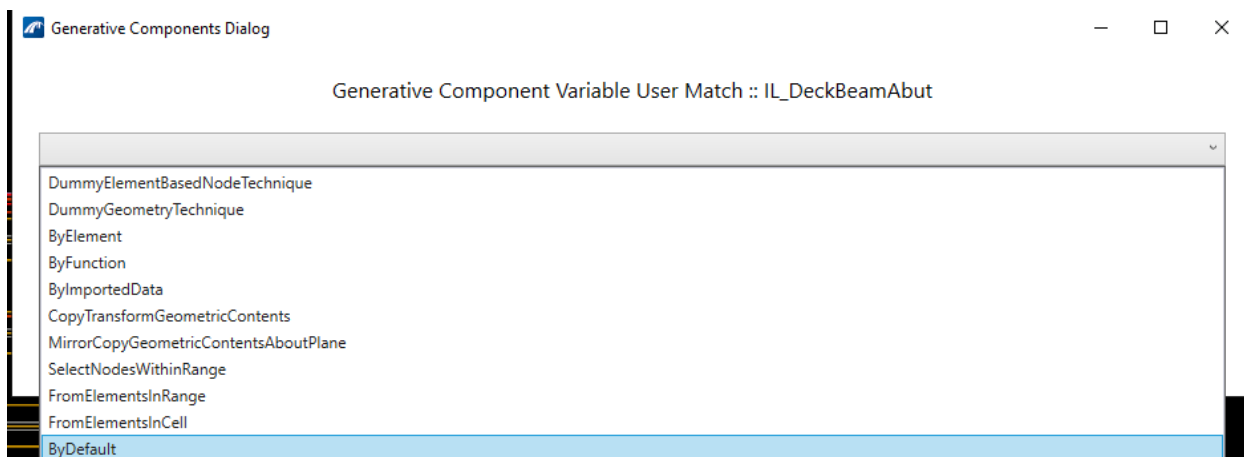
7) Select “IL_DeckBeamAbut”, then “Apply”.



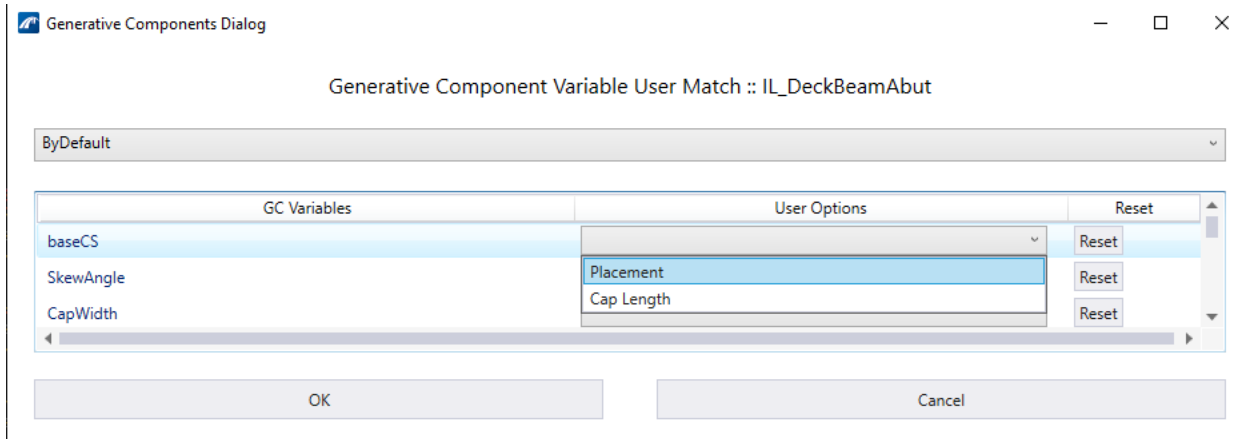
8) Select the top dropdown that appears empty.



9) Select “ByDefault”.

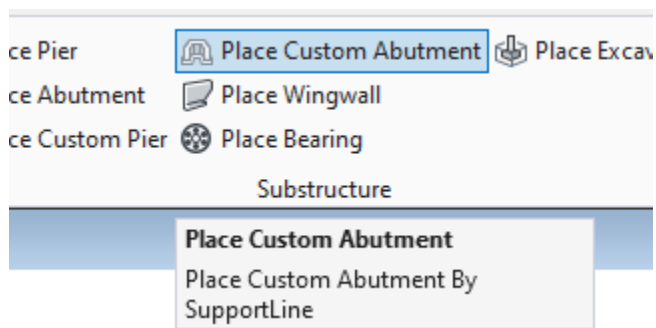


10) Select the “User Options” dropdown in the “baseCS” row and select “Placement”.



11) Select “OK”.

12) From within the “OpenBridge Modeler” workflow, select “Place Custom Abutment”.

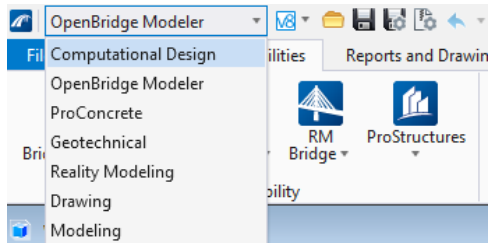


13) Ensure that the “Cell” attached is the IL_DeckBeamAbut. If not, select it.

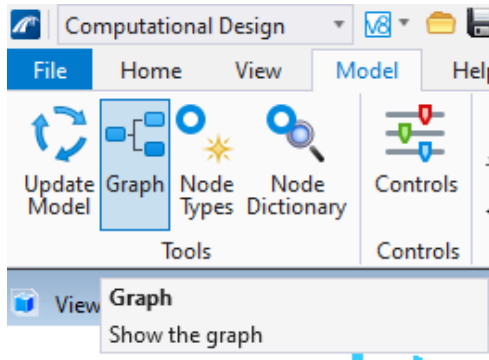
IDOT Pile Bent	Parametric	IDOT-Class.cel
Inclined Columns Pier	Parametric	Inclined Columns Pier.cel
X PIER	Parametric	X Pier.cel
> IL_DeckBeamAbut	GenerativeComponent	
IL_IntegralAbut	GenerativeComponent	

Placement Techniques		**ByDefault**
Variable Name	Mapped Variable	
> baseCS	Placement	
SkewAngle	Not Assigned	
CapWidth	Not Assigned	
RCapLength	Not Assigned	
LCapLength	Not Assigned	
AbutBackToBrq	Not Assigned	

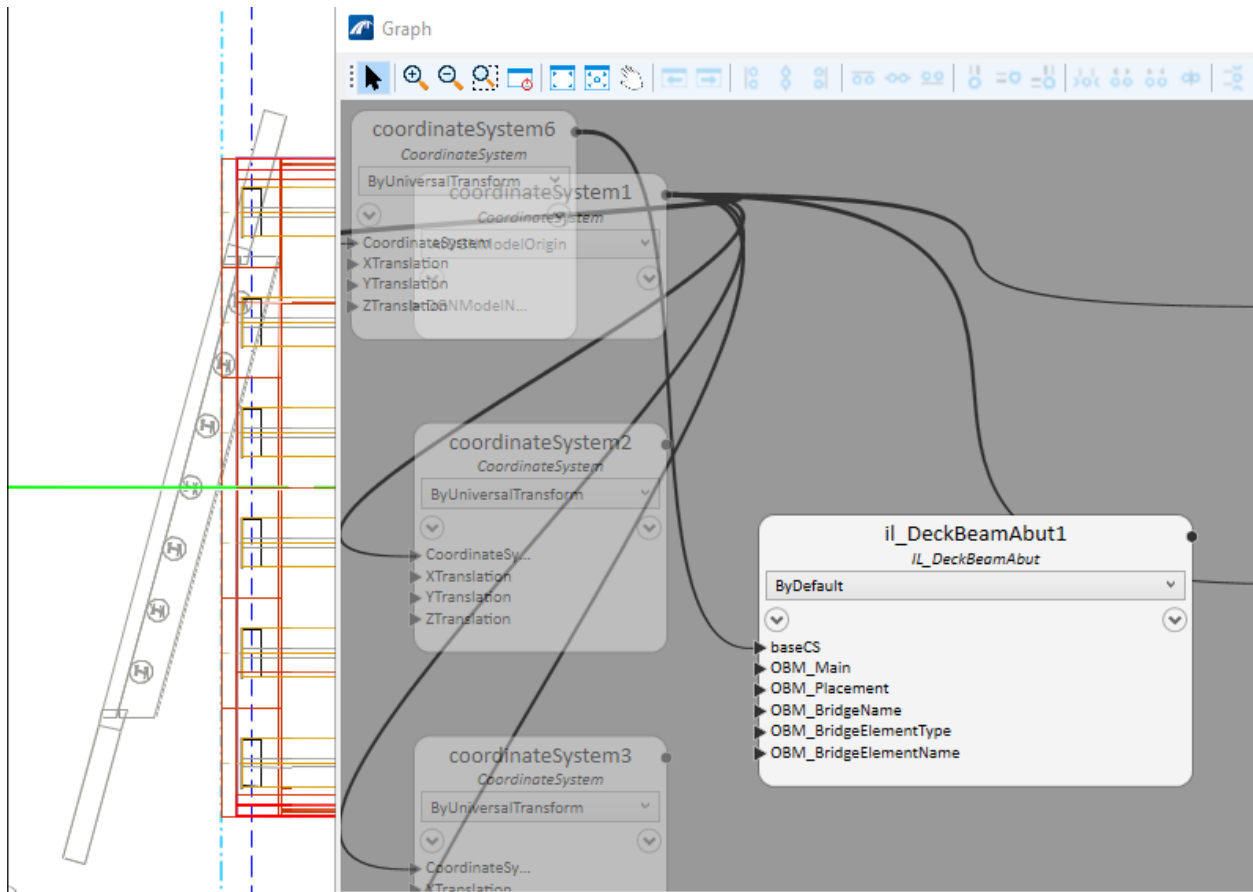
- 14) Edit the values in the “Place Custom Abutment” dialog.
- 15) Select appropriate “SupportLine” and then reset.
- 16) Once the Generative Components have been placed, the variables need to be modified.
- 17) Change to the “Computational Design” workflow.



