PIPE Design Pro
Reverse Lookup Manual

PIPE DESIGN,Inc.

Introduction

The PIPE Design Pro Reverse Lookup Manual is a reverse lookup formulation of questions that cannot be fully explained in the conventional user guide and how to be led to this result.

This manual has been requested by our users, who have said that they could not get a clear picture of the entire process from the user guide alone.

If you have any requests or suggestions for the title or content of the manual, we would like to use them as material for future editions.

Thank you in advance.

Table of Contents

1. What is a project？

- What are the steps to follow when starting PIPE DESIGN PRO ("PDP")?
- What are the first settings to be made when I create a new project?

2. What is the definition of a pipe network?

- What information and configuration values are required to define a pipe network in PDP?
- What are the specific steps to select a network of pipes and perform a flow calculation?
- How can I change the route numbers and manhole numbers of a network of pipes in a batch?

3. What is the procedure for creating a longitudinal sections?

- What is the longitudinal profile format used for longitudinal sections?
- Can you automatically create a profile of the location I want to check?

4. What is the procedure for creating a flow calculation sheet?

- What information and settings are required for flow calculations?

5. How do I complete a floor plan as a drawing for submission?

- What formats are available for plans created in PDP?

- What points should I keep in mind when preparing plan styles?

6. What are the key points to keep in mind when designing sewers with PDP?

- What points should I pay attention to when setting up the information needed for sewer design and when designing longitudinal sections?

7. How do I create a plan + profile drawing?

- How do I create a plan and profile?

8. How do I divide up a project among multiple people?

- What are the advantages of working with multiple people?

- What should I be aware of when merging drawings?

9. How do I convert sewer ledger data from GIS to PDP data?

- What are the steps required to convert sewer ledger data from GIS to PDP data?

10. What are the steps required to create a quantity calculation?

- What are the steps required to create a quantity calculation?

11. Is it possible to display the results of a longitudinal section calculation of a pipeline on a plan view?

- What are the steps required to display the results of a longitudinal section calculation on a plan view?

12. What are the settings when there are multiple Land use regions?

- What are the settings and how are they reflected in the design information?

13. How do I consider underground utilities in the design of a house connection pipe?

- What information and settings are required to account for underground utilities in the design of a house connection pipe?

14. What is the procedure for creating a cross-section?

- What information and settings are required to create a cross-section?

1. What is a project?
What are the steps to follow when starting PIPE DESIGN PRO ("PDP")?

This section explains how to create a new project. Shows how to enter a project name, location, and other information about the project, and provides instructions for creating a project.

1. Enter the "Project Information".
2. Select and specify the database for the pipe cross section and manhole.
3. Specify each item in "Drawing Settings" (Unit: 1=1m recommended, scale setting automatically sets font size)
4. Specify the number of objects or values and rounding method when drawing on a plane for "Object Generated Digits".
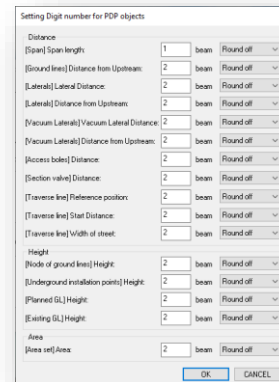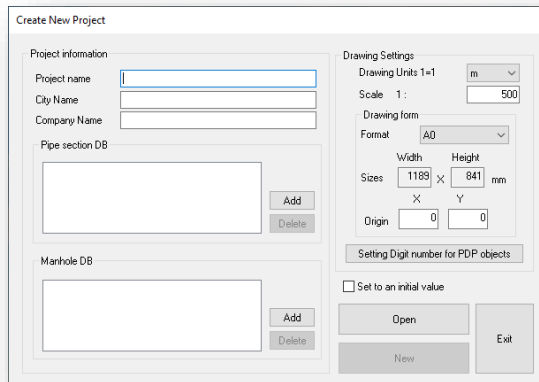
1. What is a project?

