

CI224519-L

# The 123's and ABC's of Corridor Model setup, planning, and execution

Jeff Frye, HDR Inc. Bellevue Washington

Cadd Manager/Roadway Designer



# About the speaker

- Jeff Frye
- 28 years of experience
- 15<sup>th</sup> AU
- 2<sup>nd</sup> teaching
- HDR Inc for 6 years

## My co-presenter

### Charline Fox



Is a cadd professional with over 20 years of design and drafting experience. The last 4 years have been with HDR in the Seattle office. This is her 10th year attending AU. She continues to attend because the knowledge and perspective you gain from your peers is unatonable any other way.

# My Team Today

## Zac Sharp

This is his 8th year attending AU. He continues to attend AU to learn and be inspired.



## Stephen Walz

Autodesk University is one of those awesome experiences that really opens your eyes to see how others are pushing the boundaries with software and developing technology!




## Richard Liggett

My first trip to Autodesk University was in 2006 every time I come to AU I realize that the possibilities are endless with the software and collaboration of others.



# What to expect

1. Template – settings and general file housekeeping
  2. Workflow diagrams
  3. QTO Manager – Linear Quantities
  4. Discuss some of the sub-assemblies we will use and why
  5. Create an Assembly
  6. Create a corridor
  7. Get Corridor Shape Quantities
- 

# Template settings

Drawing Settings - Drawing2

Units and Zone | Transformation | Object Layers | Abbreviations | Ambient Settings

Drawing units: Feet  
Imperial to Metric conversion: US Survey Foot (39.37 inches per Meter)  
Scale: 1" = 20'  
Custom scale: 20

Angular units: Degrees  
Scale objects inserted from other drawings  
Set AutoCAD variables to match

Zone: USA, Washington

Available coordinate systems:  
HPGN (HARN) Washington State Planes, North Zone, US Foot  
Selected coordinate system code: HARN\WO.WA-NF

Description: HPGN (HARN) Washington State Planes, North Zone, US Foot

Projection: LM

Datum: HARN\WO

OK Cancel Apply Help

Viewports

New Viewports | Named Viewports

New name:

Standard viewports:  
"Active Model Configuration"  
Single  
Two: Vertical  
Two: Horizontal  
Three: Right  
Three: Left  
Three: Above  
Three: Below  
Three: Vertical  
Three: Horizontal  
Four: Equal  
Four: Right  
Four: Left

Preview:  
View: "Current"  
Visual style: 2D Wireframe  
View: "Current"  
Visual style: 2D Wireframe  
View: "Current"  
Visual style: 2D Wireframe

