ACO Qmax465

Subassembly Installation and Reference Guide
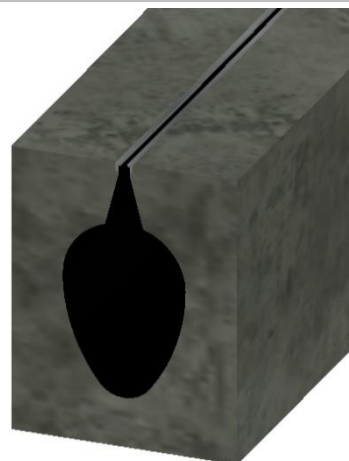
User Guide for Autodesk AutoCAD Civil 3D files

Contents

1. Introduction

This document describes the installation, configuration and use of the ACO Qmax subassembly component for AutoCAD Civil 3D 2021.

2. Installing the ACO Qmax465 subassembly

The Qmax sub-assembly is available as a .pkt file which contains the subassembly .dll file and associated configuration files for installing the subassembly in Civil 3D.

To install the subassembly, click on the Import panel title on the Insert ribbon.
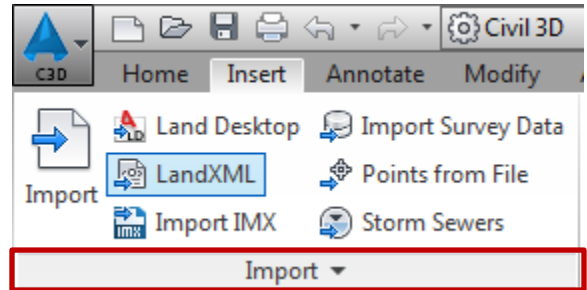
Choose import subassemblies

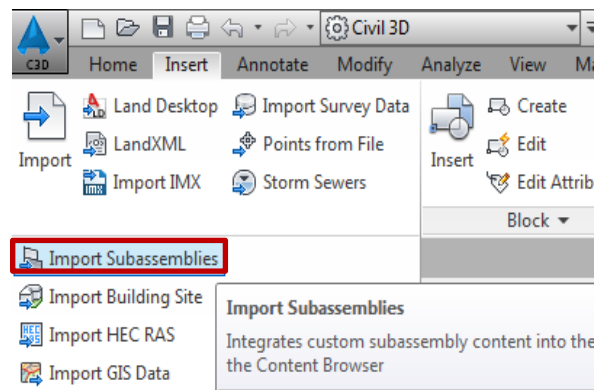Browse to the location of the ACOQmax465.pkt file, and choose a tool palette to import to, or create a new palette. The subassembly can also optionally be added to the user Catalog Library.
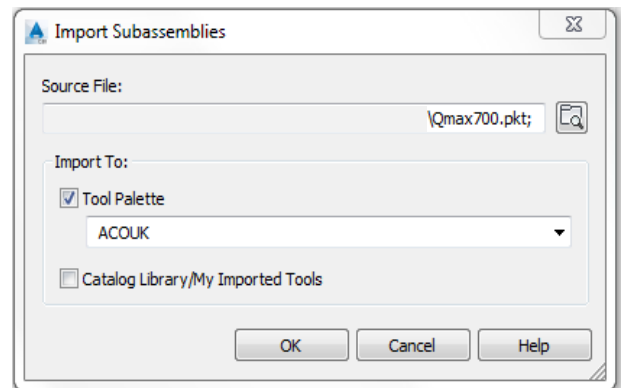
The tool palette in civil 3D will now show the ACO Qmax465 subassembly. Note that by right-clicking in the tool palette, the palette can be customized by creating a separate item for the ACO Qmax465, as shown here.

