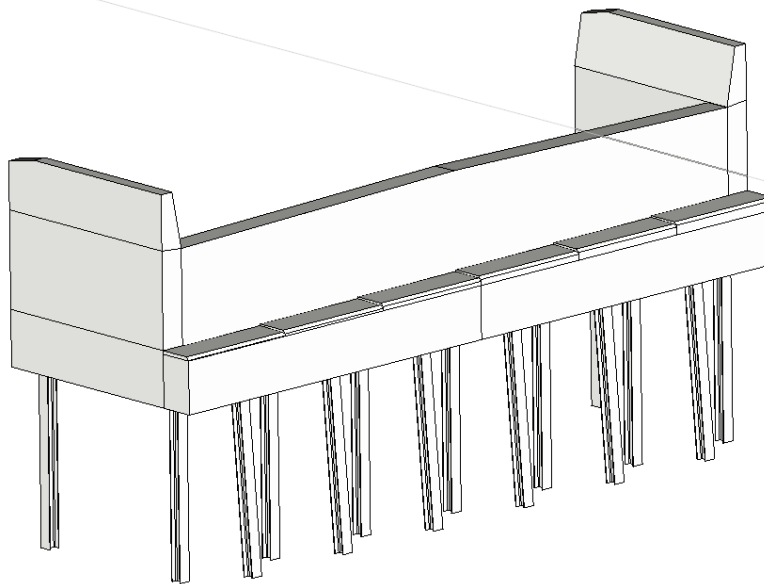




# Illinois Pile Stub Abutment

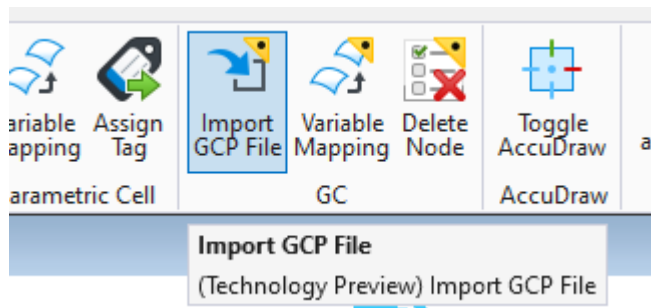
Generative Component for OpenBridge Modeler



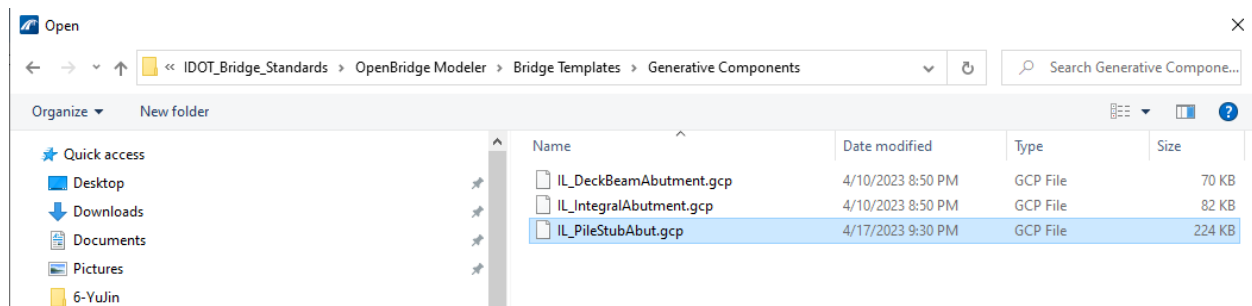
9-12-2023

## Illinois Pile Stub Abutment Generative Component Placement

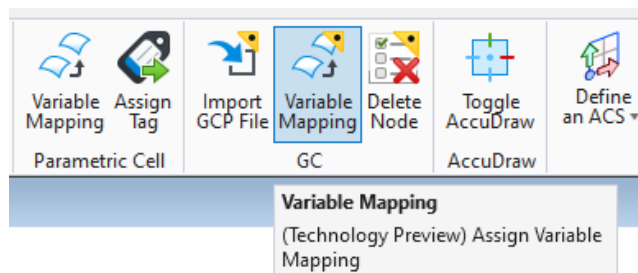
- 1) Open “OpenBridge Modeler Generative Components”.
- 2) Open the dgn containing your OBM 3D model.
- 3) From within the “OpenBridge Modeler” workflow, go to the “Utilities” tab and select “Import GCP File” within the “GC” group.



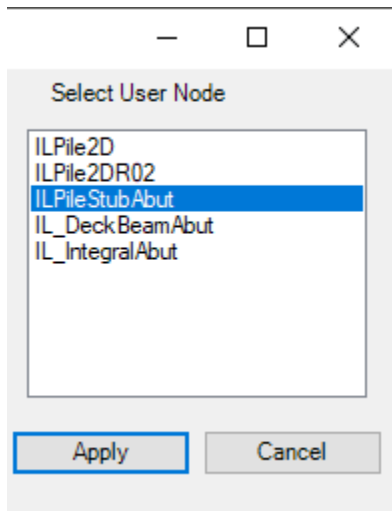
- 4) Map to “c:\IDOTCAD\_ORD\Configuration\ Organization-Civil\IDOT\_Bridge\_Standards\OpenBridge Modeler\Bridge Templates\Generative Components\” and select the file “IL\_PileStubAbut.gcp”.



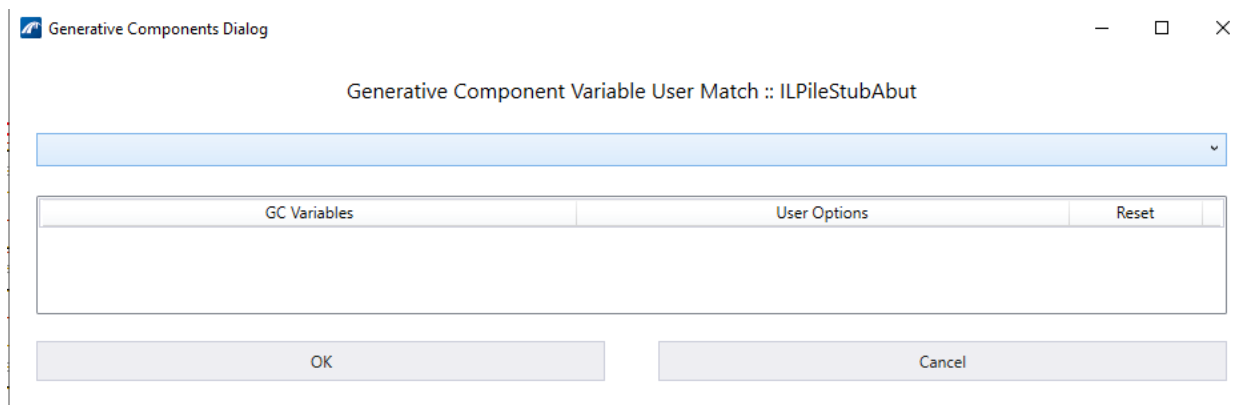
- 5) Click “Open”.
- 6) In the “GC” group, select “Variable Mapping”.



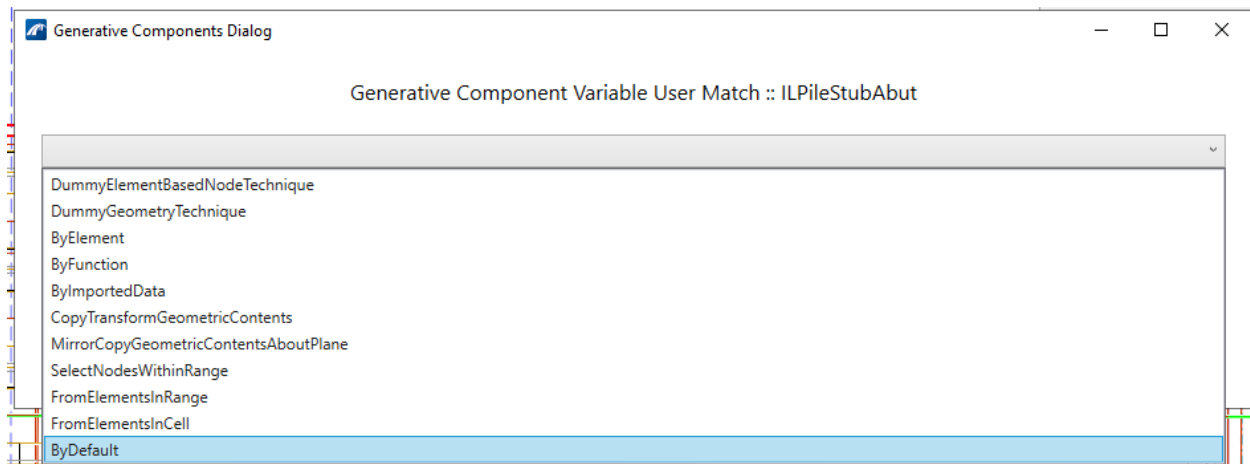
7) Select “IL\_PileStubAbut”, then “Apply”.



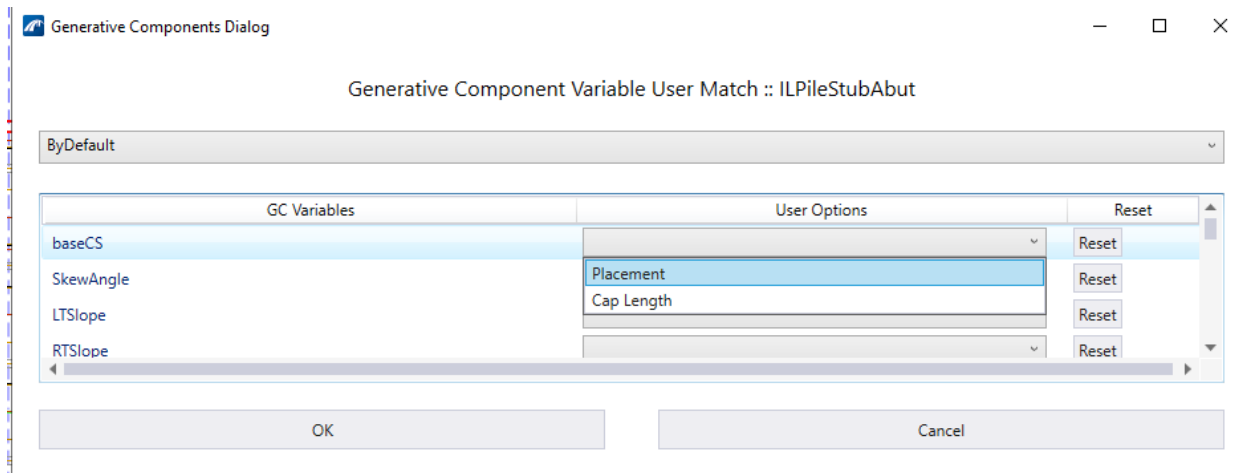
8) Select the top dropdown that appears empty.



9) Select “ByDefault”.

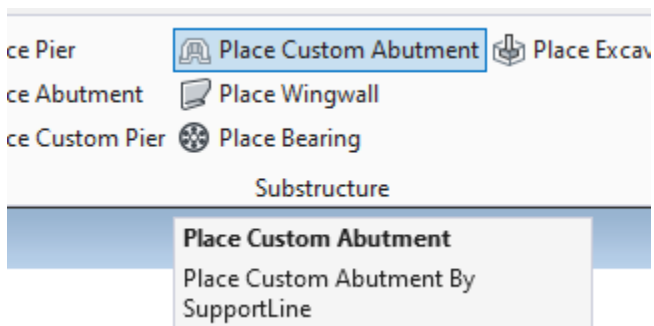


10) Select the “User Options” dropdown in the “baseCS” row and select “Placement”.

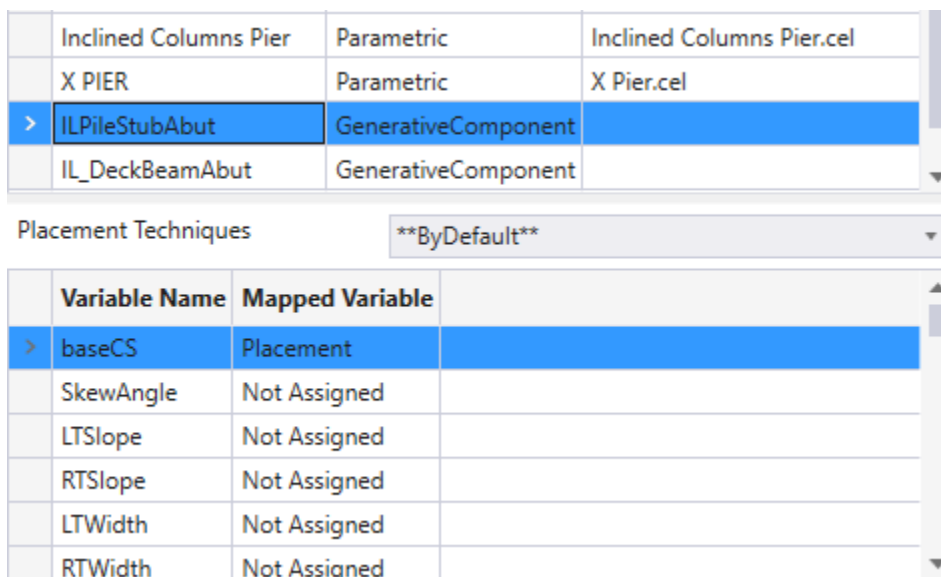


11) Select “OK”.

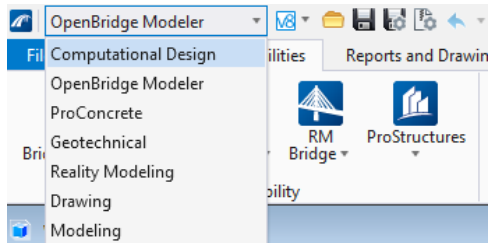
12) From within the “OpenBridge Modeler” workflow, select “Place Custom Abutment”.



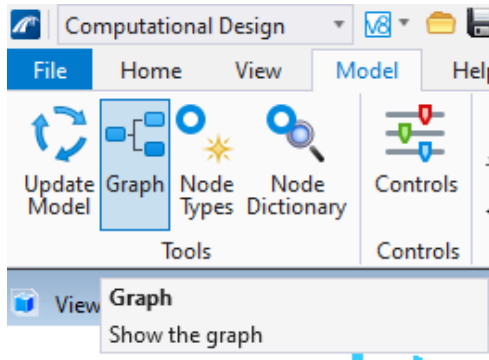
13) Ensure that the “Cell” attached is the ILPileStubAbut. If not, select it.



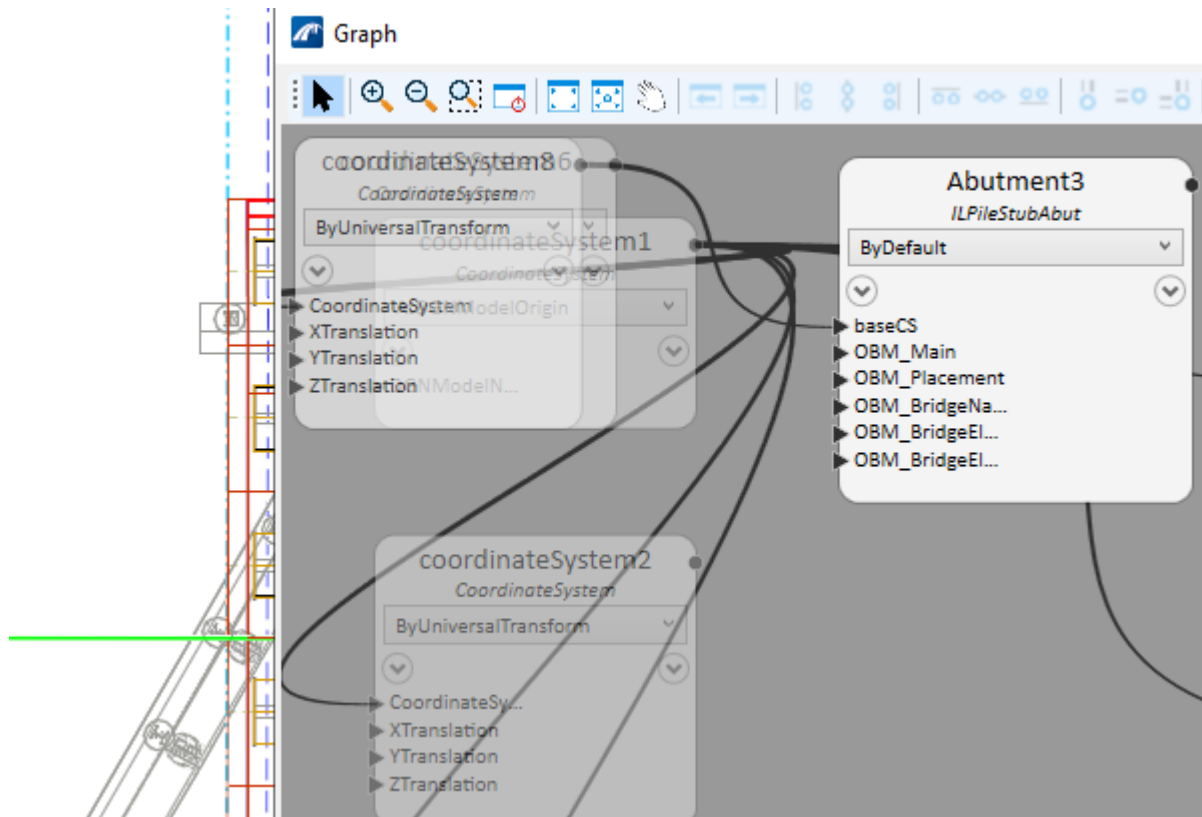
- 14) Edit the values in the “Place Custom Abutment” dialog.
- 15) Select appropriate “SupportLine” and then reset.
- 16) Once the Generative Components have been placed, the variables need to be modified.
- 17) Change to the “Computational Design” workflow.



- 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 “Abutment3”.



20) Double-clicking on the box for “Abutment3” will bring up the Node Properties dialog for that abutment. This is where the variable values must be changed. Pages 9 thru 73 of this document show what dimensions the variables refer to.

Node Properties

Abutment3
ILPileStubAbut
ByDefault

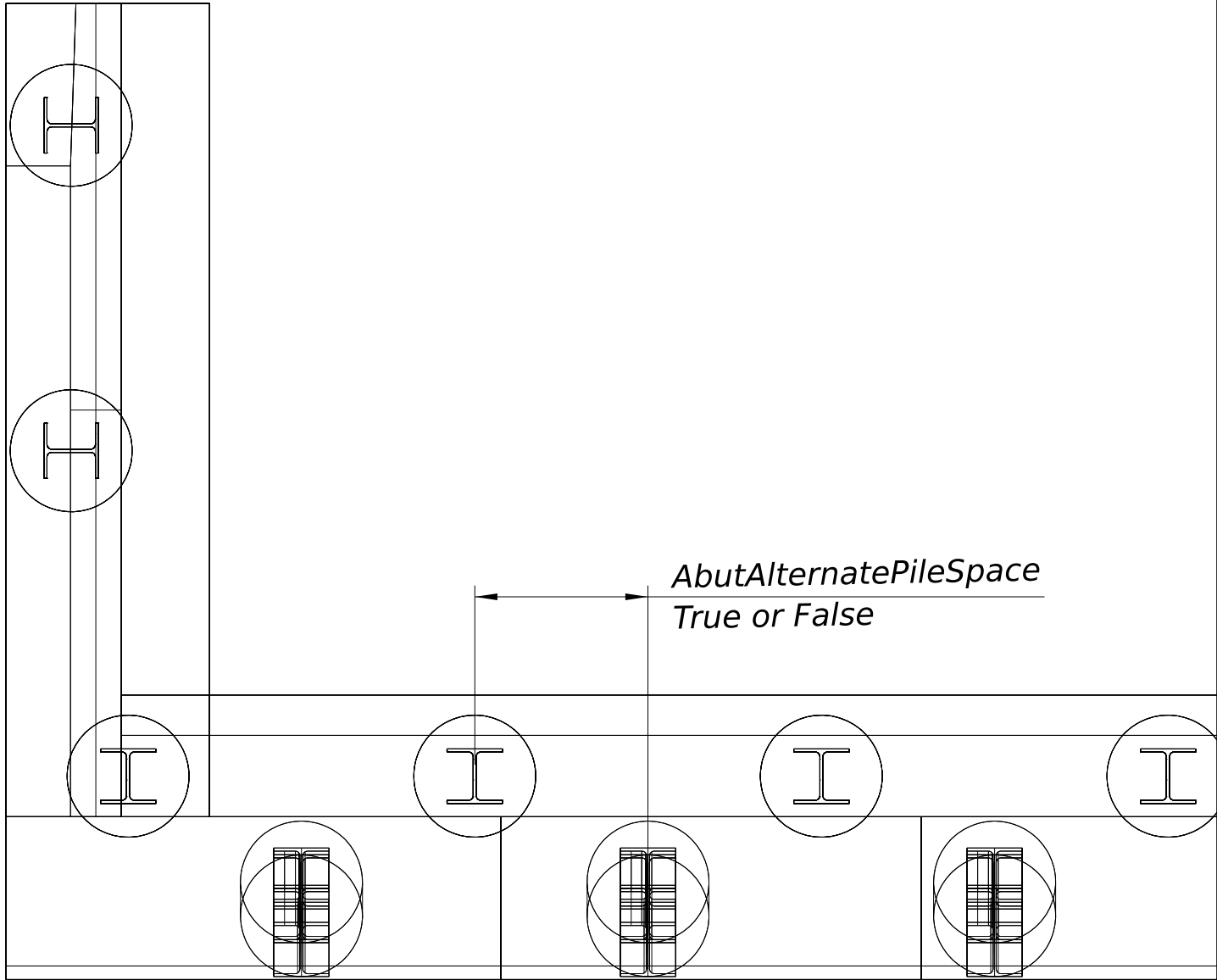
Node Information

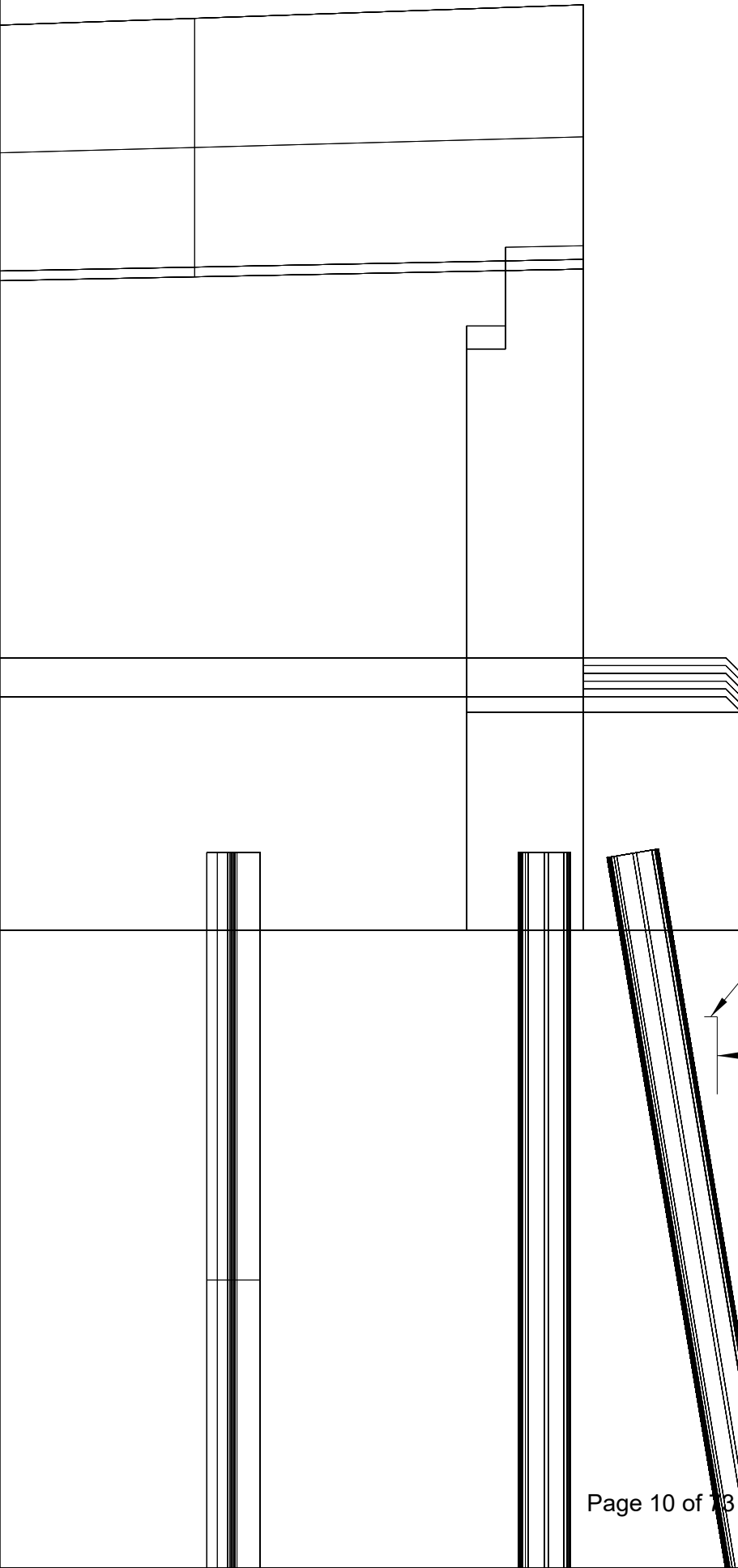
Technique Inputs

|                      |  |                                                             |
|----------------------|--|-------------------------------------------------------------|
| baseCS               |  | □ coordinateSystem8                                         |
| SkewAngle            |  | □ 30.0                                                      |
| LTSlope              |  | □ -2.0                                                      |
| RTSlope              |  | □ -2.0                                                      |
| LTWidth              |  | □ 15.0                                                      |
| RTWidth              |  | □ 15.0                                                      |
| FootingLength        |  | □ 3.5                                                       |
| BackwallThick        |  | □ 1.5                                                       |
| BackwallHeight       |  | □ 6.0                                                       |
| BackwallVOffset      |  | □ 1.0                                                       |
| BackwallHOffset      |  | □ 0.5                                                       |
| BearingStepQty       |  | □ 6                                                         |
| EdgeStepOffset       |  | □ 3.5                                                       |
| BearingStepThick     |  | □ {0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.9, 1.0, 1.1, 1.2, 1.3, : |
| Corbel               |  | □                                                           |
| CorbelVerticalOffset |  | □ 1.0                                                       |
| CorbelDepth          |  | □ 0.8                                                       |
| CorbelWidth          |  | □ 0.6                                                       |
| CorbelSlopeDepth     |  | □ 0.6                                                       |
| ParapetType          |  | □ 39                                                        |
| ParapetBottomW       |  | □ 1.41666666666667                                          |
| WwCornerWidth        |  | □ 0.3                                                       |
| LwwLength            |  | □ 10.0                                                      |
| RwwLength            |  | □ 10.0                                                      |
| FootingMinThick      |  | □ 3.0                                                       |
| LwwExtendFootingW    |  | □ 2.5                                                       |
| RwwExtendFootingW    |  | □ 2.5                                                       |
| LShoulderSlope       |  | □ -2.0                                                      |
| RShoulderSlope       |  | □ -2.0                                                      |
| LeftShoulderWidth    |  | □ 2.0                                                       |
| RightShoulderWidth   |  | □ 2.0                                                       |
| BridgeAxesSlope      |  | □ -2.0                                                      |