What are the first settings to be made when I create a new project?

1. Click "Object Information View" - "Project Information View".
2. Click the "Edit Project Information" button from the "Project Information" dialog.
3. Select the format name of the template to be used when creating a vertical section drawing.
4. Select the format name of the template to be used when creating the flow calculation sheet.
5. The manhole DB and pipe section DB selected when creating a new project can be edited by clicking the "Edit Manhole DB" and "Edit Pipe Section DB" buttons.
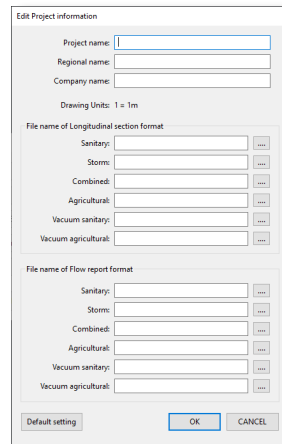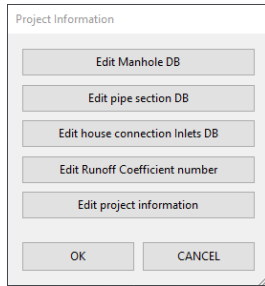
2. What is the definition of a pipe network?

What information and configuration values are required to define a pipe network in PDP?

1. Input the pipe network name and select the treatment type using "Create Object" - "Create Pipe Network".
2. Select the treatment type from "Diversion type, Sewage, Diversion type, Stormwater, Combined type, etc.

3. Multiple pipe network names can be created in a project.
4. "Tools" - "Pipe Network Switching" allows you to check the list of pipe network names and the number of lines in each network.
5. Confirm that the "Stormwater" is selected as the current network by clicking the "Mode switch button" at the bottom of the screen.

9
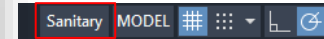
2. What is the definition of a pipe network？

「What are the specific steps to select a network of pipes and perform a flow calculation?

1. Specify which pipe network is to be used in the longitudinal calculation. Select "Tools" - "Pipe Network Switching" to specify the pipe network name.
2. By "Design Data" - "Longitudinal data construction", the data of the specified pipe network starts in "Longitudinal design mode".
3. Edit the processing formula used for longitudinal design in "Project" - "Processing formula edit" (per project).
4. Edit the value for each treatment type in "Project" - "Factor Set Number" (per project)
5. Assign "flow formula", "flow velocity calculation", "simulation", "processing formula", etc. at "Longitudinal Design Parameters" - "Batch Setting" or "Per line". This longitudinal design parameter setting is performed for each selected pipe network.
6. Click "Longitudinal Design" - "Longitudinal Calculation" to perform the longitudinal calculation.

2.   What is the definition of a pipe network?
Is there a way to change the route numbers and manhole numbers of the pipe network all at once?

1. To change the route number, go to ″Auxiliary″ – ″Route Number Change″ after the longitudinal design.
2. Manhole numbers can also be transferred by selecting ″Auxiliary″ – ″Manhole Number Transfer″ after longitudinal design.
3. Go to Plane Design Mode by selecting ″Plane Design Mode″ – ″End Update″.
4. ″View″ – "Redraw″", select the target PDP object. Alternatively, right-click to open the ″Drafting Options″ dialog, where you can select the object to be redrawn and click "OK".
5. The route number and manhole number will be changed and displayed.

3. **What is the procedure for creating a longitudinal profile?**
    What is the longitudinal section format used for longitudinal drawing?"