3. Using the ACO Qmax465 subassembly

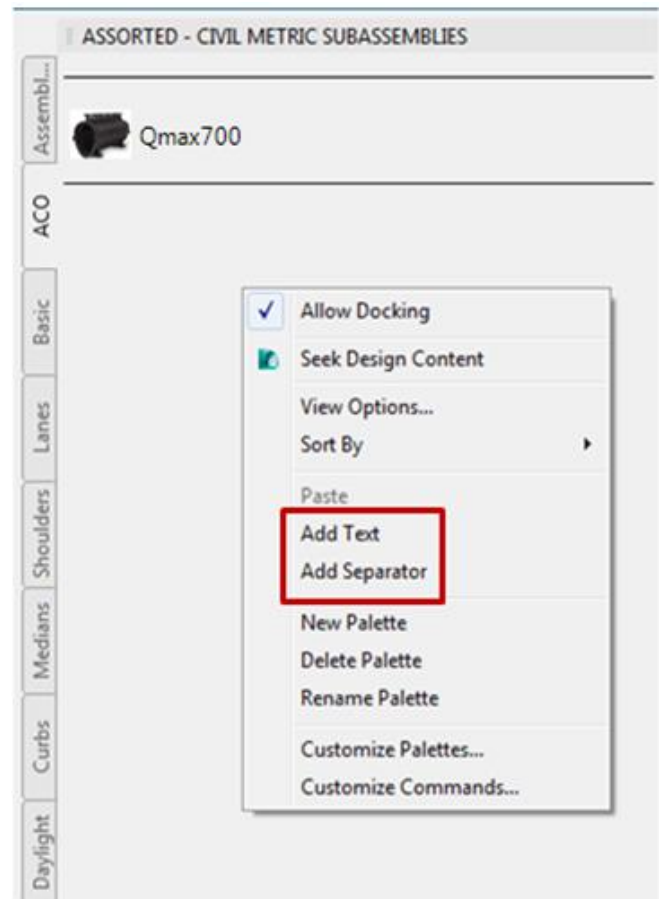The ACO Qmax subassembly includes definitions for the following Edge rail type:

Qmax 465 with Edge rail types:-
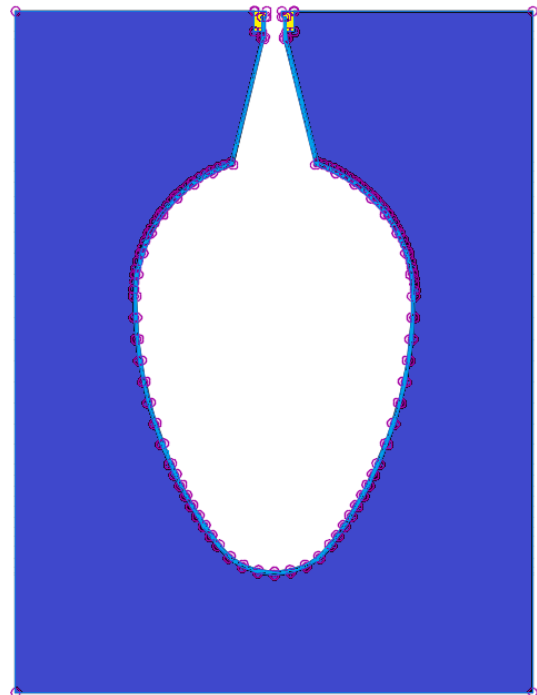
Q_Flow_Castiron

Q_Guard_Castiron

Q_Flow_Galvanized

Q_Guard_Galvanized

Q_Slot_Galvanized

Data	−
Code Set Style	Qmax - Assembly Hatch & Codes
Default Loop In Layout Mode	Last
Default Loop Offset In Layout M...	-10.000
Geometry Generate Mode	.NET
.NET Class Name	Subassembly.Qmax700
.NET Assembly Name	C:\ProgramData\Autodesk\C3D 201...

ADVANCED	−

Parameters	−
Side	Left
Edgerails_Types	Q_Flow_Castiron
Haunch Depth Parameter	0.200m
Haunching	Yes
Haunch Width Parameter	0.200m
Standard & LoadClass	EN1433 F900
Pavement_Type	Concrete_pavement
Haunch Shape Code	Haunch
Channel Top Point Code	QmaxChannelTop
Channel Bottom Invert Point Code	ChannelBottomInvert
Edge rail Shape Code	Edgerail
Edge rail Link Codes	Edgerail_Formation
Channel Formation Link Codes	Channel_Formation
Bottom Outer Channel Point Code	BottomOuterChannel
Channel Top Link Code	Top_Qmax
Pipe Link Code	Pipe
Pipe Inside Link Code	Inside_Pipe
Pipe Invert Point Code	PipeInvert
Edge rail Point Code	EdgerailTop
Edge rail Top Link Code	Top_Edgerail
Haunch Link Code	Haunch_Formation
Channel Bottom Point Code	BottomofQmax
Channel Shape Code	QmaxChannel

The subassembly also optionally includes haunching detail.