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

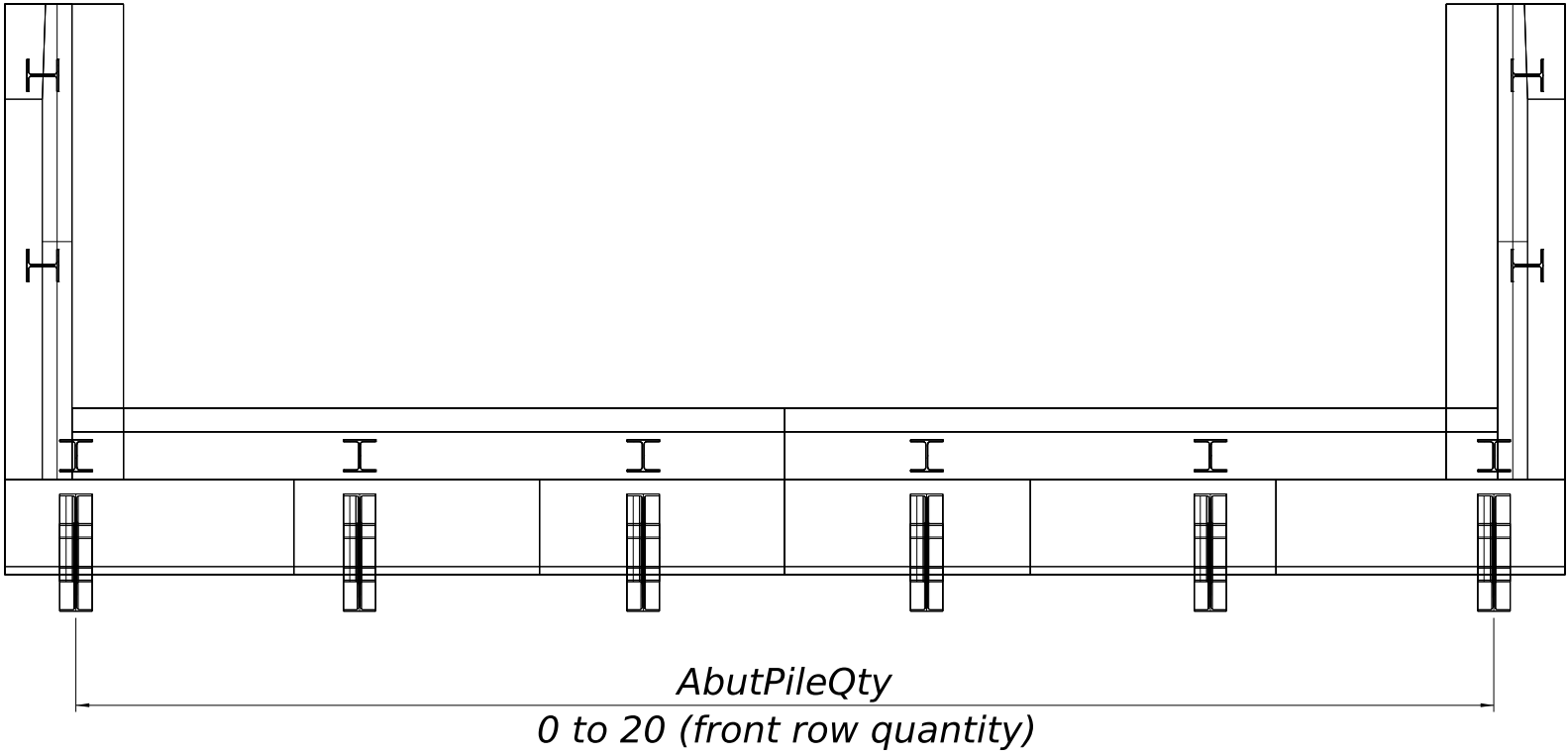


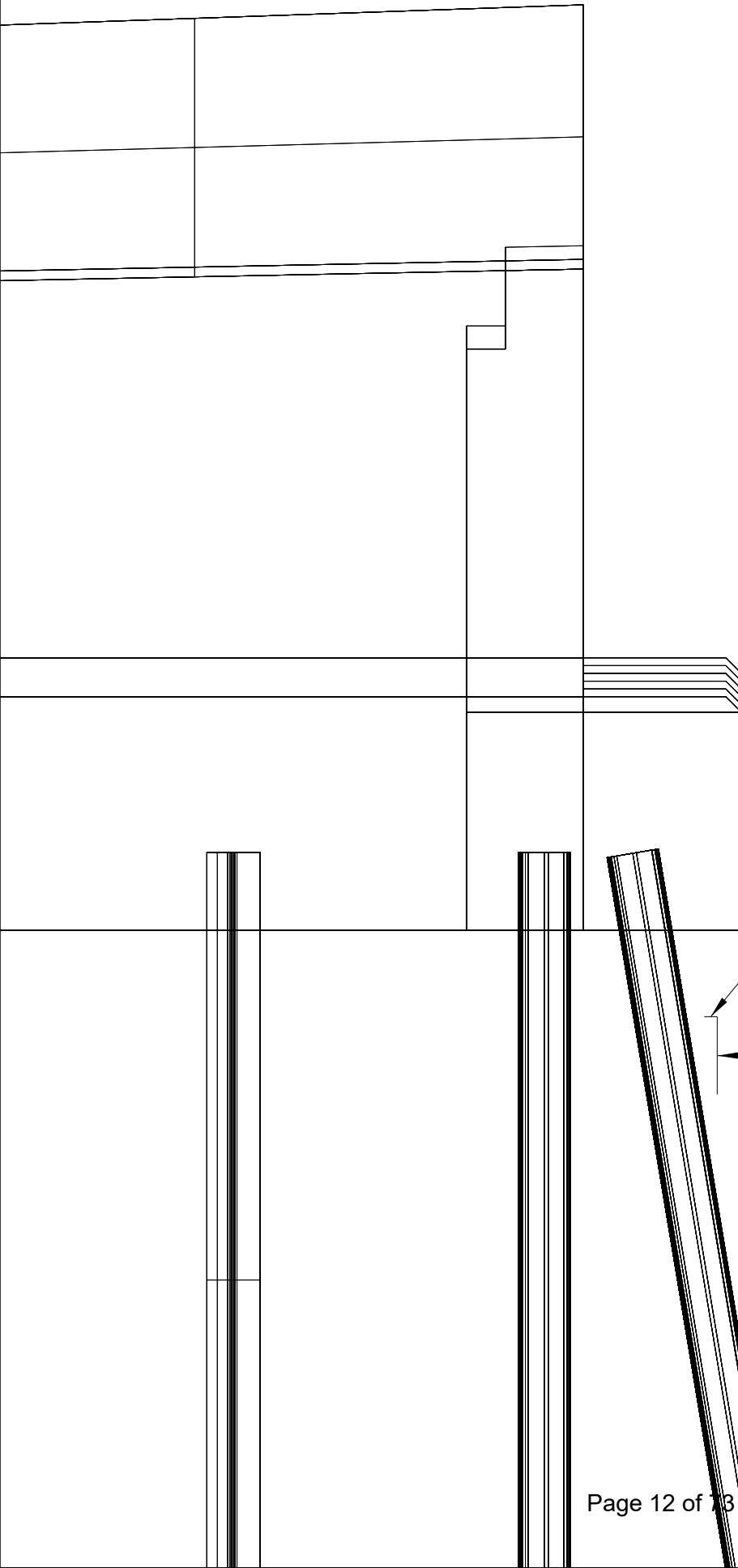




*AbutPileHBatter*  
0 to 5 in.

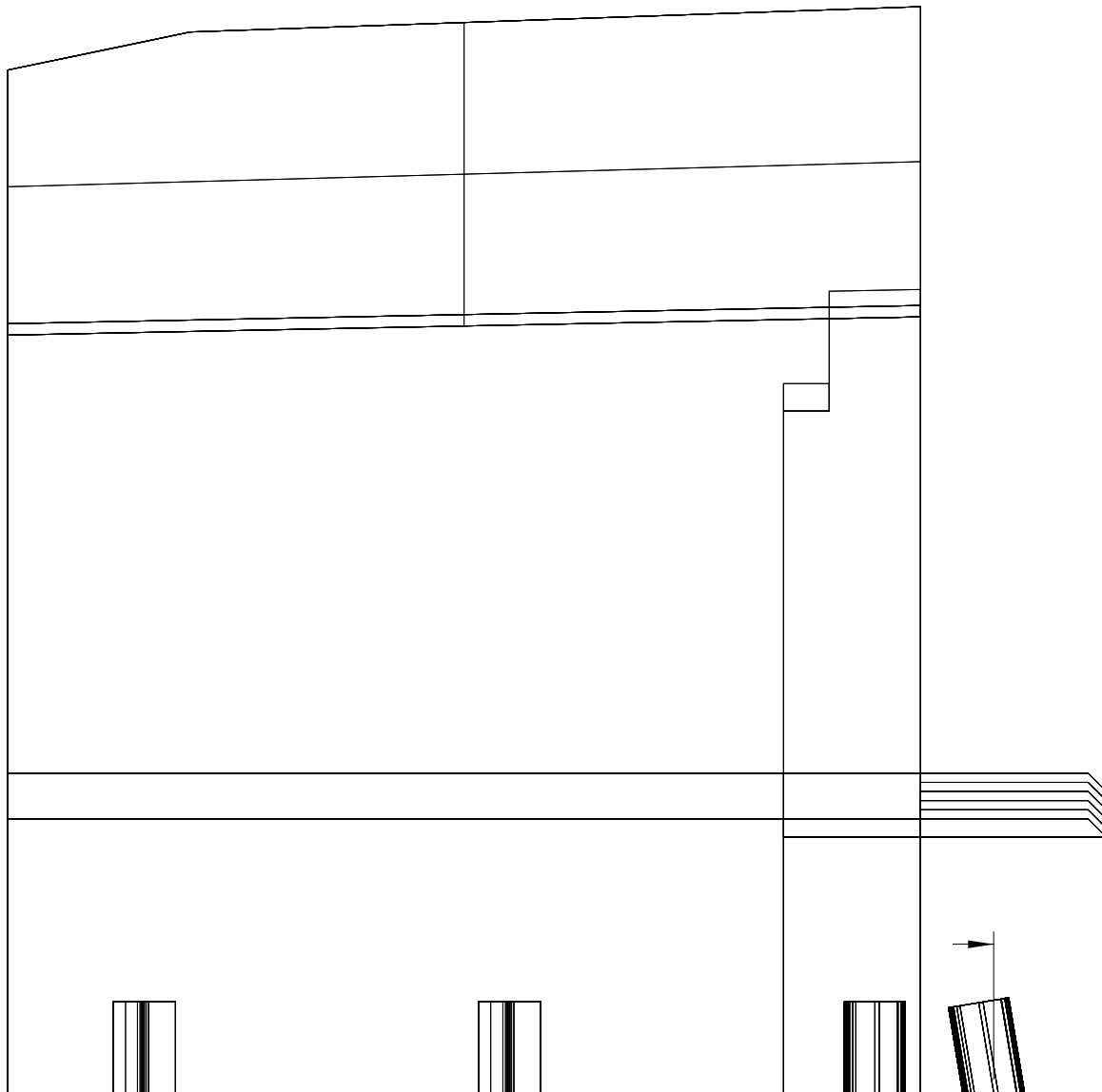
*AbutPileVBatter*  
0 to 15 in.



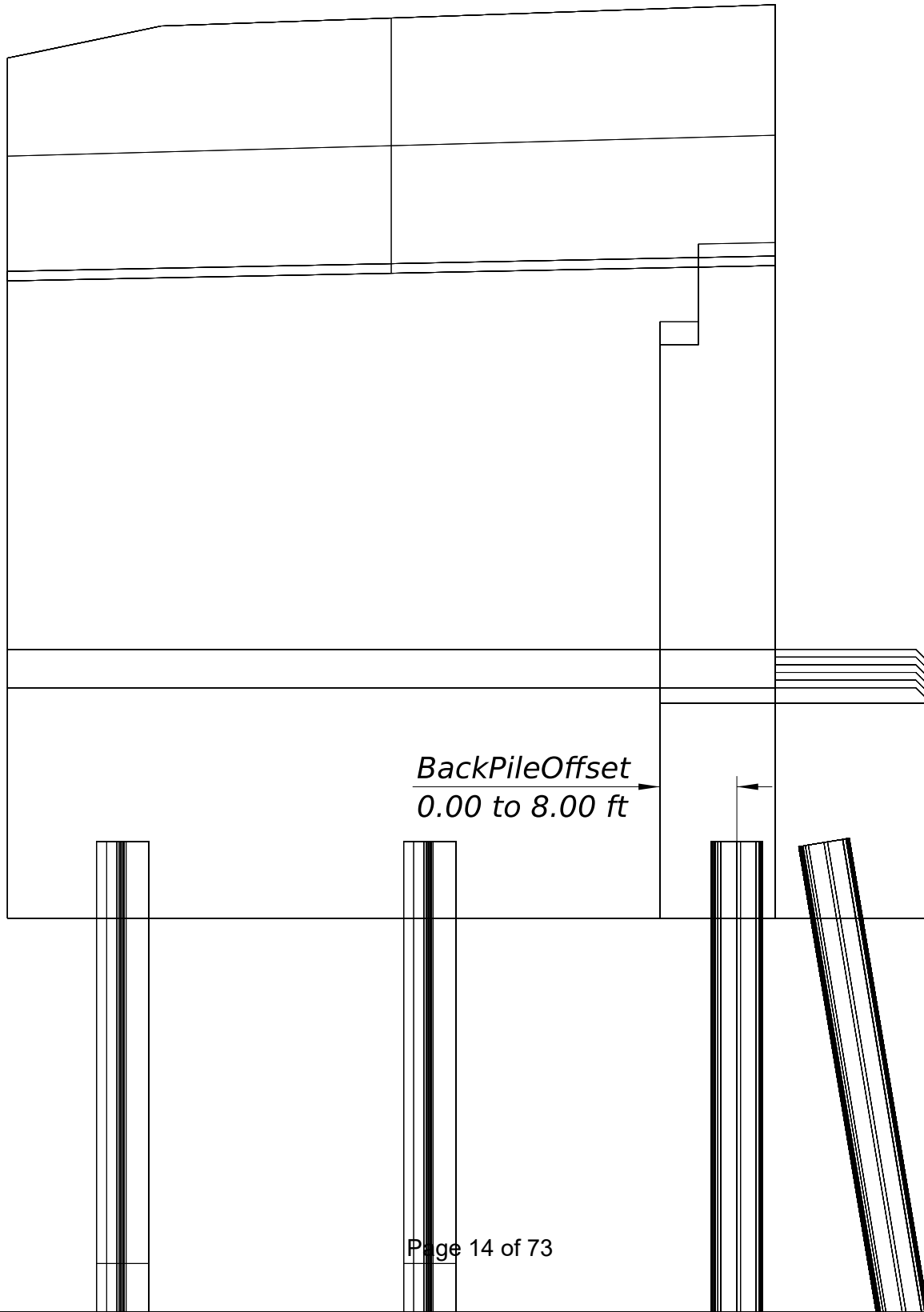


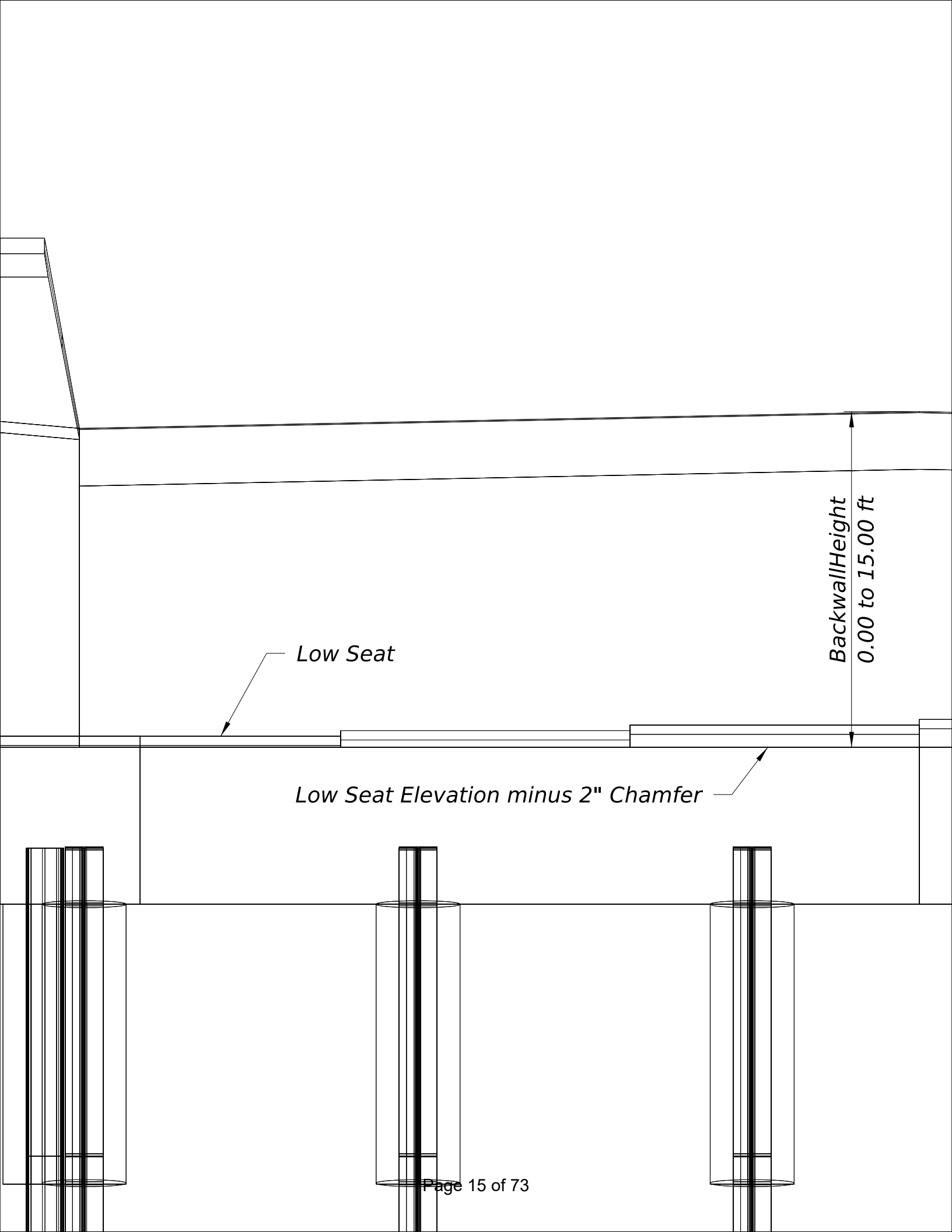
*AbutPileHBatter*  
0 to 5 in.

*AbutPileVBatter*  
0 to 15 in.



*AheadPileOffset*  
*0.00 to 8.00 ft*

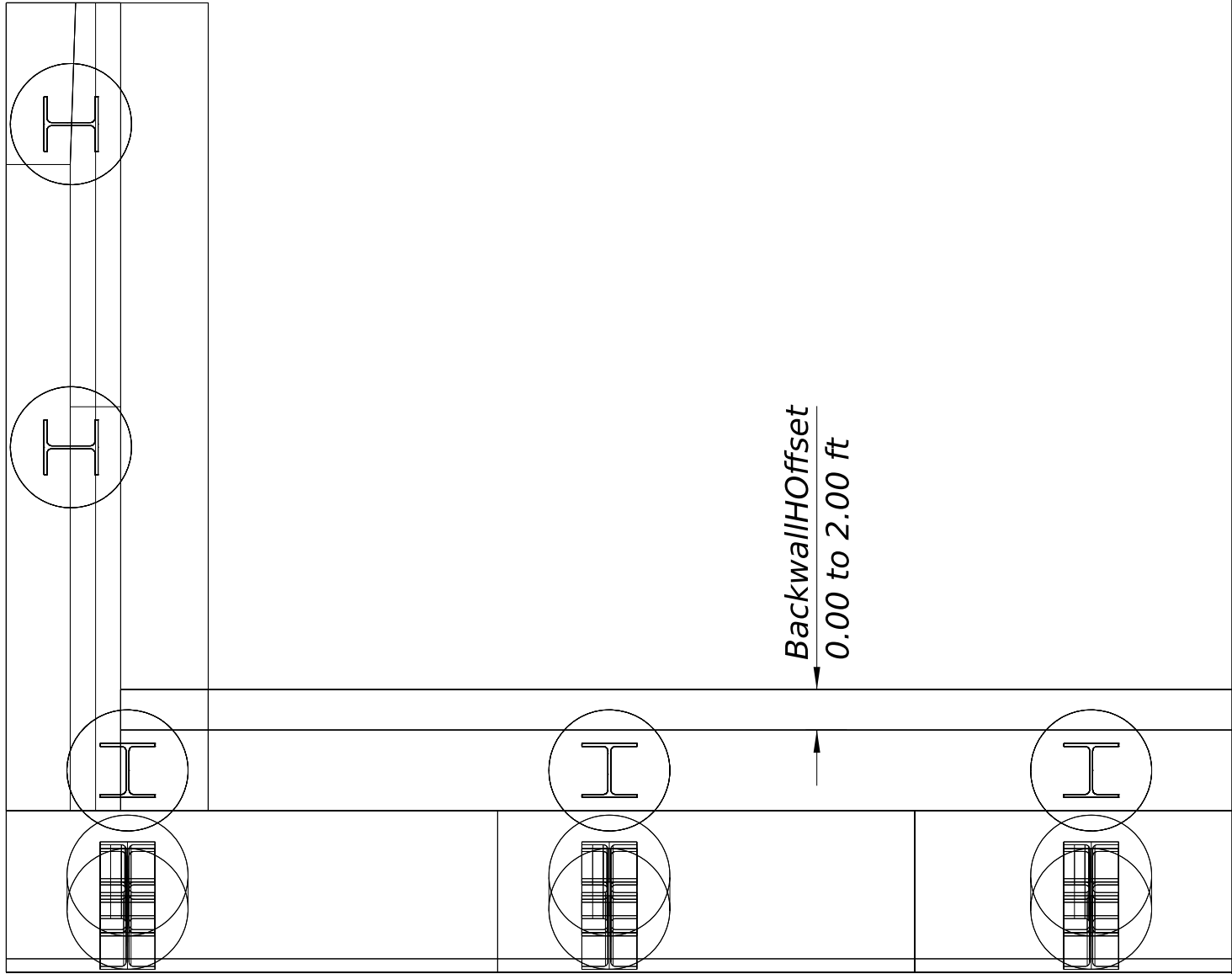




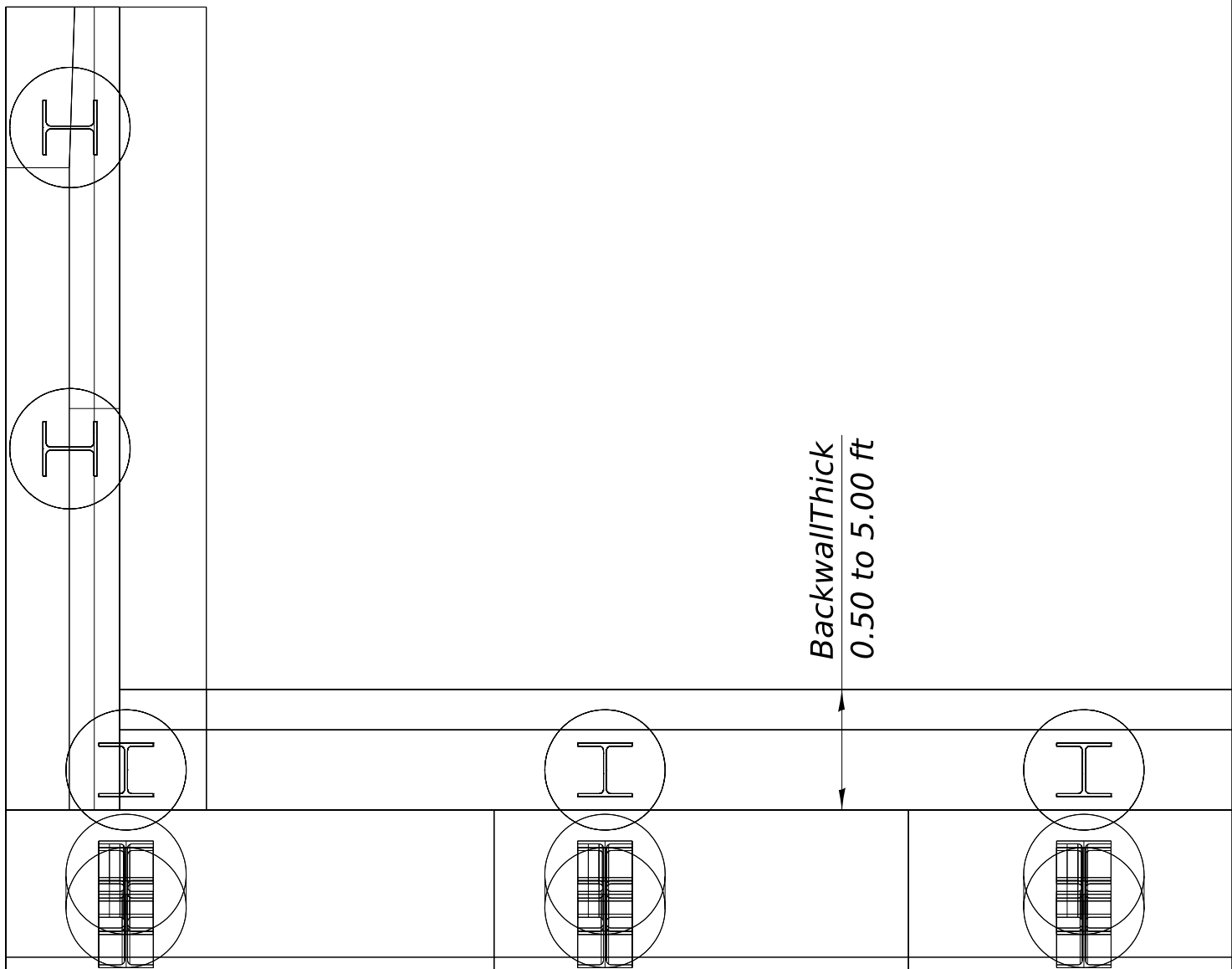
*Low Seat*

*BackwallHeight  
0.00 to 15.00 ft*

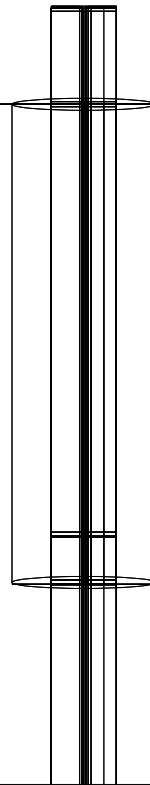
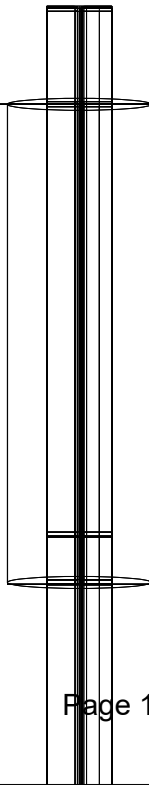
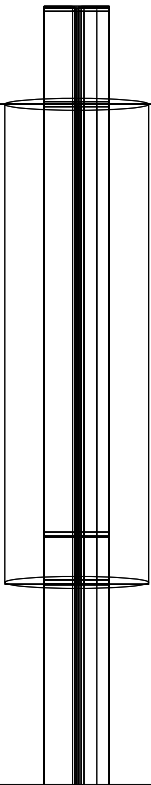
*Low Seat Elevation minus 2" Chamfer*



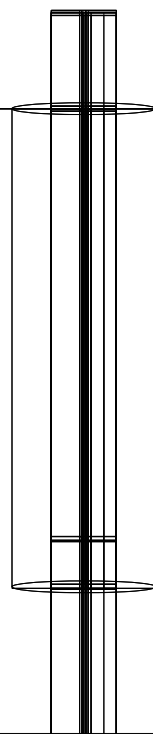
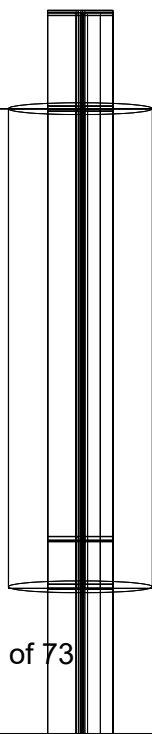
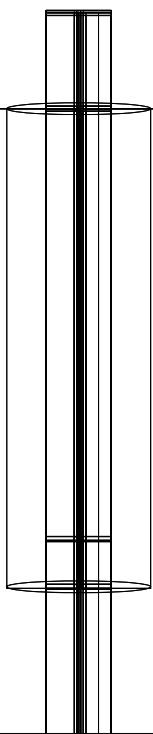