Apply to: Display Setup: 2D Change view to: "Current" Visual Style: 2D Wireframe

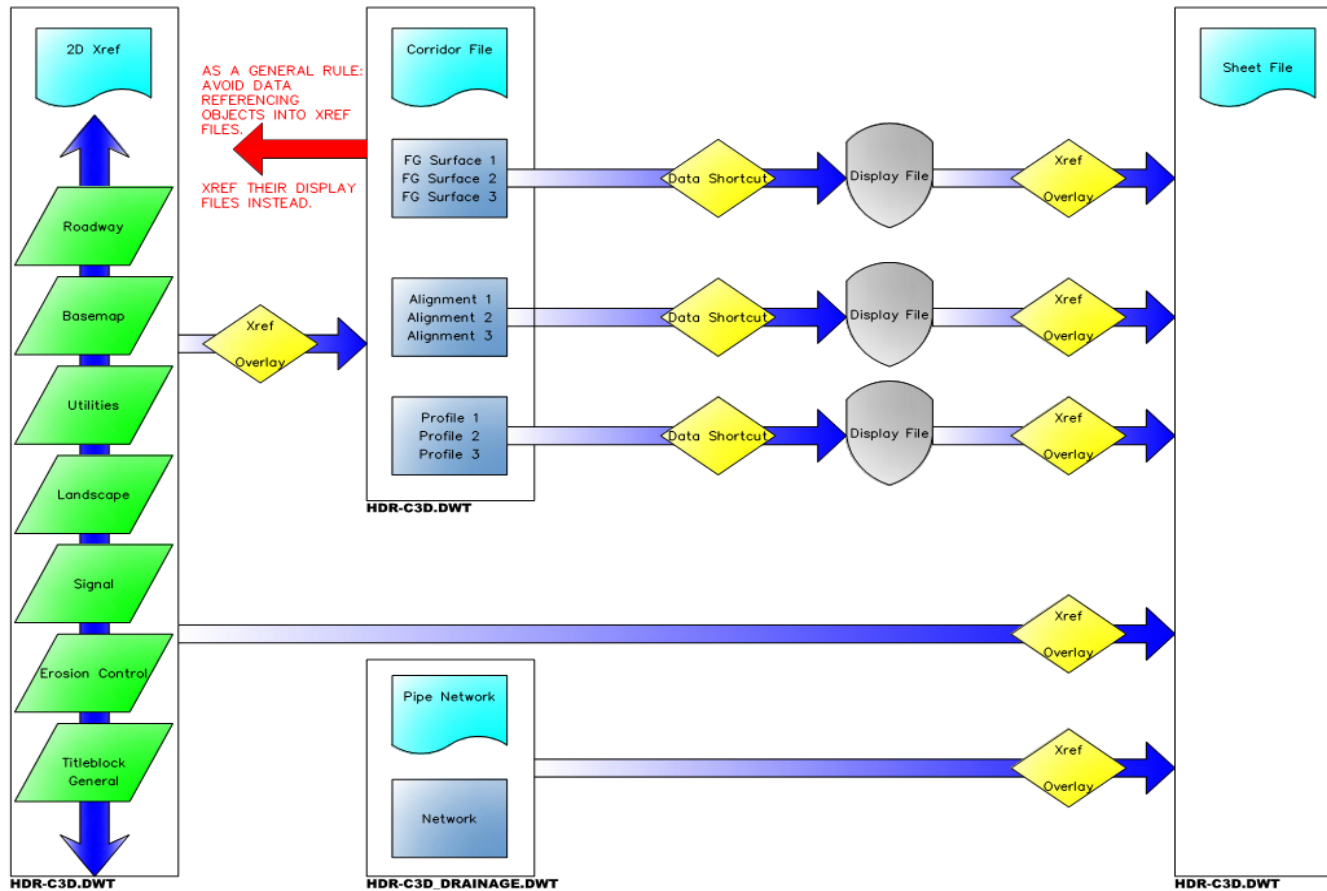
OK Cancel Help

Units and Zone | Transformation | Object Layers | Abbreviations | Ambient Settings