3.1   User Defined Parameters

| Parameter	Default Value	Definition
Side	Right	Side to apply the Sub - assembly
Edgerails_Types	Q_Flow_Castiron	Choose type of edge rail
Haunch Depth Parameter	0.2	Depth of the haunch
Channel Top Point Code	QmaxChannelTop	Point code for the Qmax channel body
Haunch Shape Code	Haunch	Shape code for the haunching
Pavement_Type	Asphalt Pavement	Type of pavement used for Qmax (Asphalt Pavement, Concrete Pavement, Block Pavement)
Standard & LoadClass	EN1433 F900	Standard & Load Class
Haunch Width Parameter	0.2	Width of the haunch
Haunching	Yes	Include haunch for the subassembly
Edgerail Link Codes	Edgerail_Formation	Link code for the edge rail Formation
Channel Formation Link Codes	Channel_Formation	Link code for the channel formation
Bottom Outer Channel Point Code	BottomOuterChannel	Point code for the outer bottom side of Qmax
Channel Top Link Code	Top_Qmax	Link code for the top of the channel
Edgerail Shape Code	Edgerail	Shape code for the edge rail
Channel Shape Code	QmaxChannel	Shape code for the channel
Channel Bottom Invert Point Code	ChannelBottomInvert	Point code for the channel invert
Channel Bottom Point Code	BottomofQmax	Point code for the channel bottom
Haunch Link Code	Haunch_Formation	Link code for the haunch formation

| Edgerail Top Link Code	Top_Edgerail	Link code for the edge rail top
Edgerail Point Code	EdgerailTop	Point code for the edge rail front
Pipe Invert Point Code	PipeInvert	Point code for the pipe invert
Pipe Inside Link Code	Inside_Pipe	Link code for the pipe inside
Pipe Link Code	Pipe	Link code for the pipe

Parameters		−
Side	Left	
Edgerails_Types	Q_Flow_Cast iron	
Haunch Depth Parameter	0.200m	
Channel Top Point Code	QmaxChannelTop	
Haunch Shape Code	Haunch	
Pavement_Type	Concrete_pavement	
Standard & LoadClass	EN1433 F900	
Haunch Width Parameter	0.200m	
Haunching	Yes	
Edge rail Link Codes	Edgerail_Formation	
Channel Formation Link Codes	Channel_Formation	
Bottom Outer Channel Point Code	BottomOuterChannel	
Channel Top Link Code	Top_Qmax	
Edge rail Shape Code	Edgerail	
Channel Shape Code	QmaxChannel	
Channel Bottom Invert Point Code	ChannelBottomInvert	
Channel Bottom Point Code	BottomofQmax	
Haunch Link Code	Haunch_Formation	
Edge rail Top Link Code	Top_Edgerail	
Edge rail Point Code	EdgerailTop	
Pipe Invert Point Code	PipeInvert	
Pipe Inside Link Code	Inside_Pipe	
Pipe Link Code	Pipe	

All the default value of the parameter can be edited by end-user. User can also input different values for the Haunch Depth Parameter & Haunch Width Parameter. By default both parameter is assigned with the maximum value.