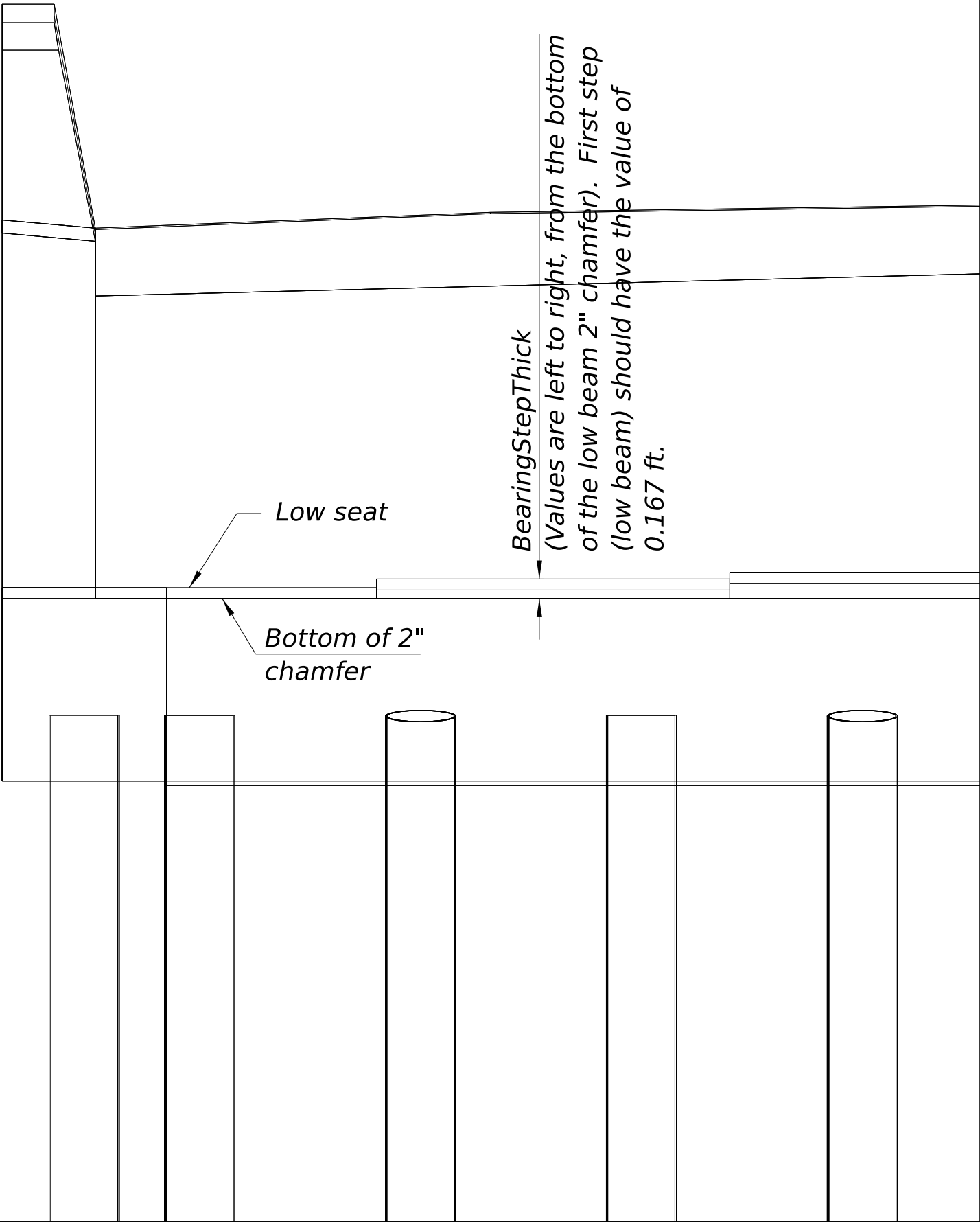


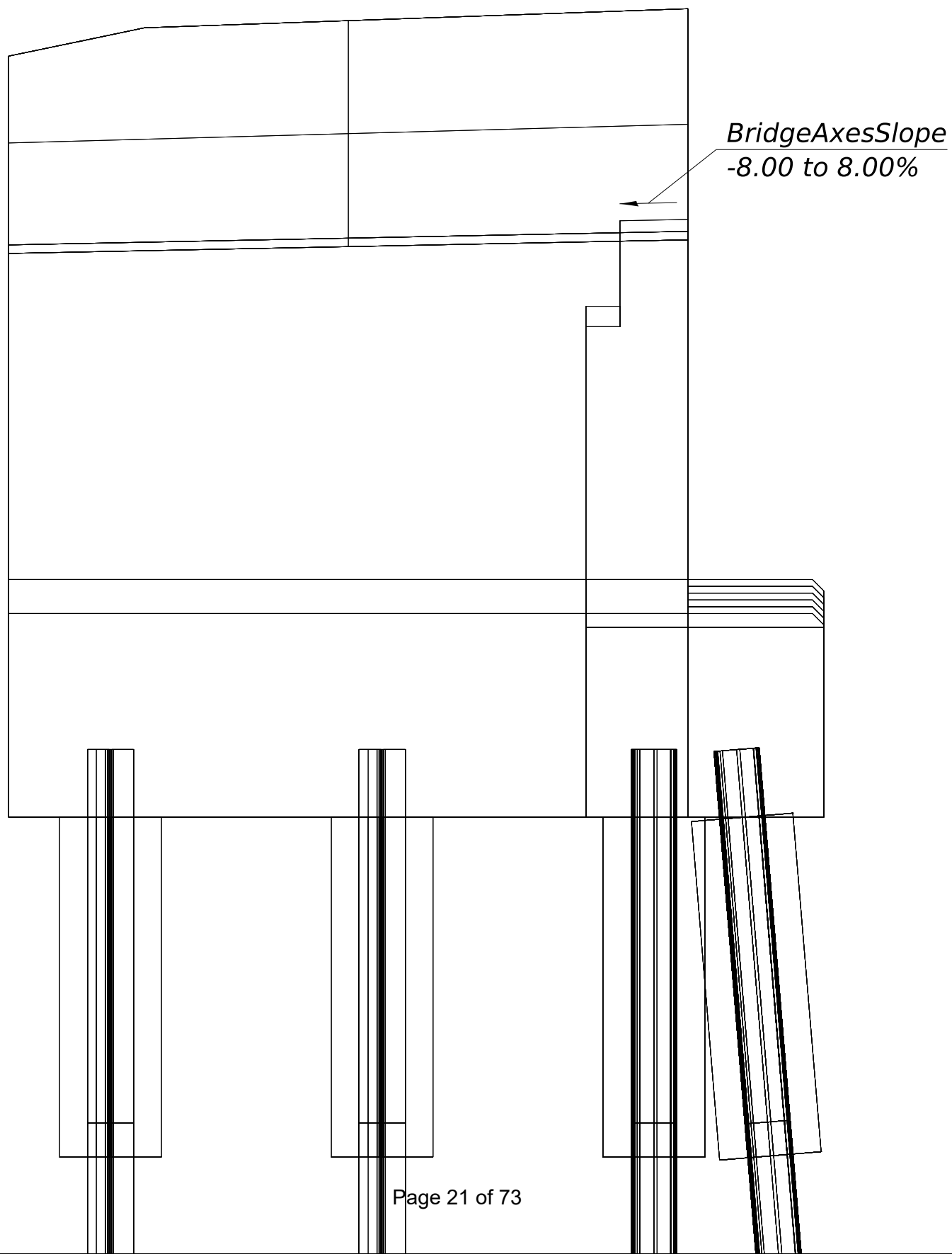
Backwall\Offset  
0.00 to 4.00 ft

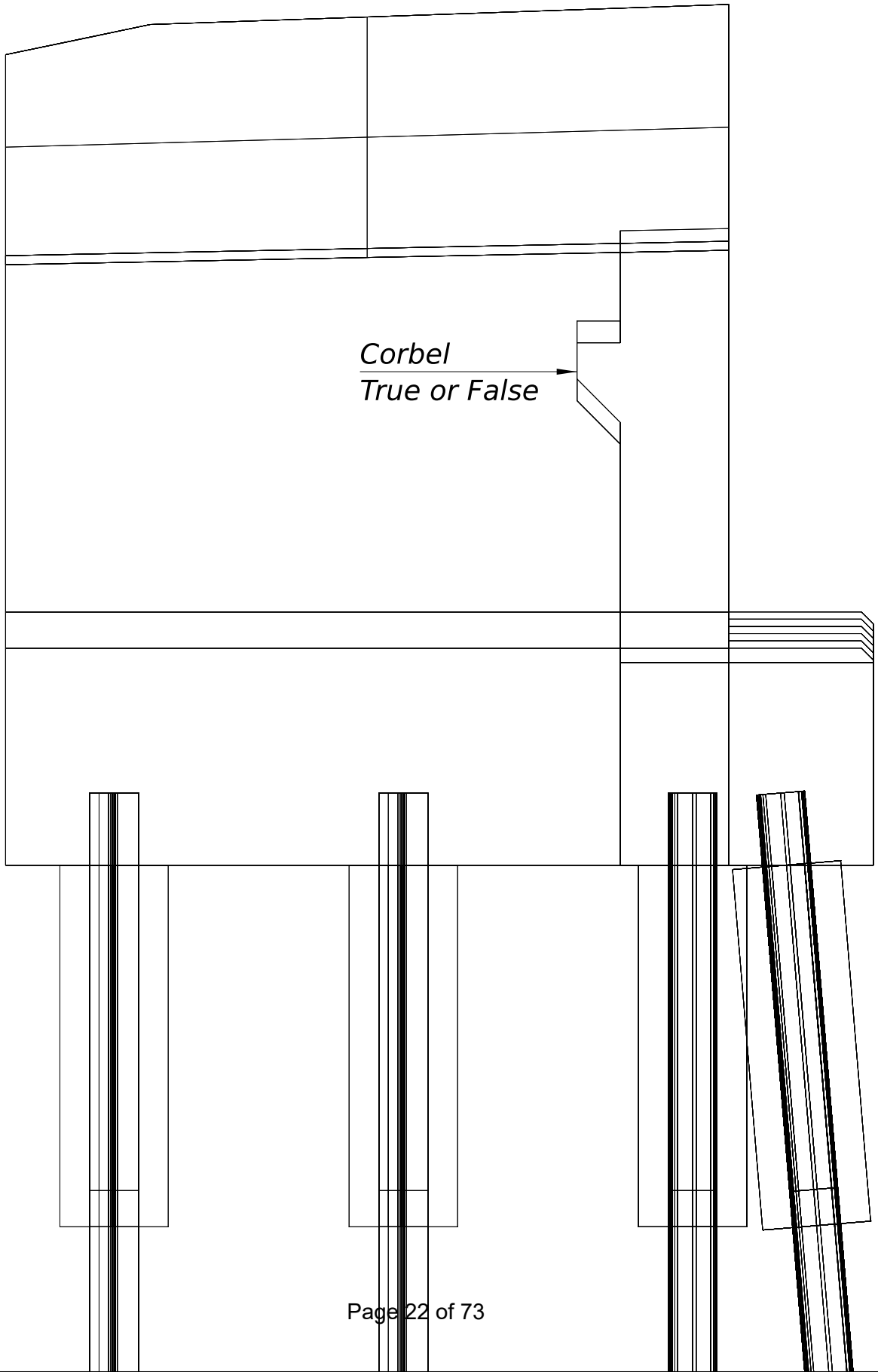


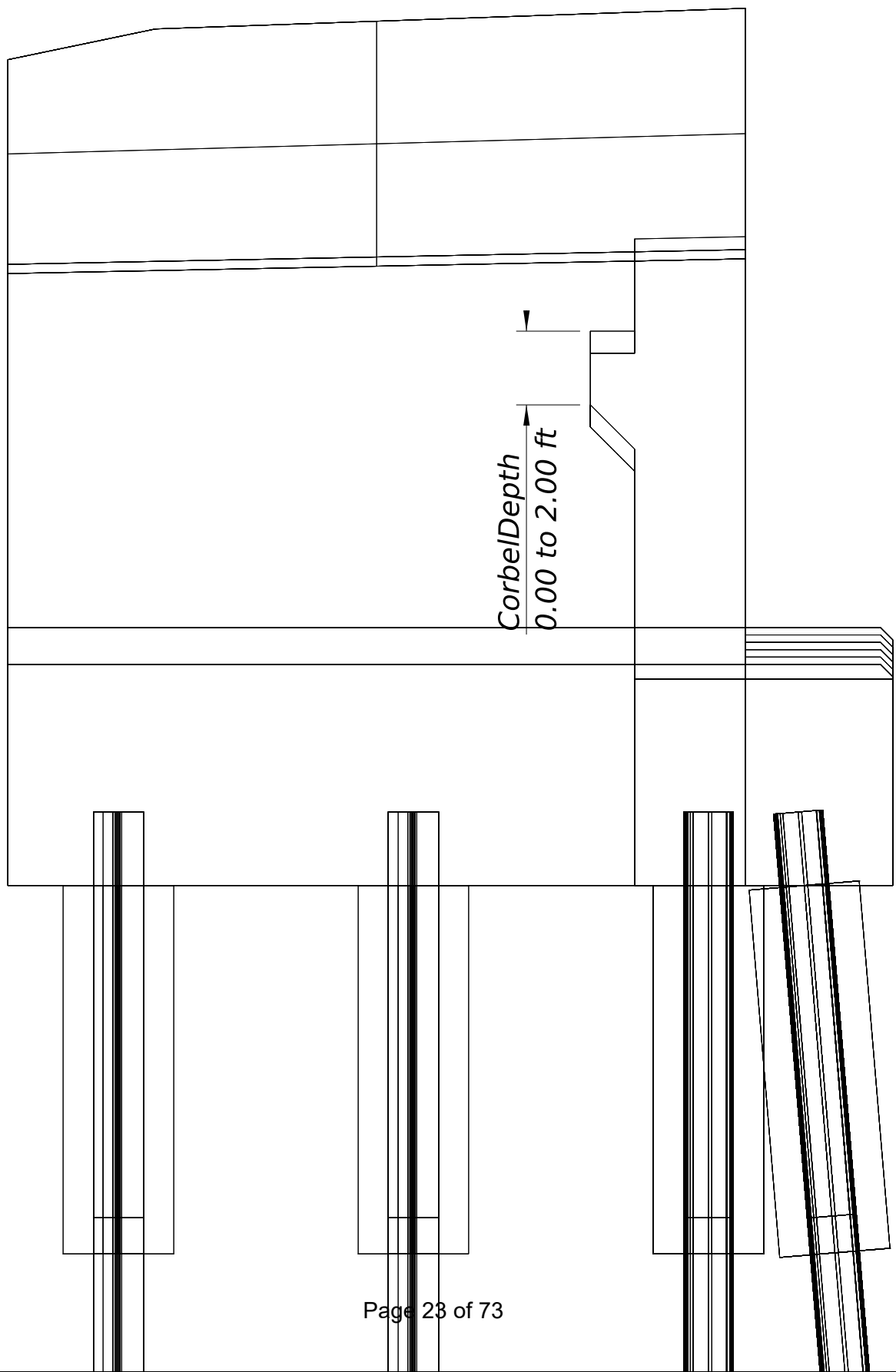
*Bearing step quantity*  
*2 to 20*

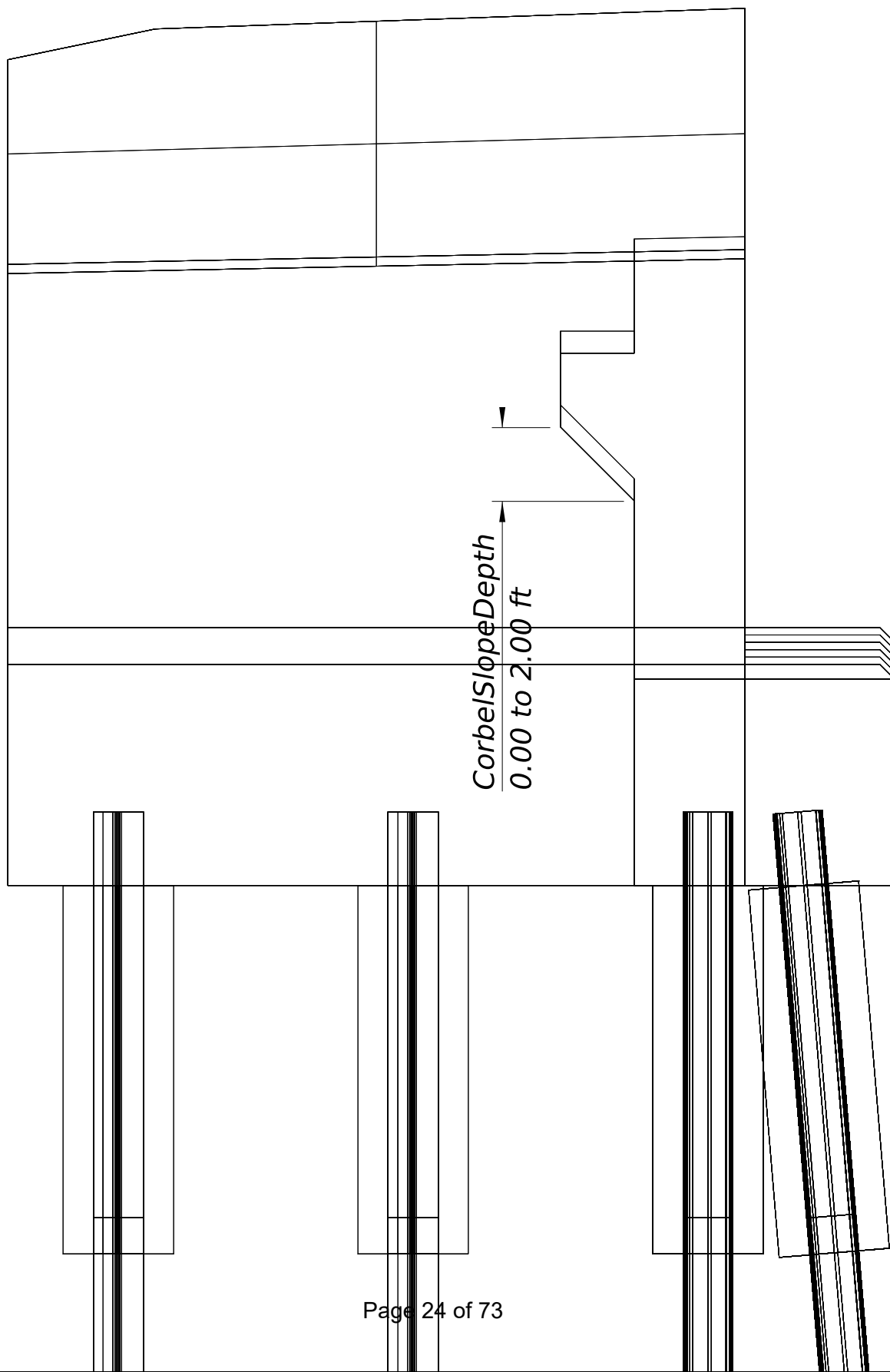






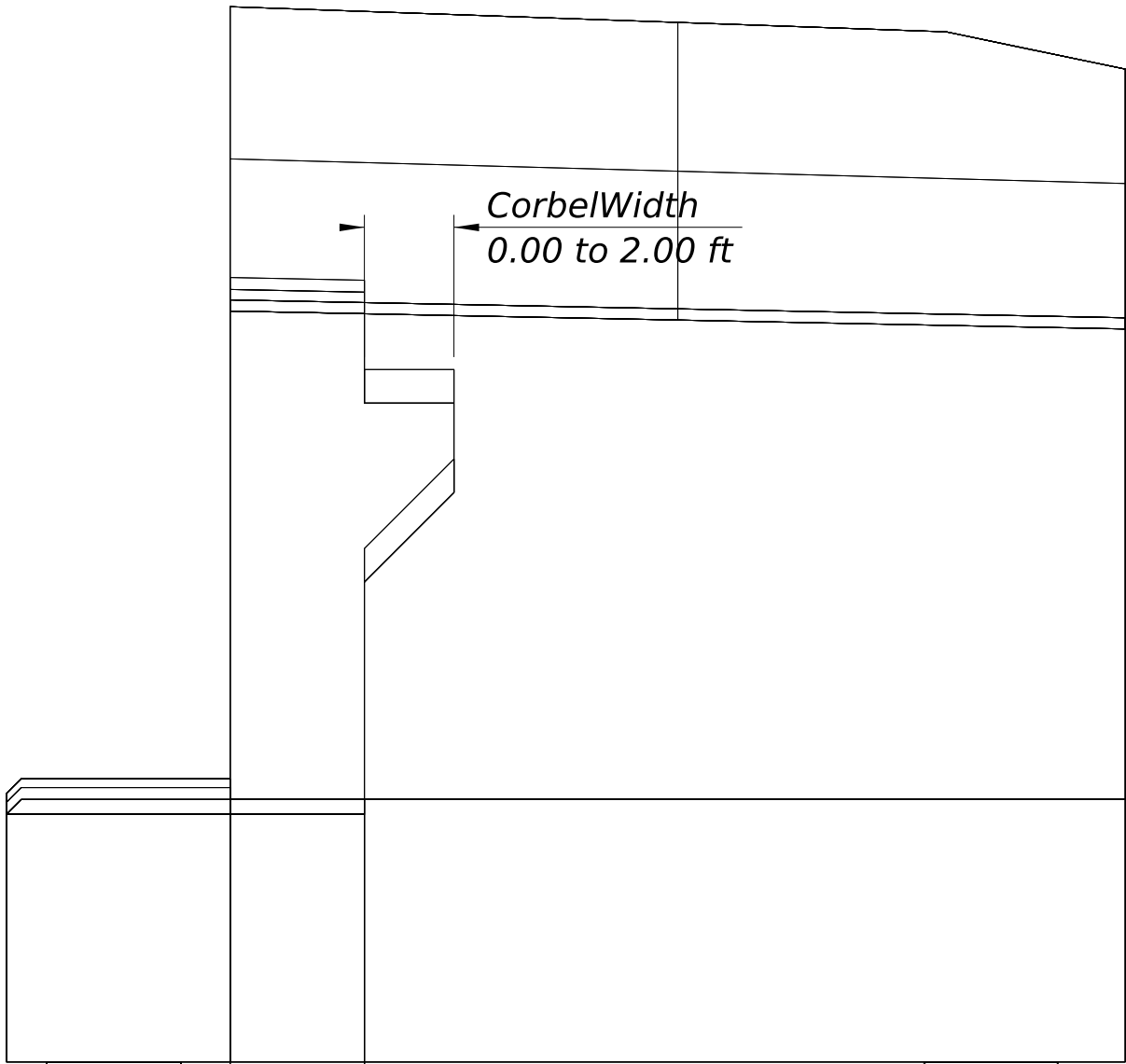




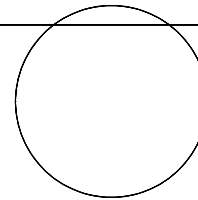
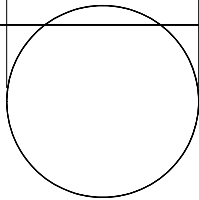


