

ACO PowerDrain SK100

Subassembly Installation and Reference Guide

User Guide for Autodesk AutoCAD Civil 3D files

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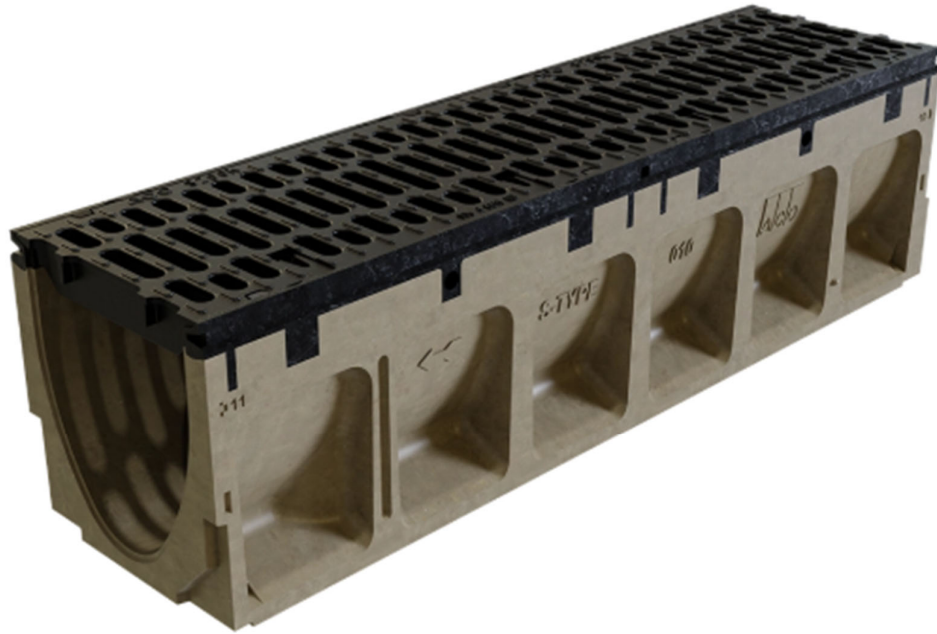
1. Introduction

ACO Water Management: Civils + Infrastructure

ACO Pty Ltd
134-140 Old Bathurst Road
Emu Plains NSW 2750
Australia

website: [ACO Australia | Quality and
Trusted Drainage Product Solutions](https://www.aco.com.au)

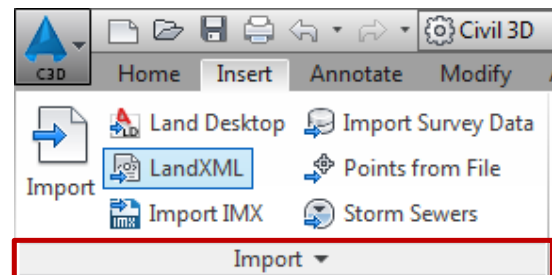
This document describes the installation, configuration and use of the ACO PowerDrain subassembly component for AutoCAD Civil 3D 2023.



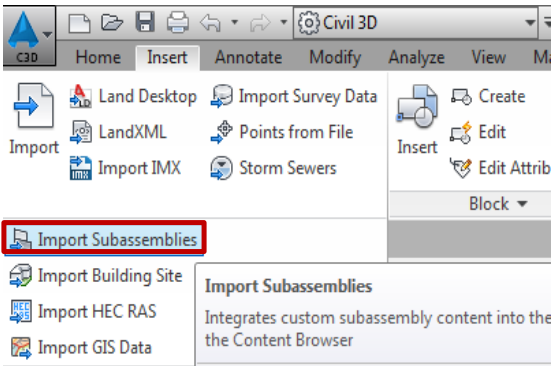
2. Installing the ACO PowerDrain subassembly

The PowerDrain 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.

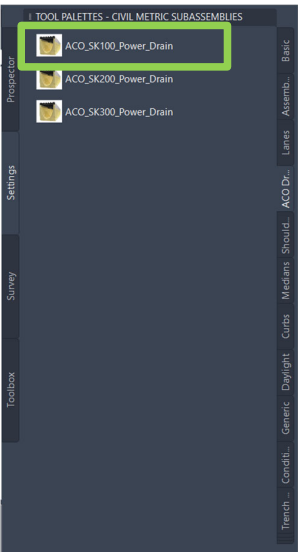
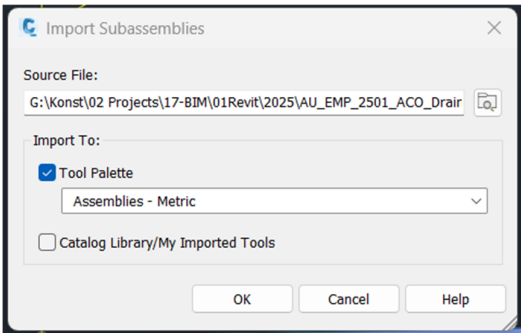
To install the subassembly, click on the Import panel title on the Insert ribbon.