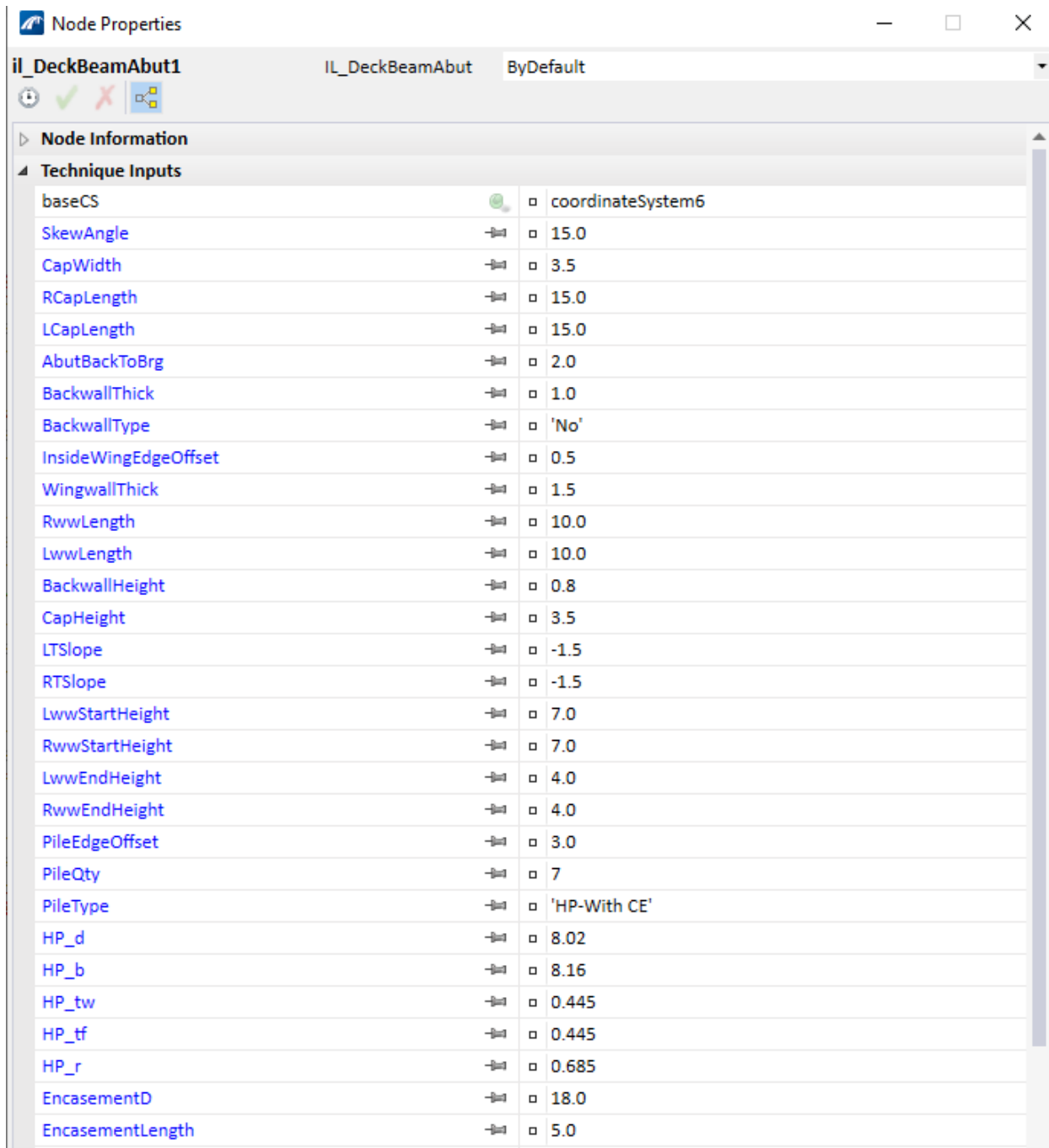
- 18) In the “Model” tab, select the “Graph” command in the “Tools” group.



- 19) Regardless of what the software names the abutment, you can identify it by hovering over the non-greyed boxes in the “Graph” dialog. It is appearing here as “il_DeckBeamAbut1”.

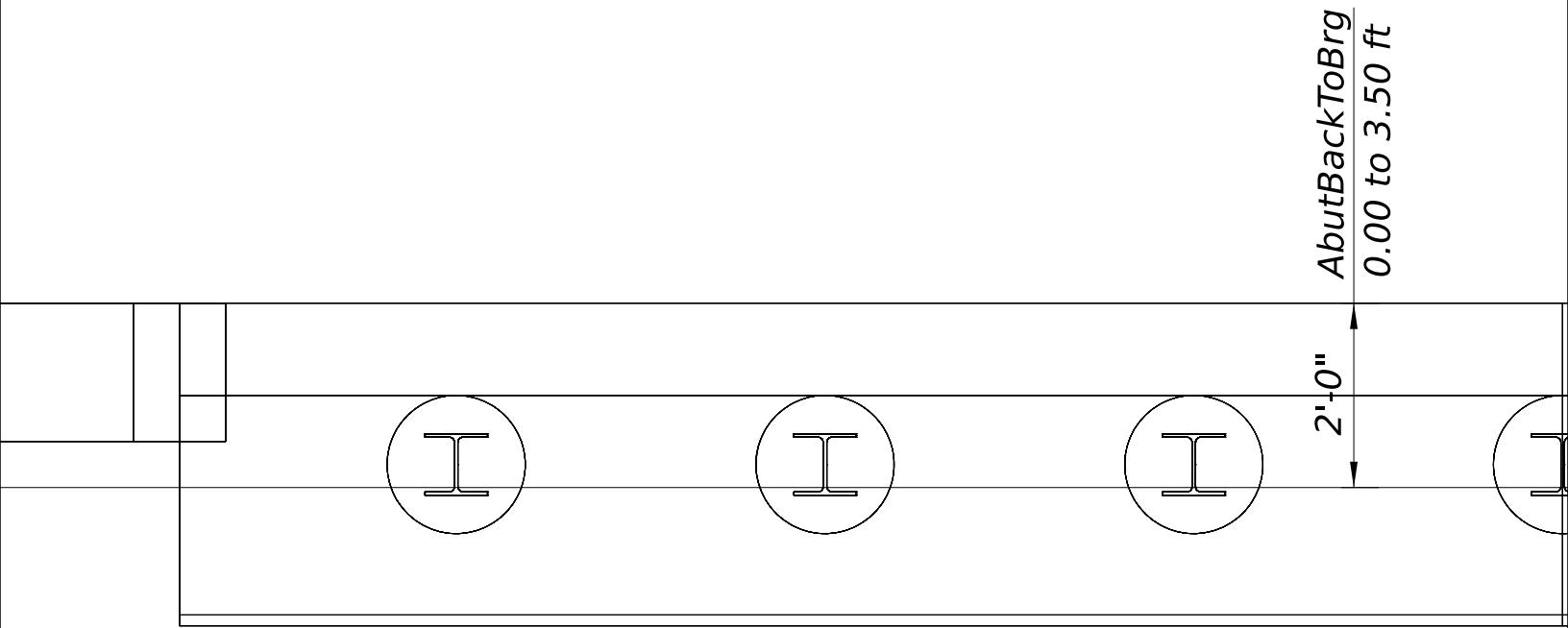


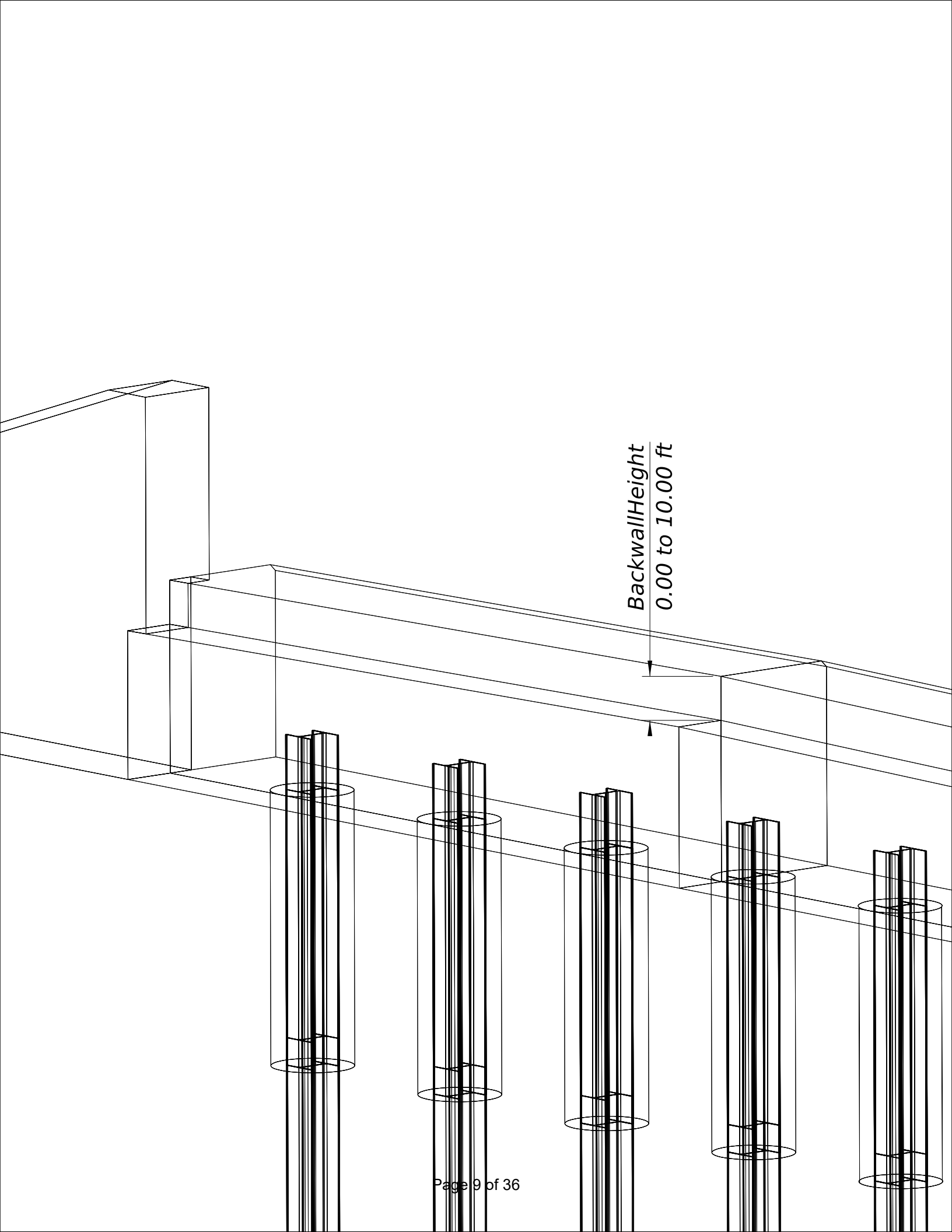
20) Double-clicking on the box for il_DeckBeamAbut1 will bring up the Node Properties dialog for that abutment. This is where the variable values must be changed. Pages 8 thru 36 of this document show what dimensions the variables refer to.

