

ACO PowerDrain SK200

Subassembly Installation and Reference Guide

User Guide for Autodesk AutoCAD Civil 3D files

Contents

1.	Introduction	1
2.	Installing the ACO PowerDrain subassembly.....	2
3.	Using the ACO PowerDrain SK200 subassembly.....	4
3.1	User Defined Parameter	5
3.2	PowerDrain SK200 with different Edge rail channel types	6
3.3	PowerDrain SK200 grating types	8
3.4	Haunch types	9
3.5	Point Codes	11
4.	Code Set Styles.....	12
4.1	Import Code Set Styles from one drawing to another.....	13

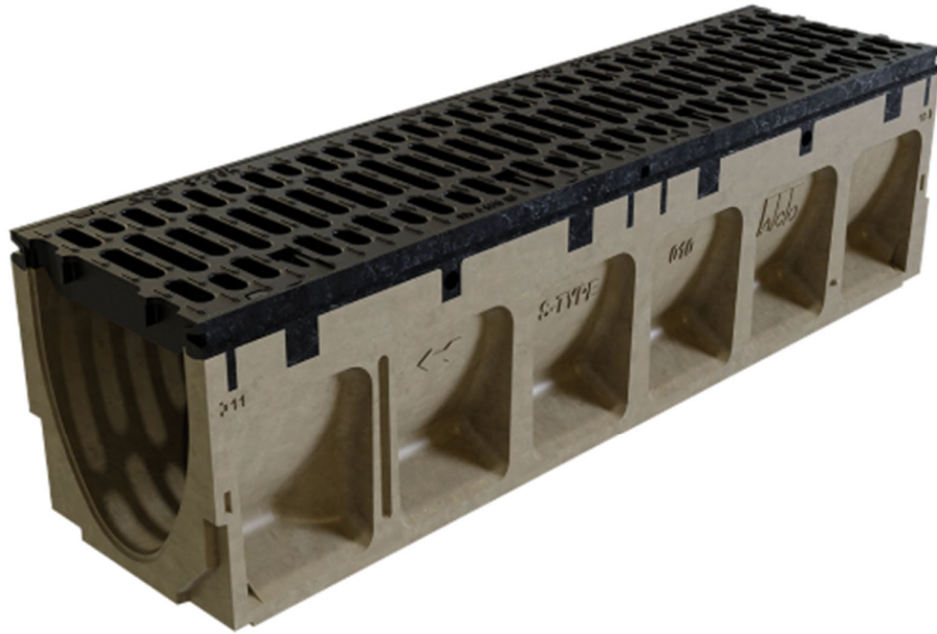
1. Introduction

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](#)

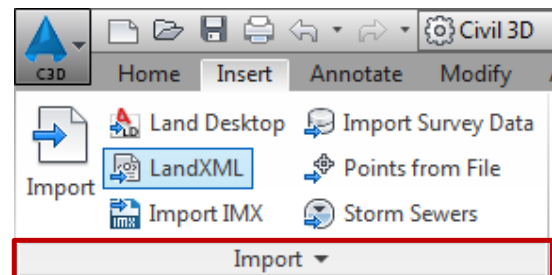
This document describes the installation, configuration and use of the ACO PowerDrain subassembly component for AutoCAD Civil 3D 2023.



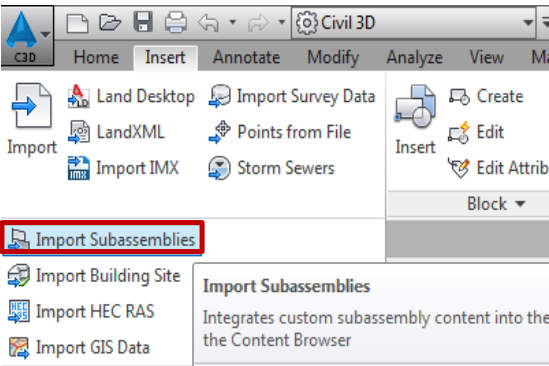
2. Installing the ACO PowerDrain subassembly

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.