Choose import subassemblies



Browse the location of the ACO PowerDrain SK100.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 PowerDrain SK100 subassembly. Note that by right-clicking in the tool palette, the palette can be customized by creating a separate item for the ACO PowerDrain SK100, as shown here.



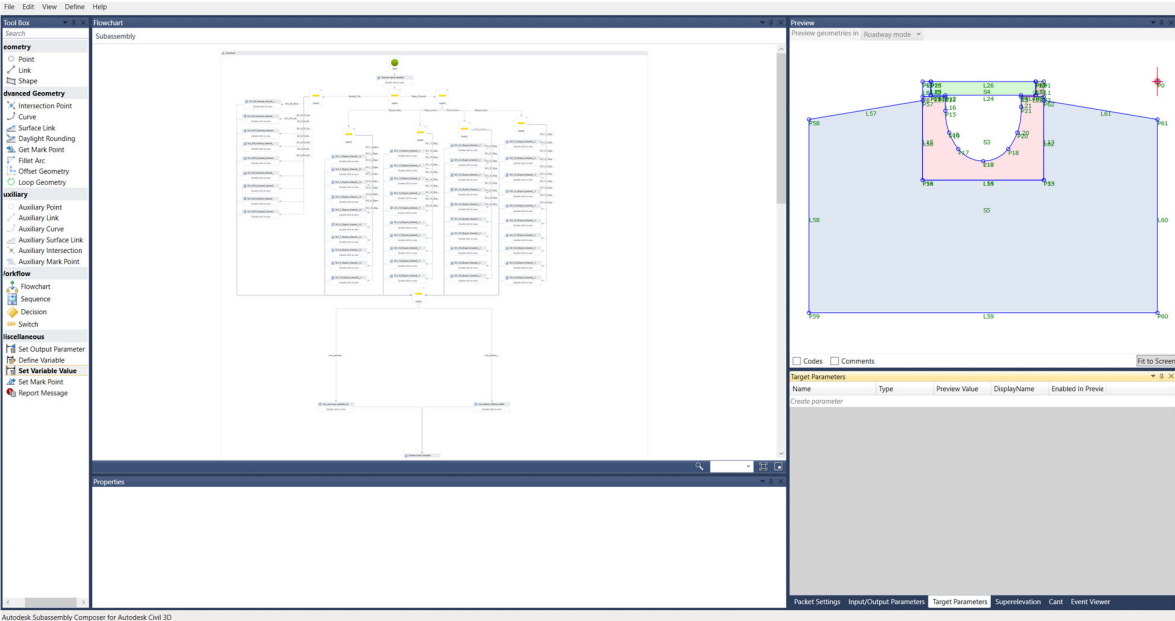
3. Using the ACO PowerDrain SK100 subassembly