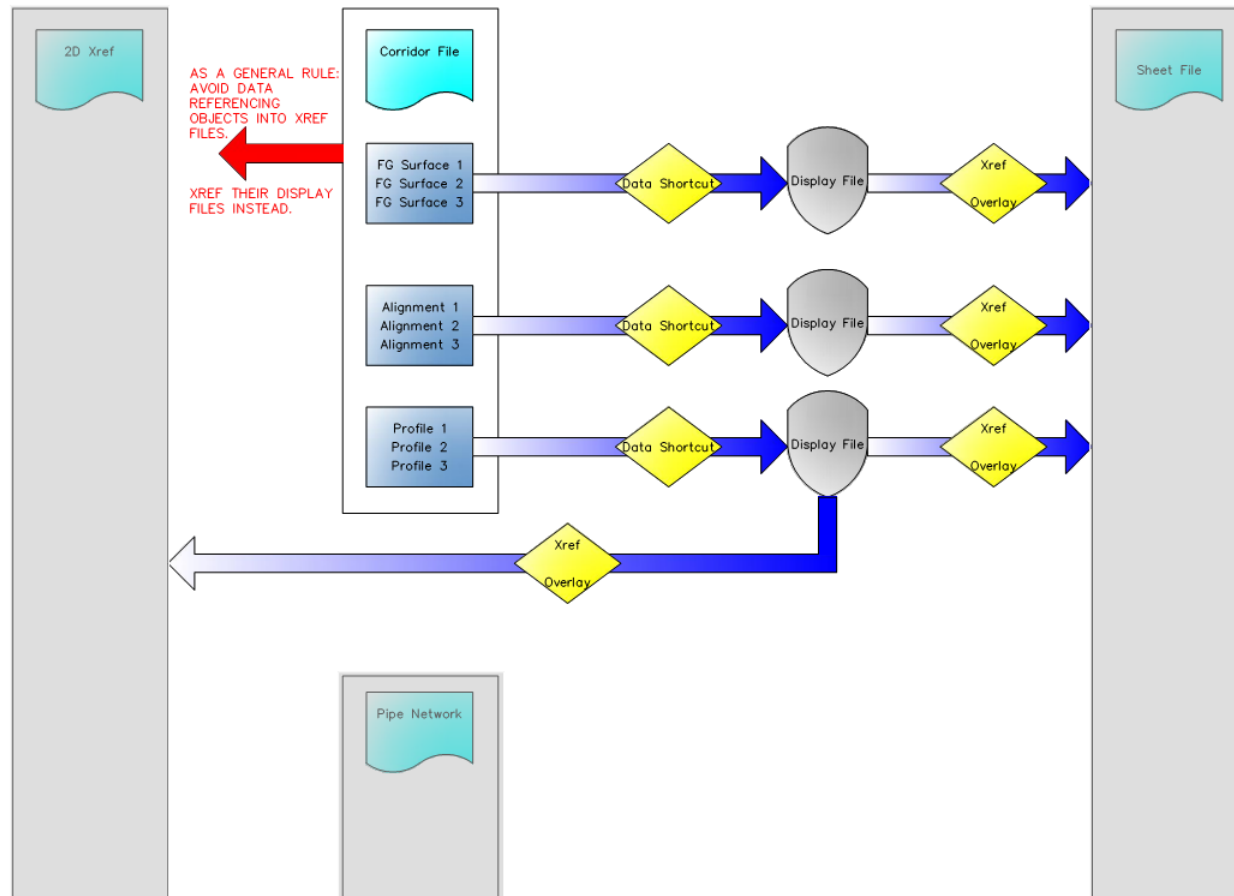
Object	Layer	Modifier	Value	Locked
Alignment	C-ROAD	Prefix	*	(L)
Alignment-Labeling	C-ROAD-TEXT	Prefix	*	(L)
Alignment-Table	C-ROAD-TABL	Prefix	*	(L)
Appurtenance	C-WATR-APPT	None		(L)
Appurtenance-Labeling	C-WATR-TEXT	None		(L)
Assembly	C-ROAD-ASSM	None		(L)
Building Site	0	None		(L)
Cant View	0	None		(L)
Catchment	C-HYDR-CTCH	None		(L)
Catchment-Labeling	0	None		(L)
Corridor	C-ROAD-CORR	Prefix	*	(L)
Corridor Section	C-ROAD-CORR-SCTN	None		(L)
Feature Line	C-TOPO-FEAT	None		(L)
Profile	C-ROAD-PROF	Prefix	*	(L)
Profile-Labeling	C-ROAD-PROF-TEXT	Prefix	*	(L)
Profile View	C-ROAD-PROF-VIEW	Prefix	*	(L)
Profile View-Labeling	C-ROAD-PROF-TEXT	Prefix	*	(L)
Sample Line	C-ROAD-SAMP	Prefix	*	(L)
Sample Line-Labeling	C-ROAD-SCTN-TEXT	Prefix	*	(L)
Section	C-ROAD-SCTN	Prefix	*	(L)
Section-Labeling	C-ROAD-SCTN-TEXT	Prefix	*	(L)
Section View	C-ROAD-SCTN-VIEW	Prefix	*	(L)
Section View-Labeling	C-ROAD-SCTN-TEXT	Prefix	*	(L)
Section View-Quotation	C-ROAD-SCTN-TABL	Prefix	*	(L)
Survey Network	V-SURV-NETWK	None		(L)
Tin Surface	C-TOPO	Prefix	*	(L)
Tin Surface-Labeling	C-TOPO-TEXT	Prefix	*	(L)