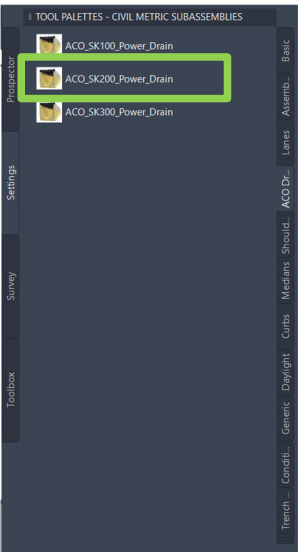
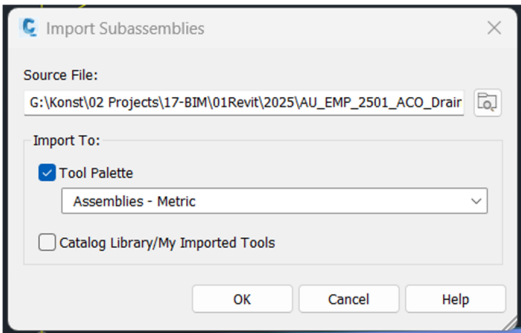
To install the subassembly, click on the Import panel title on the Insert ribbon.



Choose import subassemblies



Browse the location of the ACO PowerDrain SK200.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 SK200 subassembly. Note that by right-clicking in the tool palette, the palette can be customized by creating a separate item for the ACO PowerDrain SK200, as shown here.



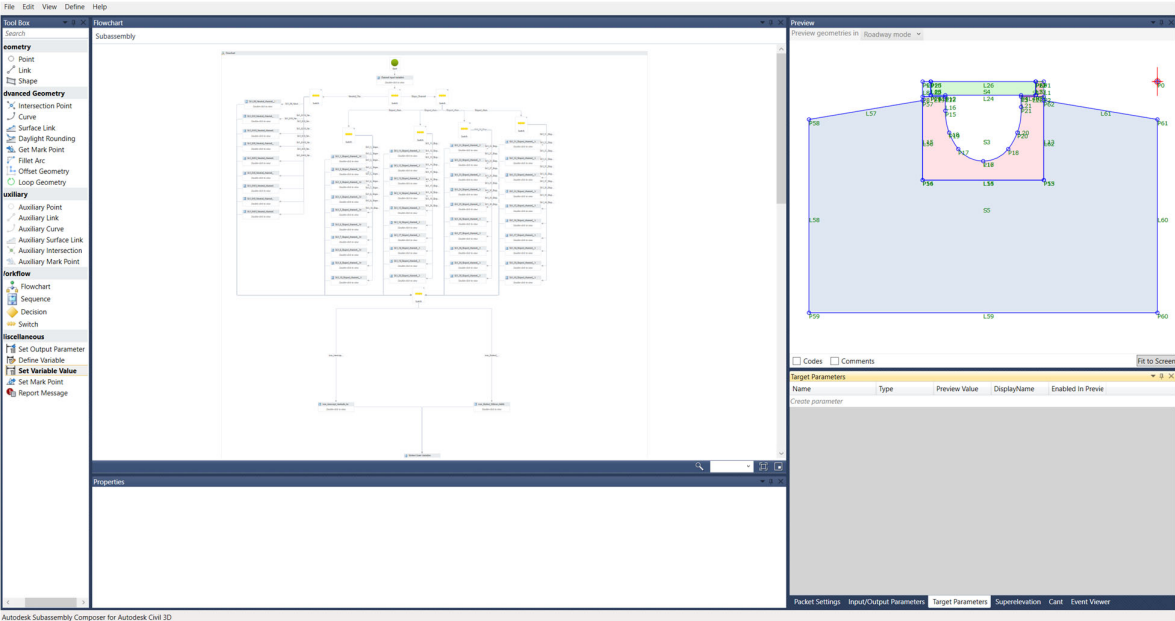
3. Using the ACO PowerDrain SK200 subassembly