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

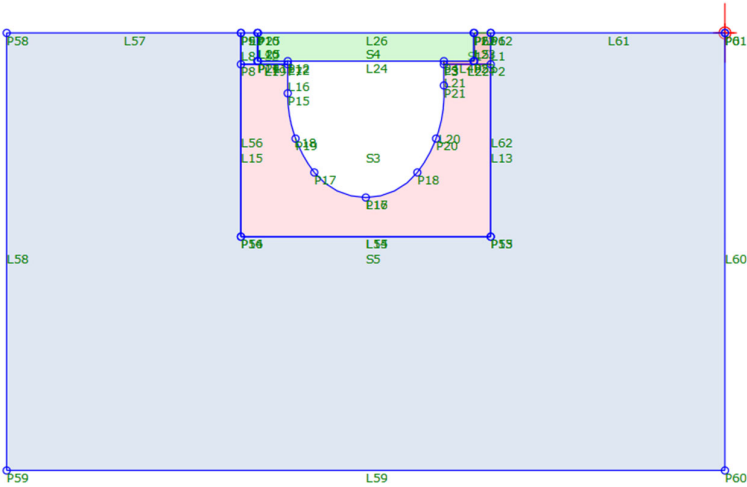
PowerDrain SK100 with Edge rail types:-

S100K Parts table

Channels and Accessories	Part No.	Invert Depth mm		Overall Depth mm		Volume L	Weight kg
		Female	Male	Female	Male		
SK1-00 Neutral channel - (1m)²	67041	100	100	125	125	7.4	22.5
SK1-1 Sloped channel - (1m)	67001	100	105	125	130	7.5	22.5
SK1-2 Sloped channel - (1m)	67002	105	110	130	135	7.7	22.9
SK1-3 Sloped channel - (1m)	67003	110	115	135	140	8.1	23.4
SK1-4 Sloped channel - (1m)	67004	115	120	140	145	8.4	23.8
SK1-5 Sloped channel - (1m) ²	67005	120	125	145	150	8.8	24.3
SK1-6 Sloped channel - (1m)	67006	125	130	150	155	9.2	24.7
SK1-7 Sloped channel - (1m)	67007	130	135	155	160	9.6	25.2
SK1-8 Sloped channel - (1m)	67008	135	140	160	165	10.0	25.6
SK1-9 Sloped channel - (1m)	67009	140	145	165	170	10.4	26.1
SK1-10 Sloped channel - (1m) ²	67010	145	150	170	175	10.8	26.5
SK1-010 Neutral channel - (1m)²	67043	150	150	175	175	10.8	26.5
SK1-0103 Neutral channel - (0.5m)²	67044	150	150	175	175	5.4	13.7
SK1-11 Sloped channel - (1m)	67011	150	155	175	180	11.2	27.0
SK1-12 Sloped channel - (1m)	67012	155	160	180	185	11.7	27.4
SK1-13 Sloped channel - (1m)	67013	160	165	185	190	12.1	27.9
SK1-14 Sloped channel - (1m)	67014	165	170	190	195	12.5	28.3
SK1-15 Sloped channel - (1m) ²	67015	170	175	195	200	12.9	28.8
SK1-16 Sloped channel - (1m)	67016	175	180	200	205	13.4	29.3
SK1-17 Sloped channel - (1m)	67017	180	185	205	210	13.8	29.7
SK1-18 Sloped channel - (1m)	67018	185	190	210	215	14.2	30.2
SK1-19 Sloped channel - (1m)	67019	190	195	215	220	14.6	30.6
SK1-20 Sloped channel - (1m) ²	67020	195	200	220	225	15.1	31.1
SK1-020 Neutral channel - (1m)²	67045	200	200	225	225	15.0	31.1
SK1-0203 Neutral channel - (0.5m)²	67046	200	200	225	225	7.5	15.7
SK1-21 Sloped channel - (1m)	67021	200	205	225	230	15.5	31.5
SK1-22 Sloped channel - (1m)	67022	205	210	230	235	15.9	32.0
SK1-23 Sloped channel - (1m)	67023	210	215	235	240	16.4	32.4
SK1-24 Sloped channel - (1m)	67024	215	220	240	245	16.7	32.8
SK1-25 Sloped channel - (1m) ²	67025	220	225	245	250	17.2	33.3
SK1-26 Sloped channel - (1m)	67026	225	230	250	255	17.6	33.7
SK1-27 Sloped channel - (1m)	67027	230	235	255	260	18.1	34.2
SK1-28 Sloped channel - (1m)	67028	235	240	260	265	18.5	34.7
SK1-29 Sloped channel - (1m)	67029	240	245	265	270	18.9	35.1
SK1-30 Sloped channel - (1m) ²	67030	245	250	270	275	19.3	35.6
SK1-030 Neutral channel - (1m)²	67047	250	250	275	275	19.3	35.6
SK1-0303 Neutral channel - (0.5m)²	67048	250	250	275	275	9.7	17.7
SK1-31 Sloped channel - (1m)	67031	250	255	275	280	19.8	36.0
SK1-32 Sloped channel - (1m)	67032	255	260	280	285	20.2	36.5
SK1-33 Sloped channel - (1m)	67033	260	265	285	290	20.6	36.9
SK1-34 Sloped channel - (1m)	67034	265	270	290	295	21.0	37.4
SK1-35 Sloped channel - (1m) ²	67035	270	275	295	300	21.5	37.8
SK1-36 Sloped channel - (1m)	67036	275	280	300	305	21.9	38.3
SK1-37 Sloped channel - (1m)	67037	280	285	305	310	22.4	38.7
SK1-38 Sloped channel - (1m)	67038	285	290	310	315	22.8	39.2
SK1-39 Sloped channel - (1m)	67039	290	295	315	320	23.2	39.6
SK1-40 Sloped channel - (1m) ²	67040	295	300	320	325	23.7	40.1
SK1-040 Neutral channel - (1m)²	67049	300	300	325	325	23.6	40.1
SK1-0403 Neutral channel - (0.5m)²	67050	300	300	325	325	11.8	19.8
SK1-901 In-line pit (0.5m)	142547	-	-	737	737	47.3	39.3
Type 901 In-line plastic rubbish basket	01498	-	-	-	-	-	0.5
End cap	96824	-	-	317	317	-	0.2
Debris strainer for 100mm knockout	93488	-	-	-	-	-	0.1
Installation device	97477	-	-	-	-	-	1.3
Grate removal tool	01318	-	-	-	-	-	0.1
PowerLok safety clip	10443	-	-	-	-	-	-