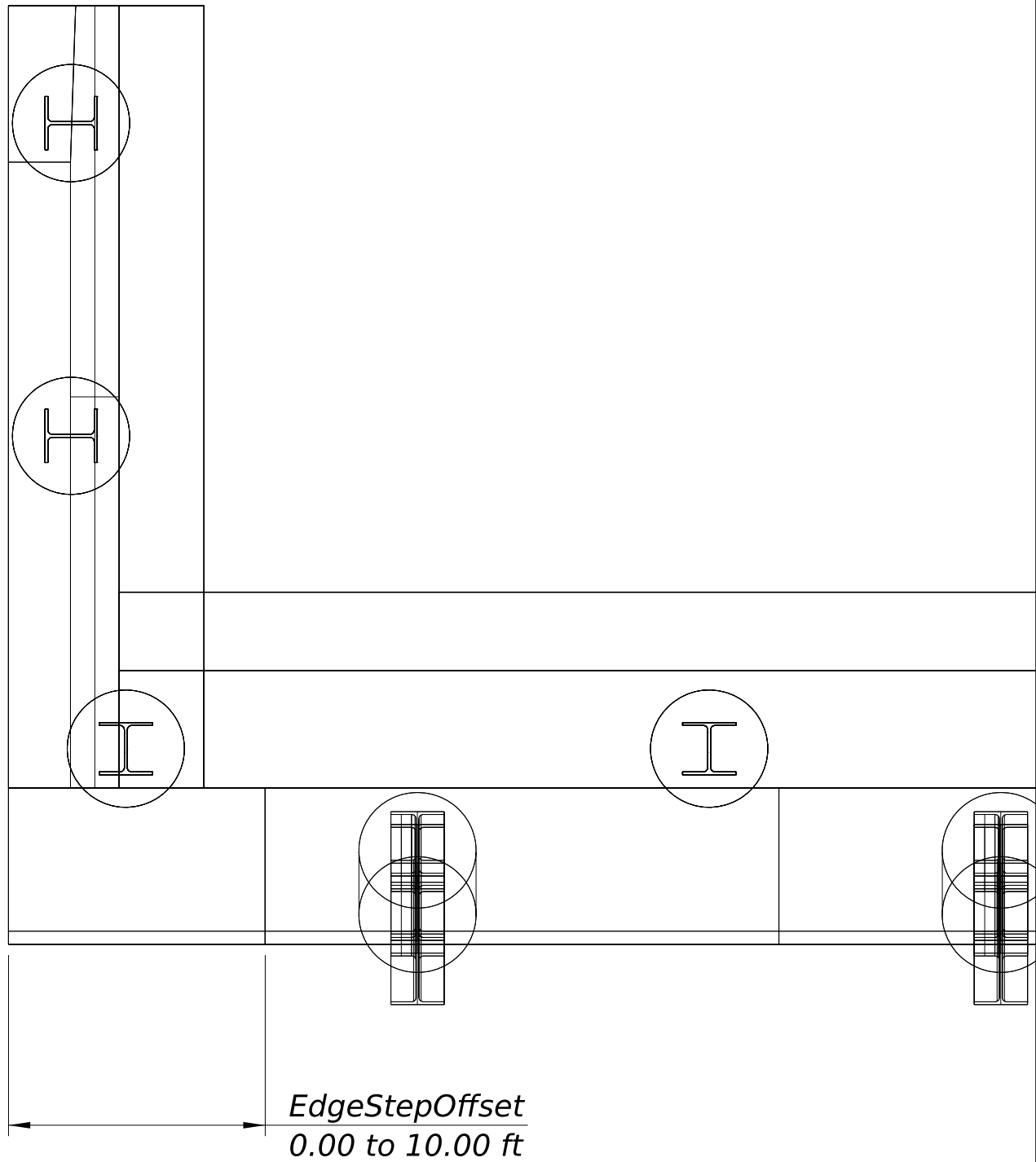
Corbel/SlopeDepth  
0.00 to 2.00 ft

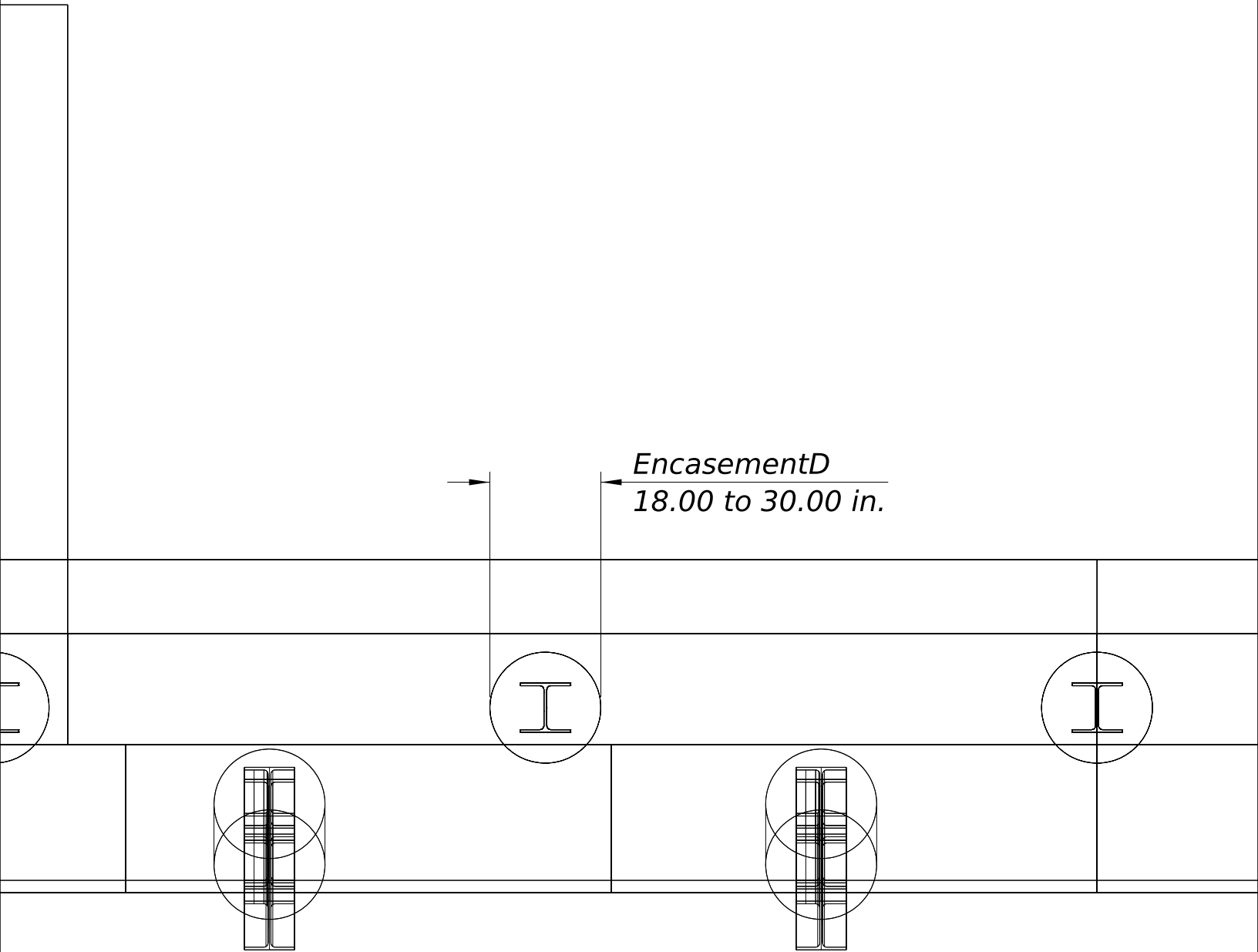


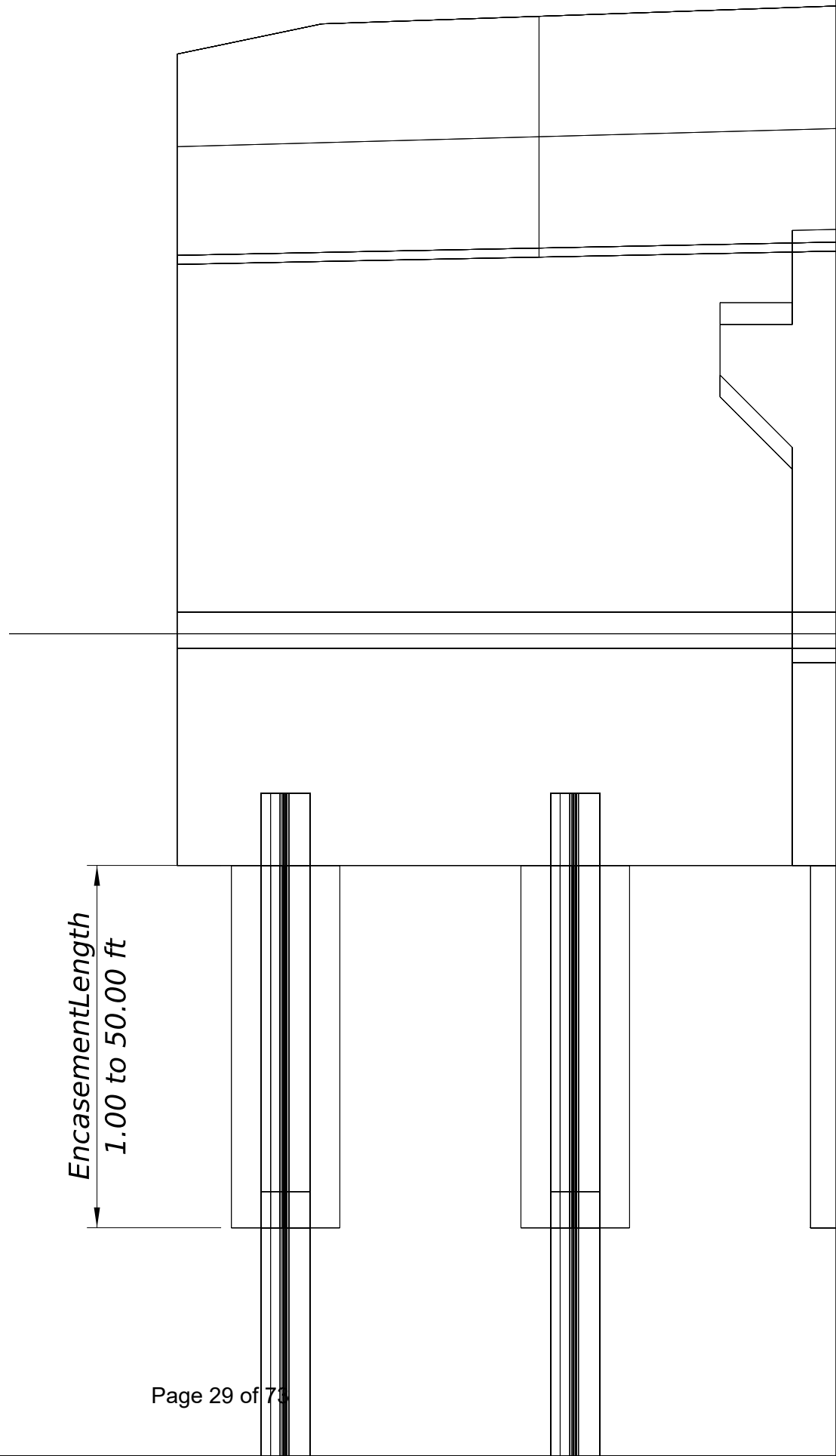


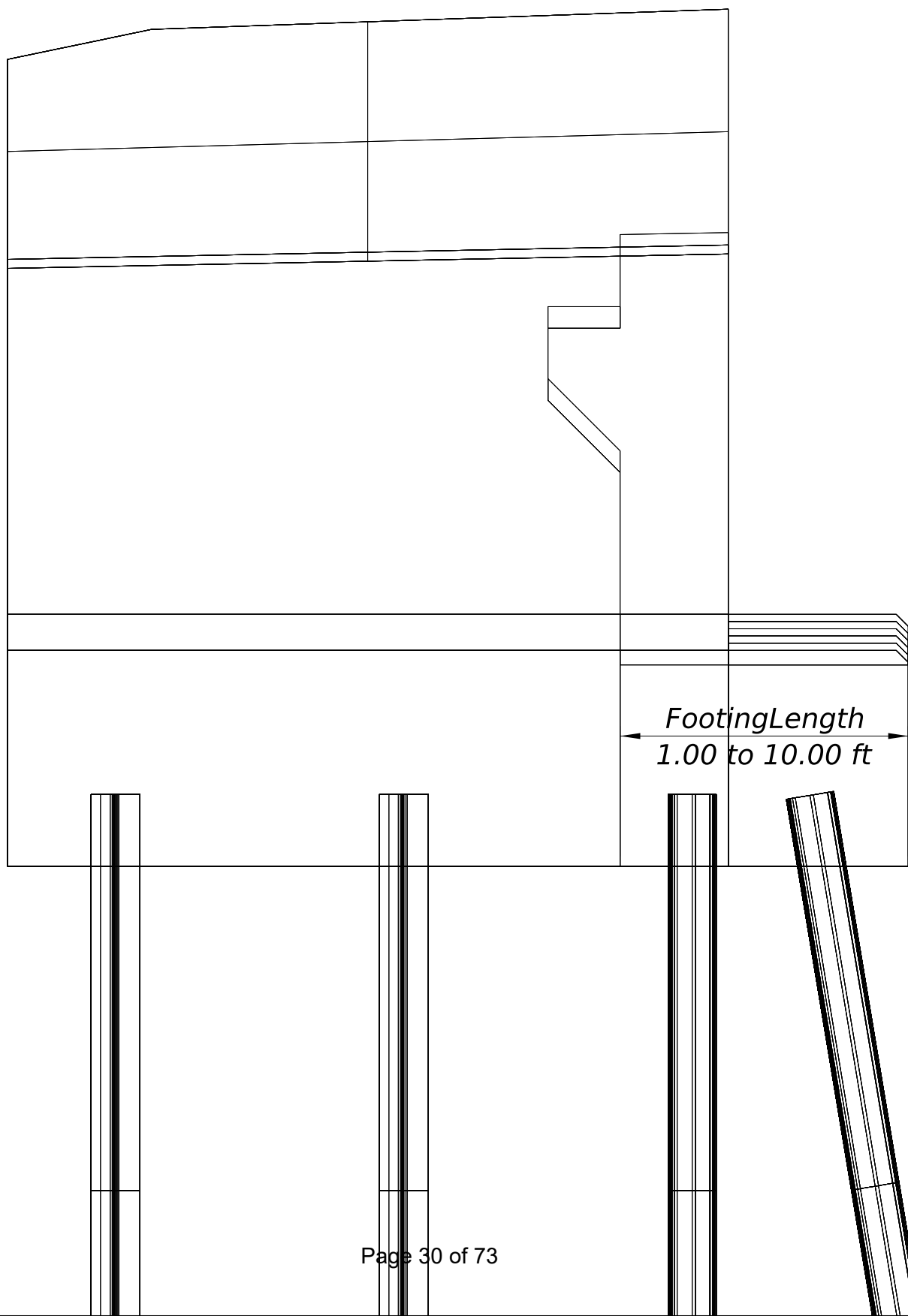
*DSDia*  
*0.00 to 60.00 in.*



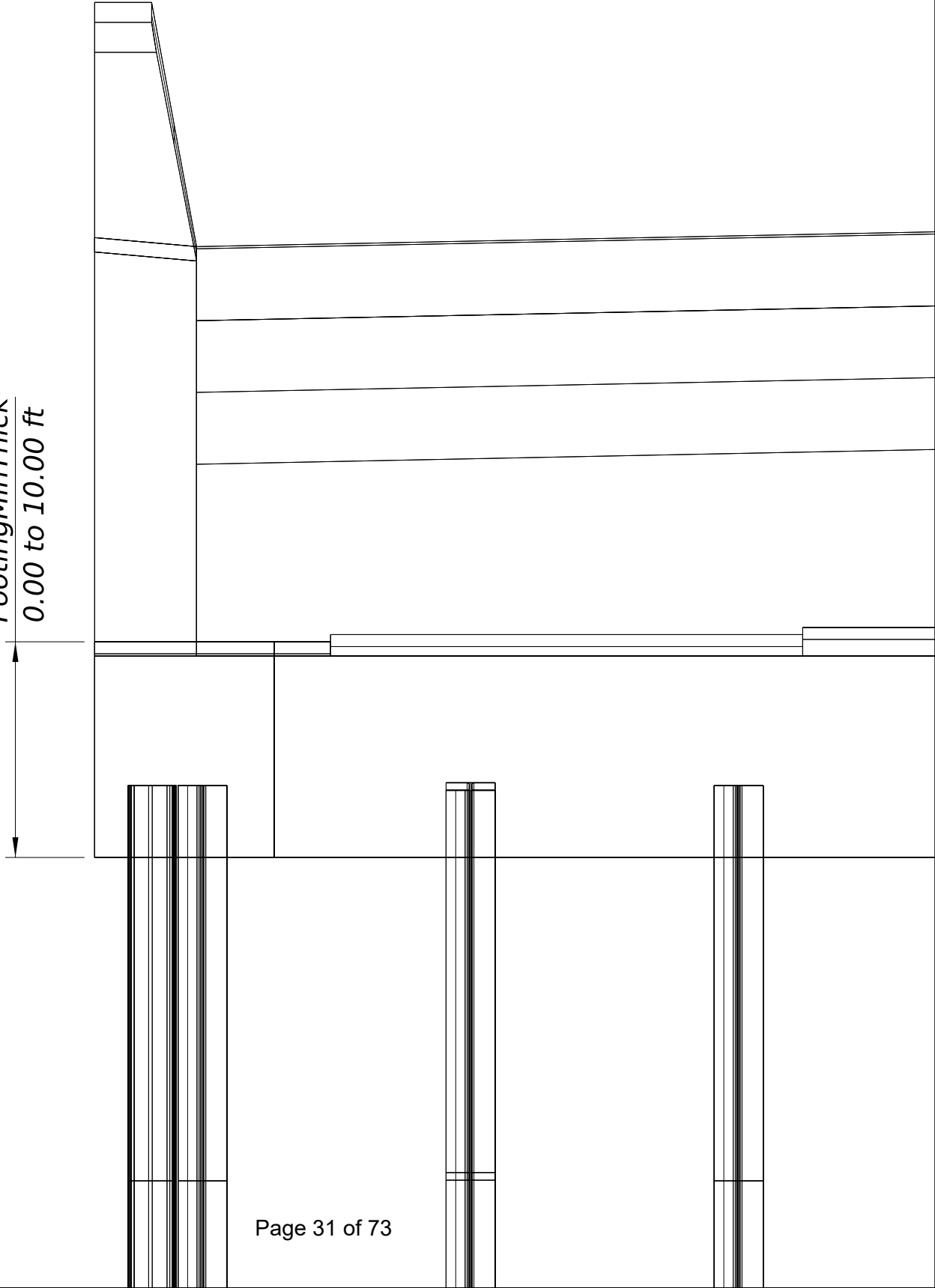


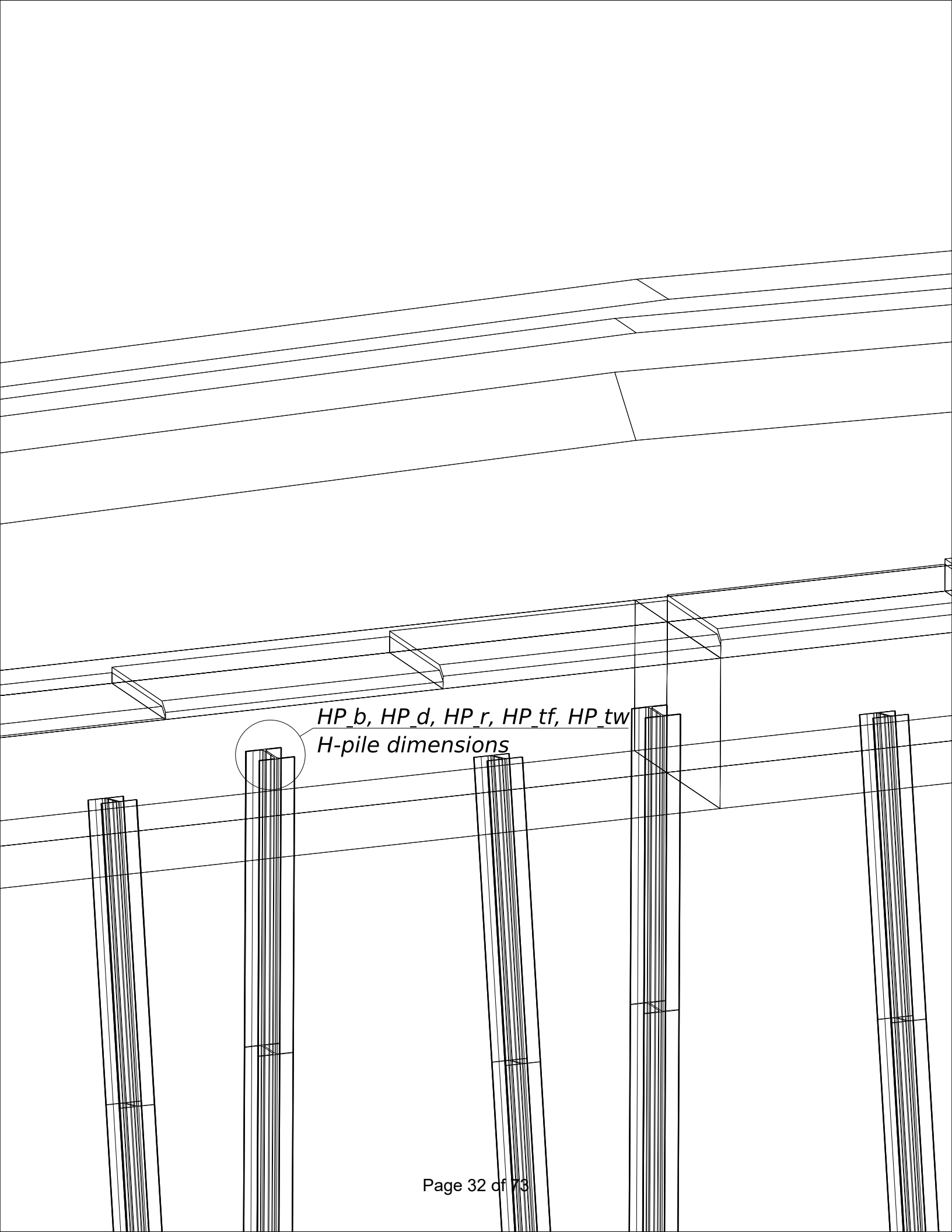






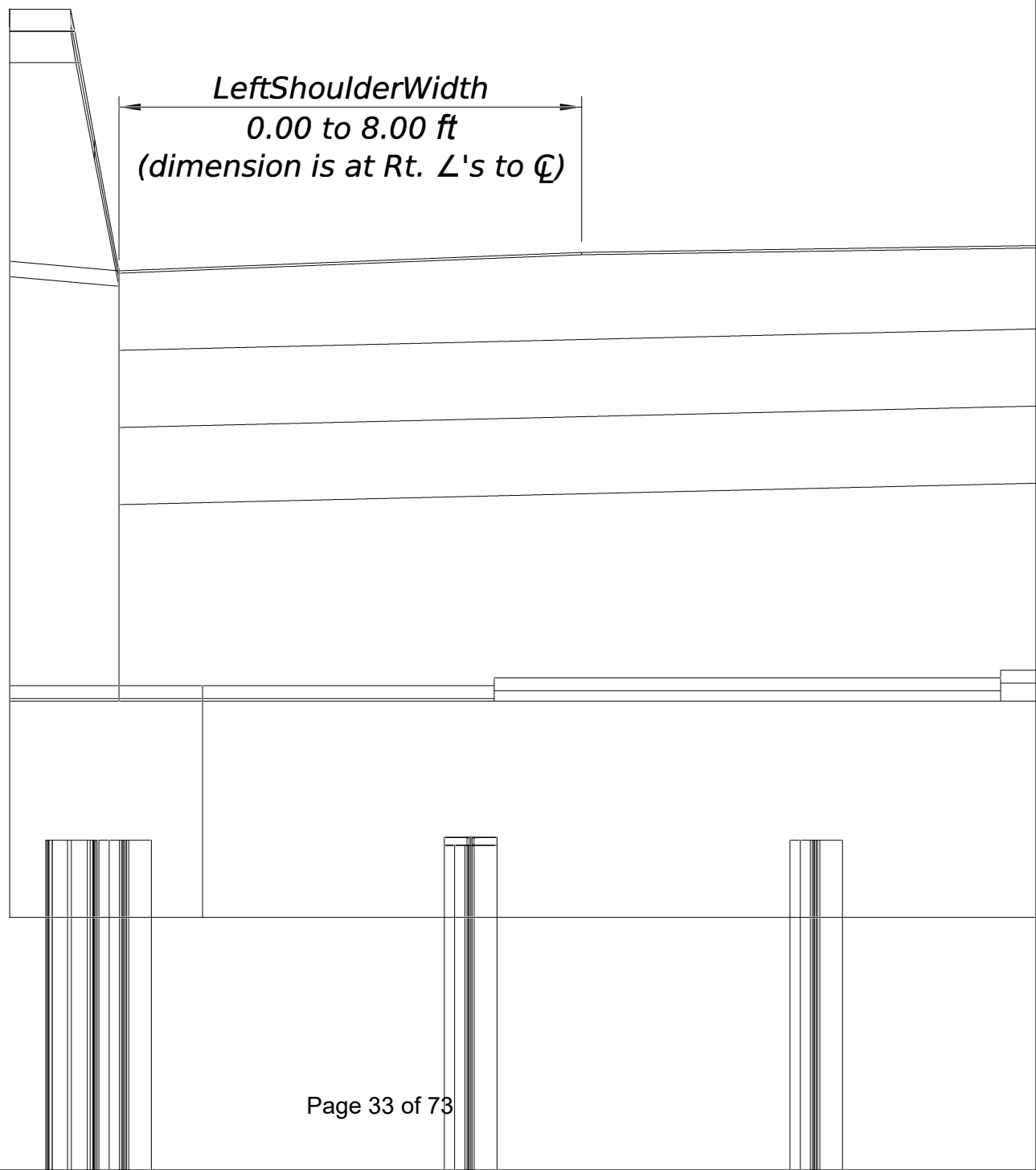
*FootingMinThick*  
*0.00 to 10.00 ft*

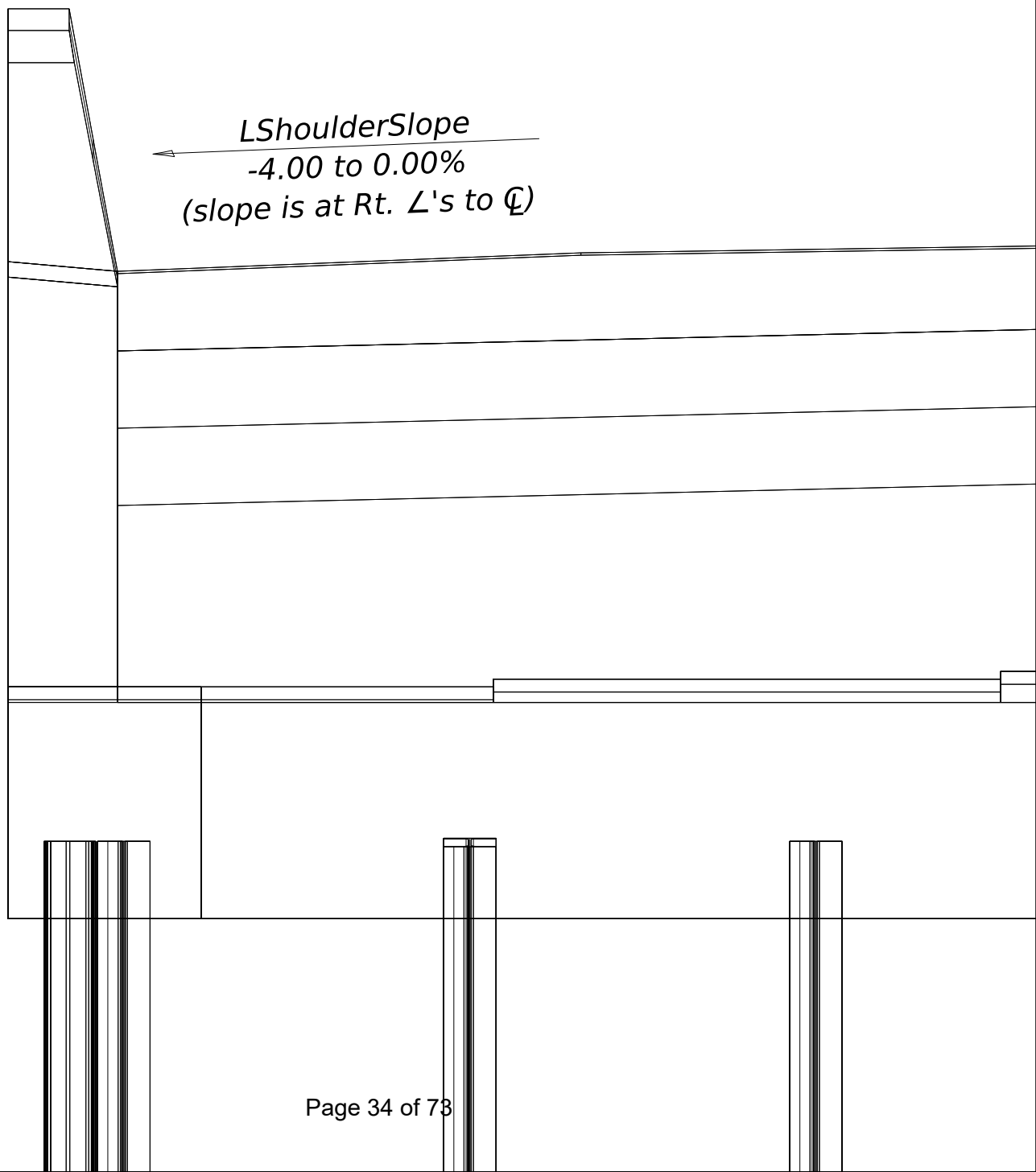




*HP\_b, HP\_d, HP\_r, HP\_tf, HP\_tw*  
*H-pile dimensions*

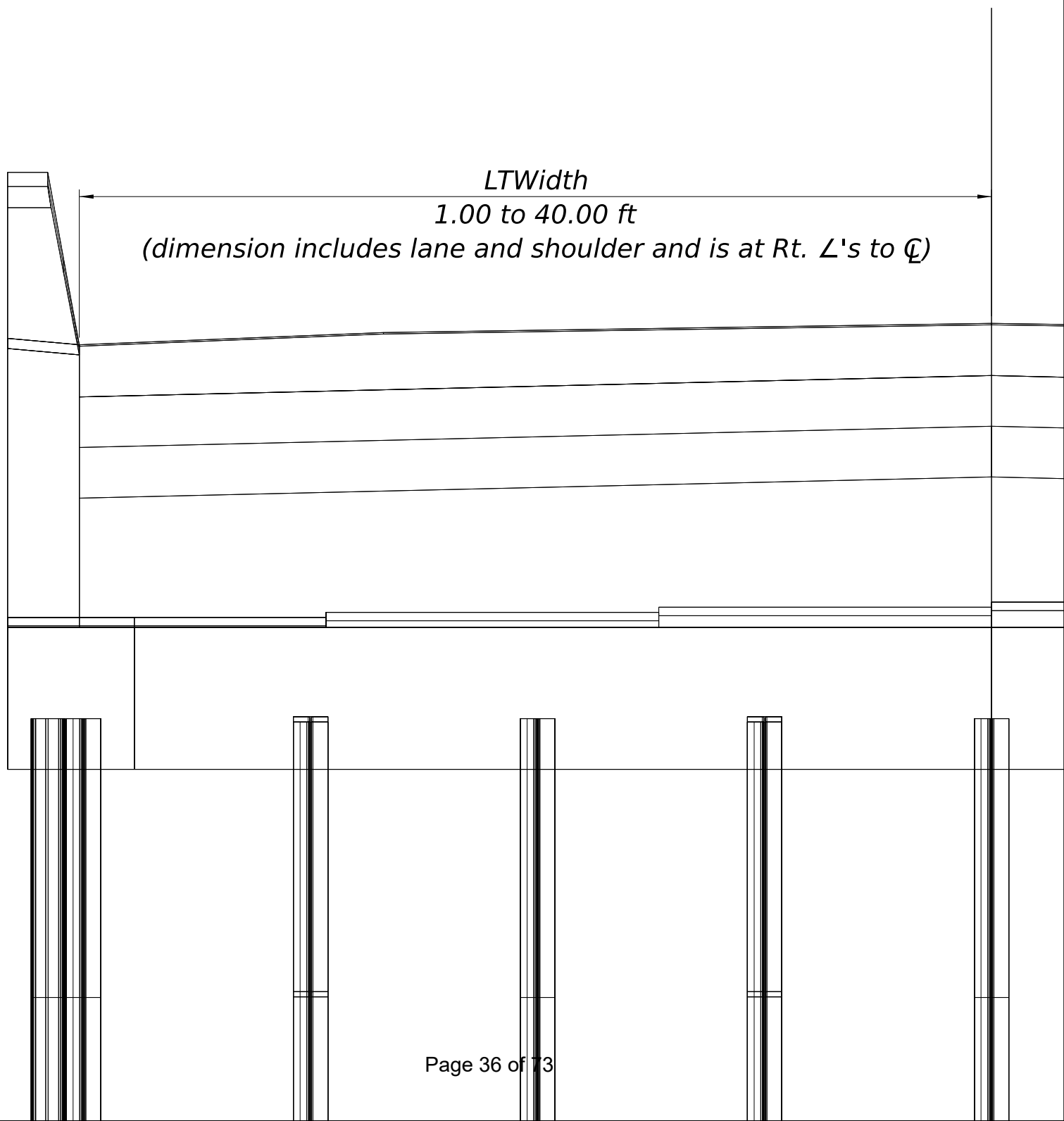