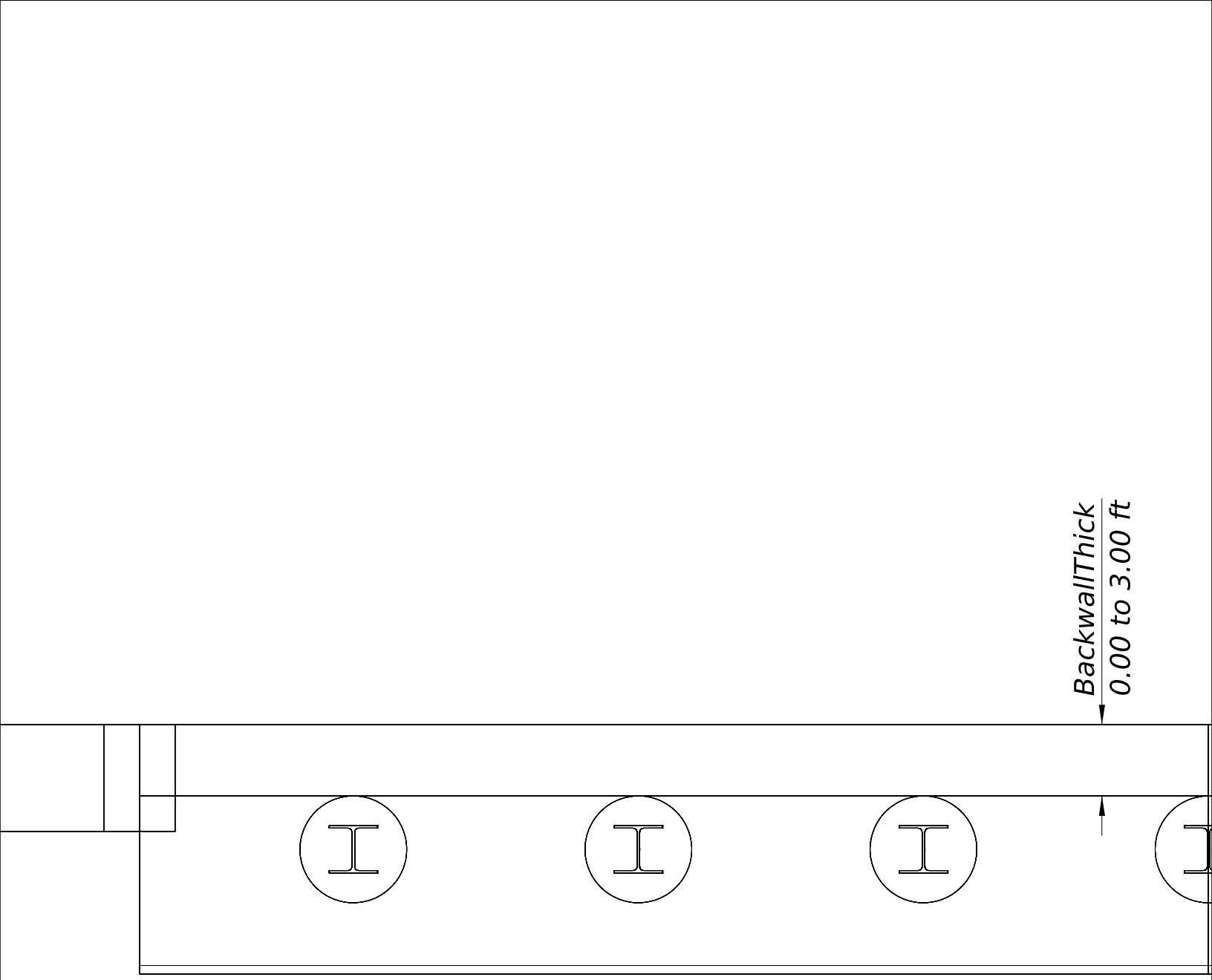


Node Properties		
il_DeckBeamAbut1		
IL_DeckBeamAbut ByDefault		
Node Information		
Technique Inputs		
baseCS		coordinateSystem6
SkewAngle		15.0
CapWidth		3.5
RCapLength		15.0
LCapLength		15.0
AbutBackToBrg		2.0
BackwallThick		1.0
BackwallType		'No'
InsideWingEdgeOffset		0.5
WingwallThick		1.5
RwwLength		10.0
LwwLength		10.0
BackwallHeight		0.8
CapHeight		3.5
LTSlope		-1.5
RTSlope		-1.5
LwwStartHeight		7.0
RwwStartHeight		7.0
LwwEndHeight		4.0
RwwEndHeight		4.0
PileEdgeOffset		3.0
PileQty		7
PileType		'HP-With CE'
HP_d		8.02
HP_b		8.16
HP_tw		0.445
HP_tf		0.445
HP_r		0.685
EncasementD		18.0
EncasementLength		5.0

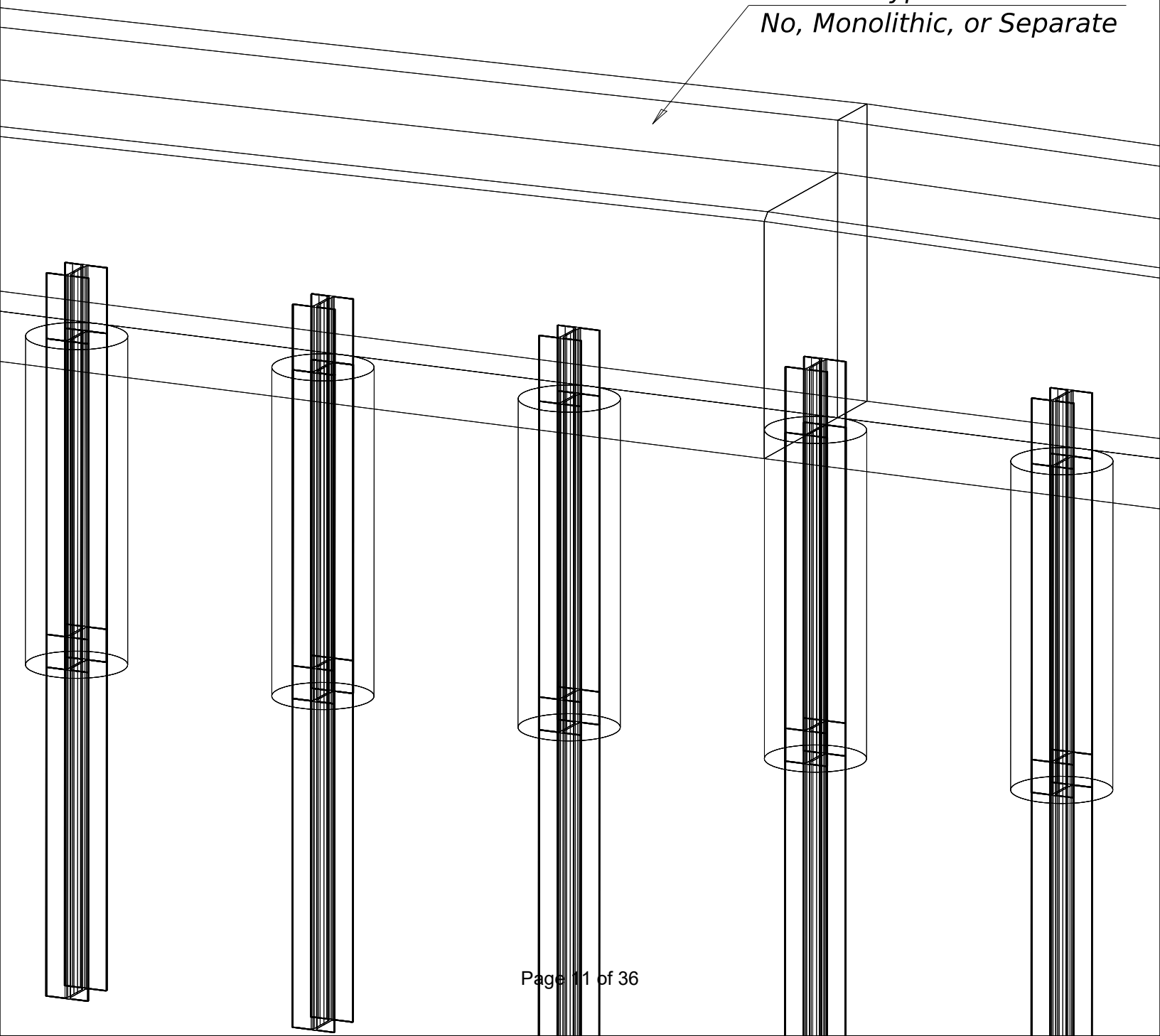
It is advisable that all other substructure elements (3d solids, native OBM substructure types, and – components) be placed prior to placing the generative component abutments.