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

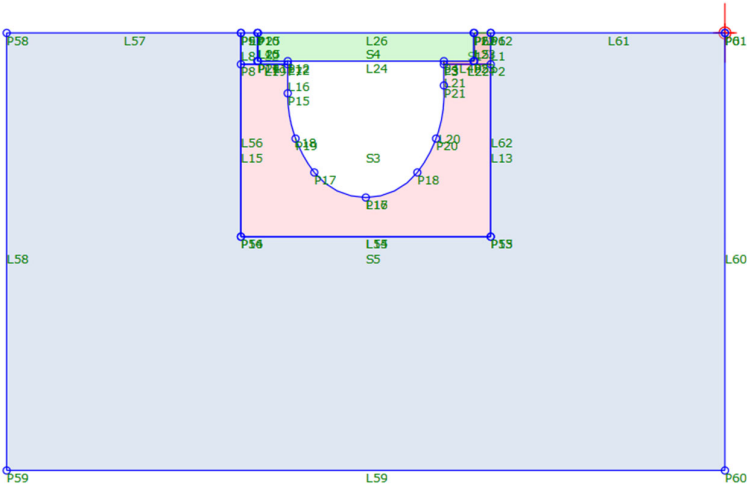
PowerDrain SK200 with Edge rail types:-

S200K Parts table

Channels and Accessories	Part No.	Invert Depth mm		Overall Depth mm		Volume L	Weight kg
		Female	Male	Female	Male		
SK2-00 Neutral channel - (1m)²	68041	200	200	225	225	28.5	36.1
SK2-1 Sloped channel - (1m)	68001	200	205	225	230	30.1	36.1
SK2-2 Sloped channel - (1m)	68002	205	210	230	235	30.8	36.6
SK2-3 Sloped channel - (1m)	68003	210	215	235	240	31.5	37.1
SK2-4 Sloped channel - (1m)	68004	215	220	240	245	32.3	37.6
SK2-5 Sloped channel - (1m) ²	68005	220	225	245	250	33.1	38.1
SK2-6 Sloped channel - (1m)	68006	225	230	250	255	33.9	38.6
SK2-7 Sloped channel - (1m)	68007	230	235	255	260	34.7	39.1
SK2-8 Sloped channel - (1m)	68008	235	240	260	265	35.5	39.6
SK2-9 Sloped channel - (1m)	68009	240	245	265	270	36.3	40.1
SK2-10 Sloped channel - (1m) ²	68010	245	250	270	275	37.1	40.6
SK2-010 Neutral channel - (1m)²	68043	250	250	275	275	36.3	40.6
SK2-0103 Neutral channel - (0.5m)²	68044	250	250	275	275	18.2	26.5
SK2-11 Sloped channel - (1m)	68011	250	255	275	280	37.9	41.1
SK2-12 Sloped channel - (1m)	68012	255	260	280	285	38.7	41.6
SK2-13 Sloped channel - (1m)	68013	260	265	285	290	39.5	42.1
SK2-14 Sloped channel - (1m)	68014	265	270	290	295	40.4	42.6
SK2-15 Sloped channel - (1m) ²	68015	270	275	295	300	41.2	43.1
SK2-16 Sloped channel - (1m)	68016	275	280	300	305	42.0	43.6
SK2-17 Sloped channel - (1m)	68017	280	285	305	310	42.9	44.1
SK2-18 Sloped channel - (1m)	68018	285	290	310	315	43.7	44.5
SK2-19 Sloped channel - (1m)	68019	290	295	315	320	44.5	45.1
SK2-20 Sloped channel - (1m) ²	68020	295	300	320	325	45.3	45.6
SK2-020 Neutral channel - (1m)²	68045	300	300	325	325	44.6	45.6
SK2-0203 Neutral channel - (0.5m)²	68046	300	300	325	325	22.3	29.9
SK2-21 Sloped channel - (1m)	68021	300	305	325	330	46.2	46.1
SK2-22 Sloped channel - (1m)	68022	305	310	330	335	47.0	46.6
SK2-23 Sloped channel - (1m)	68023	310	315	335	340	47.9	47.1
SK2-24 Sloped channel - (1m)	68024	315	320	340	345	48.7	47.6
SK2-25 Sloped channel - (1m) ²	68025	320	325	345	350	49.6	48.1
SK2-26 Sloped channel - (1m)	68026	325	330	350	355	50.4	48.6
SK2-27 Sloped channel - (1m)	68027	330	335	355	360	51.3	49.1
SK2-28 Sloped channel - (1m)	68028	335	340	360	365	52.1	49.6