# Workflow – Big Picture



# Workflow – Corridor File

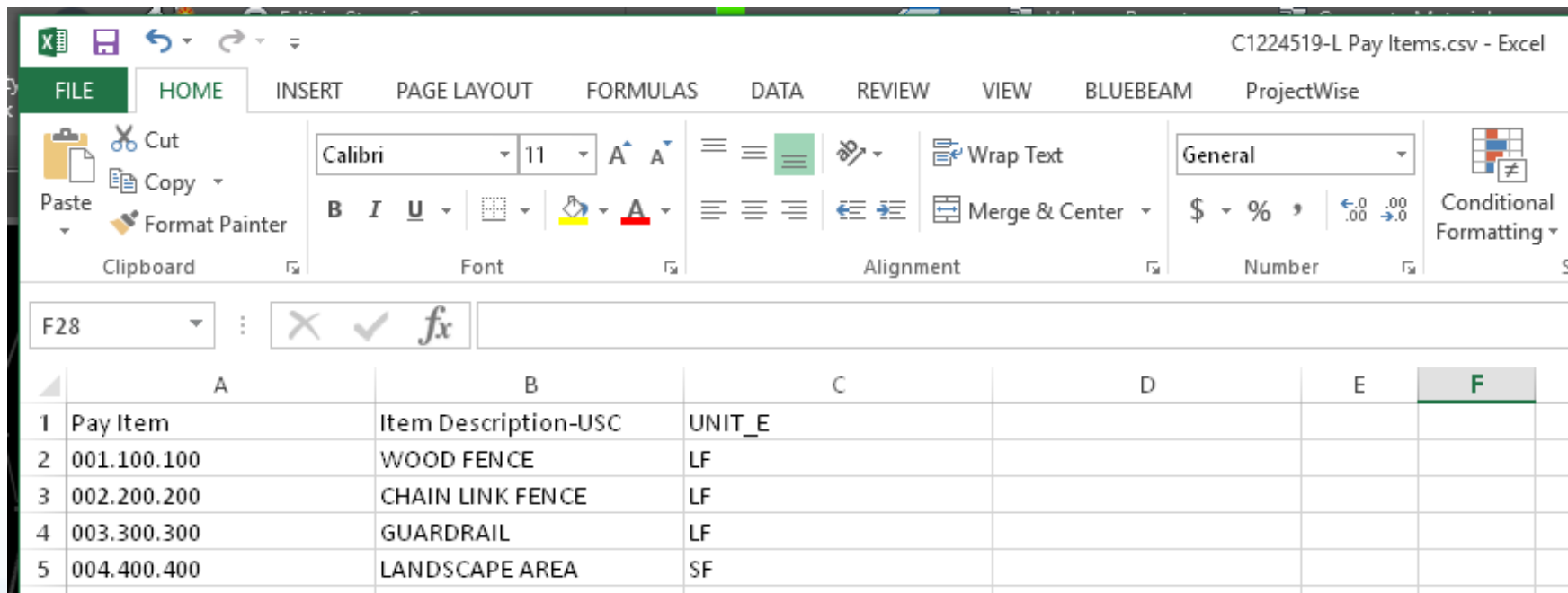




# Workflow – Questions



# QTO Manager and Pay Items – easier than you think...



	A	B	C	D	E	F
1	Pay Item	Item Description-USC	UNIT_E			
2	001.100.100	WOOD FENCE	LF			
3	002.200.200	CHAIN LINK FENCE	LF			
4	003.300.300	GUARDRAIL	LF			
5	004.400.400	LANDSCAPE AREA	SF			