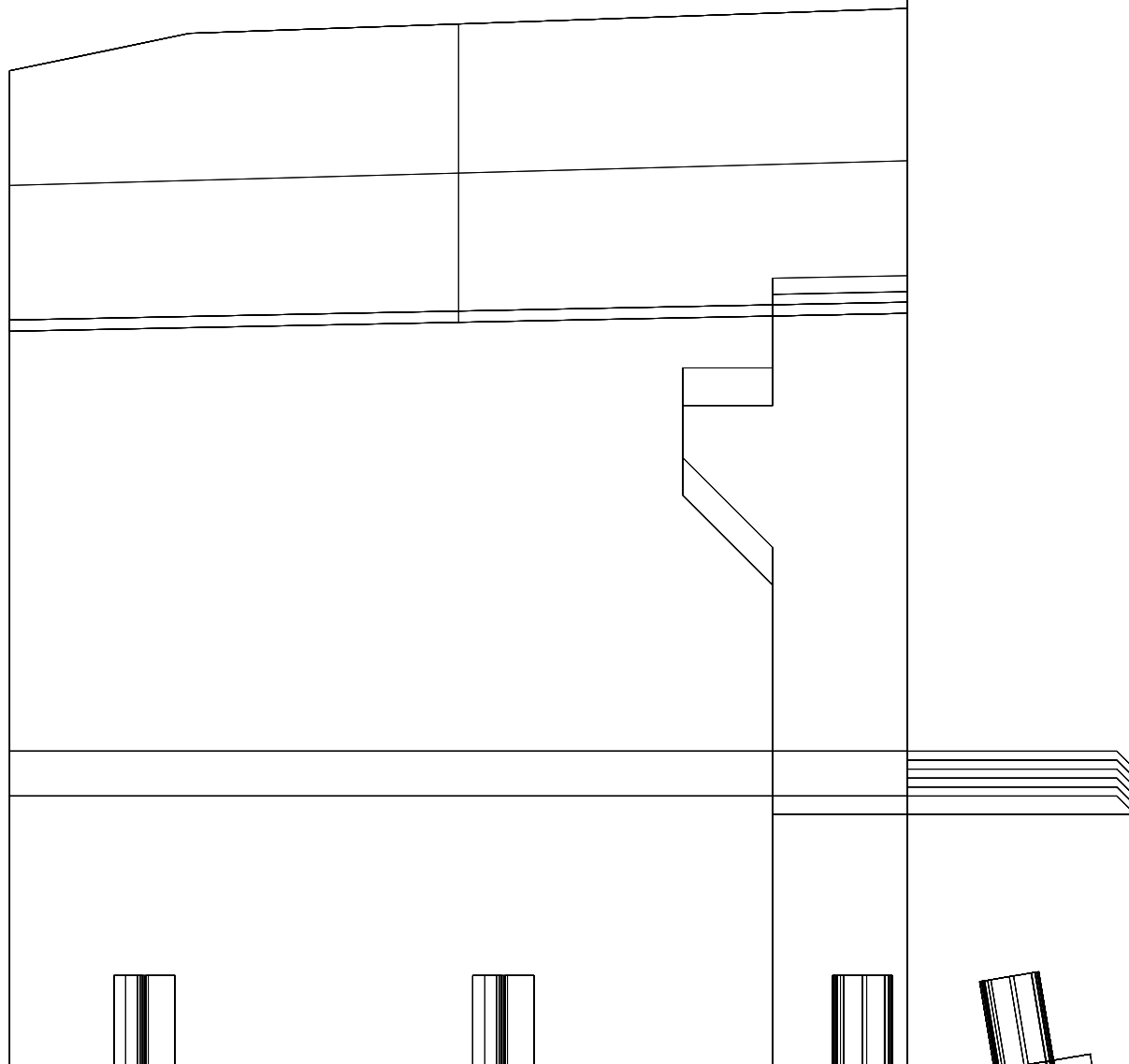


*LShoulderSlope*  
-4.00 to 0.00%  
(slope is at Rt. L's to  $\mathbb{Q}$ )

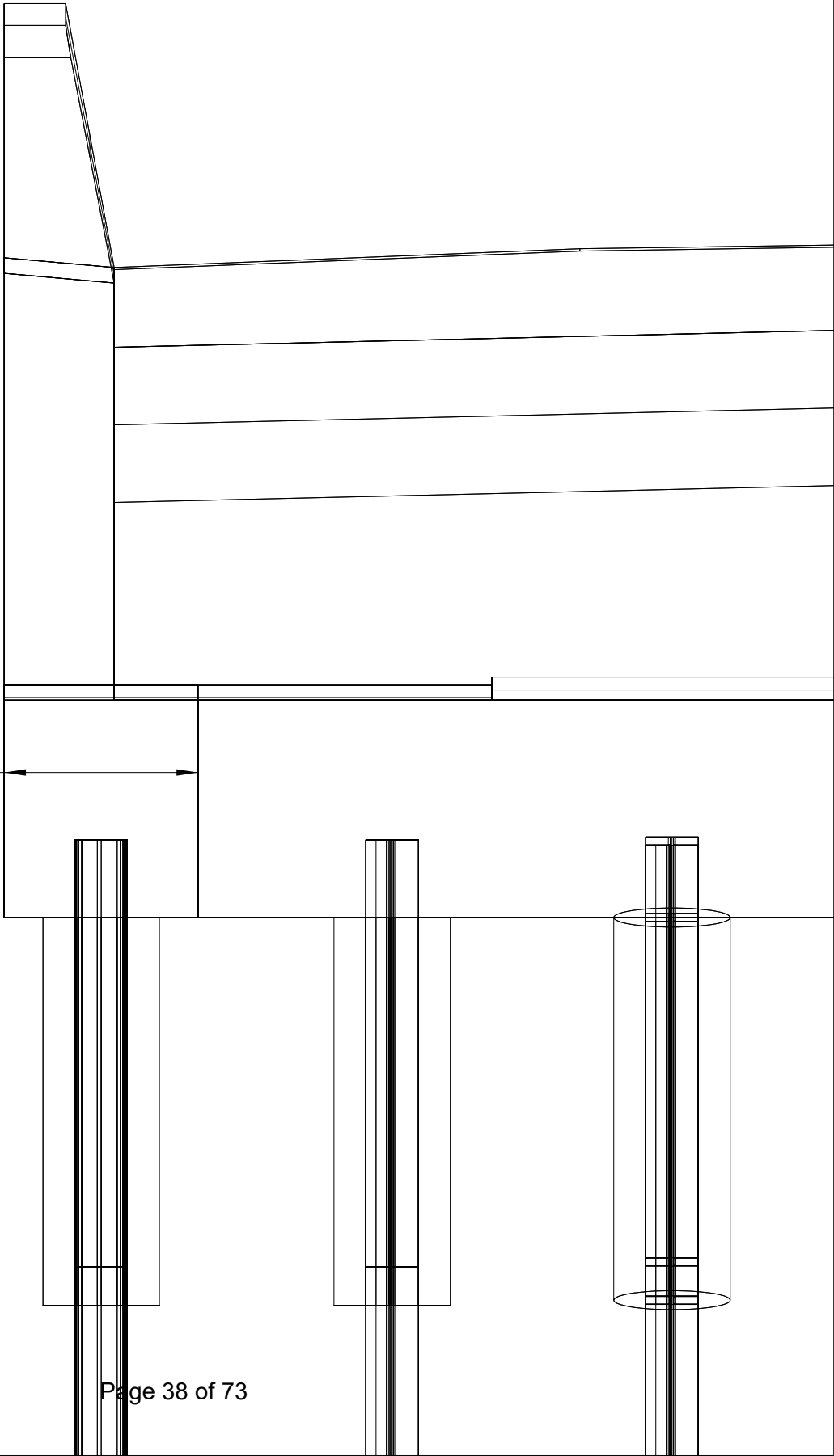
*LTSlope*  
*-8.00 to 8.00%*  
*(slope is at Rt.  $\angle$ 's to  $\mathbb{C}$ )*



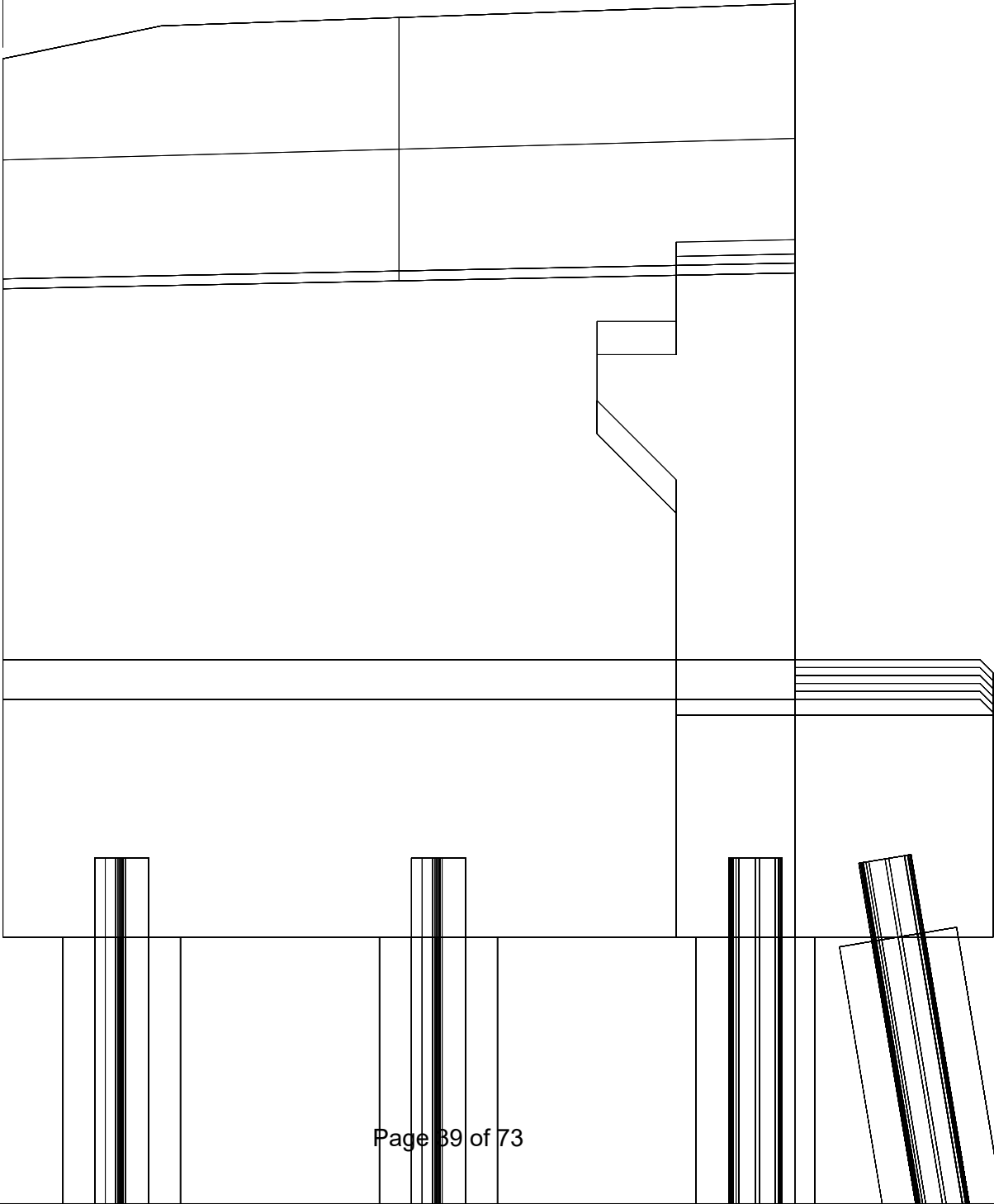
$L_{ww}$ EncasementLength  
1.00 to 50.00 ft



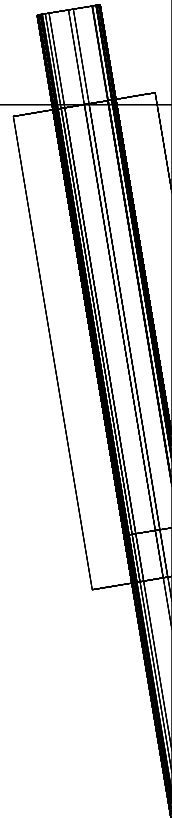
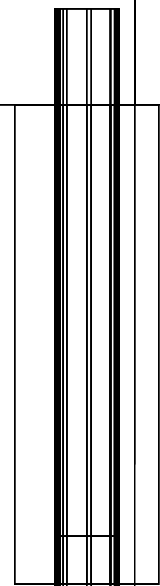
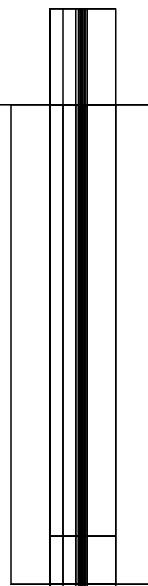
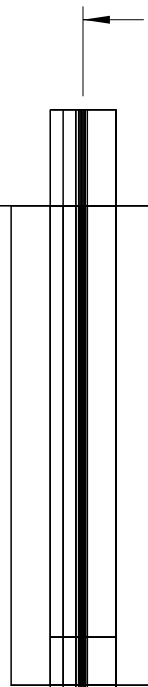
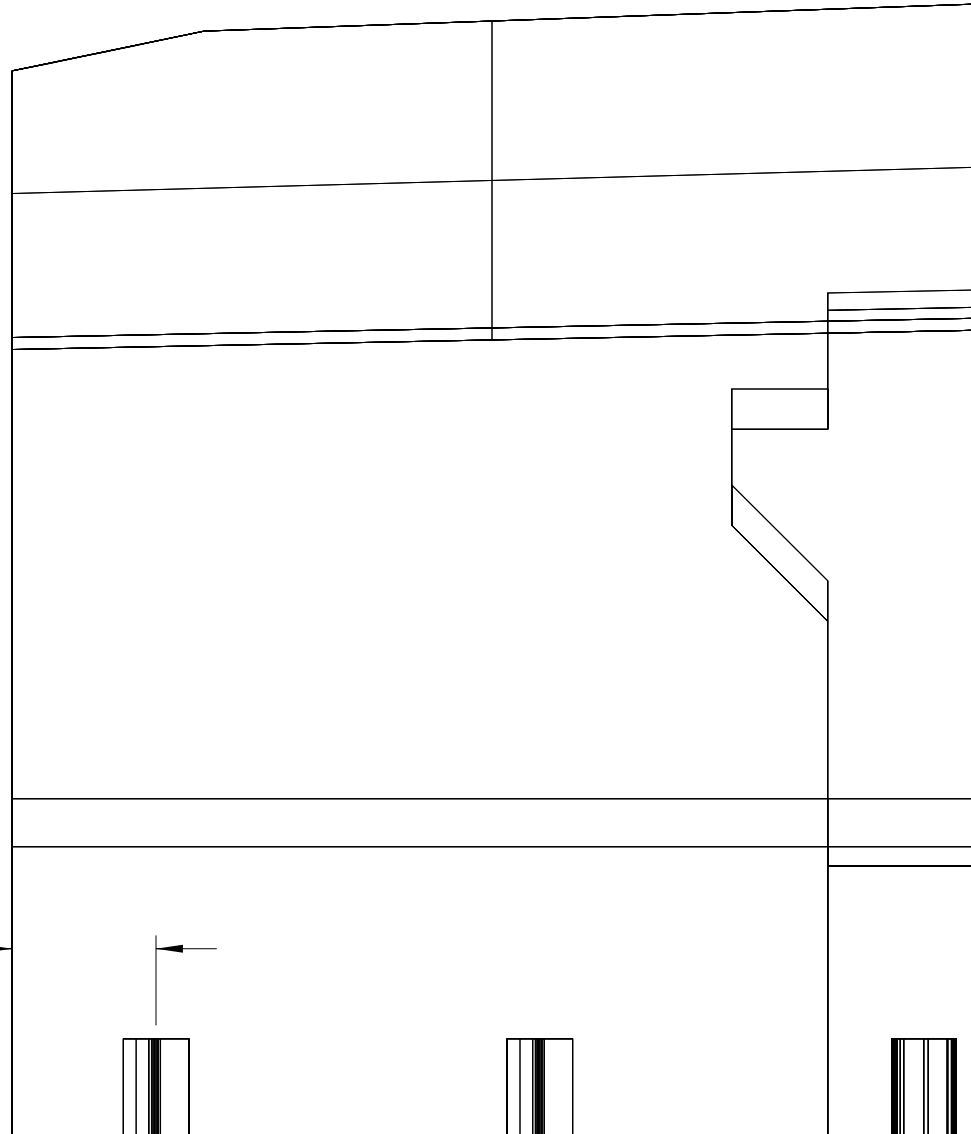
*LwwExtendFootingW*  
*0.00 to 6.00 ft*