SK2-29 Sloped channel - (1m)	68029	340	345	365	370	53.0	50.1
SK2-30 Sloped channel - (1m) ²	68030	345	350	370	375	53.8	50.6
SK2-030 Neutral channel - (1m)²	68047	350	350	375	375	53.0	50.6
SK2-0303 Neutral channel - (0.5m)²	68048	350	350	375	375	26.7	32.0
SK2-31 Sloped channel - (1m)	68031	350	355	375	380	54.7	51.2
SK2-32 Sloped channel - (1m)	68032	355	360	380	385	55.5	51.7
SK2-33 Sloped channel - (1m)	68033	360	365	385	390	56.4	52.2
SK2-34 Sloped channel - (1m)	68034	365	370	390	395	57.2	52.7
SK2-35 Sloped channel - (1m) ²	68035	370	375	395	400	58.1	53.2
SK2-36 Sloped channel - (1m)	68036	375	380	400	405	58.9	53.7
SK2-37 Sloped channel - (1m)	68037	380	385	405	410	59.7	54.2
SK2-38 Sloped channel - (1m)	68038	385	390	410	415	60.6	54.7
SK2-39 Sloped channel - (1m)	68039	390	395	415	420	61.4	55.2
SK2-40 Sloped channel - (1m) ²	68040	395	400	420	425	62.3	55.7
SK2-040 Neutral channel - (1m)²	68049	400	400	425	425	61.6	55.7
SK2-0403 Neutral channel - (0.5m)²	68050	400	400	425	425	30.8	36.0
SK2-902 In-line pit (0.5m)	142548	-	-	839	839	68.5	32.3
Type 902 In-line plastic rubbish basket	13999	-	-	-	-	-	0.5
End cap	96823	-	-	420	420	-	0.6
Debris strainer for 100mm knockout	93488	-	-	-	-	-	0.1
Installation device	97478	-	-	-	-	-	1.8
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	DisplayName
Side	Side	Input	Right	
Channel_Selection	Channel_type	Input	Slope_Channel	
Neutral_channel_height_selection	Neutral_channel_Height	Input	SK2_00_Neutral_channel_1m_68041	
Slope_height_Range_Selection	Slope_channel_height_range	Input	Sloped_channel_355_To_400	
Slope_Channel_205_to_250	Sloped_Channel_245_to_250	Input	SK2_1_Sloped_channel_1m_68001	
Slope_Channel_255_to_300	Sloped_Channel_255_to_300	Input	SK2_11_Sloped_channel_1m_68011	
Slope_Channel_305_to_350	Sloped_Channel_305_to_350	Input	SK2_30_Sloped_channel_1m_68030	
Slope_Channel_355_to_400	Sloped_Channel_355_to_400	Input	SK2_40_Sloped_channel_1m_68040	
Gratings_selection	Gratings	Input	Load_Class_G_Iron_Slotted_500mm_71976	
Haunching	Yes\No	Input	Yes	
Haunching_class_selection	Haunch_Class	Input	Class_C_D	
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	Pavers_to_edge_class_C_D	
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	Pavers_to_edge_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 SK200 with different Edge rail channel types