3.2   Qmax465 with different Edge rail types

Q_Flow_Castiron

Q_Guard_Castiron

Q_Flow_Galvanized

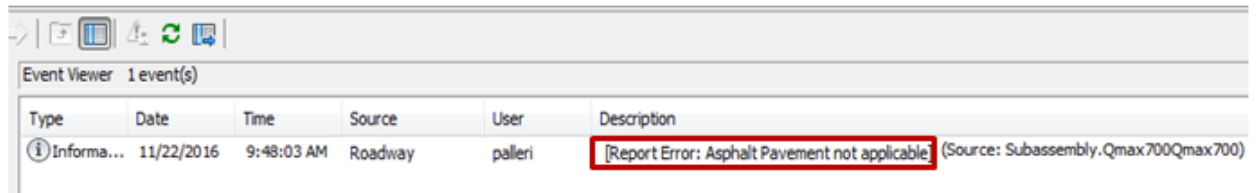Q_Guard_Galvanized
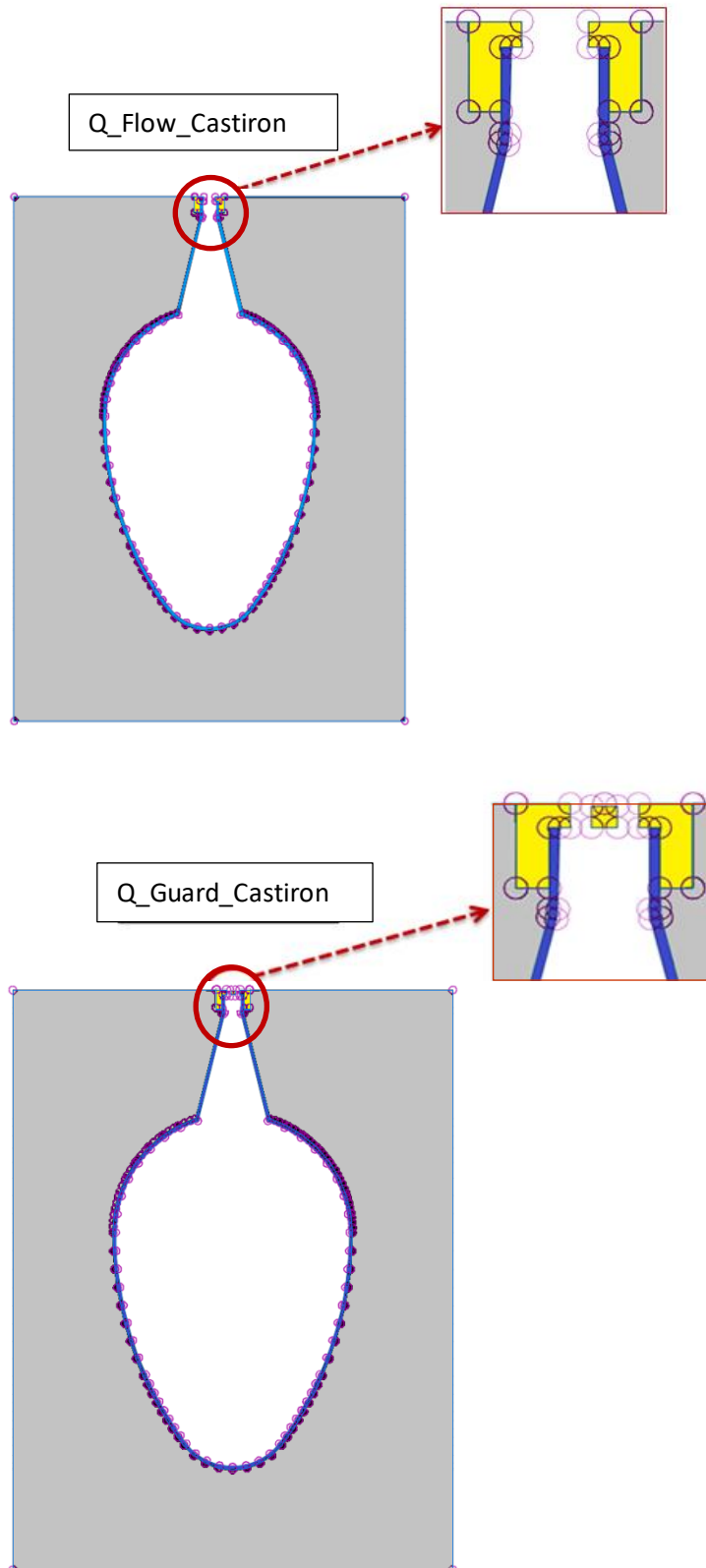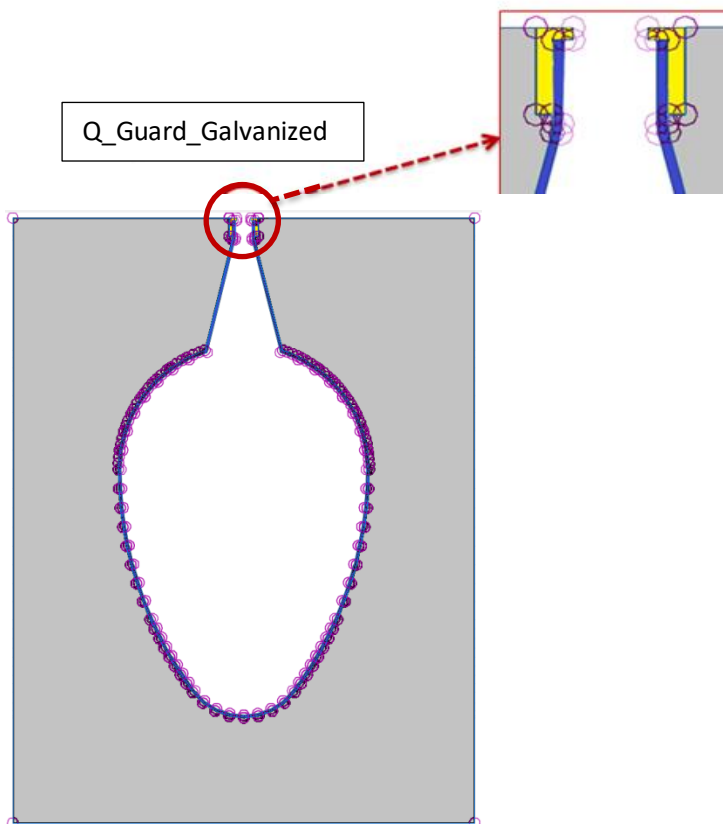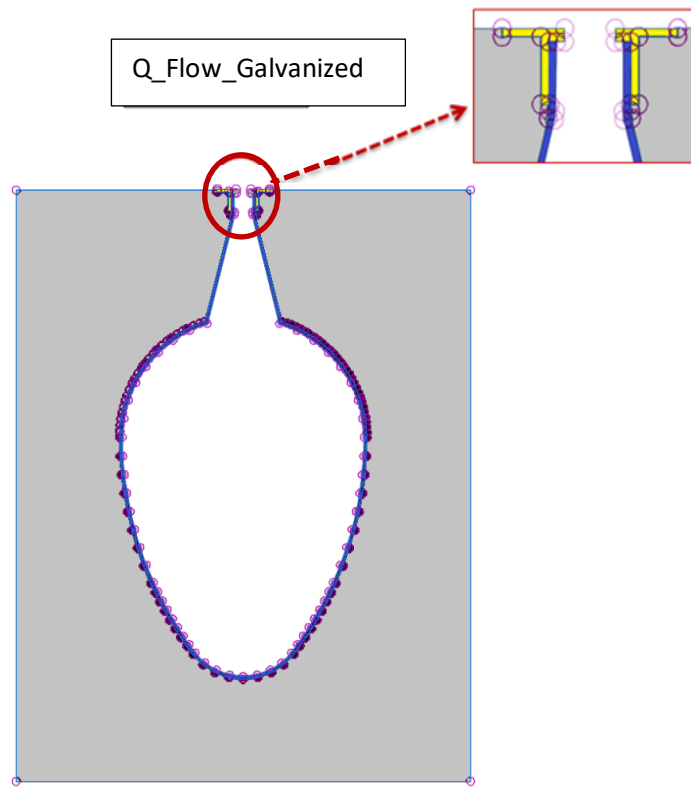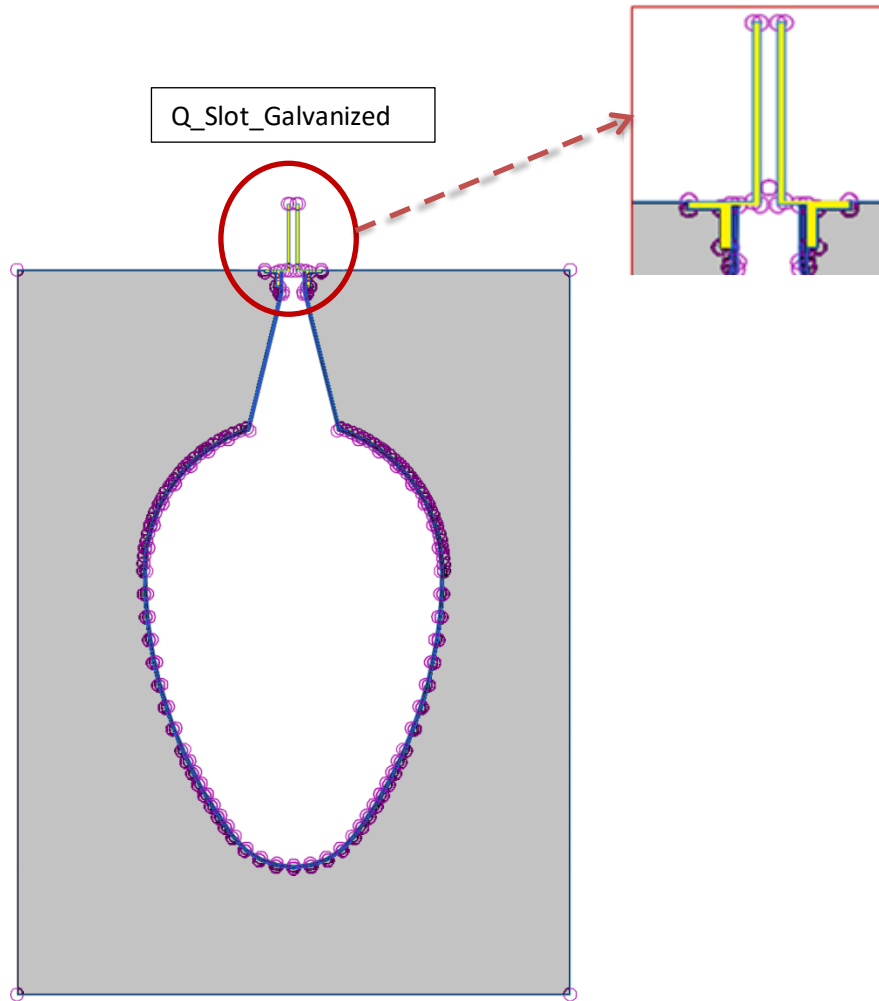
Q_Slot_Galvanized