Open: 10-QTO.dwg

# Lets Build a Corridor!

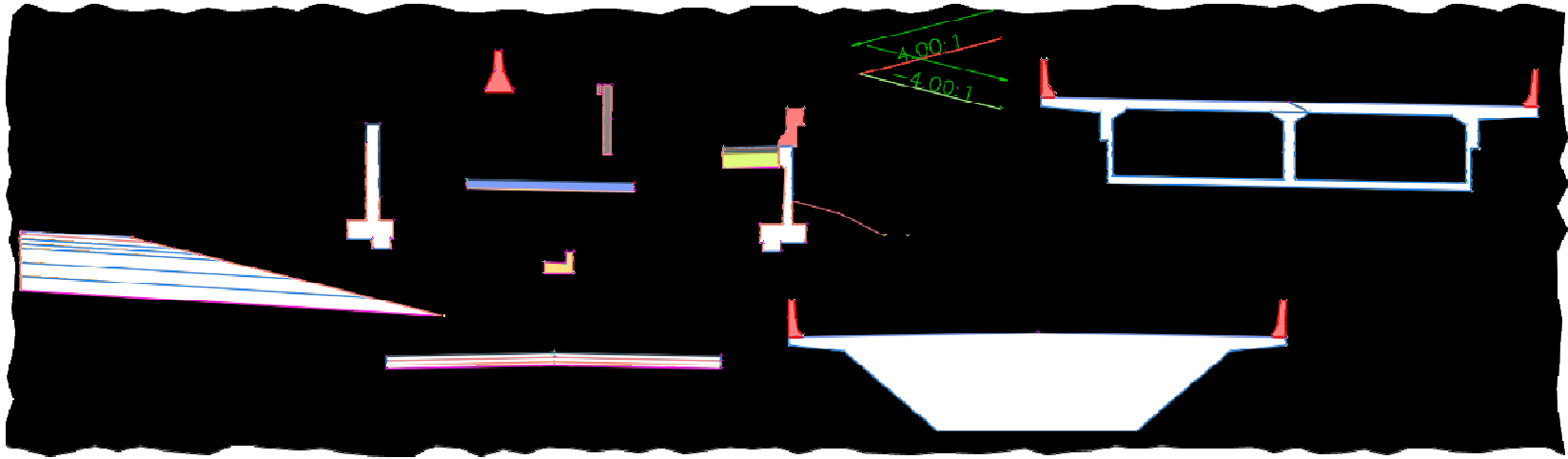
Open: 4-Corridor\_CI224519-L.dwg

The background of the slide features a dynamic, abstract design. It consists of a series of overlapping, curved lines in various shades of blue, creating a sense of depth and movement. These lines are set against a white background, and the overall effect is reminiscent of a modern architectural or engineering aesthetic. The lines appear to be part of a larger grid or mesh structure that is being revealed or built upon.