The subassembly also optionally includes haunching detail.



Input/Output Parameters			
Name	Type	Direction	Default Value
Side	Side	Input	Left
Channel_Selection	Channel_type	Input	Slope_Channel
Neutral_channel_height_selection	Neutral_channel_Height	Input	SK1_00_Neutral_channel__1m_67041
Slope_height_Range_Selection	Slope_channel_height_range	Input	Sloped_channel_105_To_150
Slope_Channel_105_to_150	Sloped_Channel_105_to_150	Input	SK1_1_Sloped_channel__1m_67001
Slope_Channel_155_to_200	Sloped_Channel_155_to_200	Input	SK1_17_Sloped_channel__1m_67017
Slope_Channel_205_to_250	Sloped_Channel_205_to_250	Input	SK1_29_Sloped_channel__1m_67029
Slope_Channel_255_to_300	Sloped_Channel_255_to_300	Input	SK1_40_Sloped_channel__1m_67040
Gratings_selection	Gratings	Input	Iron_Slotted_500mm_96082
Haunching	Yes\No	Input	Yes
Haunching_class_selection	Haunch_Class_Selection	Input	Class_C_D
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	Pavers_haunch_to_top_class_C_D
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	Pavers_haunch_to_top_class_E_G

All the default values of the parameter can be edited by end-user. User can be able to select their required PowerDrain, Grating and Haunch type.

3.2 PowerDrain SK100 with different Edge rail channel types

User can able to select their required PowerDrain channel by using the parameter PowerDrainType which has dropdown menu, with 49 different types of PowerDrain channel, which includes Neutral and Slop channel.

initially user needs to select Neutral or Slop channel in Input/Output parameter table. There is channel_selection parameter with drop down menu.

Channel_Selection	Channel_type	Input	Neutral Channel ▾
			Neutral_Channel
			Slop_Channel

If users select Neutral channel for height selection there is parameter Neutral_channel_height_selection using this user can select their required height.

Neutral_channel_height_selection	Neutral_channel_Height	Input	SK1_00_Neutral_channel_1m_67041
Slope_height_Range_Selection	Slope_channel_height_range	Input	SK1_00_Neutral_channel_1m_67041
Slope_Channel_105_to_150	Sloped_Channel_105_to_150	Input	SK1_010_Neutral_channel_1m_67043
Slope_Channel_155_to_200	Sloped_Channel_155_to_200	Input	SK1_0103_Neutral_channel_0_5m_67044
Slope_Channel_205_to_250	Sloped_Channel_205_to_250	Input	SK1_020_Neutral_channel_1m_67045
Slope_Channel_255_to_300	Sloped_Channel_255_to_300	Input	SK1_0203_Neutral_channel_0_5m_67046
Gratings_selection	Gratings	Input	SK1_030_Neutral_channel_1m_67047
Haunching	Yes\No	Input	SK1_0303_Neutral_channel_0_5m_67048
Haunching_class_selection	Haunch_Class_Selection	Input	SK1_040_Neutral_channel_1m_67049
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	SK1_0403_Neutral_channel_0_5m_67050

If users select Slope channel for height selection there is parameter Slope_height_Range_Selection using this user needs to select their height range which between 105 to 150, 155 to 200, 205 to 255 and 255 to 300. Which because Autodesk sub assembly composer have enumeration restriction with max 16 nos.