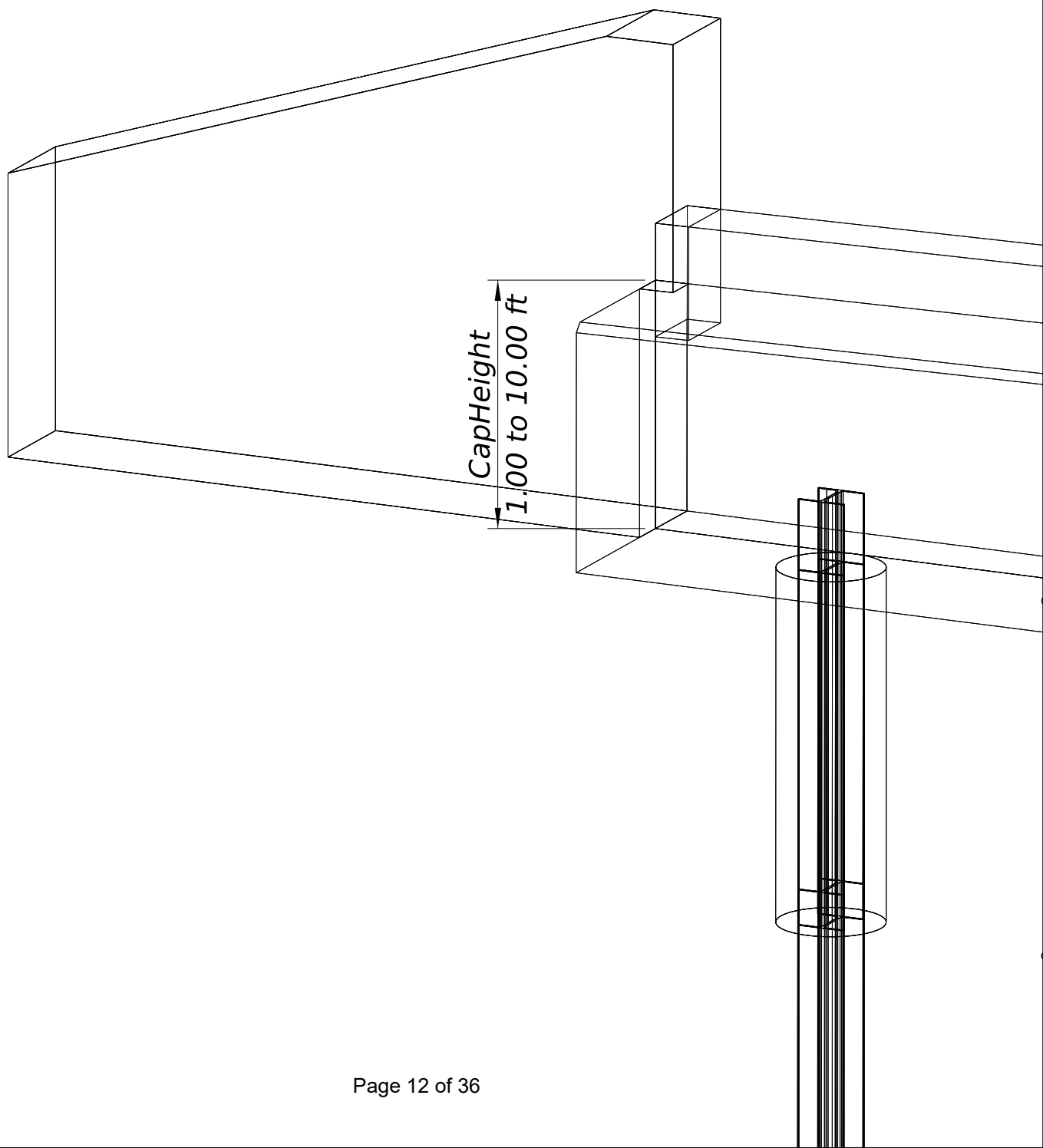


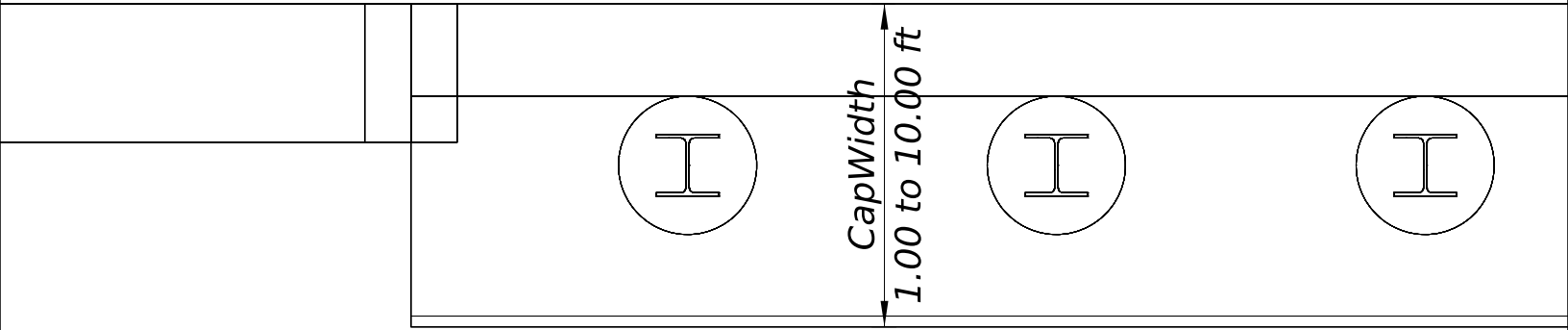


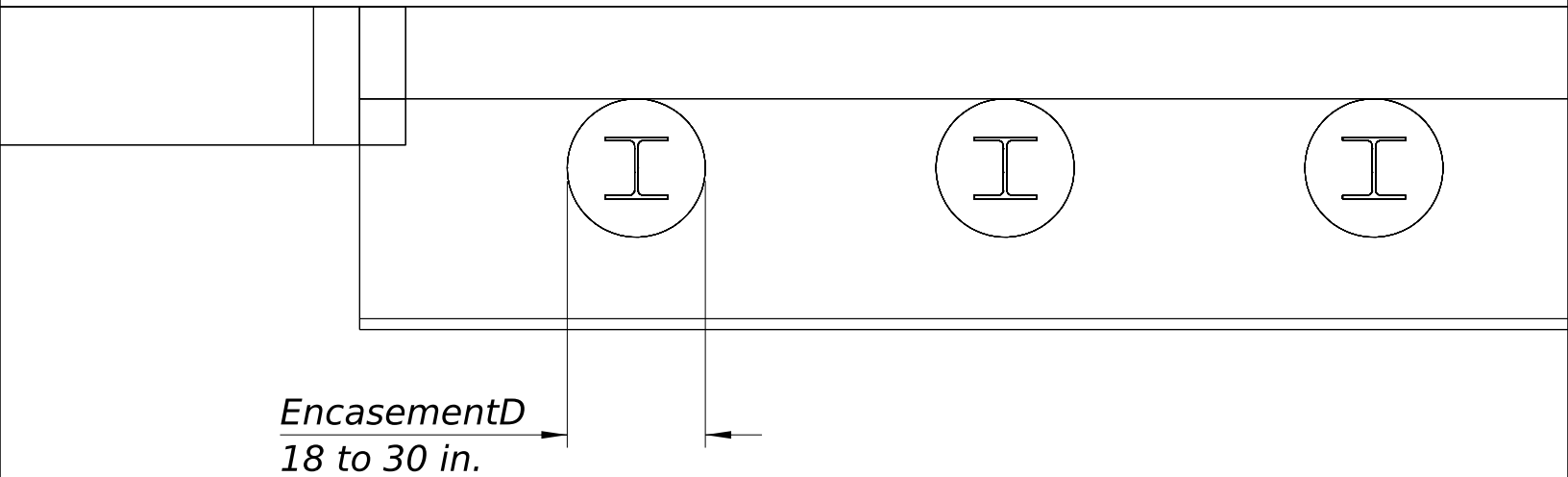


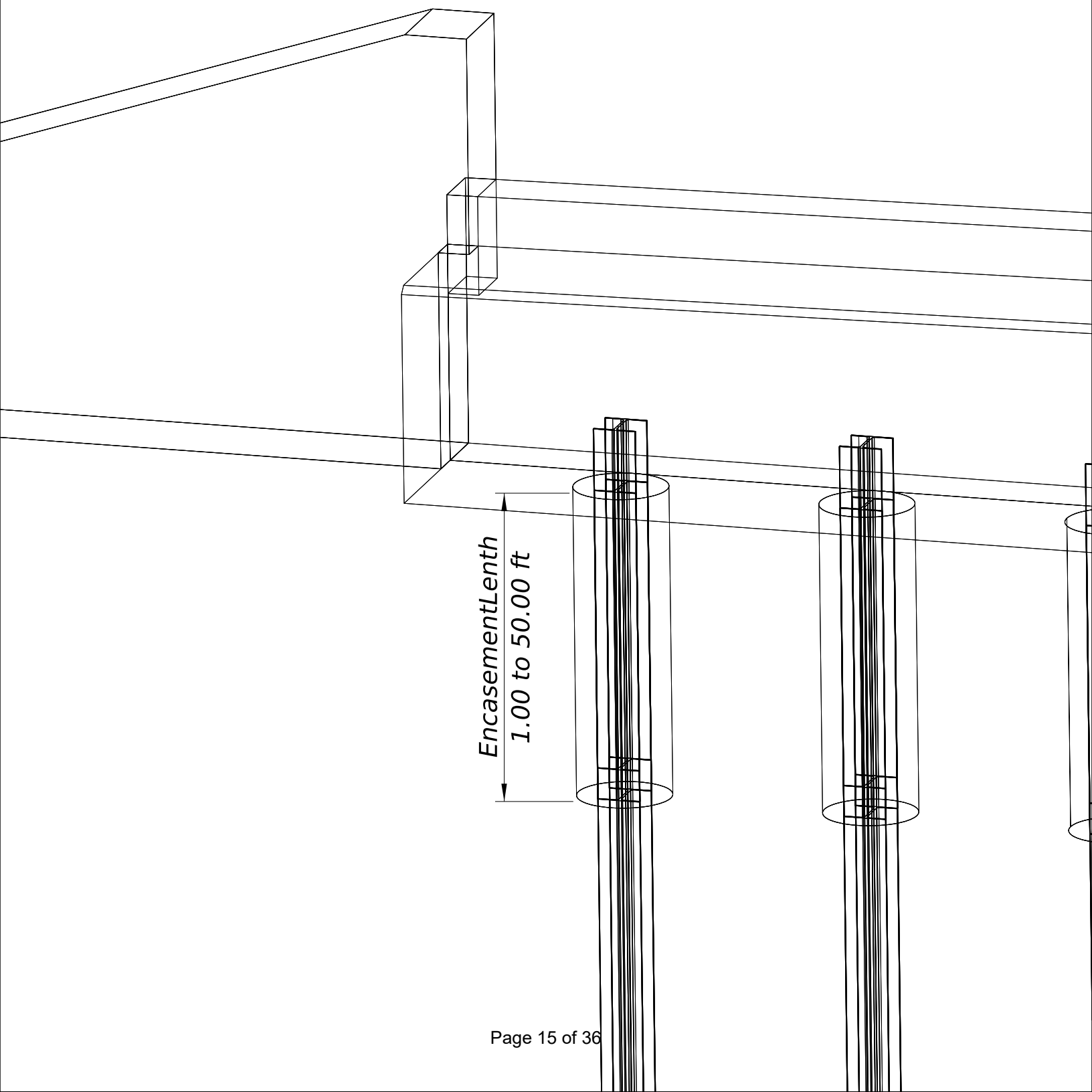
BackwallType
No, Monolithic, or Separate

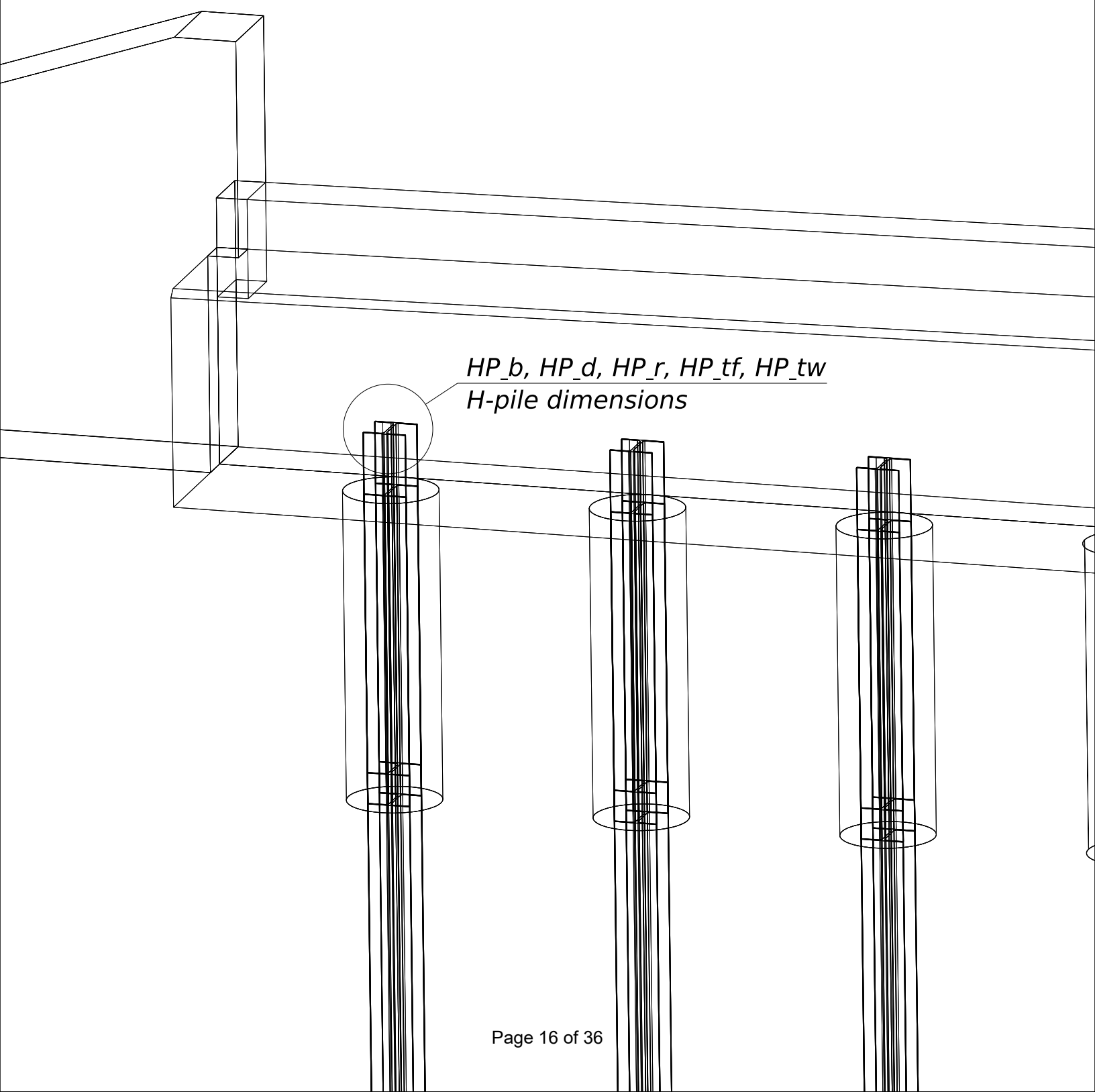






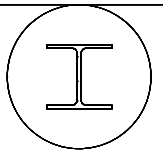
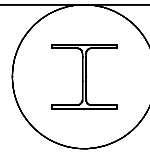
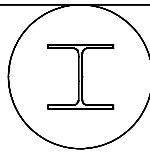


