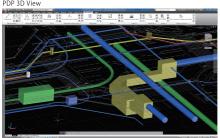
# **Automatic 3D Modeling**

3D objects are created from PDP objects which have the information on the size and depth of conduits.



3D objects which can be created by PDP may be used for many examine the distance from the and the effect on the adjacent structures while designing conduits Second, they can be presentation materials for design competitions etc. And third, they can be explanatory materials for meetings with residents

# **Plan-Profile Drawings**

As general procedures for creating drawings, new drawings can be created combining plan and longitudinal

Longitudinal Section

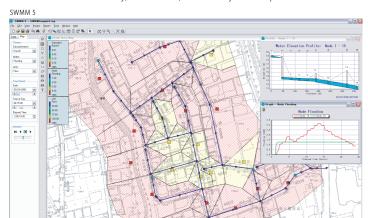
Create Plan & Longitudinal Section View



In the "Create Plan & Longitudinal Section" dialog box, it creates multiple drawings automatically. These drawings are created as AutoCAD files, which can be edited by AutoCAD's general-purpose

# Storm water runoff analysis system SWMM5 Relation

Based on the data calculated by PDP, data collaboration can be done with SWMM5, the storm water runoff analysis system. Collaboration between PDP and SWMM5 generates the following advantages. First, while PDP designs using the average rainfall intensity, SWMMS calculates changes in water lines based on the time-series rainfall intensity; and therefore, it can identify the weak points of conduits.

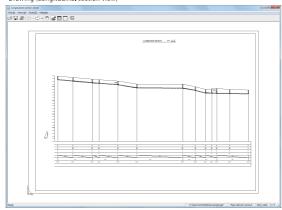


# Sample of Drawings, Calculation sheets using PDP

Most of sewage plan drawings are databases with a lot of designing information. If only for the purpose of designing and printing drawings, they can be used by the general -purpose AutoCAD or AutoCAD LT.



Drawing (Longitudinal section view)



Longitudinal section drawings can be shown in many styles, using the designated longitudinal section formats. You can freely define leader lines on the longitudinal section drawing and band styles below, as well as font sizes.

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10	9.90	0.00	6.00	1.00		38.30		-			-		2.00	04/209	45.950	1000		10.47	38.690	3450 3210	19	r-COST-constr
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12	3.82	0.00	.00	1,00	23,60	.201,00						100	1.001	36000	1.80	1,600	100	20,000	28.50	-83	-10	HISTORY WHILE
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7	0.00	0.00	0.00	E 00	57.00	279.10						8.001	2.001	94/200	1,965	0.600	0019	15.194	15.013		14.100	<b>PR</b> ; 0024
14	0.00	0.00	8.00	8.00	57.90	348.60						8.001	1.00	14/200	1,965	1.600	609	14 963	14,545	31.00	19.74	-103 (BT

As the flow calculation sheet, it creates a calculation sheet to prove as numbers the results of hydraulic and geometric calculations. Since it is automatically written into Excel sheets, editing afterwards should be done on Excel. Moreover,

# System Requirements & Support

# PIPE Design Pro 19

Microsoft Windows 10 / 11 (64bit) for English language

Autodesk AutoCAD 2023 and above

Bricsys BricsCAD Pro V25 and above Microsoft Excel 2019 and above

1 GHz and above or compatible processor

RAM:Depends on The RAM required for AutoCAD (8 GB recommended) Harddisk free space of above 500 MB is recommended.

Video Display: Depends on The video display required for AutoCAD (At least 1600x1050 True Color recommended)"

Pointing device such as Mouse

CD-ROM drive (for installation)

Offer by Subscription (Including Software Support)

https://pipedesign.co.jp/pipeclub/ Windows-compatible Printer or plotter

# PIPE Club

- Download latest version
- Download various formats
- FAQ about Product
- Release information

# **PIPE Support**

- Data Recovery Service
- Latest version up

E-Mail support

- Flow report Format service
- Section Format service





Integrated Sewer Plan and Profile Design System

# PIPE Design Pro®

"PIPE Design Pro", Integrated Sewer Plan and Profile Design System, will have the power of sewer design packages working with AutoCAD or BricsCAD. It will calculate the invert levels, slopes and diameters of the culverts as well as the design flow, capacity and the flow velocity of each culvert for storm and sanitary sewers.