User can able to select their required PowerDrain channel by using the parameter. There are 49 different types of PowerDrain channel, which includes Neutral and Slope channel.

initially user needs to select Neutral or Slope 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	SK2_0203_Neutral_channel_0_5m_68046
Slope_height_Range_Selection	Slope_channel_height_range	Input	SK2_00_Neutral_channel_1m_68041
Slope_Channel_105_to_150	Sloped_Channel_105_to_150	Input	SK2_010_Neutral_channel_1m_68043
Slope_Channel_155_to_200	Sloped_Channel_155_to_200	Input	SK2_0103_Neutral_channel_0_5m_68044
Slope_Channel_205_to_250	Sloped_Channel_205_to_250	Input	SK2_020_Neutral_channel_1m_68045
Slope_Channel_255_to_300	Sloped_Channel_255_to_300	Input	SK2_0203_Neutral_channel_0_5m_68046
Gratings_selection	Gratings	Input	SK2_030_Neutral_channel_1m_68047
Haunching	Yes\No	Input	K2_0303_Neutral_channel_0_5m_68048
Haunching_class_selection	Haunch_Class_Selection	Input	SK2_040_Neutral_channel_1m_68049
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	SK2_0403_Neutral_channel_0_5m_68050

If users select Slope channel for height selection there is a parameter Slope_height_Range_Selection using this user needs to select their height range which between 205 to 250, 255 to 300, 305 to 355 and 355 to 400. Which because Autodesk sub assembly composer have enumeration restriction with max 16 nos.

Slope_height_Range_Selection	Slope_channel_height_range	Input	Sloped channel 205 To 250
Slope_Channel_205_to_250	Sloped_Channel_205_to_250	Input	Sloped_channel_205_To_250
Slope_Channel_255_to_300	Sloped_Channel_255_to_300	Input	Sloped_channel_255_To_300
Slope_Channel_305_to_350	Sloped_Channel_305_to_350	Input	Sloped_channel_305_To_350
Slope_Channel_355_to_400	Sloped_Channel_355_to_400	Input	Sloped_channel_355_To_400

After selecting the height range according to the height there will be a parameter from that user can select the desired height of channel by using drop down menu.

Slope_Channel_205_to_250	Sloped_Channel_205_to_250	Input	SK2_1_Sloped_channel_1m_68001
Slope_Channel_255_to_300	Sloped_Channel_255_to_300	Input	SK2_1_Sloped_channel_1m_68001
Slope_Channel_305_to_350	Sloped_Channel_305_to_350	Input	SK2_2_Sloped_channel_1m_68002
Slope_Channel_355_to_400	Sloped_Channel_355_to_400	Input	SK2_3_Sloped_channel_1m_68003
Gratings_selection	Gratings	Input	SK2_4_Sloped_channel_1m_68004
Haunching	Yes\No	Input	SK2_5_Sloped_channel_1m_68005
Haunching_class_selection	Haunch_Class_Selection	Input	SK2_6_Sloped_channel_1m_68006
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	SK2_7_Sloped_channel_1m_68007
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	SK2_8_Sloped_channel_1m_68008
<			SK2_9_Sloped_channel_1m_68009
Create parameter			SK2_10_Sloped_channel_1m_68010