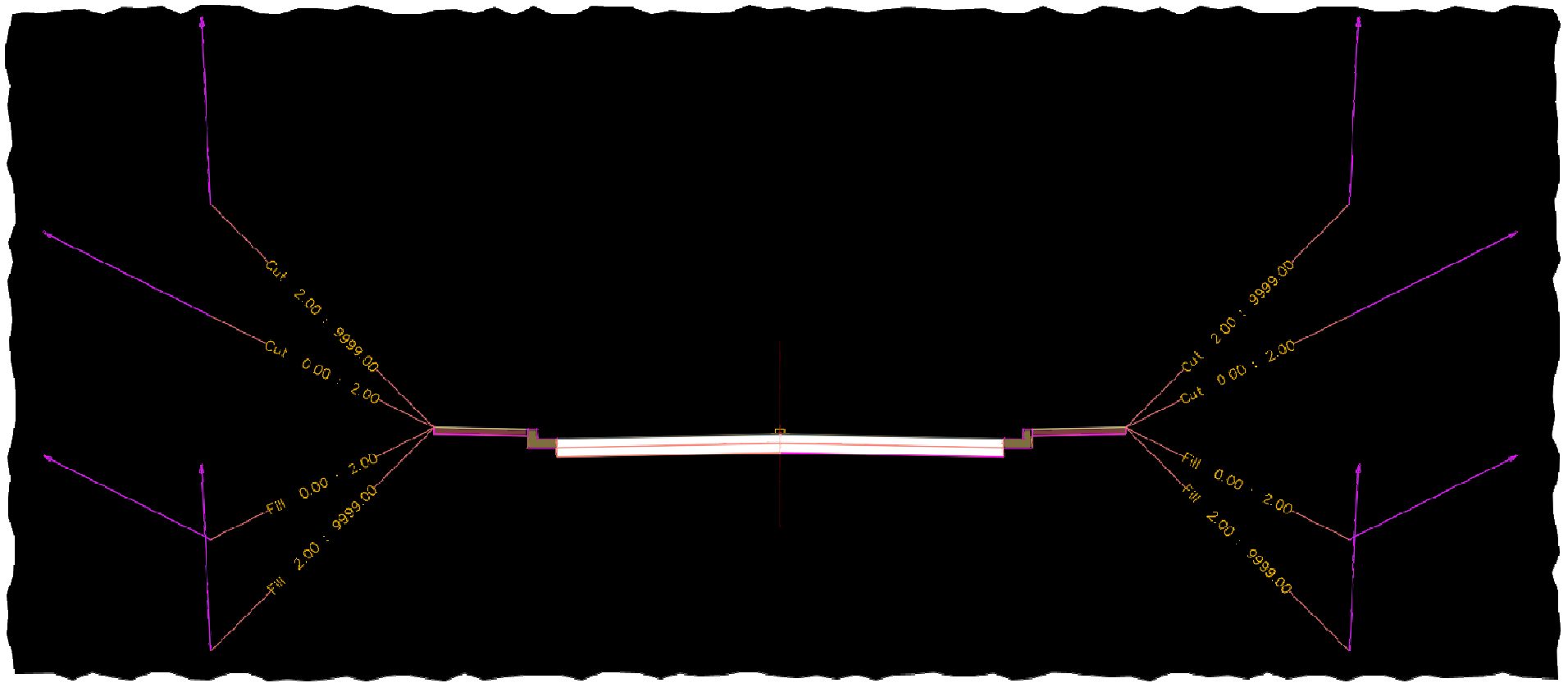
## Assembly Marker

*An assembly is an AutoCAD Civil 3D drawing object (AECCAssembly) that manages a collection of subassembly objects. Together, assemblies and subassemblies function as the basic building blocks of a roadway or other alignment-based design. An assembly object must be applied along an alignment to form a corridor, and it can reference one or more offsets.*



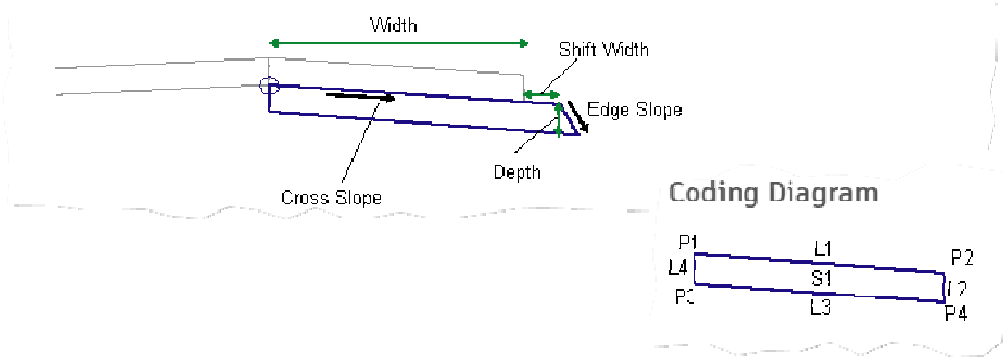
## Sub Assemblies

A **subassembly** is an AutoCAD **Civil 3D** drawing object (AECCSubassembly) that defines the geometry of a component used in a corridor section. About the **Subassembly** Collection (Settings Tab) Use the **Subassembly** collection in the Settings tree to manage **subassembly** settings and commands.



What we will create today!

This subassembly creates a simple pavement structure with user-defnnable point, link, and shape codes.

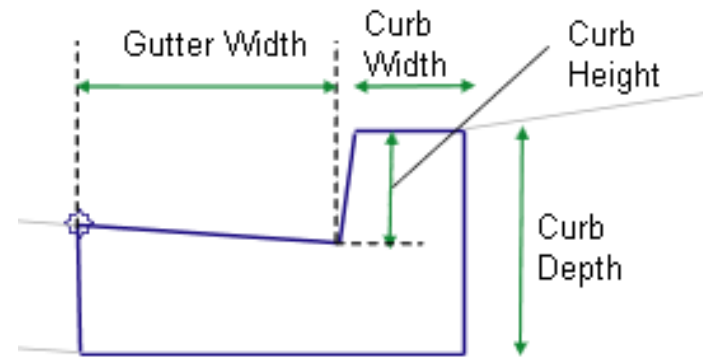


## GenericPavementStructure

### Behavior

This subassembly builds a skeletal subassembly that lets you specify various parameters. All point, link, and shape codes can be user-defined as needed. Additionally, this subassembly can get slopes from a target parameter (profile), or from the superelevation specified on the alignment. It can also assign the width from an offset alignment.