3.3   Haunch types

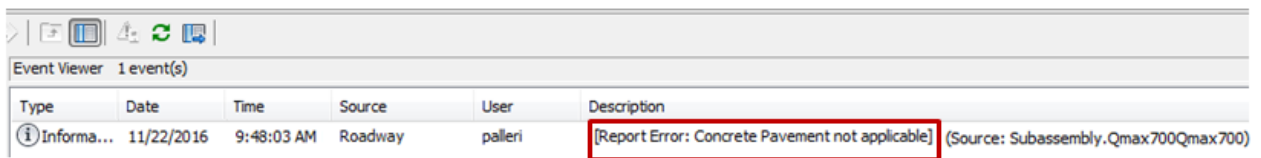There are three types of haunching available for Qmax465.

1. Asphalt Pavement : Applicable for all edge rails except for Q_Slot_Galvanized edge rail. If enduser assigns, Q_Slot_Galvanized with Asphalt Pavement, automatically reports error message "Asphalt Pavement not applicable".
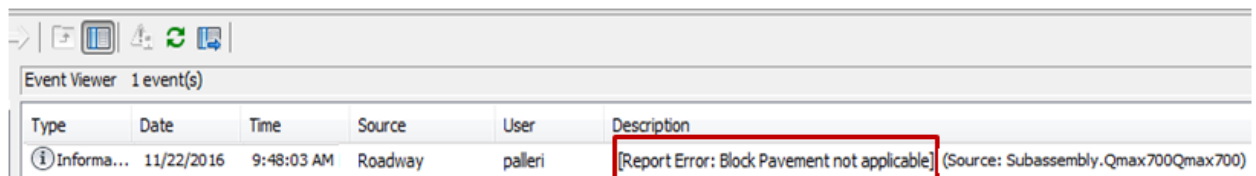

2. Concrete Pavement : Applicable for all edge rails except for Q_Slot_Galvanized edge rail. If enduser assigns Q_Slot_Galvanized with Concrete Pavement, automatically reports error message "Concrete Pavement not applicable".
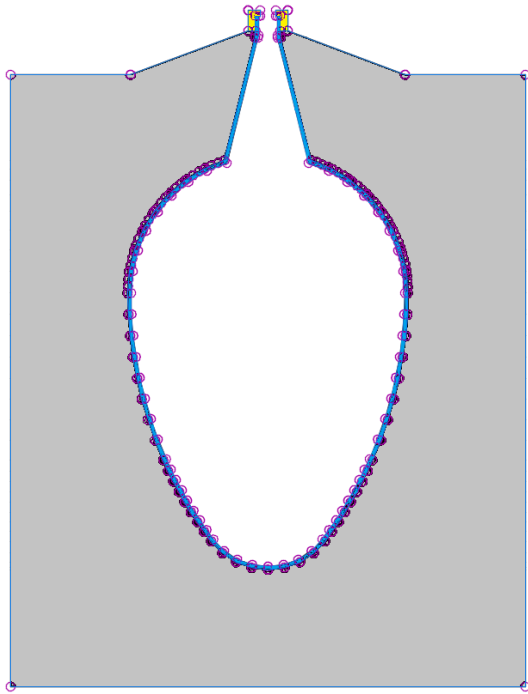