Welcome to PIPE Design Pro.

PIPE Design Pro will help you develop better, higher quality designs for route design and vertical design within AutoCAD in a short amount of time.

You will reap the benefits of the lower design time, increased productivity and profitability, and improved responsiveness to clients. PIPE Design Pro provides a unique concept in the sewer design process.

It provides solutions for managing all types of flows, including sanitary wastewater and stormwater inflow.

PIPE Design Pro creates preliminary designs for new sewers and suggests improvements for existing systems. It helps you optimize your pipe network, and find the most cost-effective way to solve system problems.

The PIPE Design Pro was developed using similar calculation solving programs to PIPE NETWORK, being released in 1985.

It has been used by thousands of engineers since its first commercial release in 1998.



Head Office:1-21-35, Kusatsu-Shinmachi, Nishiku, Hiroshima, 733-0834, Japan Phone +81-82-279-8200, Fax +81-82-279-8207

Shinagawa Office:1-9-31, Konan, Minato-ku, Tokyo, 108-0075, Japan Hakata Office:1-23-2, Hakataekimae, Hakata-ku,Fukuoka,812-0011, Japan URL https://pipedesign.co.jp



# Management

# Project

Drawings Multiple network Drawing units Calculation formulas

# **Database**

PipeSection DB

Manhole DB

Inlet DB Land Use zone

# Style

ongitudinal section format Plan style

# Layer

Calculation sheet

PDP lavers

# **Data Input**

# Treatment type

Natural flow

(Separated, Combined storm / sanitary sewers

Pressure flow

(Separated, Combined storm / sanitary sewer

### Vacuum flow

(Separated sanitary sewers)

# **Underground facilities**

Consideration to a design of intersection between underground facilities and sewer pipe Water supply pipe

Gas pipe

Communication cable Electric wiring.

# **Data Input**

# Lateral Inlet

Definition of Laterals lateral inlets

# Flow type

nlet flow from outside areas ixed Inlet flow

Inlet flow from mountain

## Outlet flow to outside areas Ground level

arious commands to acquire ground

# evel of manhole (node)

Compartment line

## Get the Area of Routes or the Spans

Private pipe line Create lateral inlets in the private areas

# nflow, Outflow

nflow from outside district ixed inlet flow data

nflow data from mountains

Outflow data

**Calculation** 

# **Treatment Type**

atural flow (Separated, Combined storm/sanitary sewer ressure flow (Separated, Combined storm/sanitary sewers cuum flow (Separated sanitary sewers)

# low calculation method of sewer pipe capacity

rm flow formula

(Rational method, Experimental method, The combination flow method, The linear curve method. River flow method.

# Procedure for Planning

PDP works very well for designing sewerage systems of new multi-unit apartments etc. Moreover, it can be used for reconstructing the existing sewerage systems in cities etc in response to changes in populations.



It sorts out the data of various underground utilities before planning sewage conduits in the development of housing complexes, industrial parks, and so on. In the basic design, it decides the main trunk lines, as well as the main route to the treatment plant. While the detailed design is done after the approval of municipalities, efficient designing is possible by utilizing the data created by the basic design etc.

Whereas construction is executed based on the drawings created by the detailed design, modification of the design on the construction site can be easily done if the design data are available, and drawings etc. can be

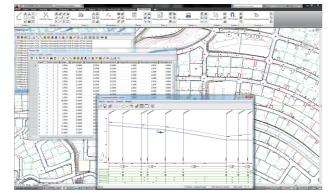


In cities, on the other hand, changes in population etc. make it necessary to increase the size of sewage pipes installed in the past, replace old conduits, and so on. PDP is capable of making data on the current sewage conduits, preparing plans in response to changes in population, planning replacement of the deteriorated conduits, and so on. Moreover, as with sewage conduits, it can sort out the data on various underground utilities which were laid in the past, and reflect them in the renewal plan. In the basic design, as with a new one, it designs the main route by selecting an economically advantageous one. In a similar way for a new plan, construction is executed based on the drawings created by the detailed design, modification of the design on the construction site can be easily done if the design data are available, and drawings etc. can be created as well.