Slope_height_Range_Selection	Slope_channel_height_range	Input	Sloped channel 255 To 300
Slop_Channel_105_to_150	Sloped_Channel_105_to_150	Input	Sloped_channel_105_To_150
Slop_Channel_155_to_200	Sloped_Channel_155_to_200	Input	Sloped_channel_155_To_200
Slop_Channel_205_to_250	Sloped_Channel_205_to_250	Input	Sloped_channel_205_To_250
Slop_Channel_255_to_300	Sloped_Channel_255_to_300	Input	Sloped_channel_255_To_300

After selecting the height range by using drop down menu user can select their required height.

Slope_Channel_105_to_150	Sloped_Channel_105_to_150	Input	SK1_1_Sloped_channel_1m_67001
Slope_Channel_155_to_200	Sloped_Channel_155_to_200	Input	SK1_1_Sloped_channel_1m_67001
Slope_Channel_205_to_250	Sloped_Channel_205_to_250	Input	SK1_2_Sloped_channel_1m_67002
Slope_Channel_255_to_300	Sloped_Channel_255_to_300	Input	SK1_3_Sloped_channel_1m_67003
Gratings_selection	Gratings	Input	SK1_4_Sloped_channel_1m_67004
Haunching	Yes\No	Input	SK1_5_Sloped_channel_1m_67005
Haunching_class_selection	Haunch_Class_Selection	Input	SK1_6_Sloped_channel_1m_67006
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	SK1_7_Sloped_channel_1m_67007
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	SK1_8_Sloped_channel_1m_67008
<			SK1_9_Sloped_channel_1m_67009
Create parameter			SK1_10_Sloped_channel_1m_67010

Slope_Channel_155_to_200	Sloped_Channel_155_to_200	Input	SK1_17_Sloped_channel_1m_67017
Slope_Channel_205_to_250	Sloped_Channel_205_to_250	Input	SK1_11_Sloped_channel_1m_67011
Slope_Channel_255_to_300	Sloped_Channel_255_to_300	Input	SK1_12_Sloped_channel_1m_67012
Gratings_selection	Gratings	Input	SK1_13_Sloped_channel_1m_67013
Haunching	Yes\No	Input	SK1_14_Sloped_channel_1m_67014
Haunching_class_selection	Haunch_Class_Selection	Input	SK1_15_Sloped_channel_1m_67015
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	SK1_16_Sloped_channel_1m_67016
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	SK1_17_Sloped_channel_1m_67017
<			SK1_18_Sloped_channel_1m_67018
Create parameter			SK1_19_Sloped_channel_1m_67019
			SK1_20_Sloped_channel_1m_67020

Slope_Channel_205_to_250	Sloped_Channel_205_to_250	Input	SK1_29_Sloped_channel_1m_67029
Slope_Channel_255_to_300	Sloped_Channel_255_to_300	Input	SK1_21_Sloped_channel_1m_67021
Gratings_selection	Gratings	Input	SK1_22_Sloped_channel_1m_67022
Haunching	Yes\No	Input	SK1_23_Sloped_channel_1m_67023
Haunching_class_selection	Haunch_Class_Selection	Input	SK1_24_Sloped_channel_1m_67024
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	SK1_25_Sloped_channel_1m_67025
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	SK1_26_Sloped_channel_1m_67026
<			SK1_27_Sloped_channel_1m_67027
Create parameter			SK1_28_Sloped_channel_1m_67028
			SK1_29_Sloped_channel_1m_67029
			SK1_30_Sloped_channel_1m_67030