While defining an assembly, you can assign the width of the previous subassembly (the one above), plus a shift width to the subassembly, so that stepped layers are possible.

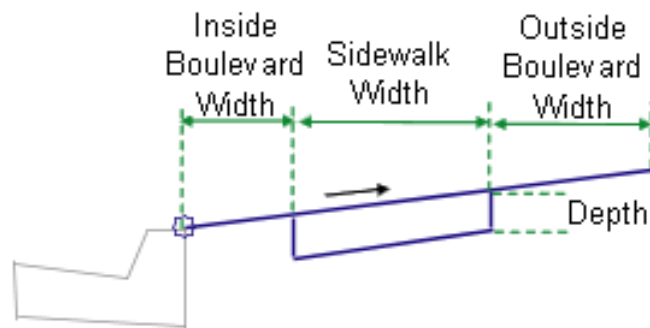


## BasicCurbAndGutter

### Behavior

The subassembly builds the shape for a simple curb and gutter with the attachment point either at (a) the inside edge of the gutter (or lip), or (b) the back of the curb. The face of the curb is given a small, constant width to make it non-vertical.



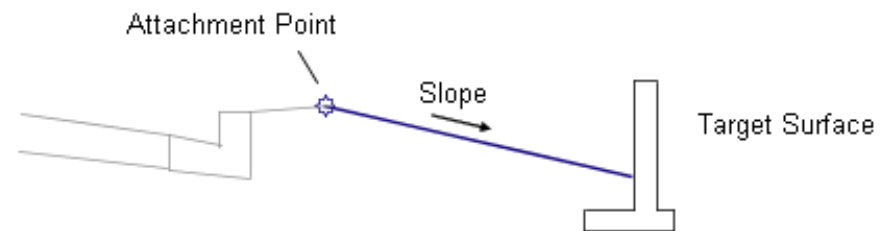


## UrbanSidewalk

### Behavior

The inside grass strip, sidewalk, and outside grass boulevard links are inserted outward from the attachment point at the given slope. The grass strips can be omitted by specifying a zero-width.

Optionally, various element widths can be attained by attaching to offset alignments. Also, the sidewalk cross slope can be derived by tying into an offset profile.



## LinkSlopeToSurface

### Behavior

A link is extended to the left or right from the attachment point at the given slope until it intersects the target surface.

By default, a cut or fill link will be added from the attachment point to the target surface. If the link needs to be added only in cut or fill conditions, specify appropriately a value for the Add Link In property of the subassembly. If the cut link and fill links must be at different slopes, then add this subassembly twice, at the same attachment point, once for Cut Only and then again for Fill Only conditions, with slopes as needed.

This subassembly includes an optional input parameter named Use Superelevation Slope that lets you specify to use the superelevation slope for the shoulder. This parameter can be set to a) Outside shoulder slope, b) Inside shoulder slope, c) Outside Lane Slope, d) Inside Lane Slope, or e) None. None is the default setting.

# Lets Build a Corridor!

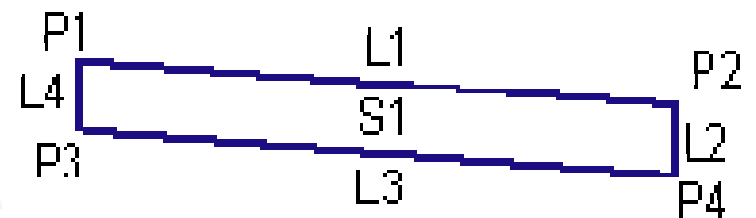
Open: 4-Corridor\_CI224519-L.dwg

Links Surfaces, Hatching (plan view)