*LwwLength*  
*0.00 to 20.00 ft*

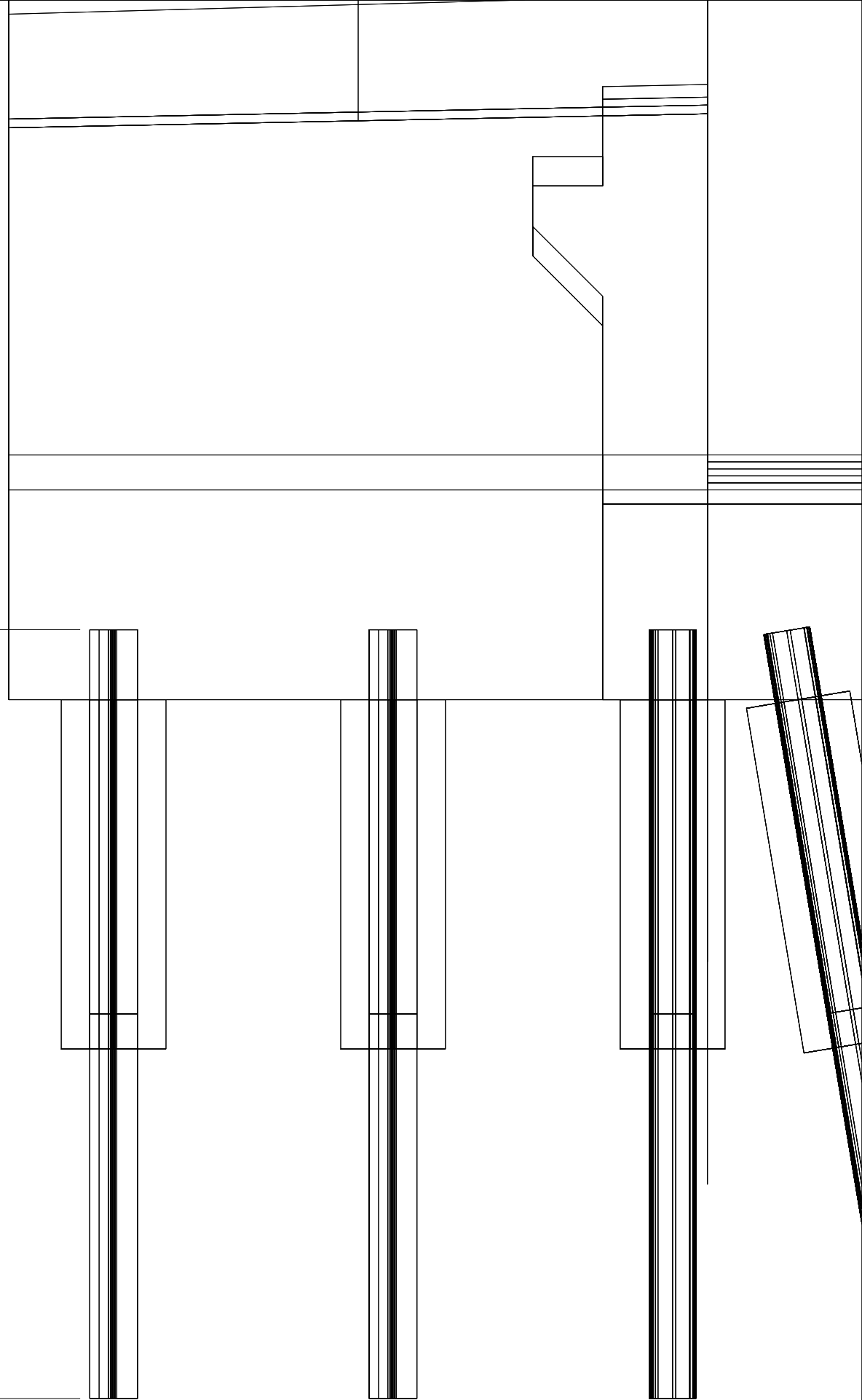


*LwwPileEdgeOffset*  
*0.00 to 8.00 ft*

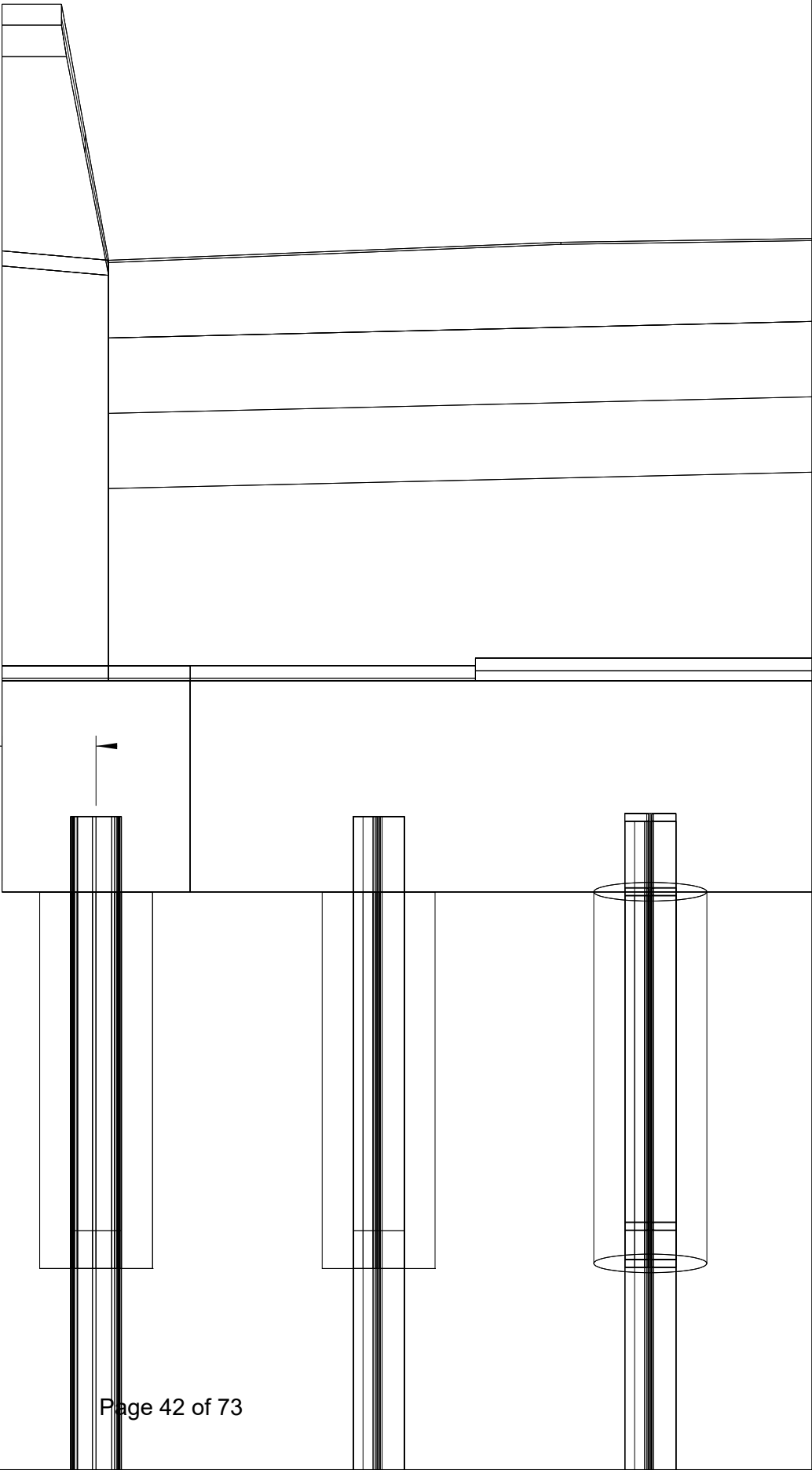


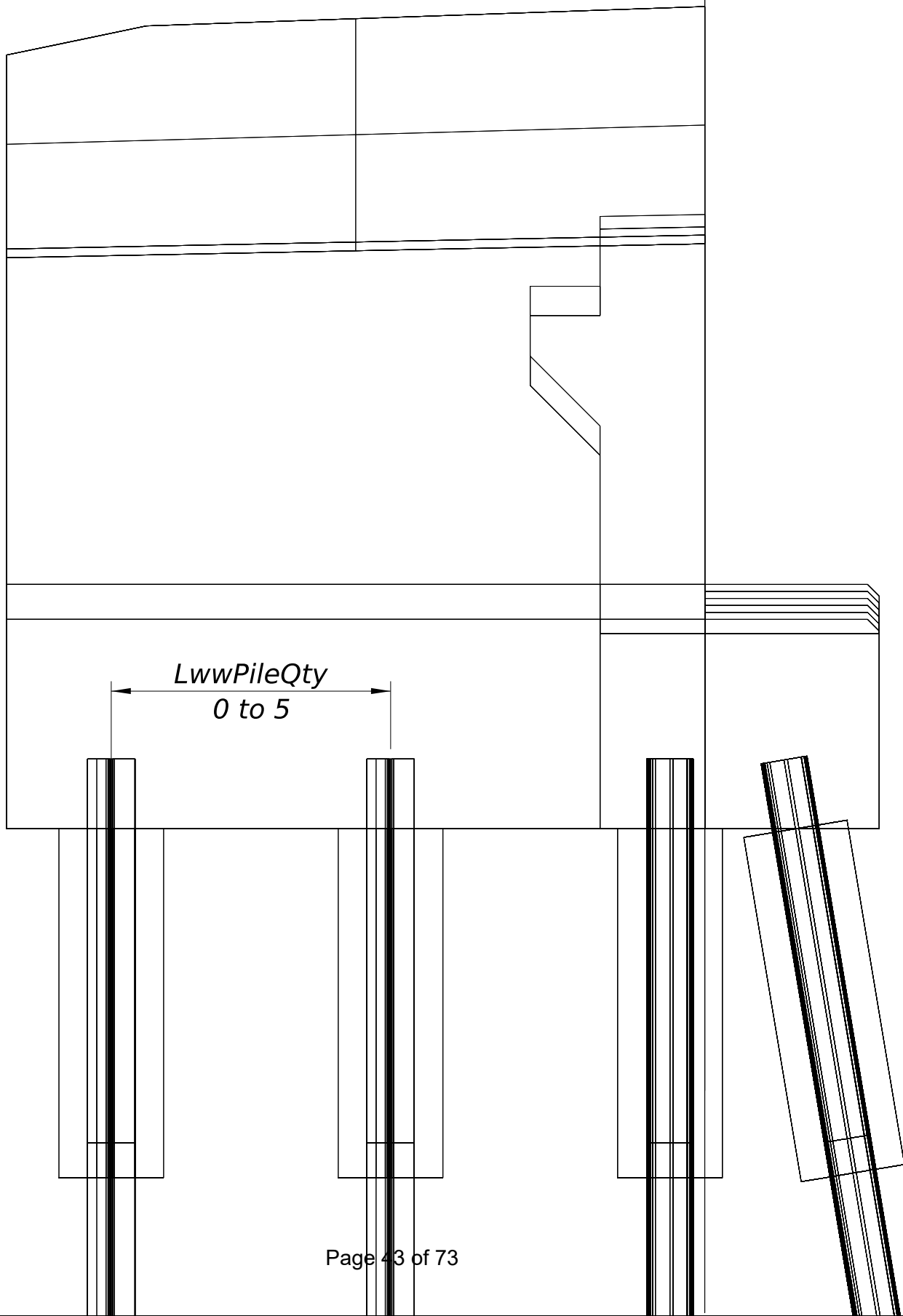


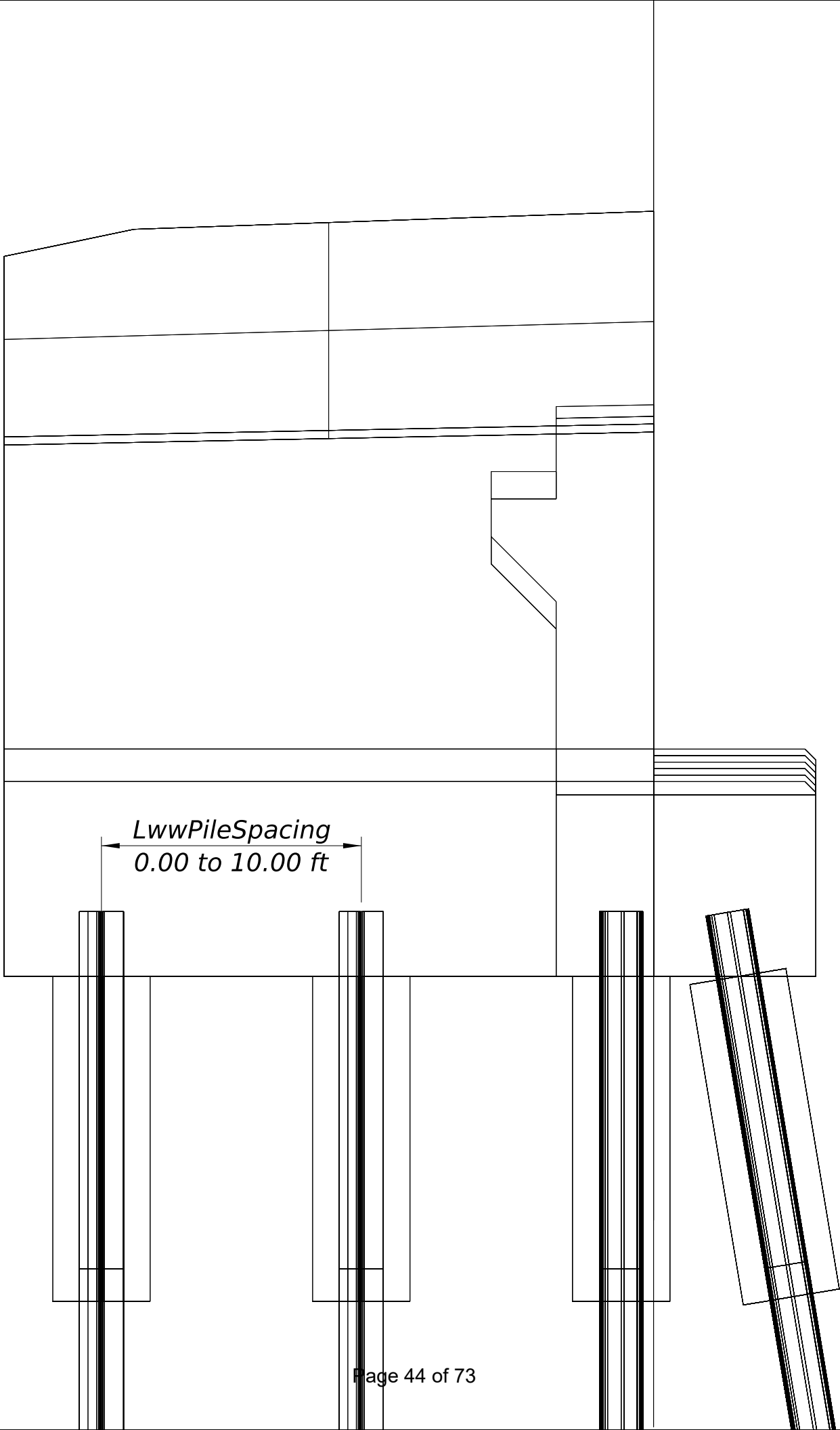
*L<sub>wwPileLenth</sub>*  
*1.00 to 50.00 ft*

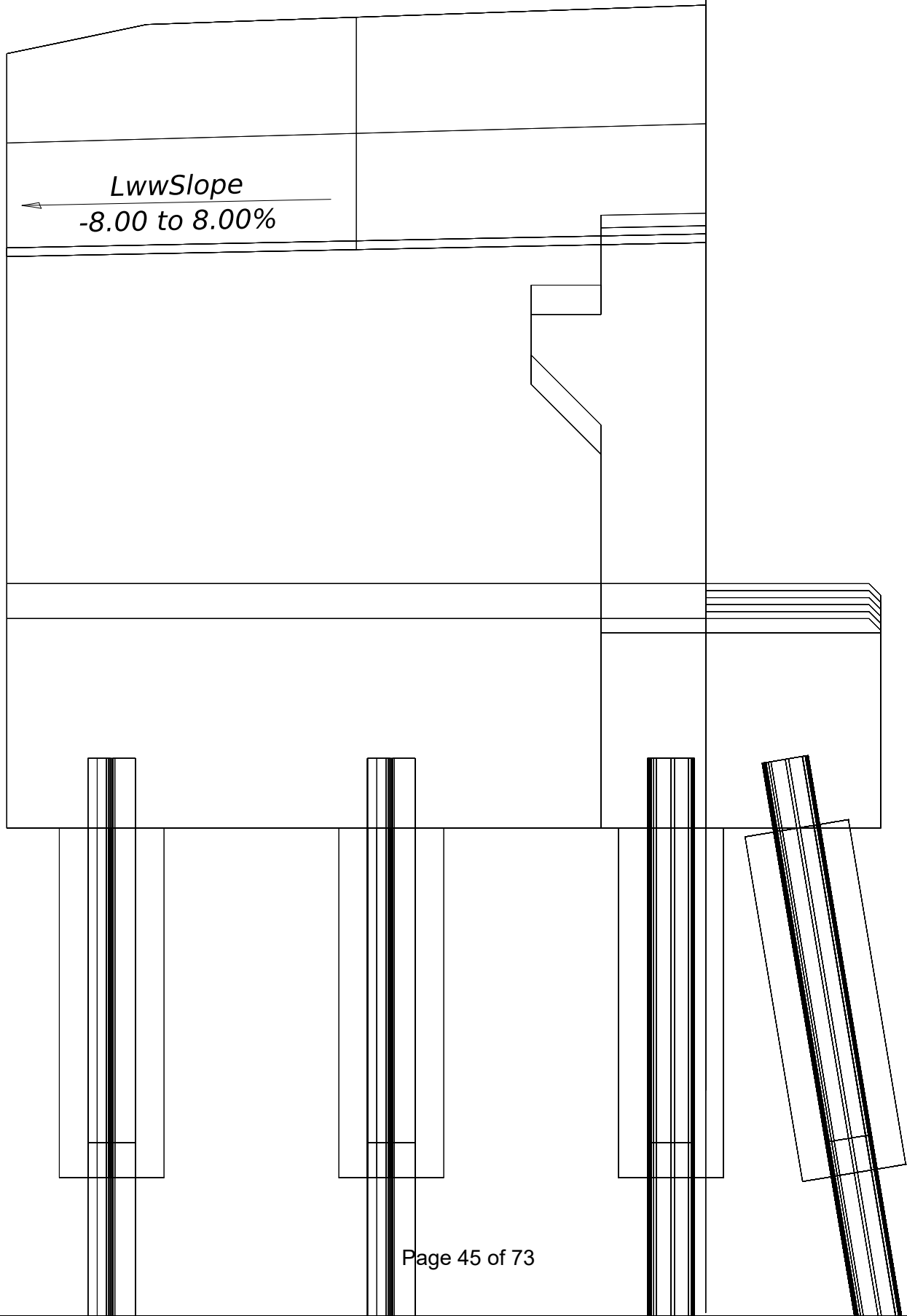


*LwwPileOffset*  
*0.00 to 1.4167 ft*



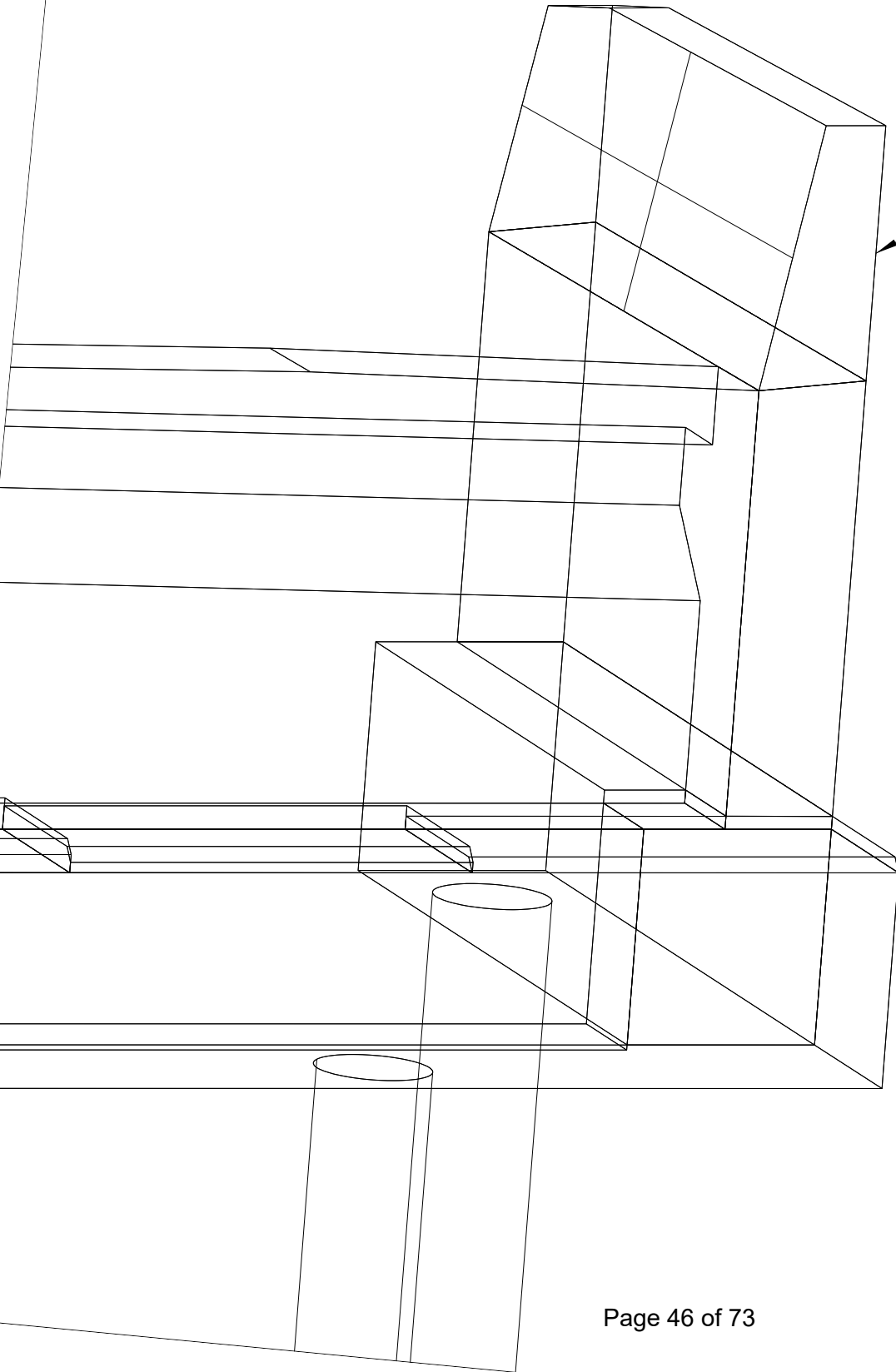


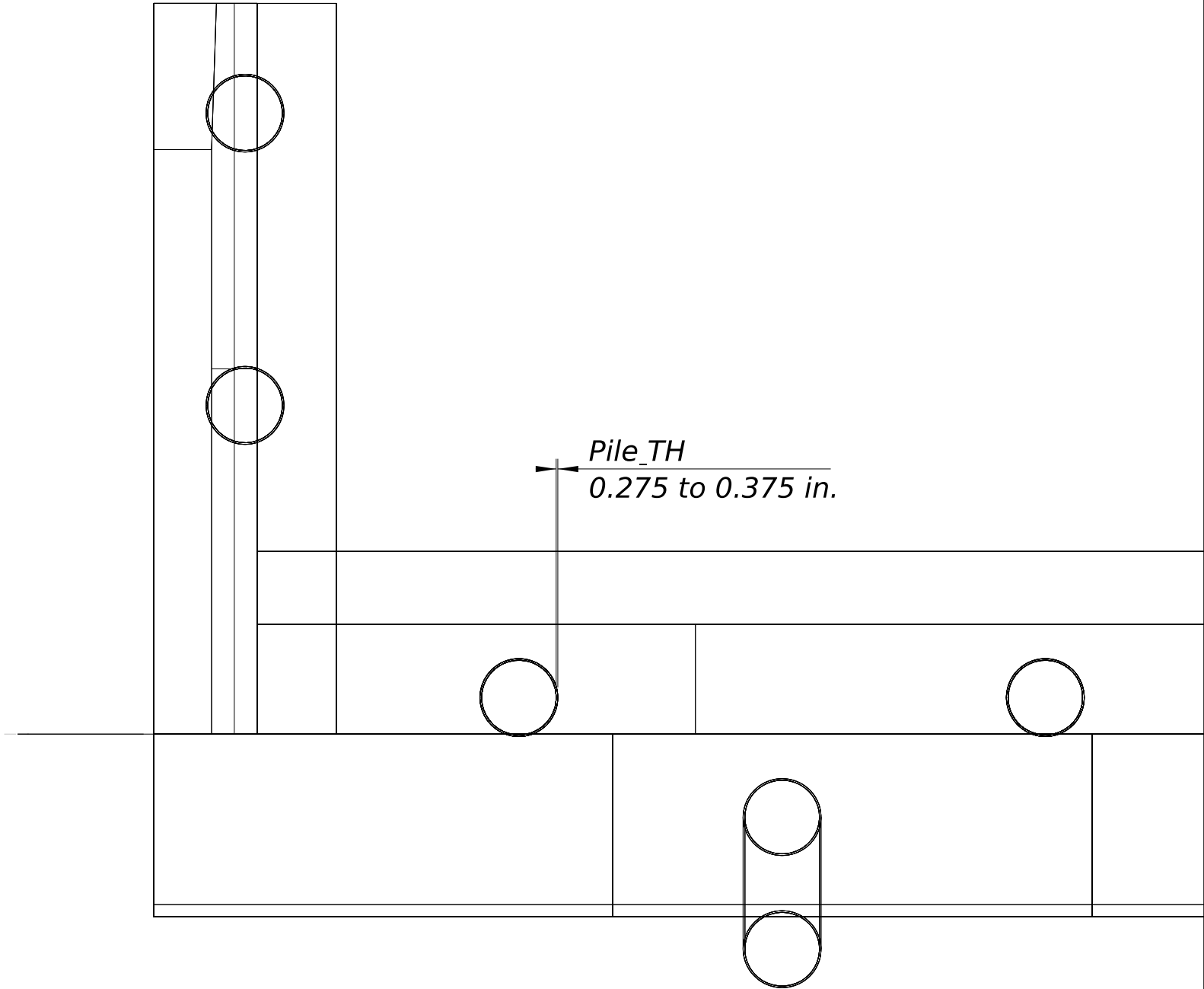


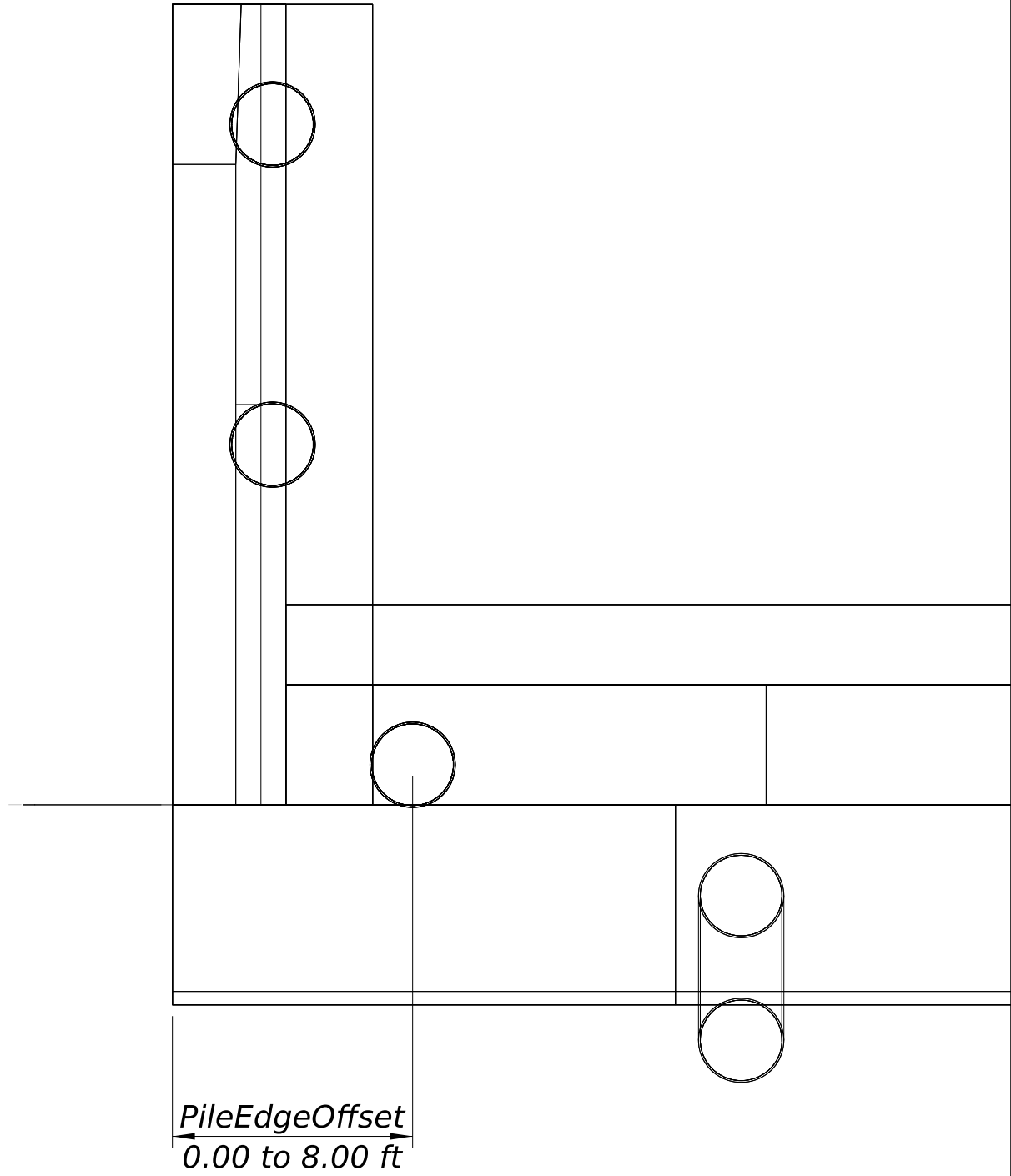


*Value must be keyed in manually*

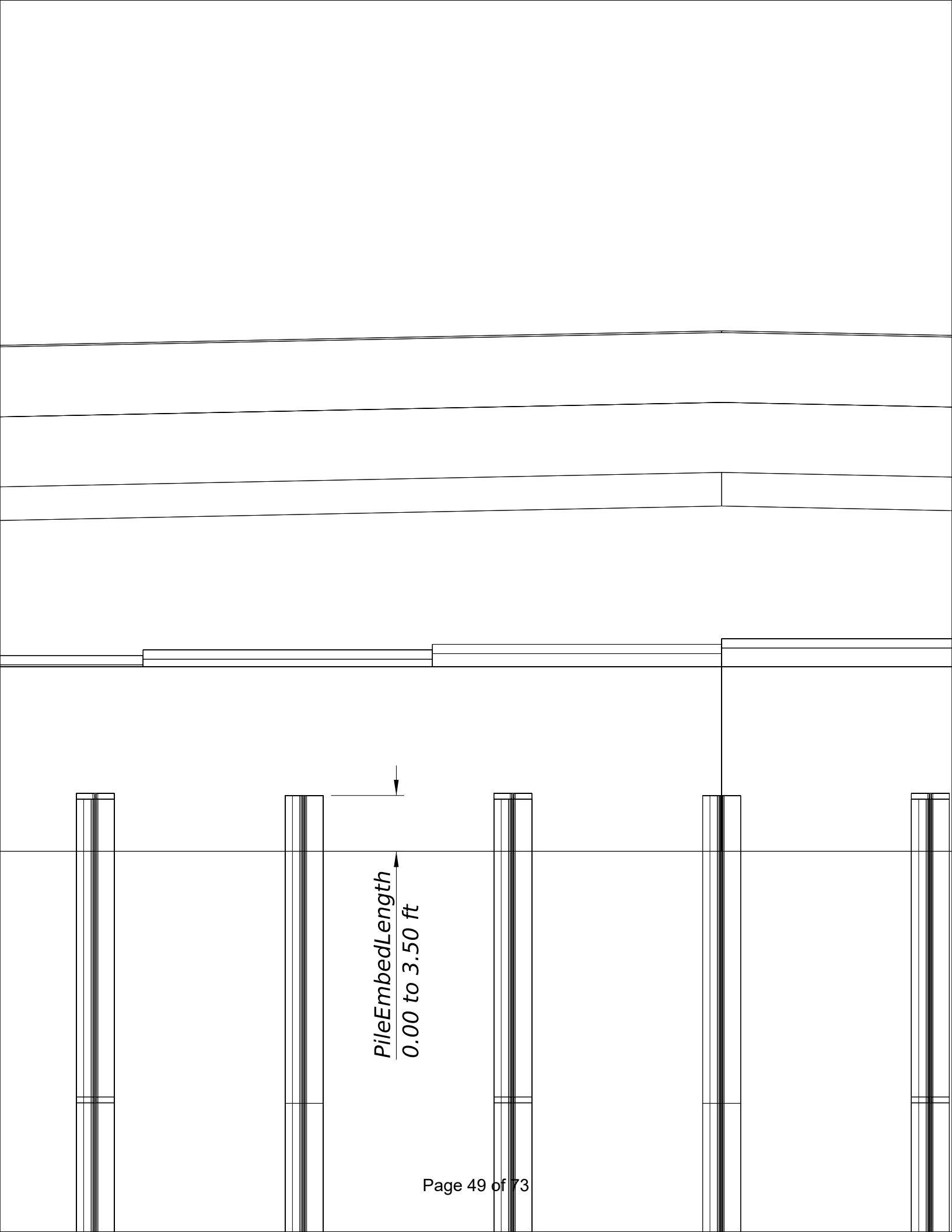
*ParapetType  
39 or 44*

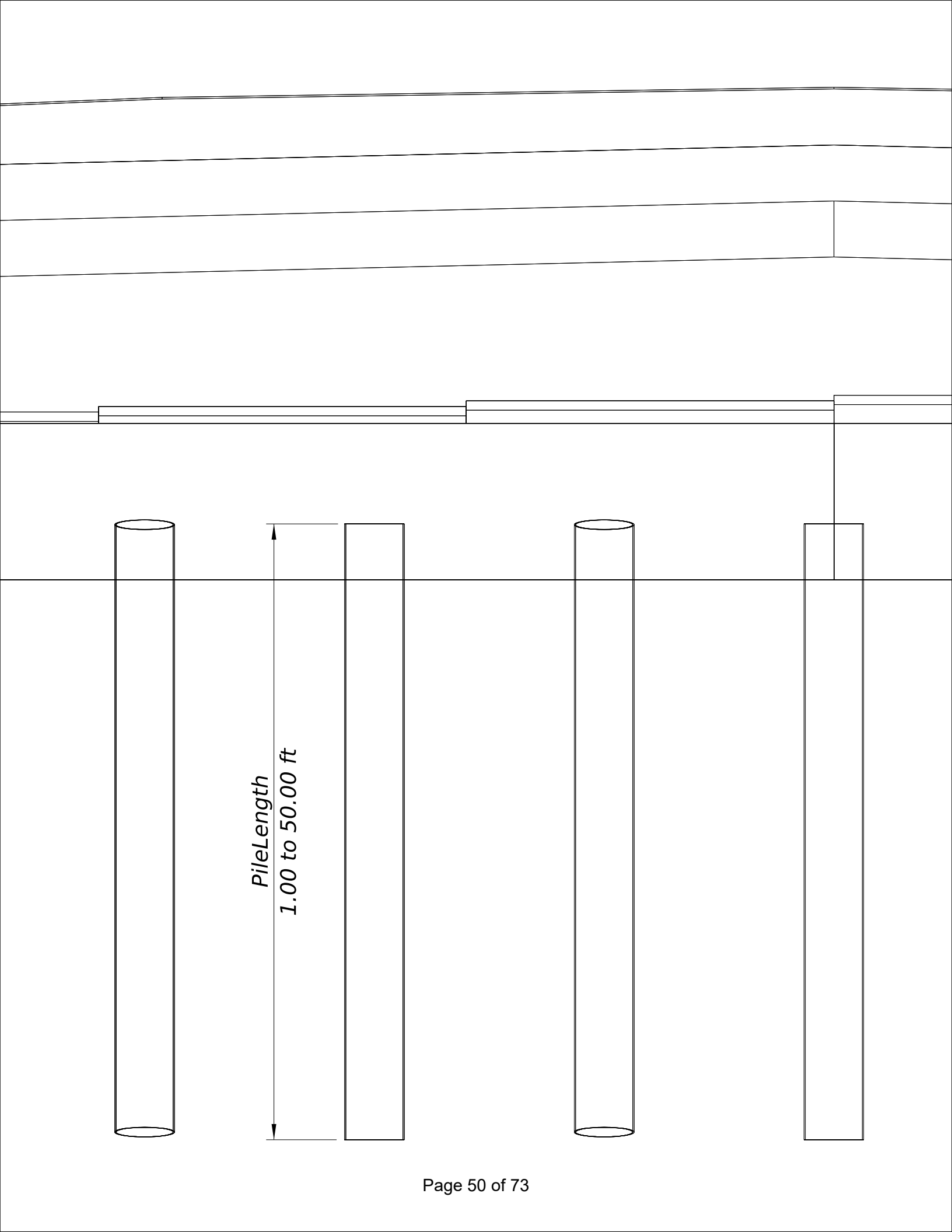




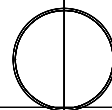
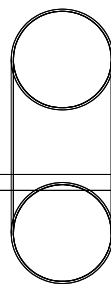
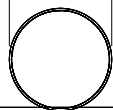
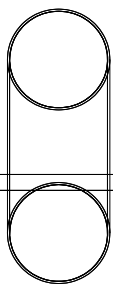