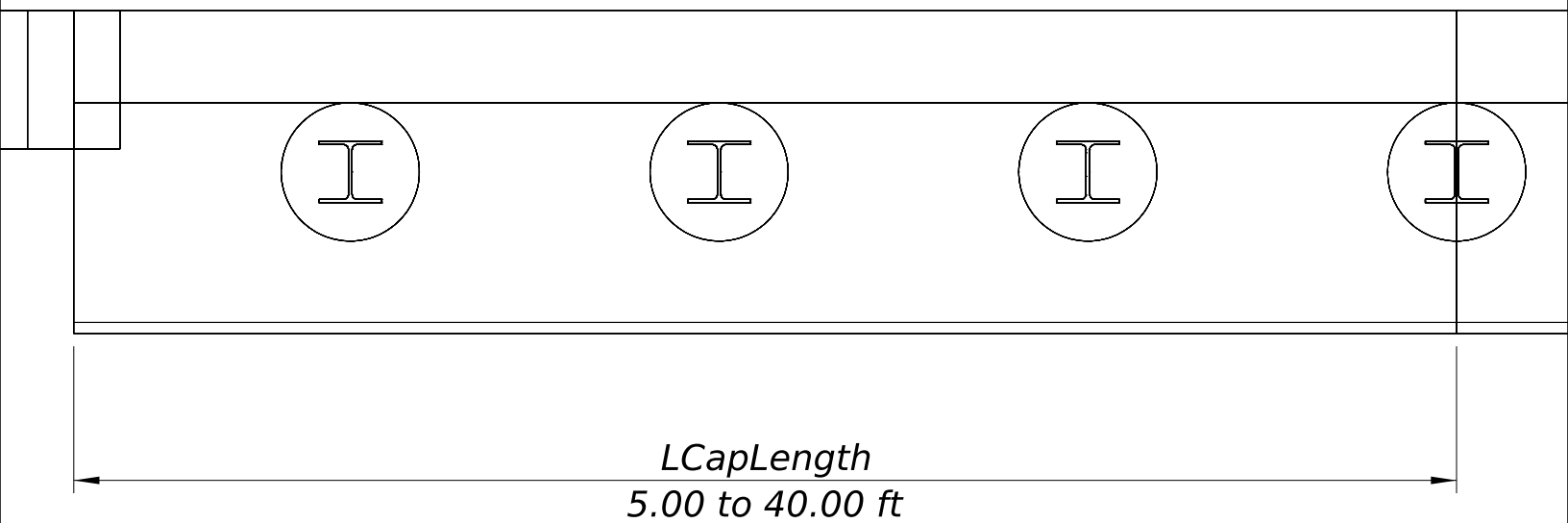




HP_b, HP_d, HP_r, HP_tf, HP_tw
H-pile dimensions

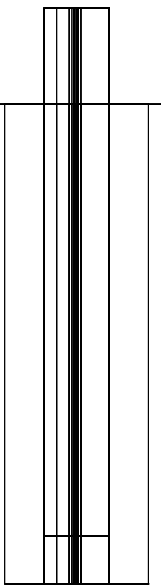
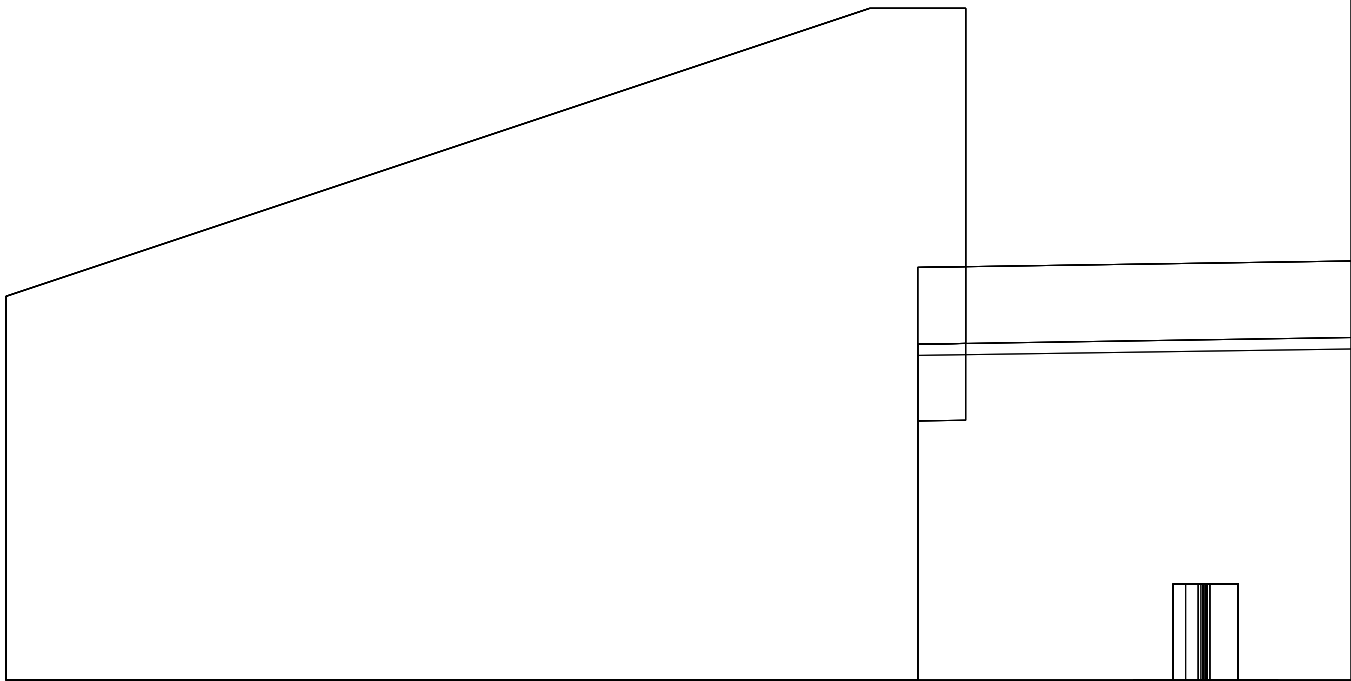
→ ← InsideWingEdgeOffset
0.00 to 2.00 ft

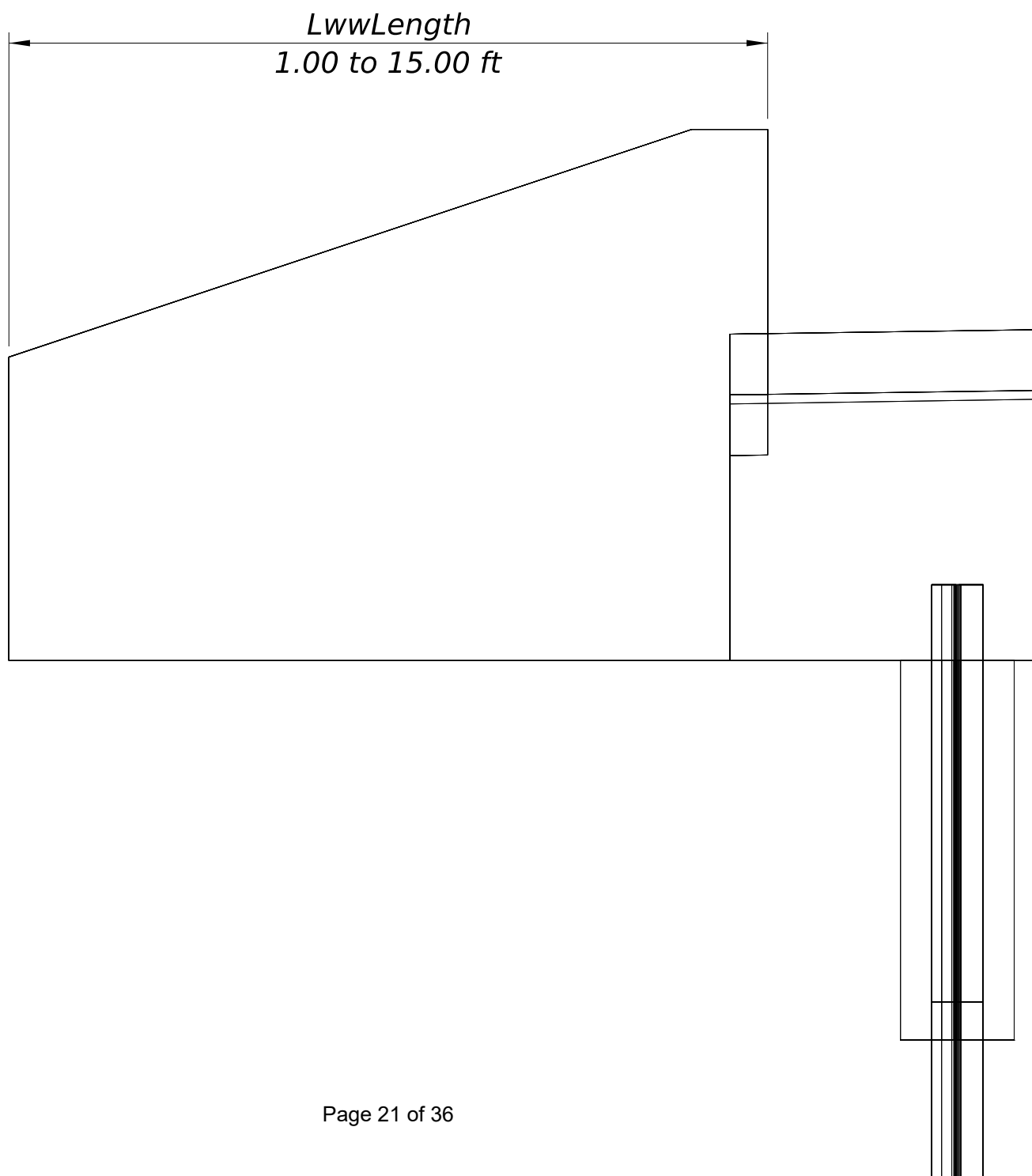




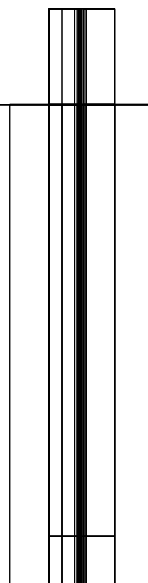
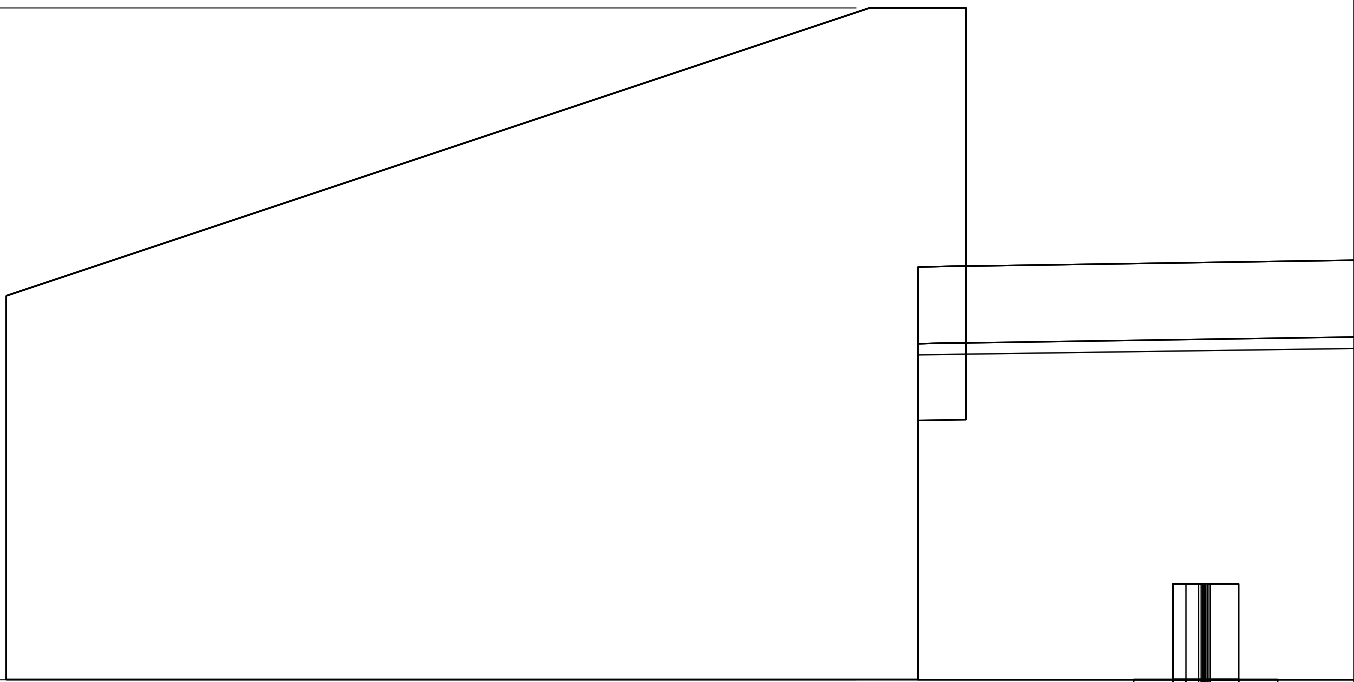
LTSlope
-8.00 to 8.00%