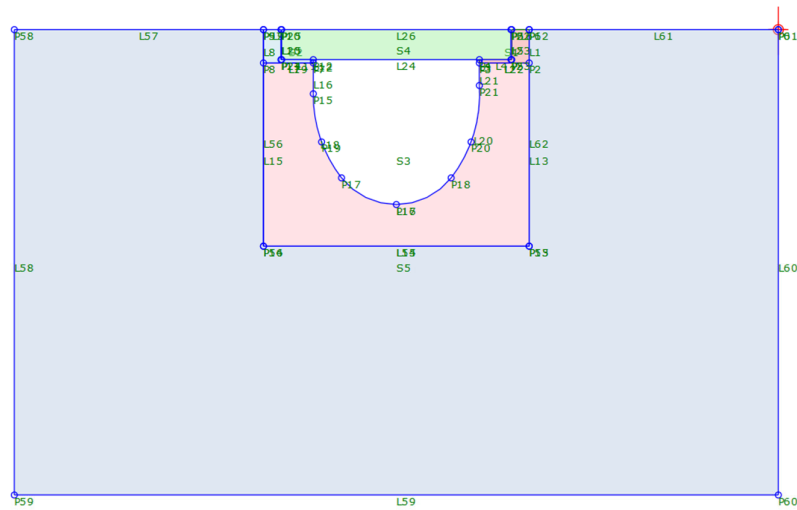
Slope_Channel_255_to_300	Sloped_Channel_255_to_300	Input	SK1_40_Sloped_channel_1m_67040
Gratings_selection	Gratings	Input	SK1_31_Sloped_channel_1m_67031
Haunching	Yes\No	Input	SK1_32_Sloped_channel_1m_67032
Haunching_class_selection	Haunch_Class_Selection	Input	SK1_33_Sloped_channel_1m_67033
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	SK1_34_Sloped_channel_1m_67034
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	SK1_35_Sloped_channel_1m_67035
<			SK1_36_Sloped_channel_1m_67036
Create parameter			SK1_37_Sloped_channel_1m_67037
			SK1_38_Sloped_channel_1m_67038
			SK1_39_Sloped_channel_1m_67039
			SK1_40_Sloped_channel_1m_67040

Packet Settings Input/Output Parameters Target Parameters Superelevation Cant Event View

3.3 PowerDrain SK100 grating types

User needs to select gratings using the parameter Gratings_selection

Gratings_selection	Gratings	Input	Iron Slotted 500mm 96082
Haunching	Yes\No	Input	Iron_Intercept_Heelsafe_AntiSlip_500mm_141299
Haunching_class_selection	Haunch_Class_Selection	Input	Iron_Slotted_500mm_96082



3.4 Haunch types

To include Haunching we have provided decision option so user can select Yes/or No from the parameter Haunching. There are two defferent classes for haunching A-B and C-D

Haunching	Yes\No	Input	Yes
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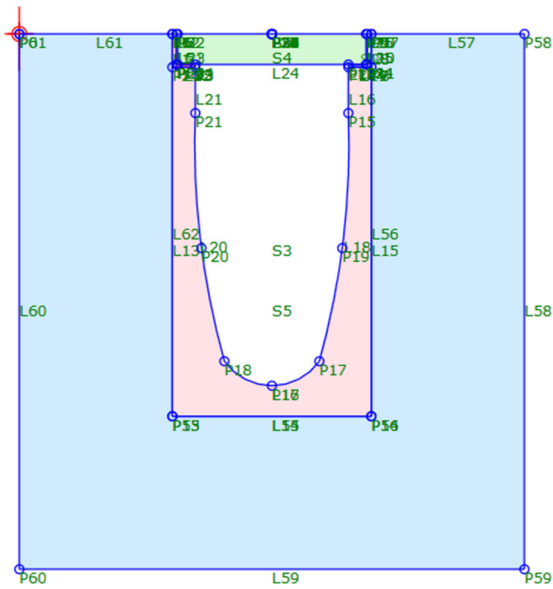
Haunch is divided into cateogart due to enumeration restriction, Haunch classes C,D option and Class E,G. it can be decide by user, using Haunch class parameter drop down menu.

Haunching_class_selection	Haunch_Class_Selection	Input	Class C D
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	Class_C_D
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	Class_E_G

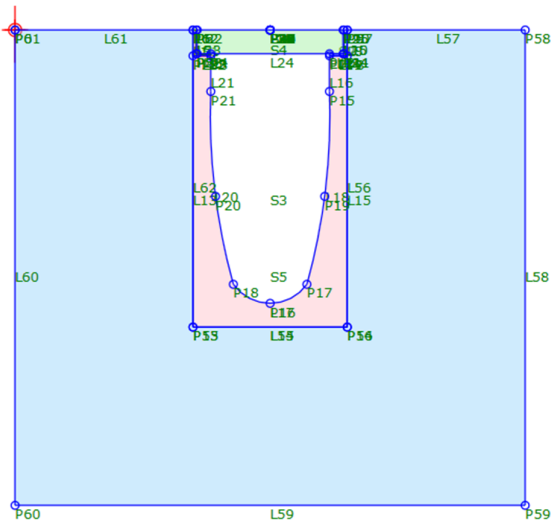
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	Pavers haunch to top class C D
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	Pavers_to_edge_class_C_D
<			Pavers_haunch_to_top_class_C_D
Create parameter			Asphalt_sloped_haunch_class_C_D
			Asphalt_haunch_to_top_class_C_D
			Concrete_haunch_to_top_class_C_D

Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	Pavers haunch to top class E G
<			Pavers_to_edge_class_E_G
Create parameter			Pavers_haunch_to_top_class_E_G
			Asphalt_haunch_to_top_class_E_G
			Concrete_haunch_to_top_class_E_G
			Asphalt_sloped_haunch_class_E_G

Haunched Asphalt Pavement



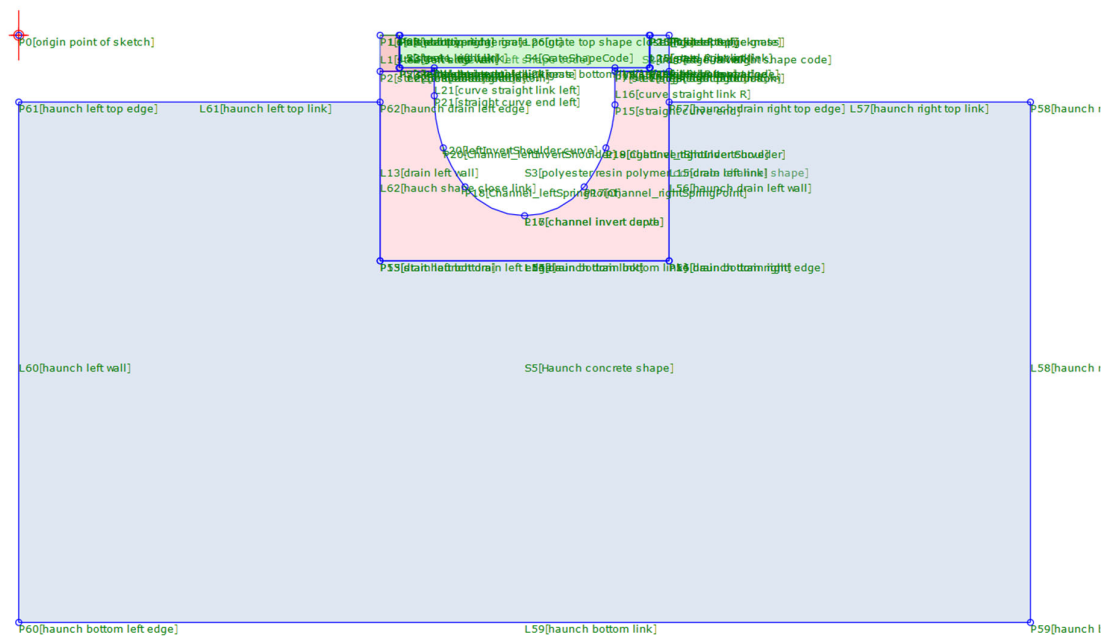
Exposed Concrete Pavement



Exposed Paver Pavement

3.5 Point Codes

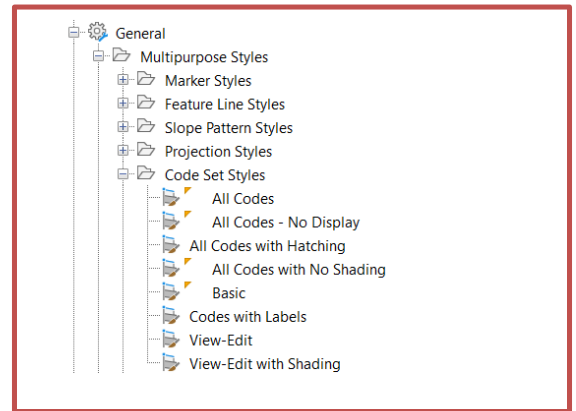
The point codes can be used in the code set styles to generate featurelines at the specific positions on the subassembly. The link codes can be used to display the outline of the subassembly in cross-sections, and also to create surface from the codes. The default values supplied with the subassembly 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 PowerDrain is indicated by the default link code of PowerDrain, and the default shape code of PowerDrain. The grating 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 Tool space.

Different code set styles used in the PowerDrain Code set style template as shown here.



4.1 Import Code Set Styles from one drawing to another

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

- Run command IMPORTSTYLESANDSETTINGS
- Browse to the location of PowerDrain 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 PowerDrain Code Set Style template to this template