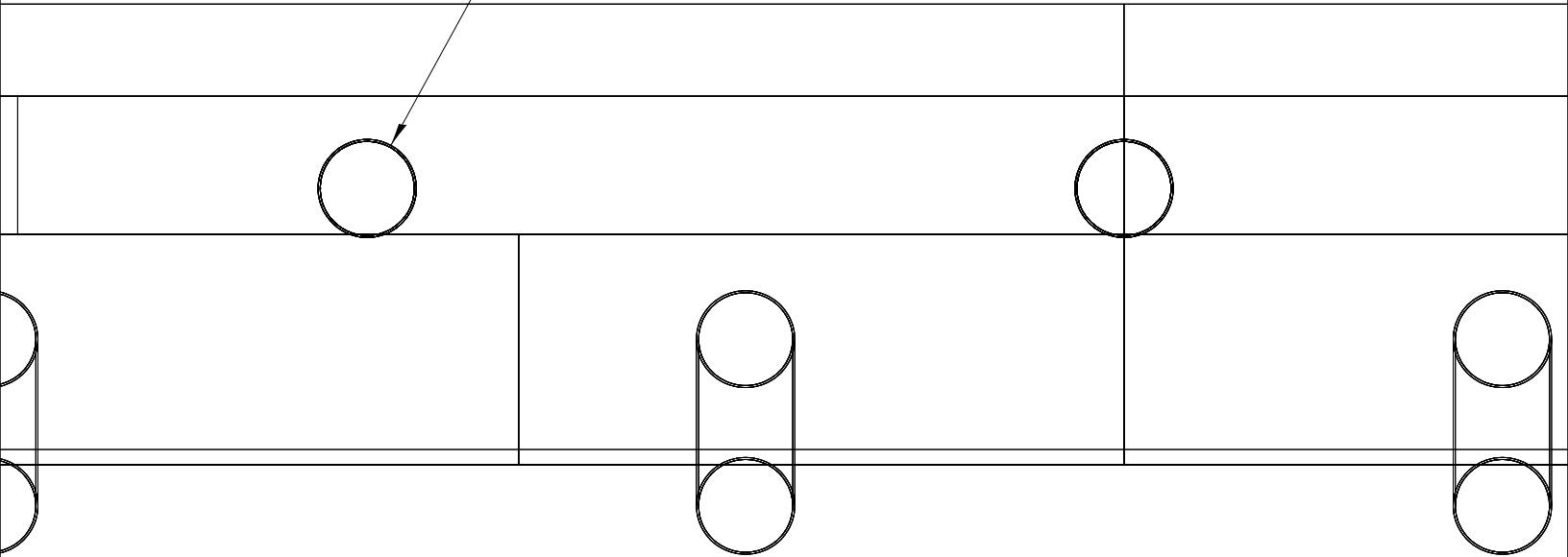
*PileODWidth*  
*12.8 to 16.0 in.*



*Vaue must be keyed in manually.*

- HP-With CE: H-pile with concrete encasement*
- HP-Without CE: H-pile without concrete encasement*
- MS-With CE: Metal Shell pile with concrete encasement*
- MS-Without CE: Metal Shell pile without concrete encasement*
- PC: Precast Concrete*
- DS: Drilled Shaft*

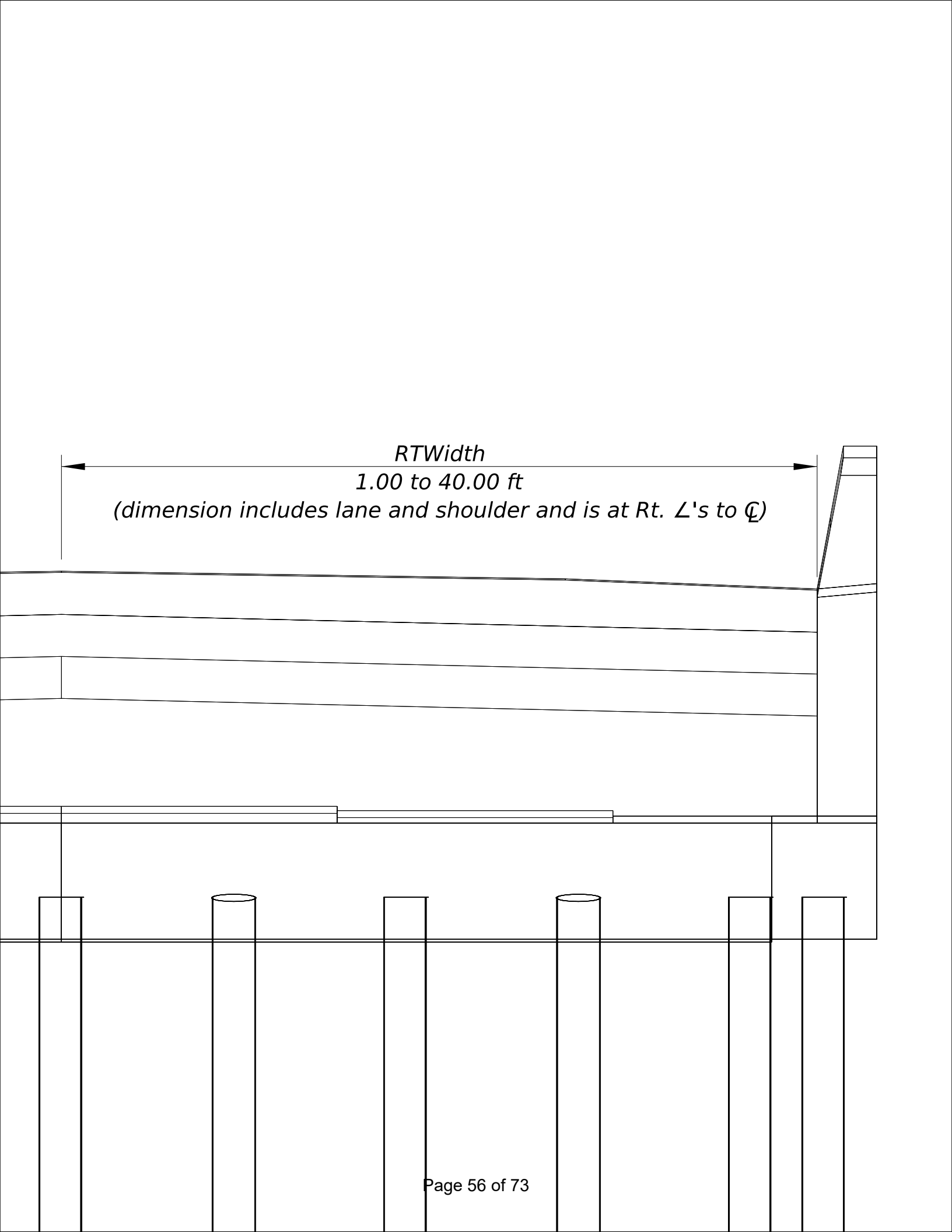
*None, HP-With CE, HP-Without CE, MS-With CE, MS-Without CE, PC, or DS*



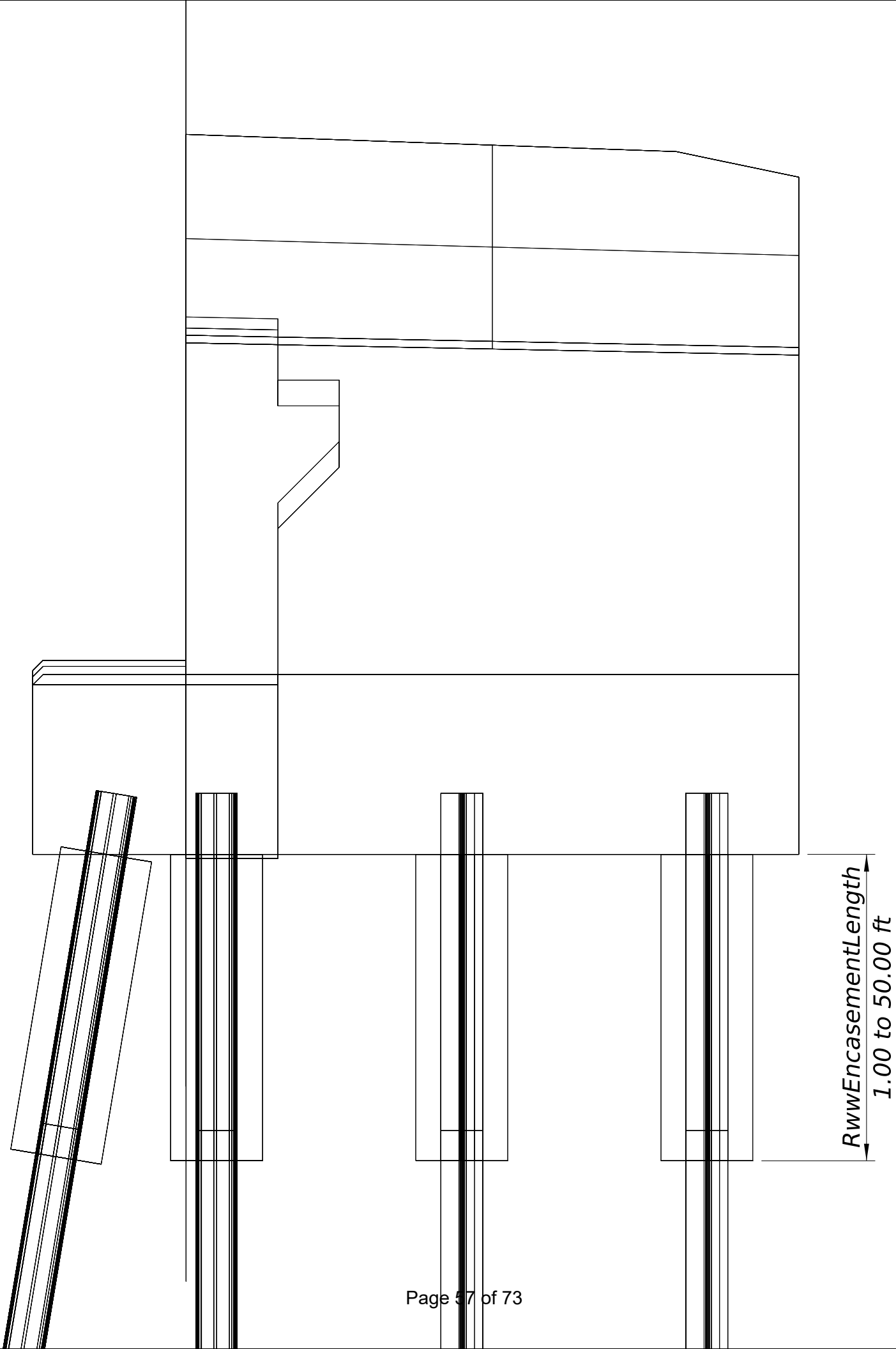
*RightShoulderWidth*  
*0.00 to 8.00 ft*  
*(dimension is at Rt.  $\angle$ 's to  $\mathbb{C}$ )*

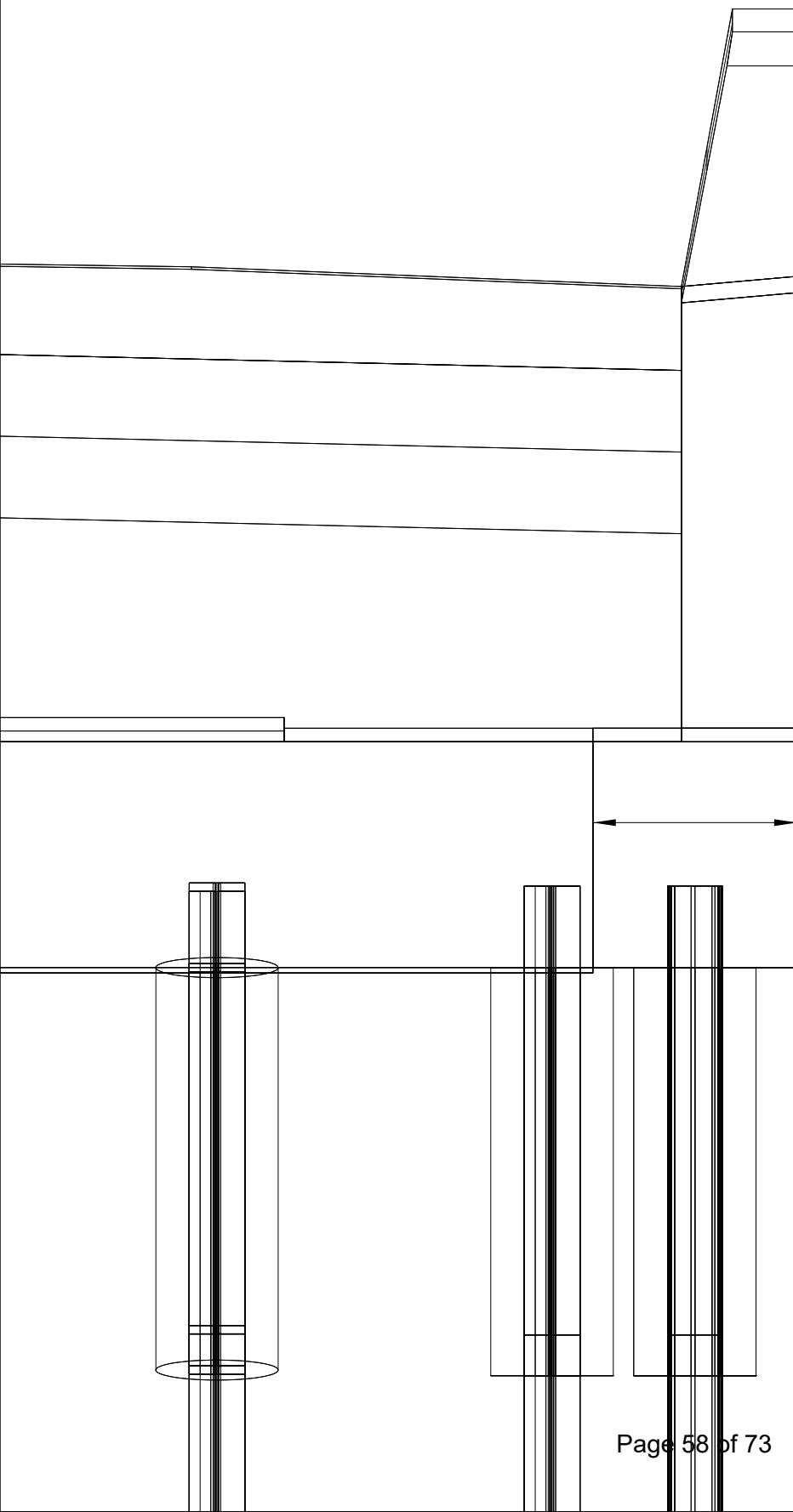
*RShoulderSlope*  
*-4.00 to 0.00%*  
*(slope is at Rt. L's to C)*