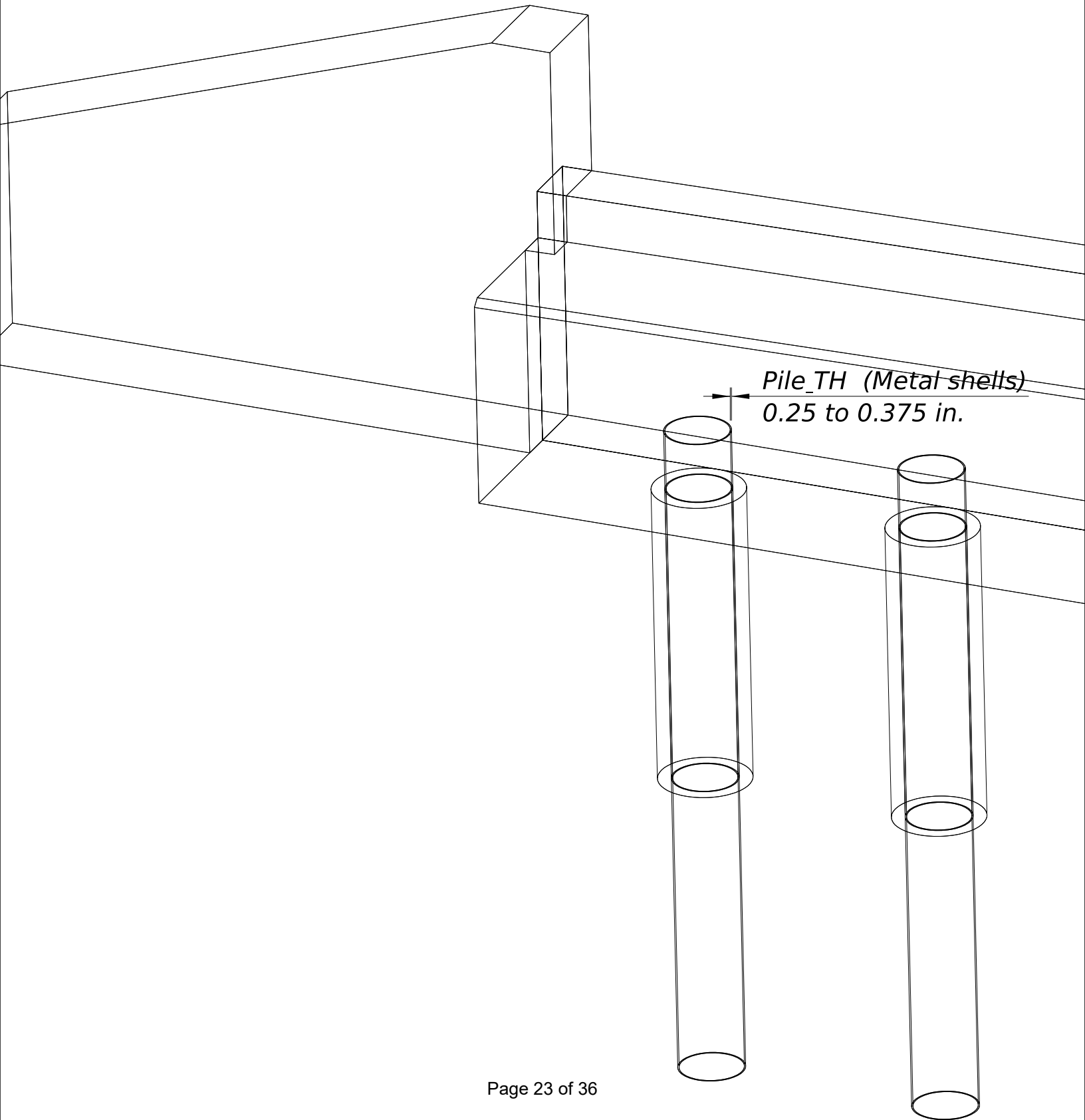
L_{ww}EndHeight
0.00 to 10.00 ft

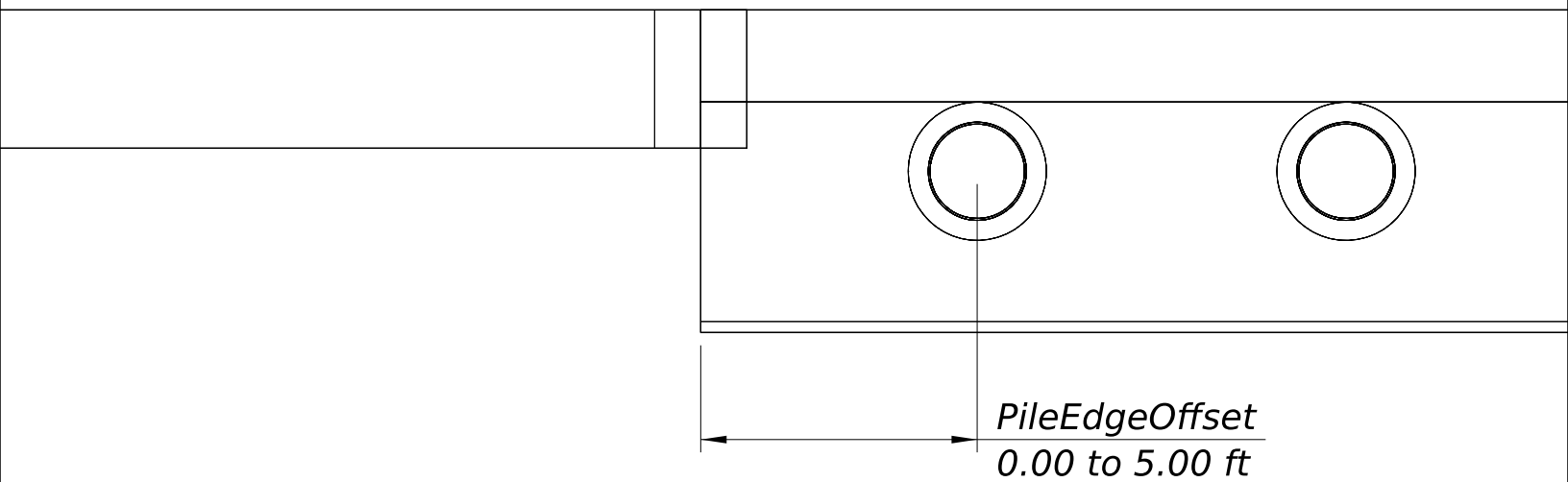


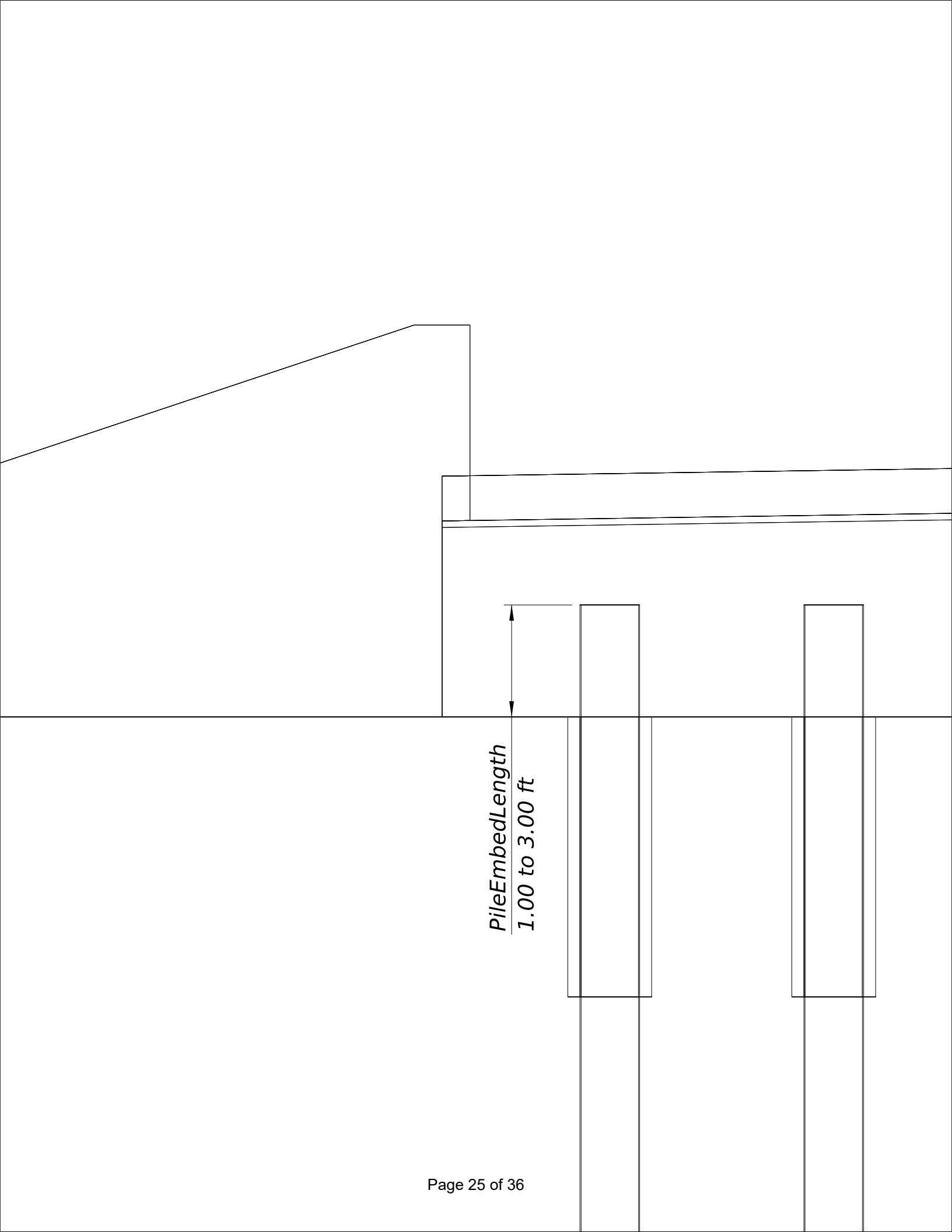


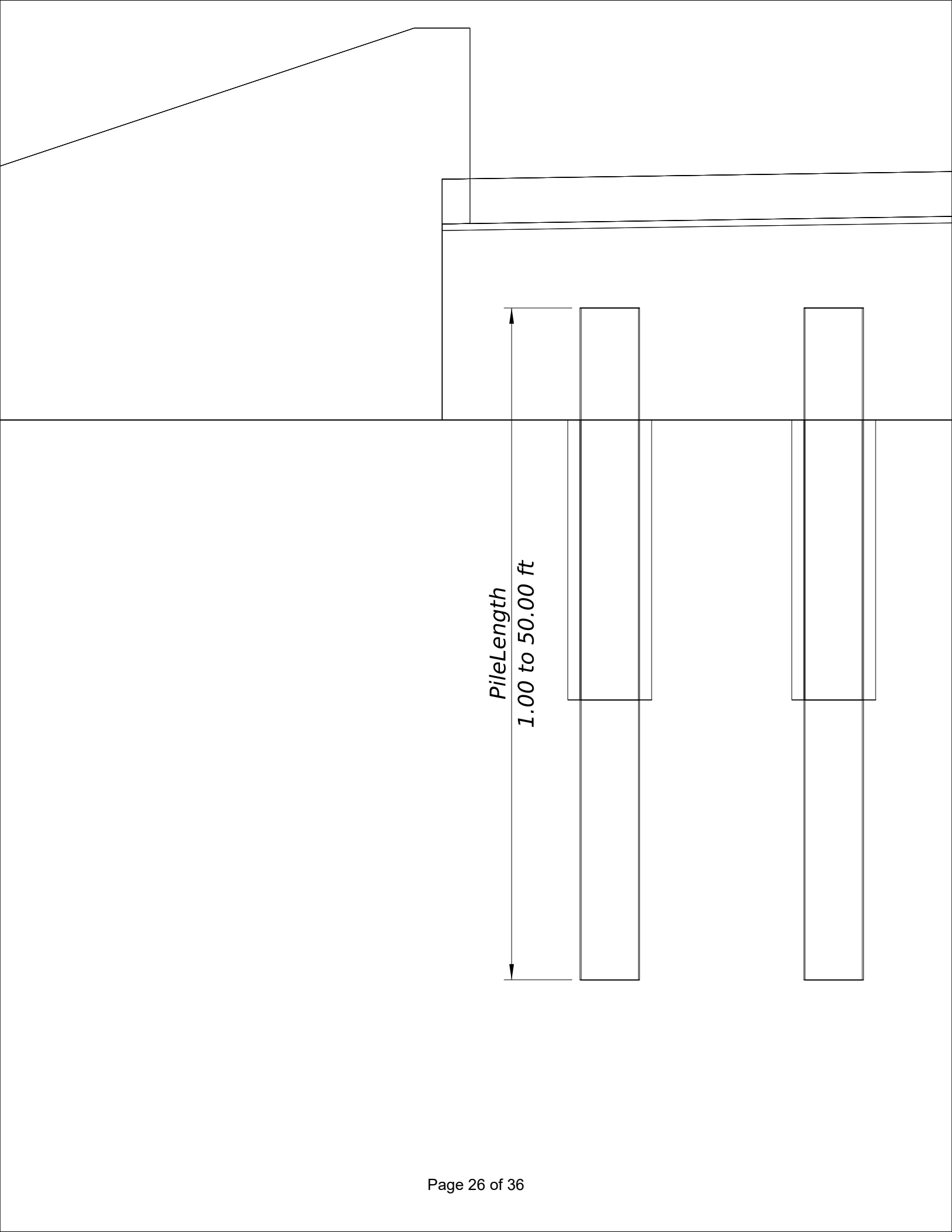
L_{wwStartHeight}
0.00 to 15.00 ft

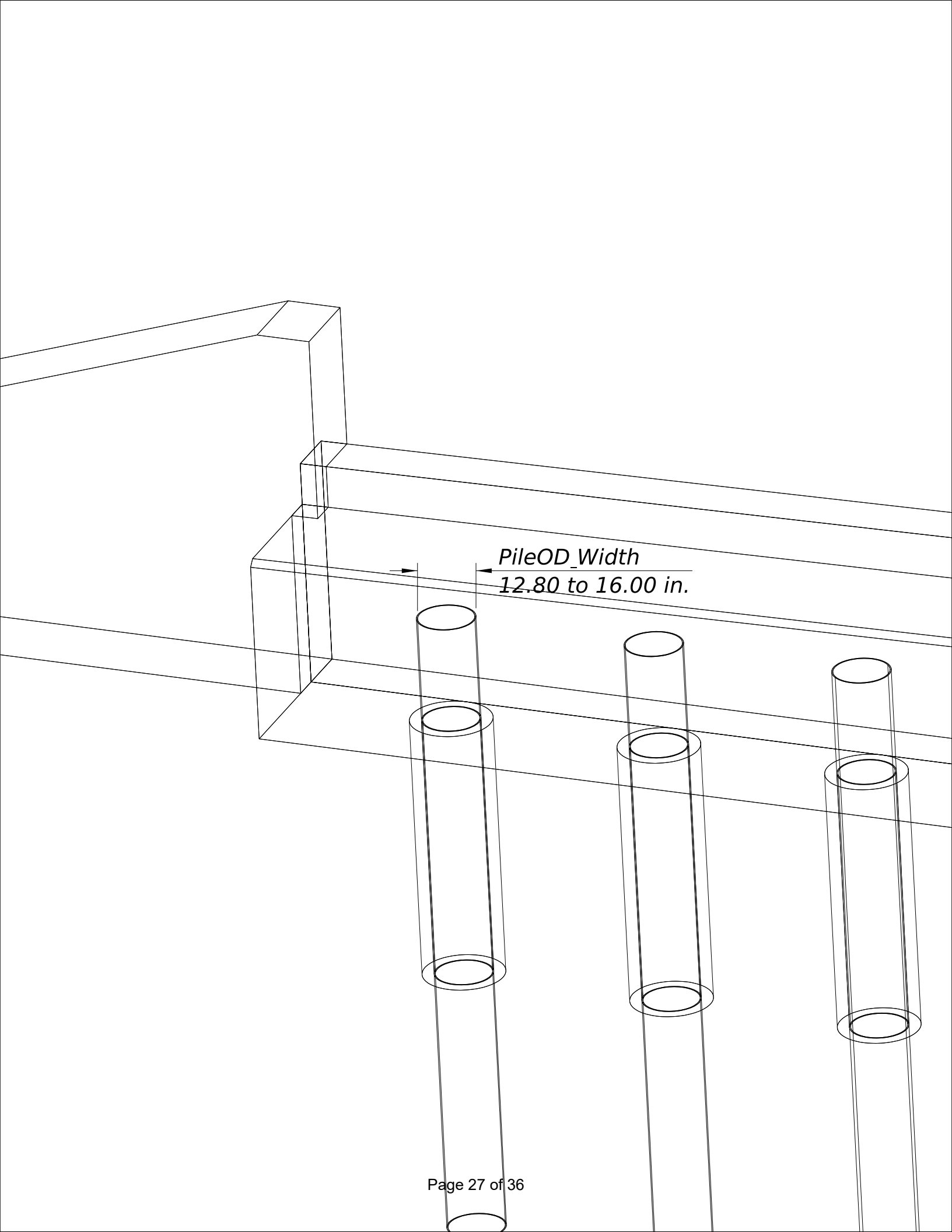