Slope_Channel_255_to_300	Sloped_Channel_255_to_300	Input	SK2_11_Sloped_channel_1m_68011
Slope_Channel_305_to_350	Sloped_Channel_305_to_350	Input	SK2_11_Sloped_channel_1m_68011
Slope_Channel_355_to_400	Sloped_Channel_355_to_400	Input	SK2_12_Sloped_channel_1m_68012
Gratings_selection	Gratings	Input	SK2_13_Sloped_channel_1m_68013
Haunching	Yes\No	Input	SK2_14_Sloped_channel_1m_68014
Haunching_class_selection	Haunch_Class_Selection	Input	SK2_15_Sloped_channel_1m_68015
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	SK2_16_Sloped_channel_1m_68016
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	SK2_17_Sloped_channel_1m_68017
<			SK2_18_Sloped_channel_1m_68018
Create parameter			SK2_19_Sloped_channel_1m_68019
			SK2_20_Sloped_channel_1m_68020

Slope_Channel_305_to_350	Sloped_Channel_305_to_350	Input	SK2_21_Sloped_channel_1m_68021
Slope_Channel_355_to_400	Sloped_Channel_355_to_400	Input	SK2_21_Sloped_channel_1m_68021
Gratings_selection	Gratings	Input	SK2_22_Sloped_channel_1m_68022
Haunching	Yes\No	Input	SK2_23_Sloped_channel_1m_68023
Haunching_class_selection	Haunch_Class_Selection	Input	SK2_24_Sloped_channel_1m_68024
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	SK2_25_Sloped_channel_1m_68025
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	SK2_26_Sloped_channel_1m_68026
<			SK2_27_Sloped_channel_1m_68027
Create parameter			SK2_28_Sloped_channel_1m_68028
			SK2_29_Sloped_channel_1m_68029
			SK2_30_Sloped_channel_1m_68030

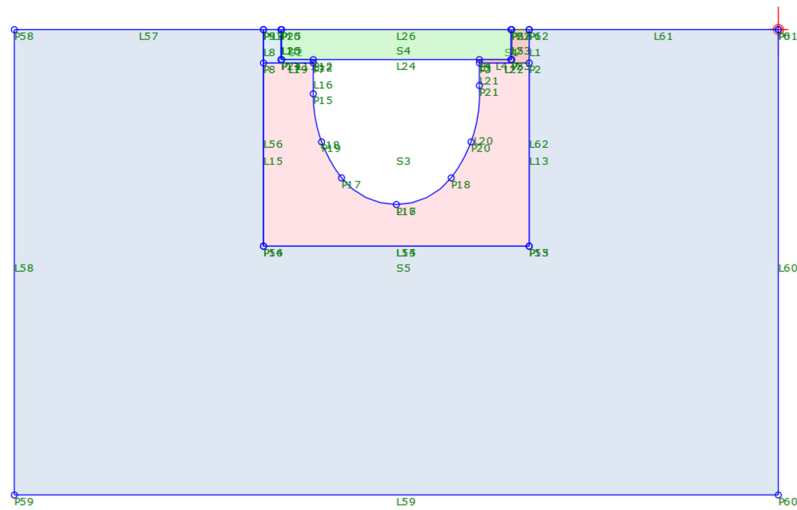
Slope_Channel_355_to_400	Sloped_Channel_355_to_400	Input	SK2_31_Sloped_channel_1m_68031
Gratings_selection	Gratings	Input	SK2_31_Sloped_channel_1m_68031
Haunching	Yes\No	Input	SK2_32_Sloped_channel_1m_68032
Haunching_class_selection	Haunch_Class_Selection	Input	SK2_33_Sloped_channel_1m_68033
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	SK2_34_Sloped_channel_1m_68034
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	SK2_35_Sloped_channel_1m_68035
<			SK2_36_Sloped_channel_1m_68036
Create parameter			SK2_37_Sloped_channel_1m_68037
			SK2_38_Sloped_channel_1m_68038
			SK2_39_Sloped_channel_1m_68039
			SK2_40_Sloped_channel_1m_68040

Packet Settings Input/Output Parameters Target Parameters Superelevation C

3.3 PowerDrain SK200 grating types

User needs to select gratings using the parameter Gratings_selection

Gratings_selection	Gratings	Input	Iron Slotted 500mm 71976
Haunching	Yes\No	Input	Iron Intercept Heelsafe AntiSlip_500mm_142685
Haunching_class_selection	Haunch_Class_Selection	Input	Iron_Slotted_500mm_71976