3. Block Pavement : Applicable only for Q_Slot_Galvanized edge rail. If enduser assigns any other edge rail with Block Pavement, automatically reports error message "Block Pavement not applicable".
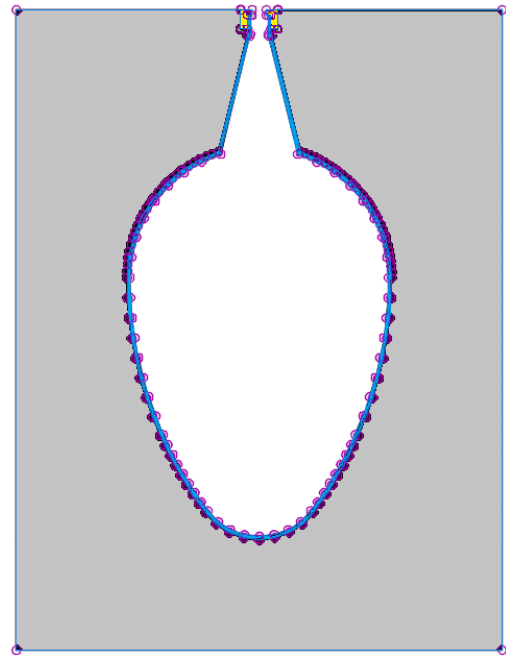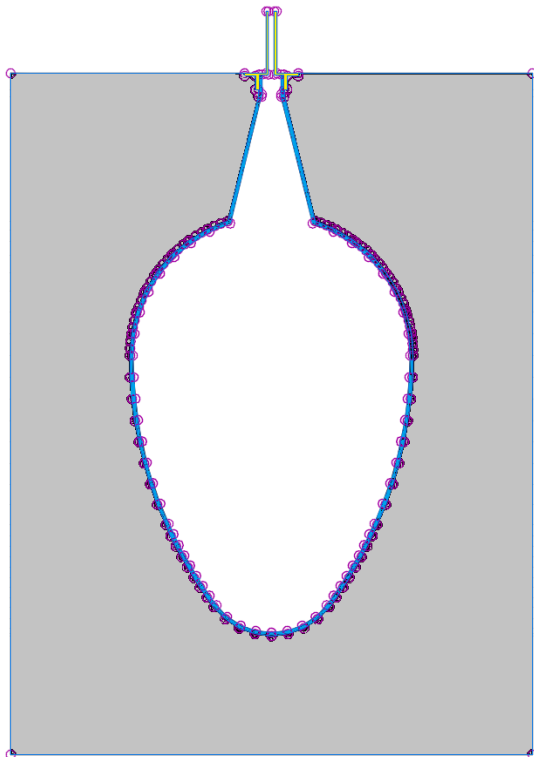
Asphalt Pavement

Concrete Pavement

Block Pavement

3.4   Point Codes

The point codes can be used in the code set styles to generate featurelines at the specific positions on the subassembly. The pipe point codes are included so that the user may project these lines onto a profile view, or possibly convert the featureline to a pipe object for exporting into an analysis package.