Points Feature lines, Label, Targets,  
Quantities (Linear)

Shapes Hatching (sections), Quantities  
(volume)

### Coding Diagram



Reset Labels

Name	Description	Style	Label Style	Render Material	Material Area Fill Style	Feature Line Style	Pay Item	Classification Code
Channel_Side		Grass Areas	<none>	Sitework.Planting.Grass.Short	Grass Hatch		<none>	
Curb	Link comprising a curb or curb an...	Curb - Top	<none>	Concrete.Cast-In-Place.Flat.Gre...	Concrete Hatch		<none>	
Datum	Bottom finish grade	Datum	<none>	<none>	<none>		<none>	
Daylight	Daylight links	Daylight	<none>	Sitework.Planting.Grass.Short	Grass Hatch		<none>	
Daylight_Cut	Cut daylight links	Daylight_Cut	<none>	Sitework.Planting.Grass.Short	Grass Hatch		<none>	
Daylight_Fill	Fill daylight links	Daylight_Fill	<none>	Sitework.Planting.Grass.Short	Grass Hatch		<none>	
Ditch		Grass Areas	<none>	Sitework.Planting.Grass.Short	Grass Hatch		<none>	
Gravel	Finish grade surfaces above gravel ...	Gravel	<none>	Sitework.Planting.Gravel.Mixed	Gravel		<none>	
Lot		Lot	<none>	Sitework.Planting.Grass.Thick	Grass Hatch		<none>	
Median		Grass Areas	<none>	Sitework.Planting.Grass.Short	Grass Hatch		<none>	
Mill	Pavement removal surface	Mill	<none>	<none>	<none>		<none>	
Pave	Any finished grade surface on a pa...	Pave	<none>	Sitework.Paving - Surfacing.Asp...	Pave		<none>	
Pave1	First pavement surface below finis...	Pave1	<none>	Sitework.Paving - Surfacing.Asp...	Pave Hatch		<none>	
Pave2	Second pavement surface below fi...	Pave2	<none>	Sitework.Paving - Surfacing.Asp...	Pave Hatch		<none>	
RWall	Link comprising retaining wall	Curb - Top	<none>	Concrete.Cast-In-Place.Flat.Gre...	Concrete Hatch		<none>	
Sidewalk	Link comprising sidewalk	Sidewalk	<none>	Concrete.Cast-In-Place.Flat.Gre...	Concrete Hatch		<none>	
Slope_Link		Daylight	<none>	<none>	<none>		<none>	
Sod		Grass Areas	<none>	Sitework.Planting.Grass.Short	Grass Hatch		<none>	
Strip	Topsoil stripping surface	Strip	<none>	Sitework.Planting.Soil	Strip Hatch		<none>	
SubBase	Links on subbase surface of paved ...	SubBase	<none>	Sitework.Planting.Gravel.Crushed	<none>		<none>	
Top	Top formation links	Top	<none>	<none>	<none>		<none>	
Point								
<default>		Basic	<none>			Basic Feature Line	<none>	
<no codes>		_No Markers	<none>			Basic Feature Line	<none>	
Back_Curb		Basic	<none>			Basic Feature Line	<none>	
Cut		Basic	<none>			Corridor Daylight Line - Cut	<none>	
Fill		Basic	<none>			Corridor Daylight Line - Fill	<none>	
Flange		Basic	<none>			Basic Feature Line	<none>	
Flowline_Gutter		Basic	<none>			Basic Feature Line	<none>	
Sidewalk_In		Basic	<none>			Basic Feature Line	<none>	
Sidewalk_Out		Basic	<none>			Basic Feature Line	<none>	
Top_Curb		Basic	<none>			Basic Feature Line	<none>	
Shape								
<default>		Basic	<none>					
<no codes>		_No Shading	<none>					
Asphalt		Basic	<none>					
Barrier	Closed area with in a concrete barr...	Barrier	<none>					
Base	Base course area in paved sections	Base	<none>					
CSBC		Basic	<none>					
Curb	Closed area withing concrete curb ...	Curb	<none>					

# Compute Material Quantities

Open: 5-Corridor\_CI224519-L - quantity. Dwg



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