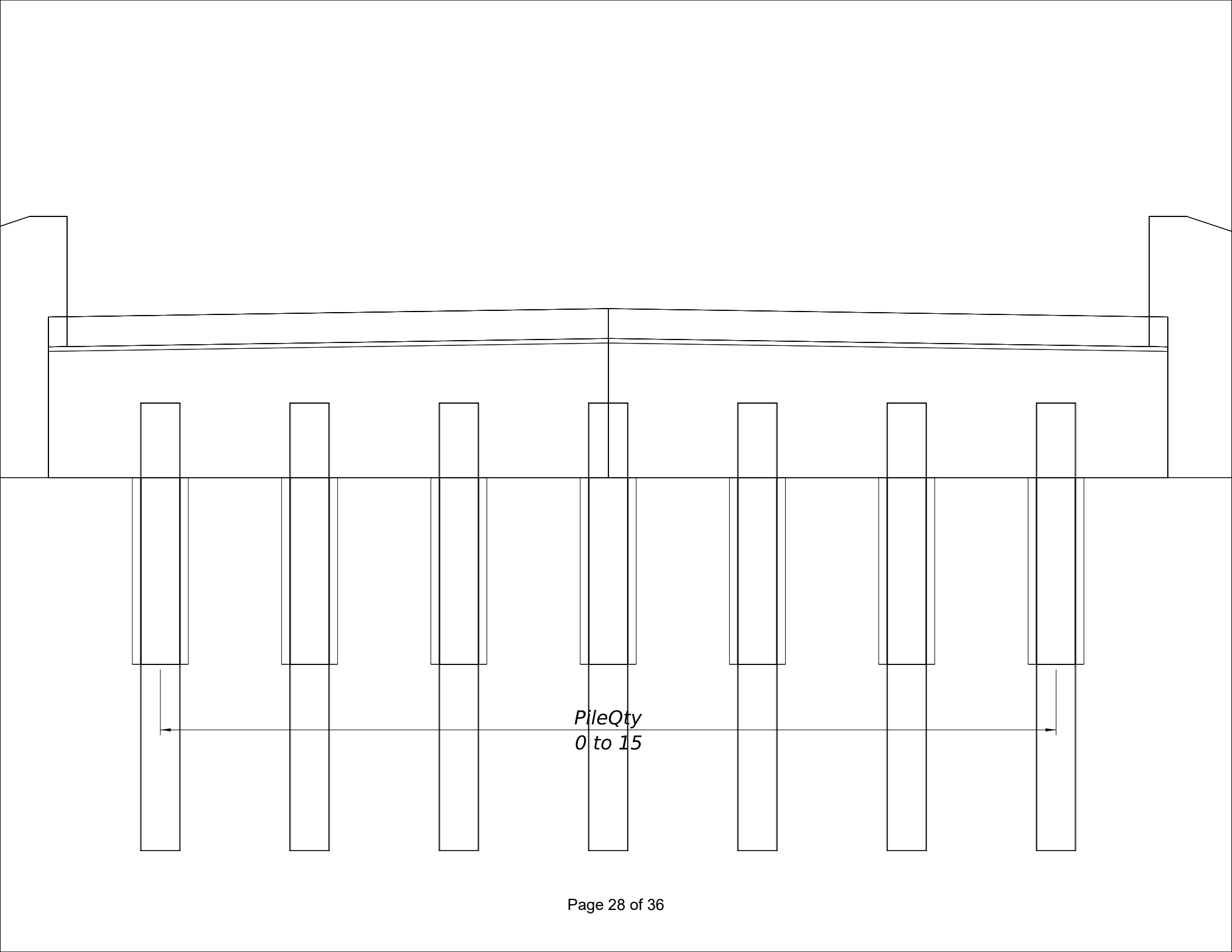






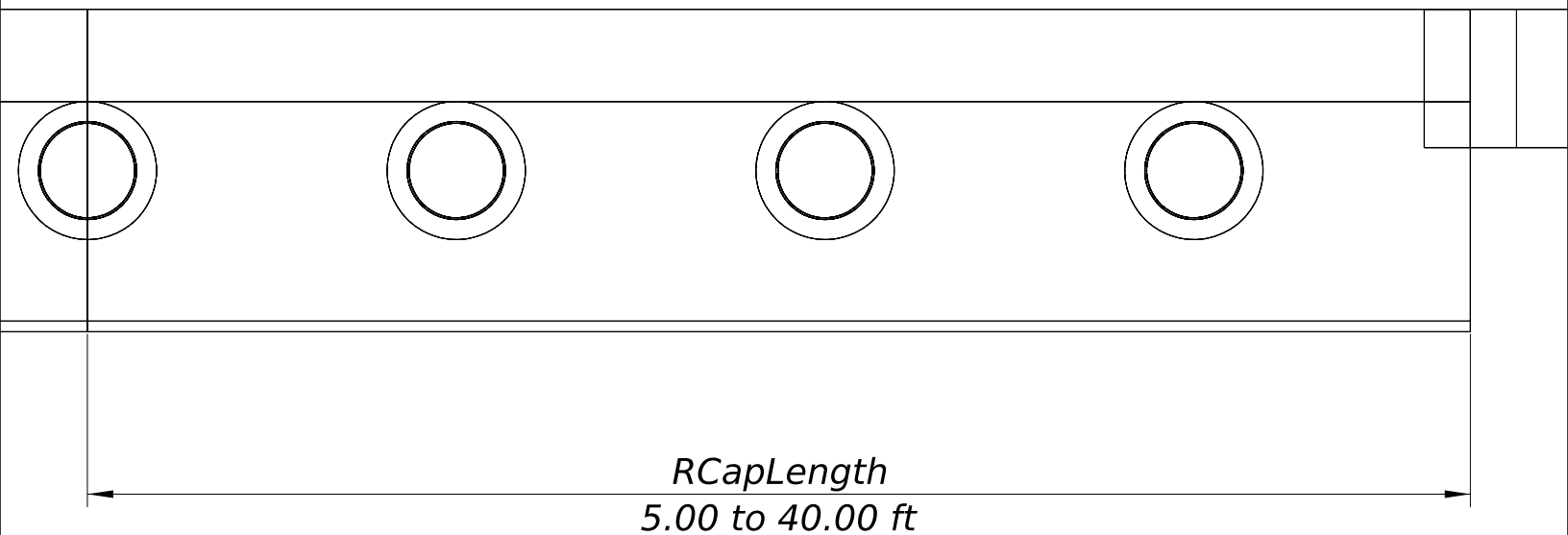




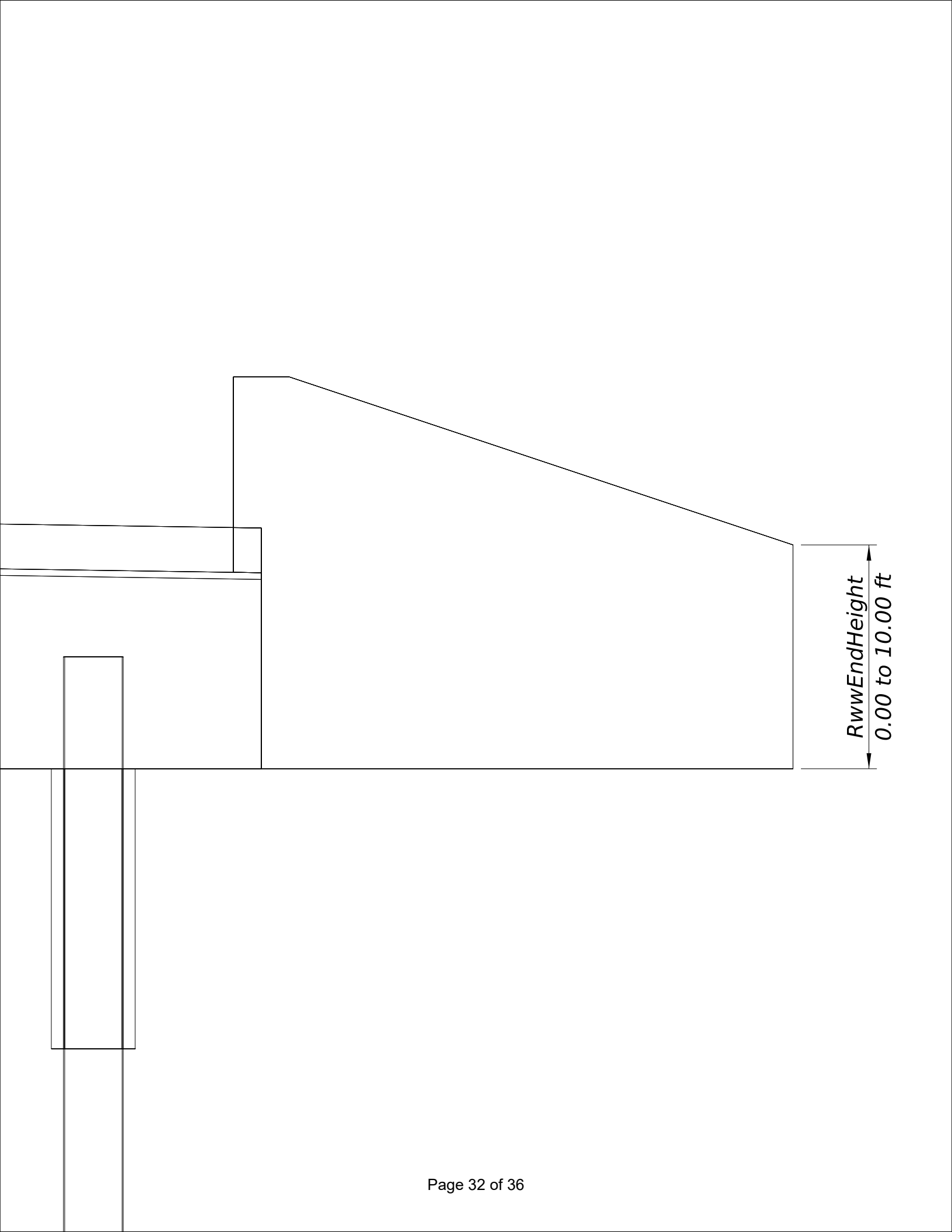


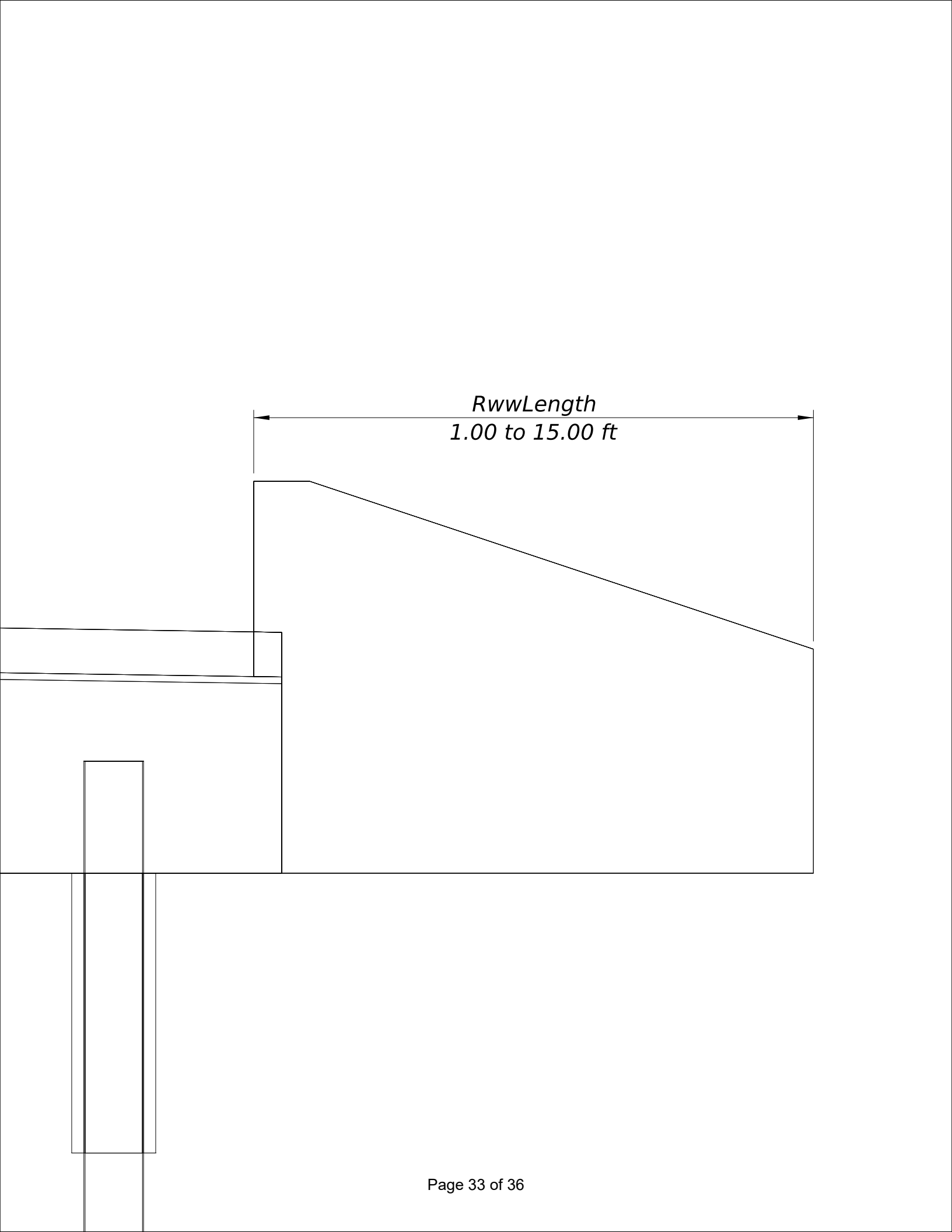
Value must be keyed in manually.

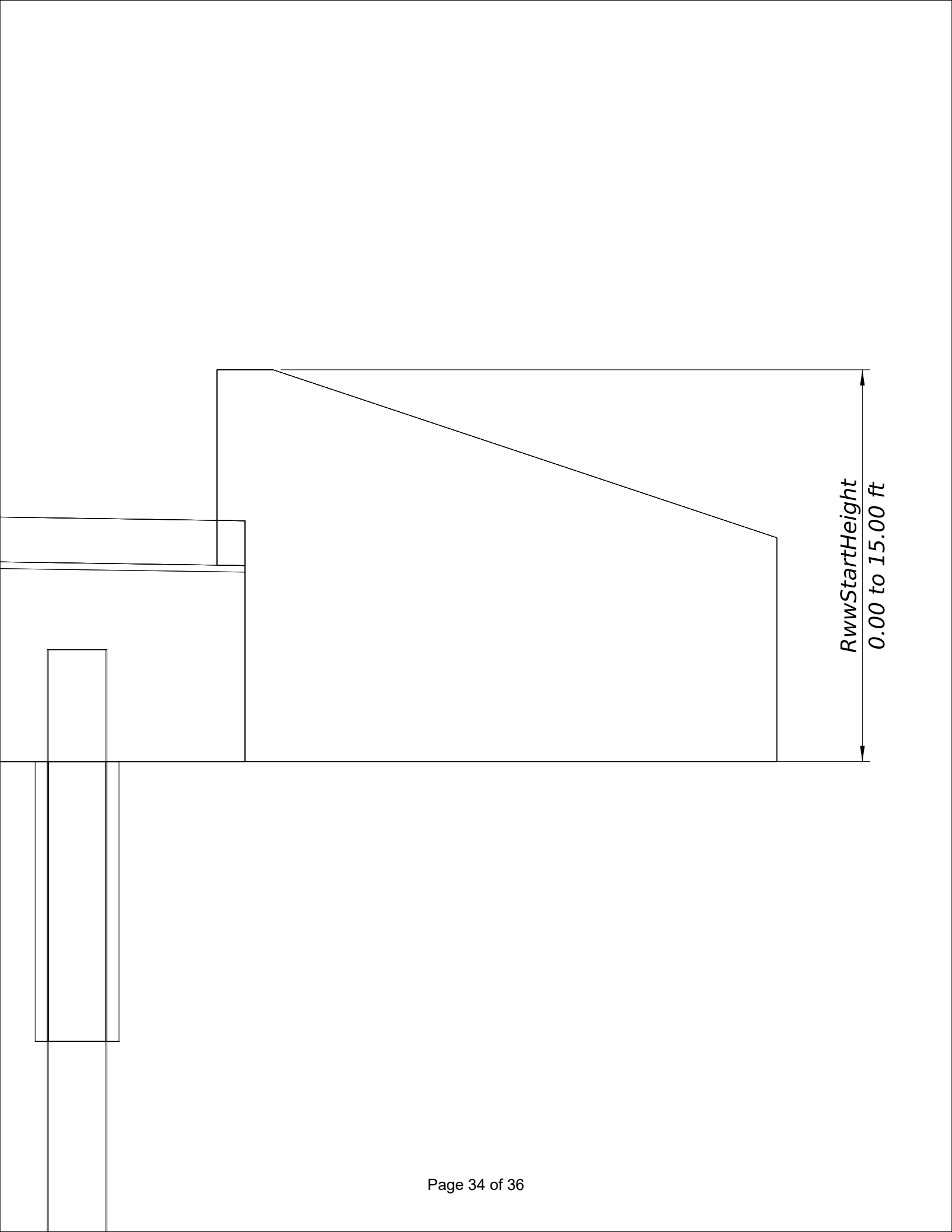
*PileType (None, HP-With CE, HP-Without CE,
MS-With CE, MS-Without CE, PC)*



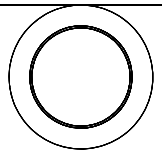
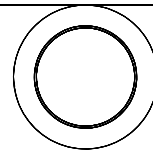
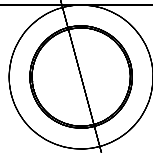
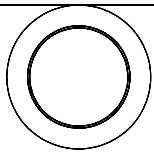
RTSlope
-8.00 to 8.00%







SkewAngle
-40.00 to 40.00



WingwallThick
0.50 to 3.00 ft