Edge rail

Edge rail Point Code
Edge rail Top

Q_Flow_Cast iron

Edge rail Point Code
Edge rail Top

Q_Guard_Galvanized

Edge rail Point Code
Edge rail Top

Q_Guard_Cast iron

Edge rail Point Code
Edge rail Top

Q_Slot_Galvanized

Edge rail Point Code
Edge rail Top

Q_Flow_Galvanized

Qmax Channel

Channel Top Point Code
QmaxChannelTop

Bottom Outer Channel Point Code
BottomOuterChannel

Pipe Invert Point Code
PipeInvert

Channel Bottom Invert Point Code
ChannelBottomInvert

3.5   Link and Shape codes

Edge rail

Edgerail Top Link Code
Top_Edgerail

Edge rail Link Codes
Edgerail_Formation

Edge rail Shape Code
Edgerail

Qmax Channel

Channel Top Link Code
Top_Qmax

Channel Formation Link Codes
Channel_Formation

Channel Shape Code
QmaxChannel

Pipe Link Code
Pipe

Haunch

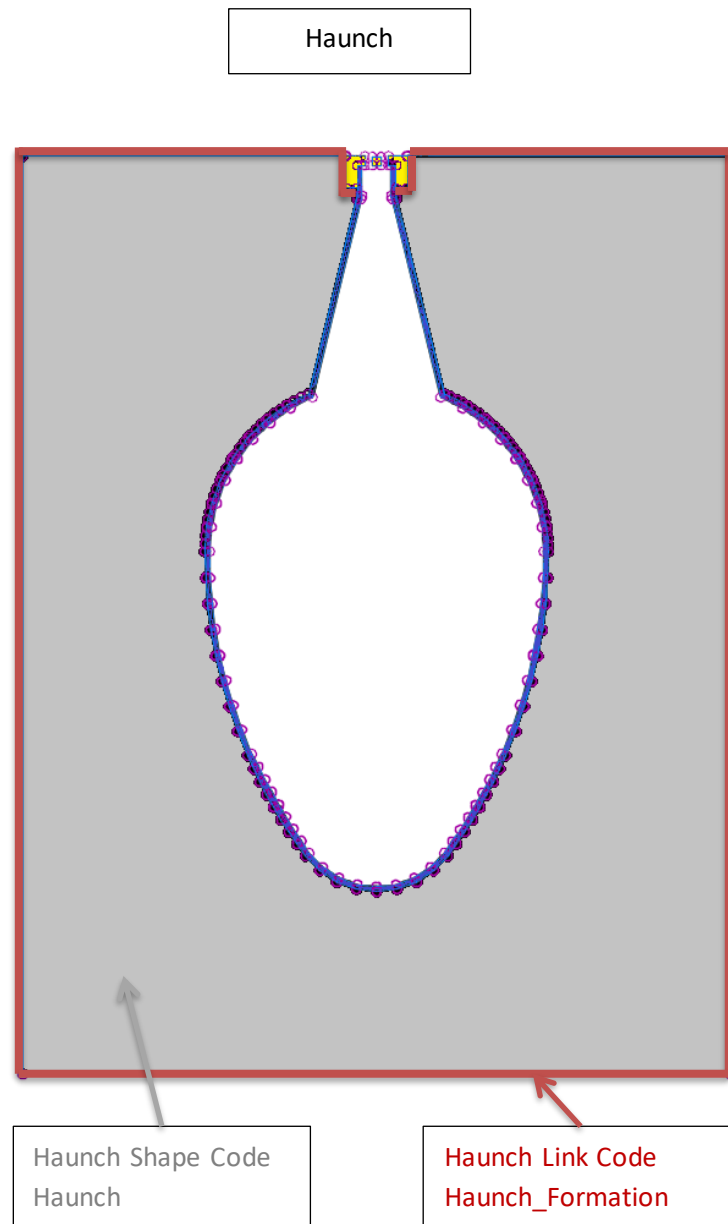Haunch Shape Code
Haunch

Haunch Link Code
Haunch_Formation

The link codes can be used to display the outline of the subassembly in cross-sections, and also to create surface from the codes. The default values supplied with the subassembly include the standard codes of Top and Formation which are used universally to indicate a Top surface of the corridor model or a Formation surface of the corridor model respectively. The Qmax is indicated by the default link code of Qmax, and the default shape code of Qmax. The Edge rail is indicated by the default link code of edge rail, and the default shape code of edge rail .The haunching is indicated by the default link code of Haunch, and the default shape code of Haunch. All of these codes can be over-ridden by the user. The shape codes are used to enable hatching to be applied in the cross-section views, and also to enable volumes of materials to be generated.

4. Code Set Styles

Code Set Styles are used to control the appearance and labeling of the individual point, link, and shape components of the subassemblies. The many styles required are grouped into Code Sets. Code Set settings are located in the General collection on the Settings tab of the Toolspace.

Different code set styles used in the Qmax Code set style template as shown here.
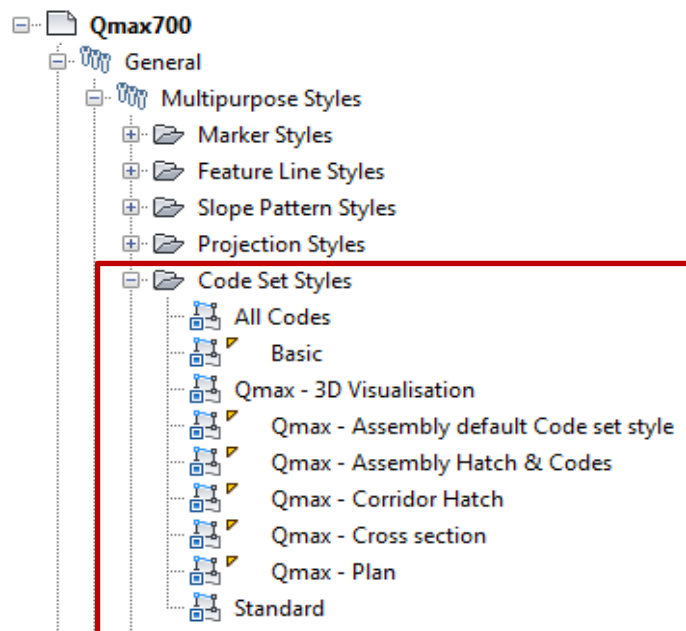
4.1   Import Code Set Styles from one drawing to another

Open the drawing in which Qmax Code Set style has to be imported.

- Run command IMPORTSTYLESANDSETTINGS
- Browse to the location of Qmax Code Set Style template
- Select Styles as desired, check "Import Settings" toggle and click OK
- Warning will be displaying informing that duplicates styles may be overwritten
- Drawing will import styles and settings from Qmax Code Set Style template to this template