*RTSlope*  
→  
*-8.00 to 8.00%*  
*(slope is at Rt. ∠'s to C)*



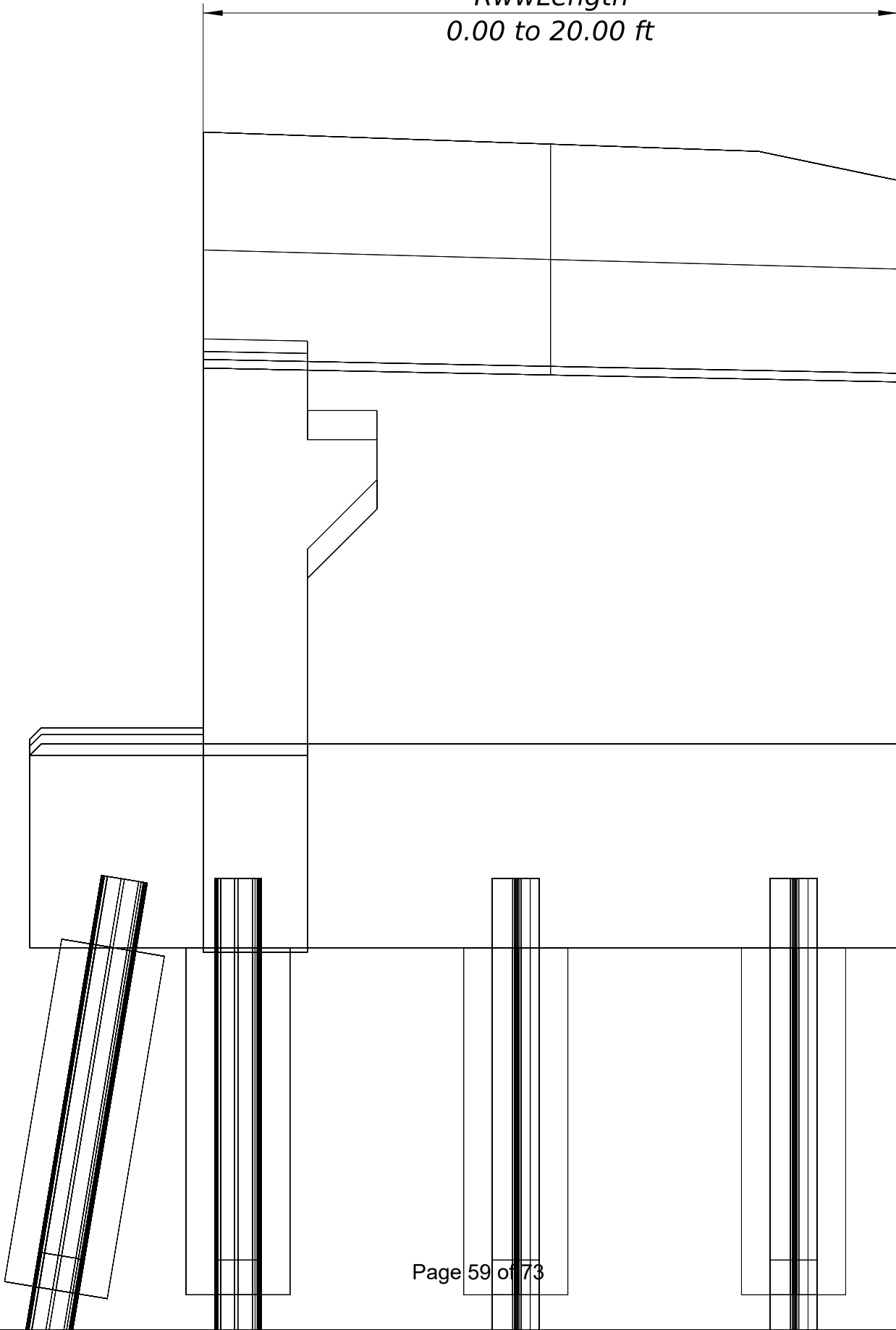


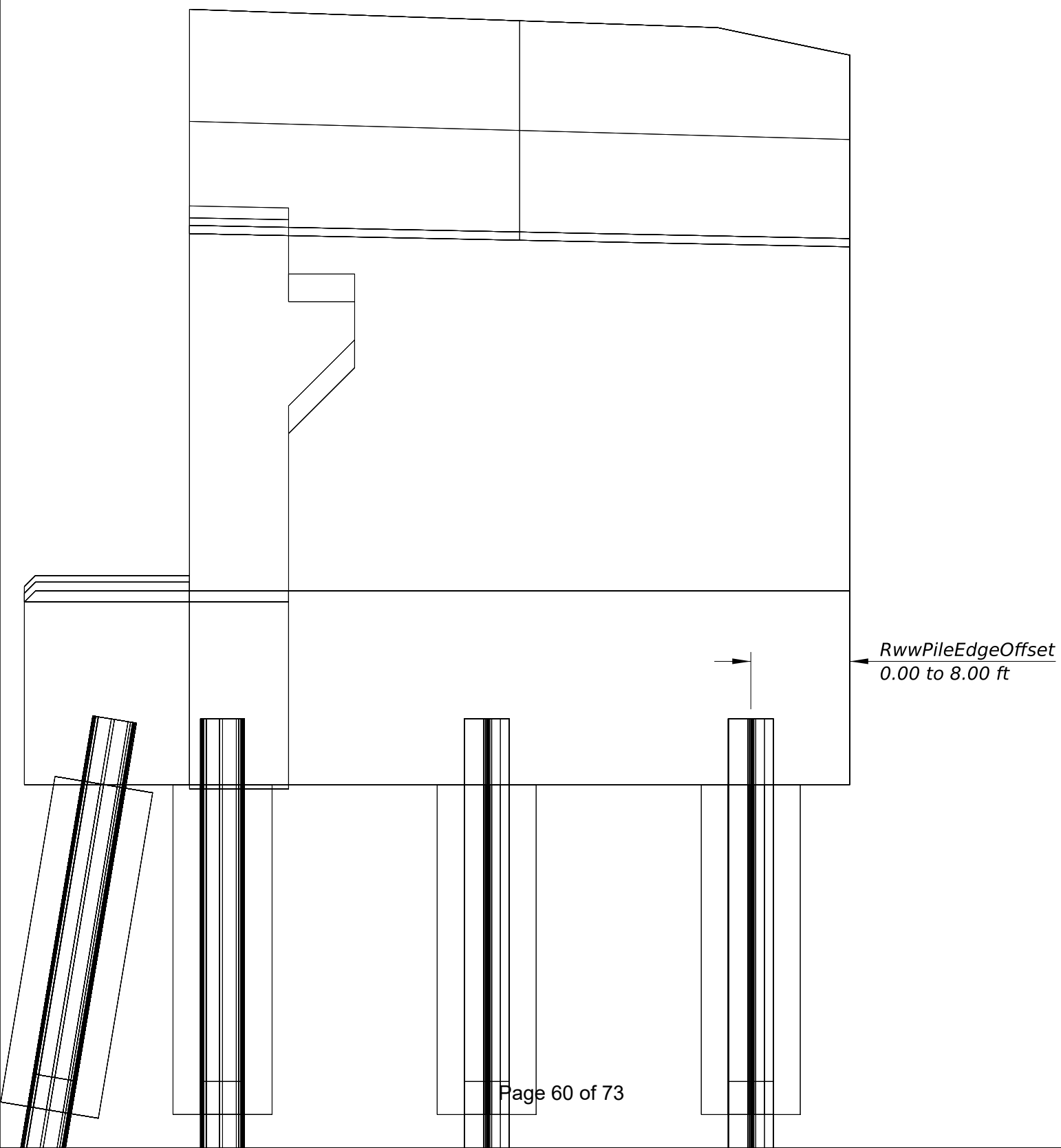


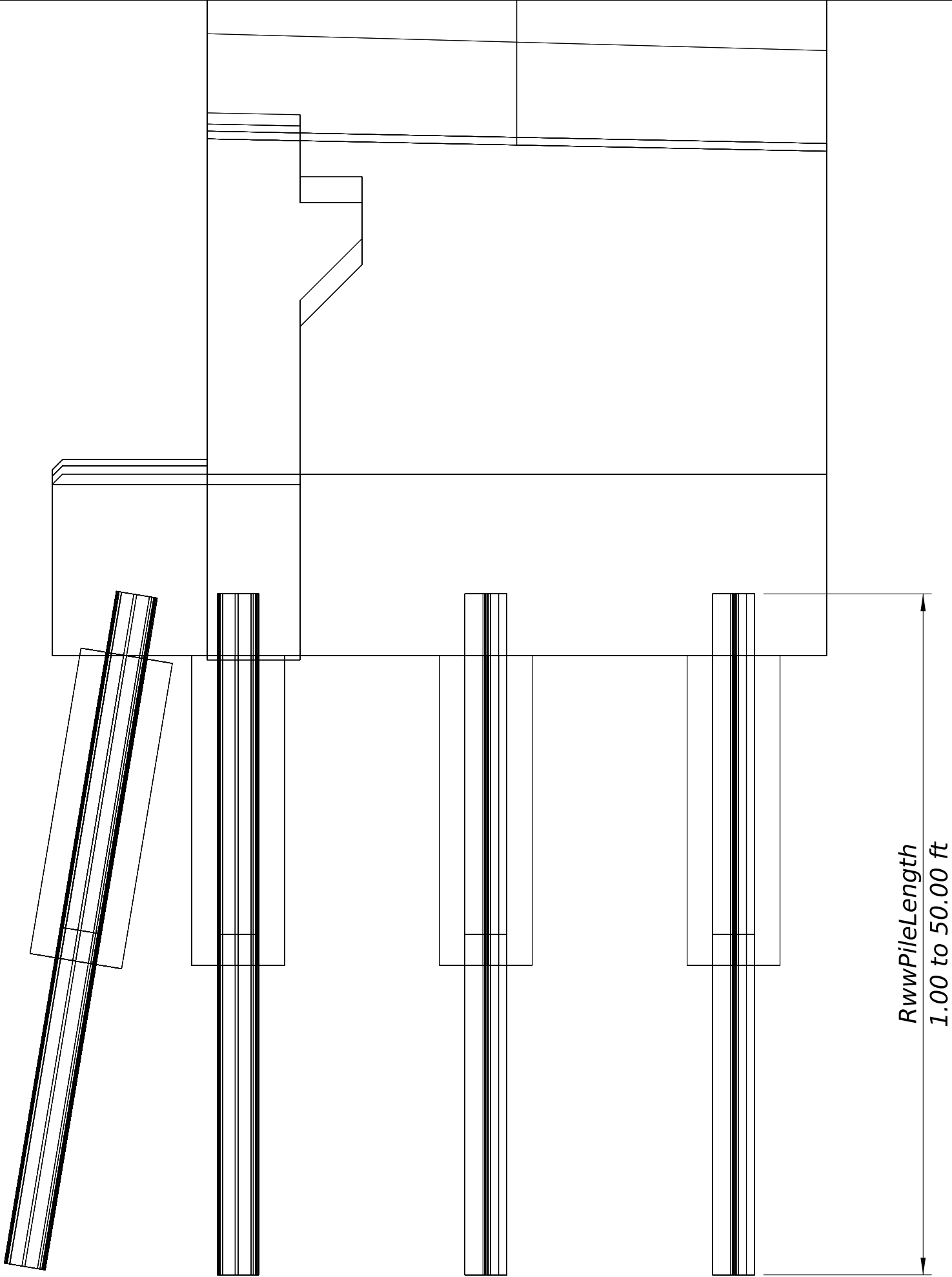


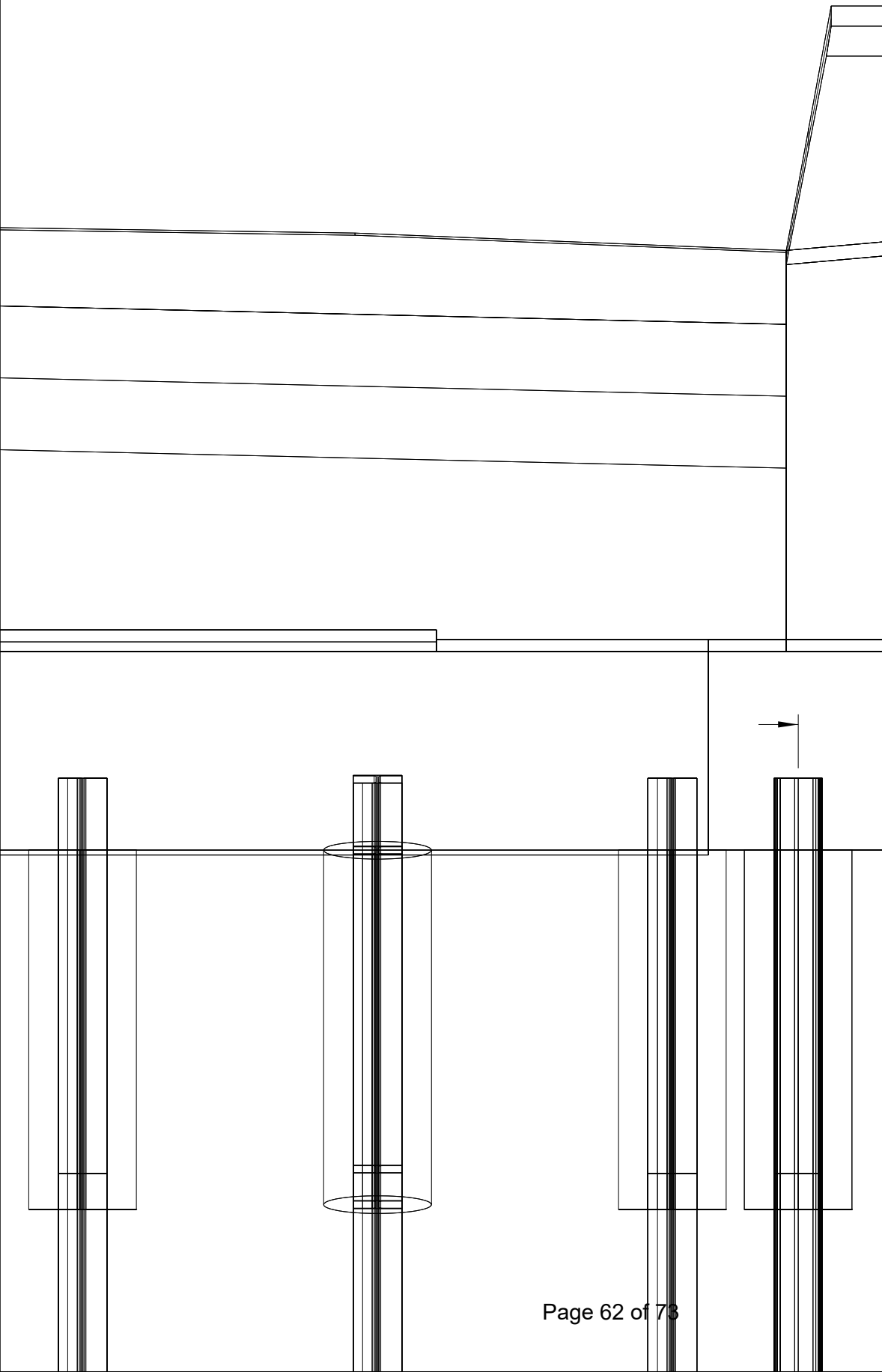
*RwwExtendFootingW*  
*0.00 to 6.00 ft*

*RwwLength*  
0.00 to 20.00 ft

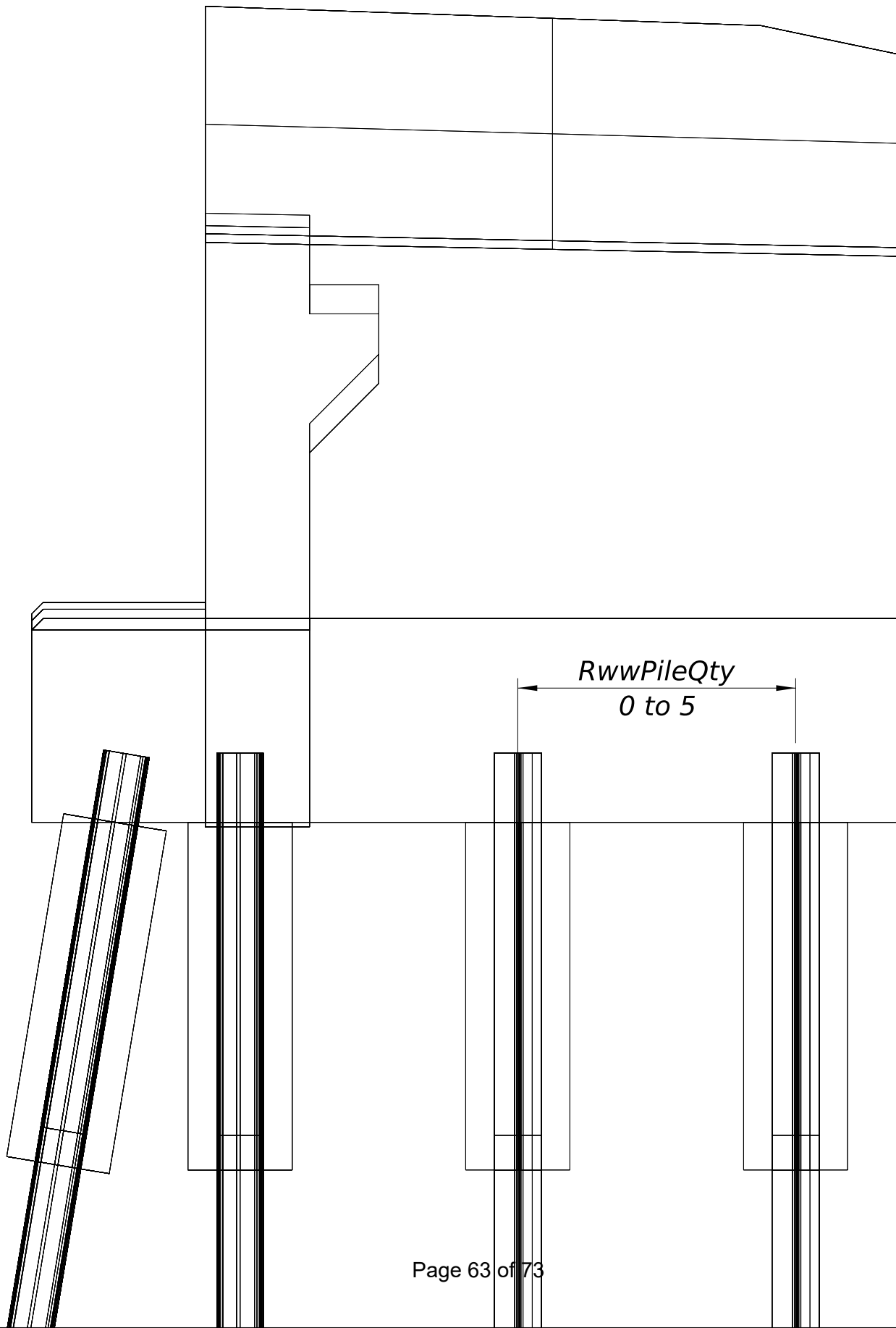


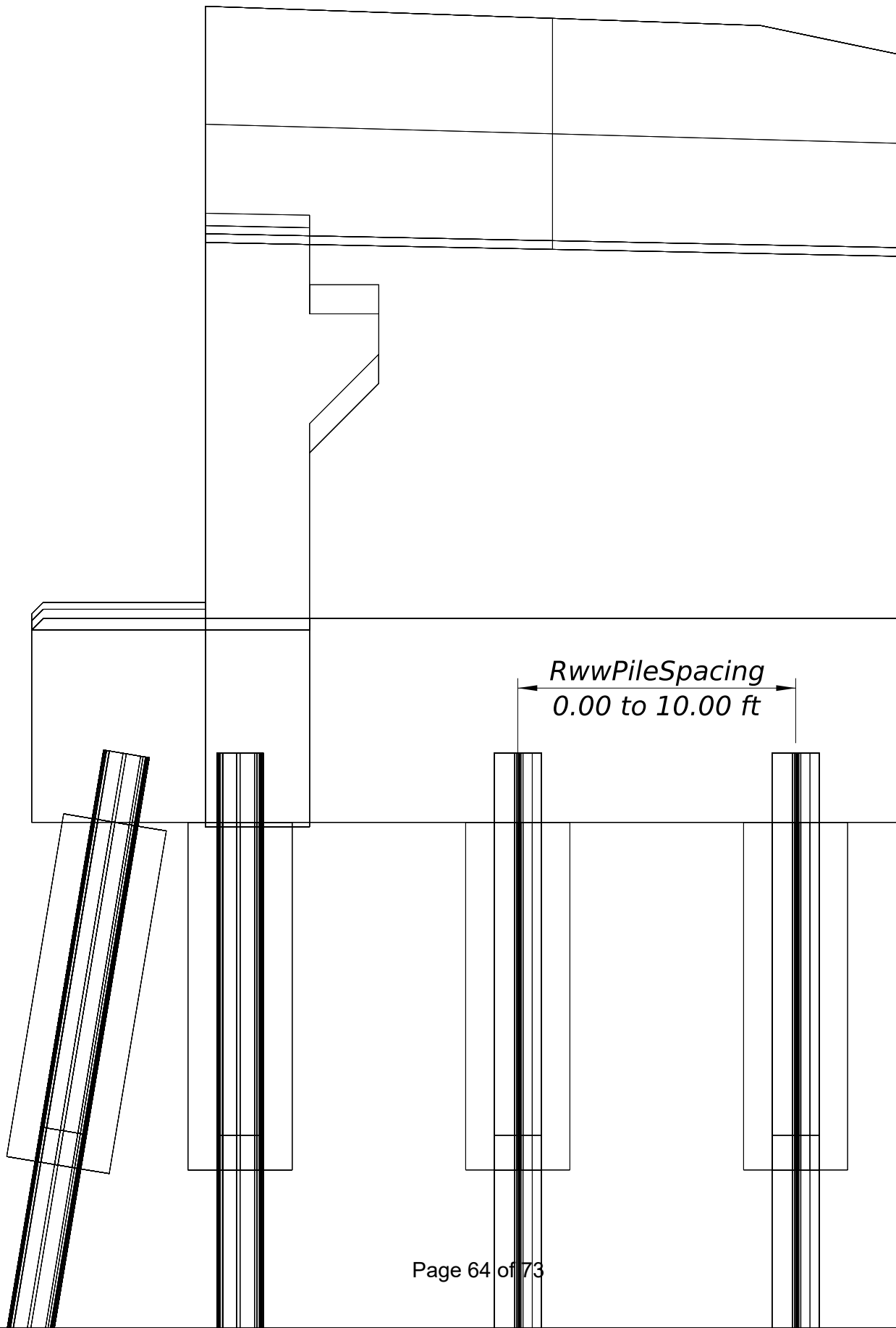




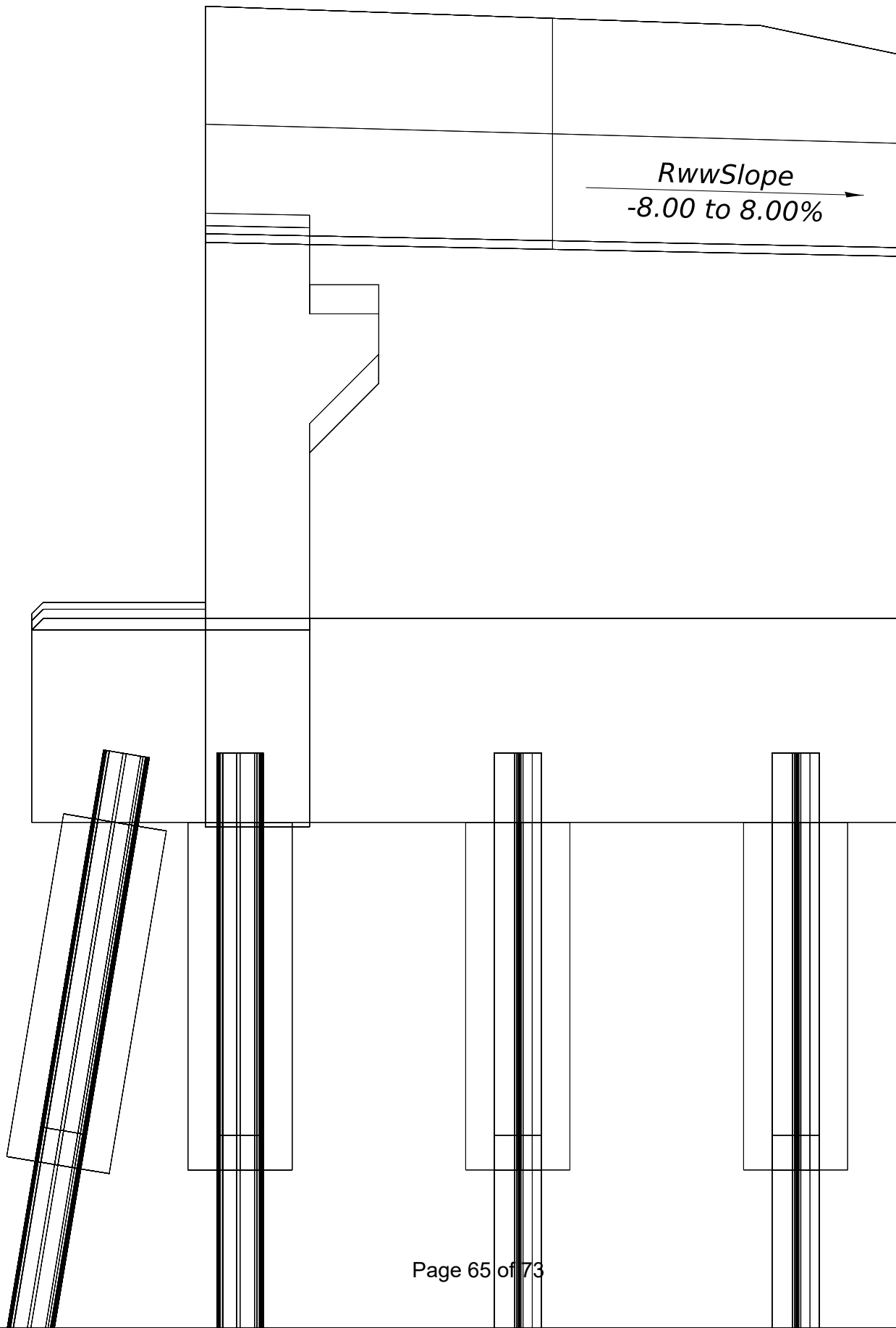


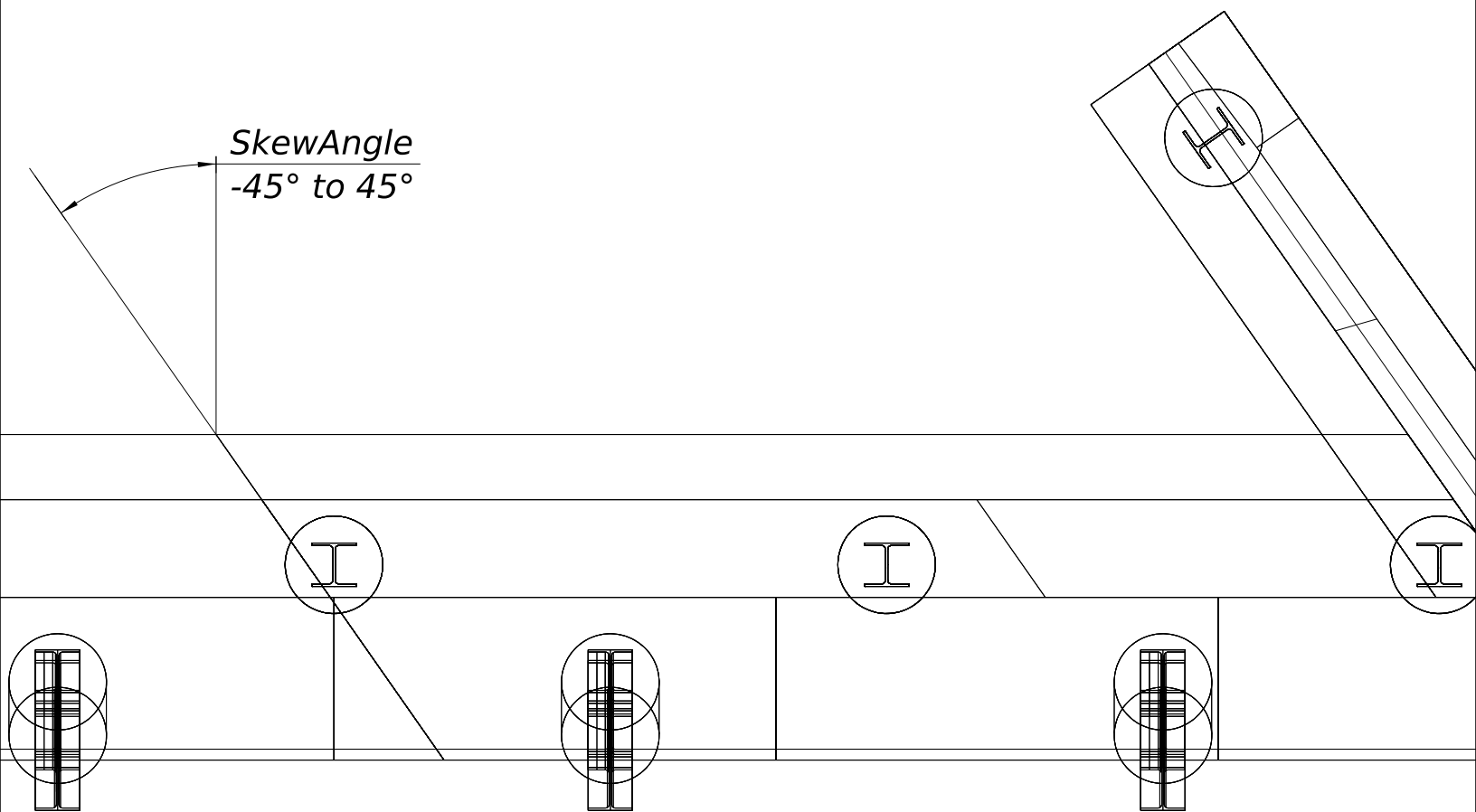
*RwwPileOffset*  
*0.00 to 1.4167 ft*



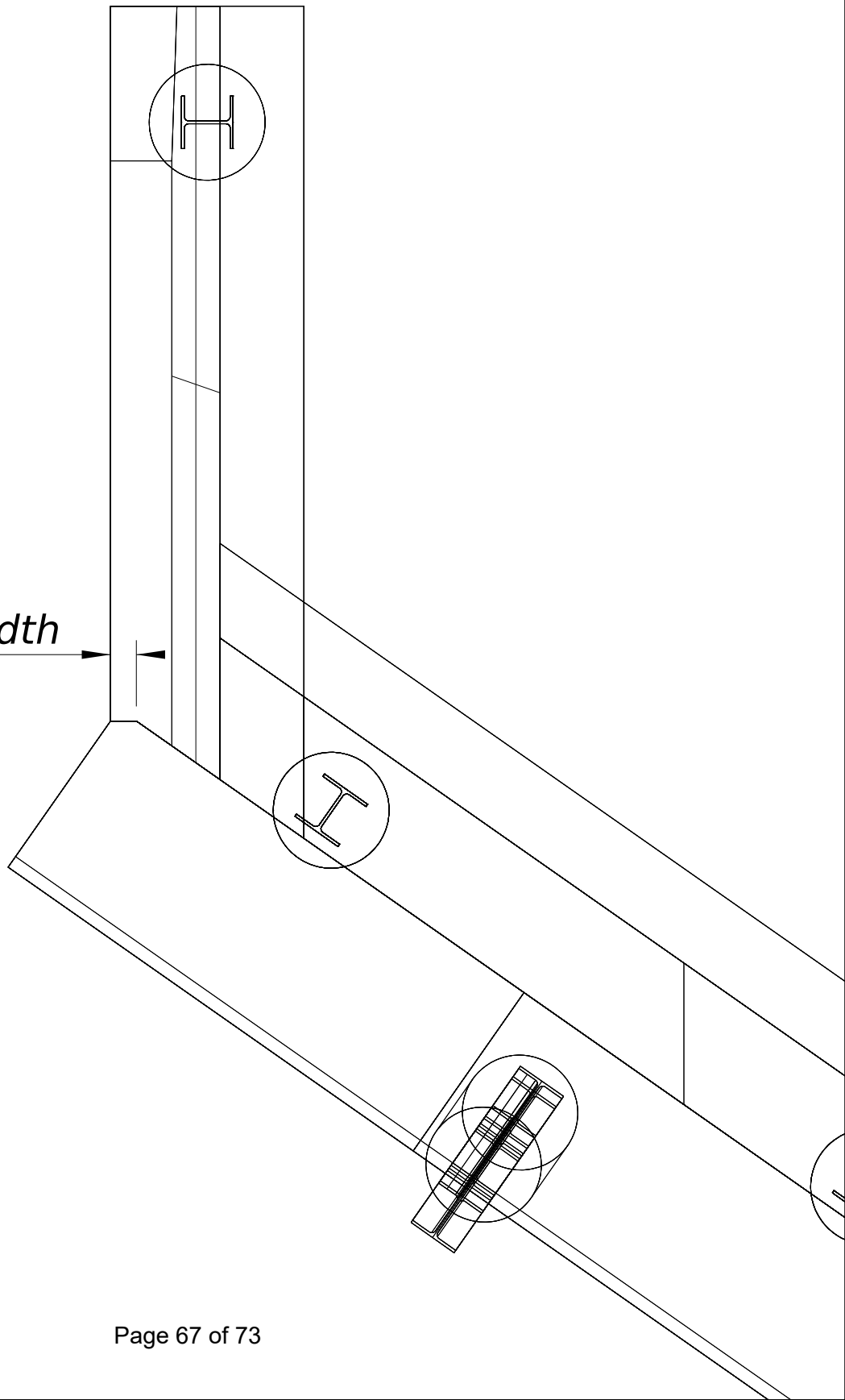


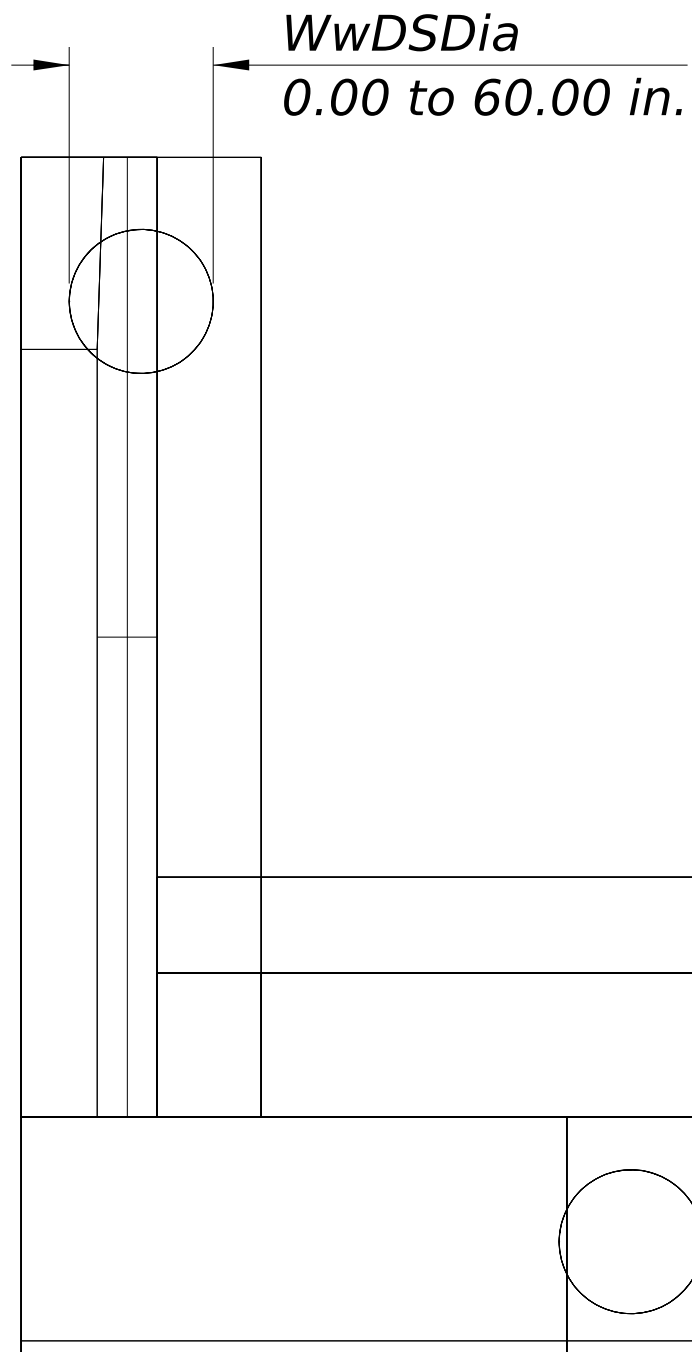


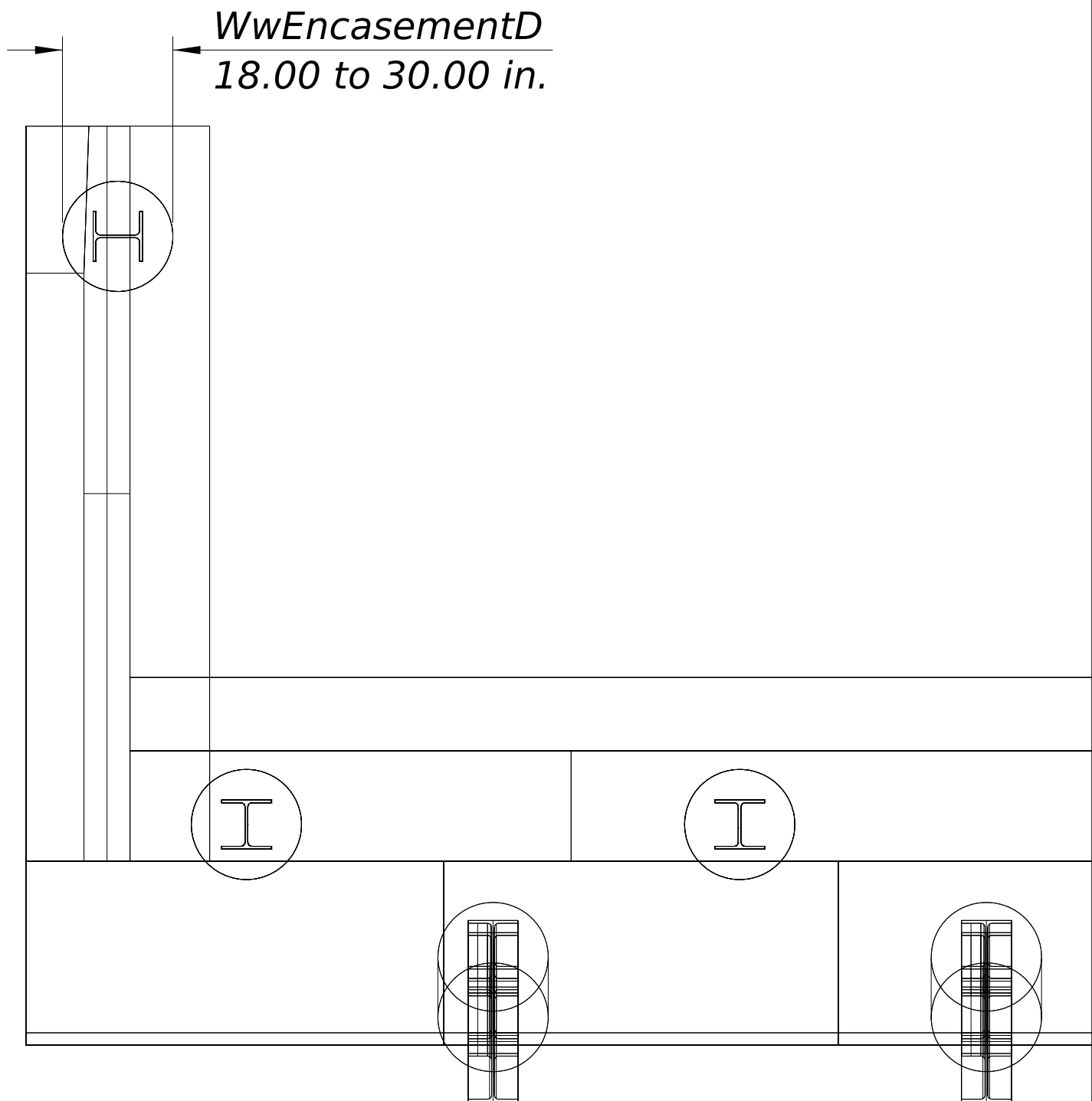




*WwCornerWidth*  
*0 to 1.00 ft*







*WwHP\_b, WwHP\_d, WwHP\_r,  
WwHP\_tf, and WwHP\_tw,*