# **Completely Integrates Plan and Profile Information**

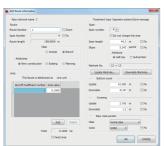
PDP is capable of showing the network of sewage facilities and the geometric information of conduits at the same time. As the information of conduits is always integrated, it enables enginners to work efficiently

Plan & Longitudinal design view



# Dialogue Boxes for Fast Data Input

To calculate with pipe networks, you need at least to draw one Route (PDP object) on a drawing. Underground facility and Lateral data can be defined in the Longitudinal data.



# Underground facility

Class W	aterwork -		
Feature size			
	und •		
Teathers site			
Chen			
Code			
Cook			
Sze		Postion	
Width	0.15 m	Specify the Cove	mg
	0 m	Constant slope (Sta	
Ователи			
Unner side	0.3 m	summe Height(n	
Down side	0.3 m	1 1.200	
		2 1.231	
Front side			
Rear side	2 m		-
Number of In			
Rows	- 1	Columns	1
Defection			
Character String	Water supply	da.150 DP1.200-1.230	6e
Set to an ini	tal value	OK.	CAI
Set to an ini	Sal value	OK.	CAI

## Laterals Information

Span number	1		2945		
Direction	From upsto-		Code 1 * Name	House inlet No.	
letance from the upstream	8.4000	n	Cover name	Heavy cover	
Length of Laterals	5,5100		Depth of triet (ftefault value)	1.5000	-
Slope		permit ::: Automatic calculation		1.0000	
imited offset of Upper side	100,0000	n			
imbed offset of Under side	0.0000	n	Lateral Inflow Number	14	
Main pipe high-side b . •	0.0129	m Automatic calculation		1.9670	=
Covering of Upper side	1.0000	m [] Automatic calculation	Lateral Orflow Depth	1.5000	-
Blevation of Upper side	0.8800	m @Automatic calculation	Number of House per Lateral Inflow	1.0000	
PIPE section code		Disable	Name of Land owner		
Class Polyamyl chloride po	16 VP *		John	Addi	60
Code P100 -			John	Delete	(2)
Foundation Drain Under side		n			
		Set to	an intal value OK	CAM	n

# Various Flow Calculation methods

We have incorporated in the Rain intensity formula, which is used in ASEAN countries, Rational method 2, Rational method 3, Wenzel formula, in addition to the Japanese traditional formulas

## Flow Calculation method

OK CANC

## Flow Calculation method

lame of flow	calculation method	Rainwa	ater Rational formula 3
Standard coe	fficient set number	1 0	Runoff Coefficient 0.700000
Rainfall inter	nsity formula		Concentration time
f(x): q = i	L(1 + C /gF)/(t+	b)*	Calculation Calculated flow rate (Route unit)
ConstantA	11000		Inflow time of the uppermost Route 10 min
Constant b	30		Flow velocity per Route. Assumed flow rate
Constant C	0.54		Additined fow falls.
Constant n	0.85		Apply the Rain equality coefficient
Constant P	1		OK CANCEL

dit flow calculation method				
Name of flow calculation	Treatment type	Calculation formula		
Unit sewage quantity formula 1	Sanitary sewage	Unit sewage quantity		
Unit Sewage Quantity Formula 1	Sanitary sewage	Unit sewage quantity		
Population density formula 1	Senitary sewage	Population density		
Population Density Formula 1	Sanitary sewage	Population density		
Sewage Compound expression formula 1	Sanitary sewage	Yokohama type		
Sewage Compound Expression Formula 1	Sanitary sewage	Yokohama type		
Rainwater Rational formula 1	Storm sewage	Rational method 1		
Rainwater Rational Formula 1	Storm sewage	Rational method 1		
Rainwater Empirical formula 1	Storm sewage	Esperimental method		
Rainwater Empirical formula 2	Storm sewage	Esperimental method		
Rainwater Empirical Formula 1	Storm sewage	Experimental method		
Rainwater Empirical Formula 2	Storm sewage	Experimental method		
Rainwater Compound expression formula 1	2om sevage	Combined flow method		
Rainwater Compound Expression Formula 1	Storm sewage	Combined flow method		
Rainwater Straight formula 1	Storm sewage	Linear curve method		
Rainwater Straight Formula 1	Storm sewage	Linear curve method		