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 different classes for haunching A-B and C-D

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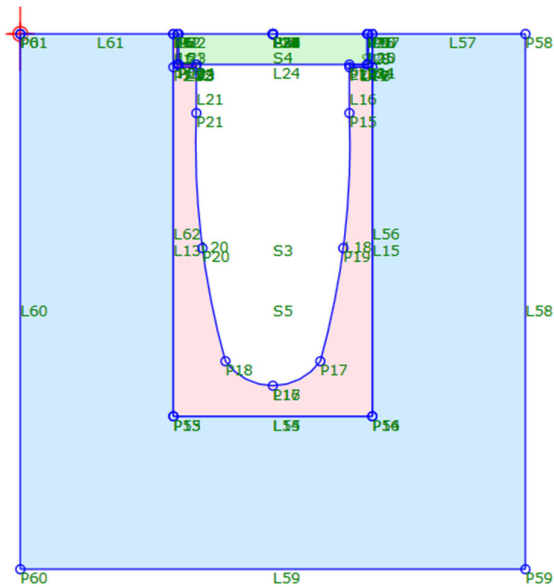
Haunch is divided into cateogart due to enumeration restriction, Haunch classes C,D option and Class E,G. it can be decide by user, using Haunch class parameter drop down menu.

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

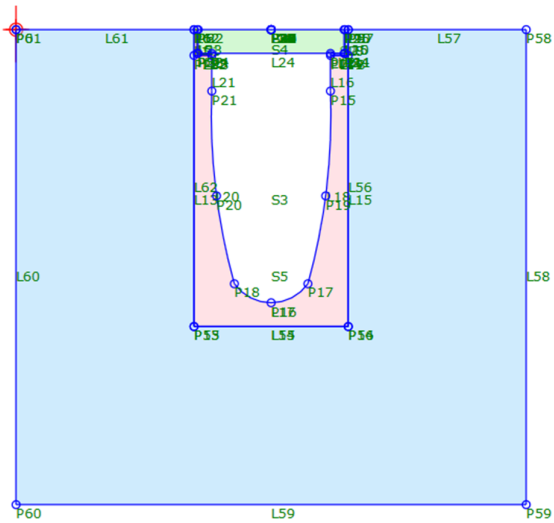
Haunch_Class_C_D_selection	Haunch_Class_C_D	Input	Pavers haunch to top class C D
Haunch_Class_E_G_selection	Haunch_Class_E_G	Input	Pavers_to_edge_class_C_D
<			Pavers_haunch_to_top_class_C_D
Create parameter			Asphalt_sloped_haunch_class_C_D
			Asphalt_haunch_to_top_class_C_D
			Concrete_haunch_to_top_class_C_D

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

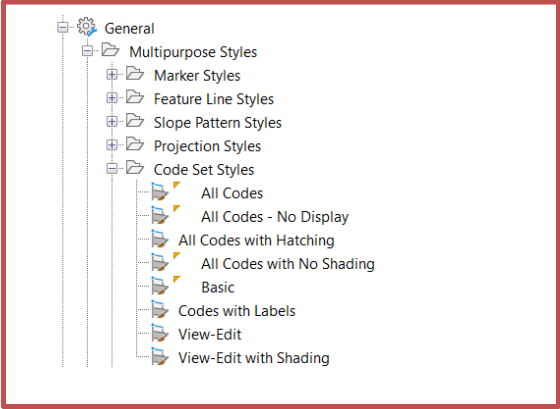
PowerDrain is indicated by the default link code of PowerDrain, and the default shape code of PowerDrain. The grating is indicated by the default link code of edge rail, and the default shape code of edge rail .The haunching is indicated by the default link code of Haunch, and the default shape code 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