# Calculation

# Flow calculation method of sewer pipe capacit

ustomization for Flow Calculation types Customization for the calculation flow types after setting new types per project

utomatic calculation

Automatic calculation of pipe section slope, pipe and manhole elevation Pose mode viewer in process of flow calculation

Automatic setting to decide manhole type

# Sewer Plan design

# Create & Edit PDP Object

Pipe networks, Routes, Border lines, Compartment lines Land Use regions, Invalid region, Boundary line of street, nderground facilities, Ground line, Lateral, Vacuum Valve u acuum Lateral, Private pipe lines, Section valve, Vacuum Access bole. Vacuum station, Inlet flow from outside areas Fixed Inlet flow. Inlet flow from mountain. Outlet flow to outside areas

## Get the Area of Routes

Automatic Area calculation and adjustmen of each sub-catchment areas,

# Plan style

Switch graphic mode and Print mode, Manage plan symbols,

Manage plan style per treatment type. reating 3D solid model object from PDP object

# **Longitudinal section**

# Format and layout

ree style format for each local gove Multi layout (Automatic multiple layout) Layout using PDP object properties

# Plan & Longitudinal section

Automatically combine the plan part of Route and a Longitudinal section

# Reports

# Flow reports

Output flow report, Output Loss calculation sheets (Vacuum flow)

Quantity reports Output quantity report for PDP objects

# Input & Output with files

# low reports

Output flow report, Output Loss calculation sheets (Vacuum flow)

# **Quantity reports**

Output quantity report for PDP objects

# **Others**

# **Export to SWMM5**

Export CSV file to SWMM5 dynamic hydrology-hydraulic water quality simulation model)

# **Automation Features**

interactive works.

Generate data from drawing

View of pipeline network

Build for hydrological and longitudinal calculation

Create datum of underground utilities from information to cross over Routes or Spans.

OK CANCEL

**Control Styles and Printing** 

Drawer style - Route

Cale Lambje

Thinge Certinana 

Total Cale Cale 

Total Cale 

Total Cale 

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Total Cale 

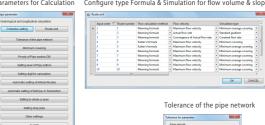
Total Cale 

Total 

To

These are dialog boxes to set various parameters to be used for designing sanitary-water and storm-water conduits. It is capable of having various settings such as those which can be customized by architects —i.e., rainfall intensity formulas, unit sanitary amount formulas, and setting digit for calculation—as well as the maximum and minimum values for flow velocity, and the minimum and maximum values of earth covering

Parameters for Calculation Configure type Formula & Simulation for flow volume & slope



Longitudinal and Flow Calculation with a flexible manner

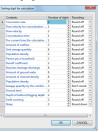
When doing the longitudinal calculation for sewage pipe networks, all information is considered, including

hydrological and longitudinal calculation parameters as well as Pipe section DB, Manhole DB, Underground utility information, the set flow rate of each conduit, and ground levels.

While automatic designing is possible, civil-designers can proceed with designing by making decisions in

Tree of pipeline network





Underground facility Dialog Box

**Data Input** 

**Seamless** 

Design

**Process** 

Management



Calculation





Section

Longitudinal





**Input & Output** with files

Others

Available for the latest **AutoCAD** Version!

Takes Advantage of the powerful features of the latest AutoCAD

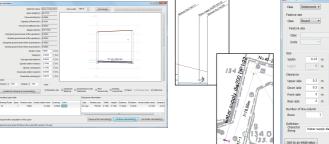
# **Support for Underground Utilities and Ground Contour Lines**

Undergroud facility

It can also utilize underground utilities and changes in the ground surface as conditions for designing conduits. In the calculation process, the distance between the conduits and underground utilities or the ground surface is displayed on the dialog box when necessary. Depth of the conduits etc. can be changed

It controls the display and printing of sewage networks on the plane created by PDP. It can do the attribute information display of conduits, underground utilities display, color setting, etc.





can also utilize underground utilities and changes in the ground surface as conditions for designing conduits In the calculation process, the distance between the conduits and underground utilities or the ground surface is displayed on the dialog box when necessary. Depth of the conduits etc. can be changed at this stage