    1. Longitudinal section format is a style of profile drawing used to create longitudinal section drawings in PDP.
    2. To create a longitudinal section format, select "PIPE DESIGN" - "PIPE Design Pro17" from the start menu.
    3. Click "Edit Vertical Section Drawing Format" and the "Form Edit" screen will appear.
    4. Select the format name on the left side and double-click it to display the contents in the viewer on the right side.
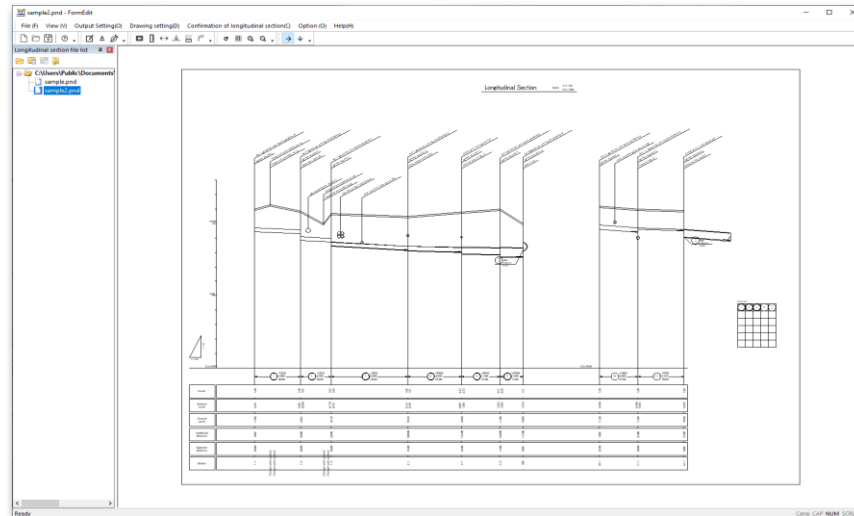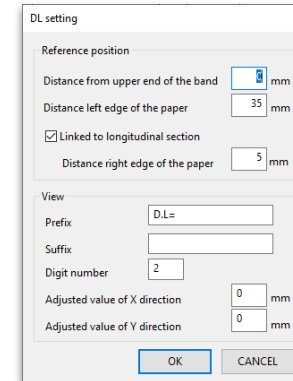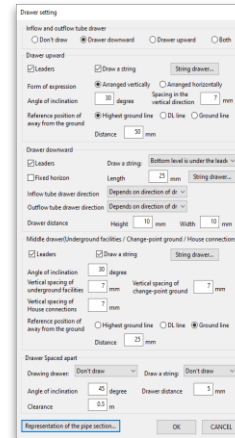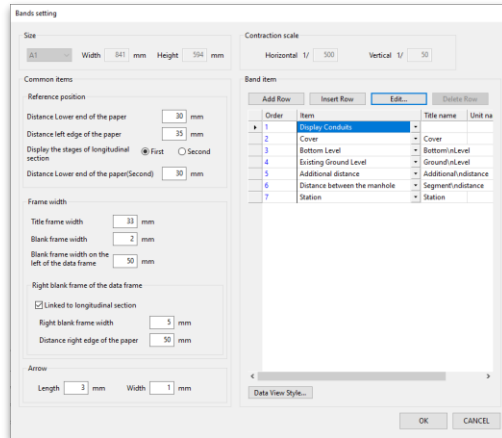
3. What is the procedure for creating a longitudinal profile?
How do I adjust the layout of a profile drawing?

1. The layout of the profile is automatically set by the format. The functions that are automatically adjusted are as follows.
-The text strings can be automatically arranged by freely setting the band items.
-Automatic placement of text without overlap of leader lines and text by setting the top/bottom leader lines and text macro.
-Automatic adjustment of the position of the appropriate route and ground line on the drawing by switching elevation settings.

3. What is the procedure for creating a longitudinal section?
   Can you automatically create a longitudinal section at the location you want to check? "

   1. Go to the longitudinal design mode.
   2. Click " Longitudinal Design " – " Longitudinal Calculation " to perform a longitudinal calculation.
   3. When the message " Calculation of the pipe network has been completed successfully. is displayed at the end, it indicates that all the longitudinal calculations have been completed.
   4. Click "Longitudinal section" – "Display longitudinal section for confirmation" to display the longitudinal section for confirmation. Select a route from ″Data Entry″ – ″Pipe Network Data″ and follow the above procedure to display a longitudinal profile including that route.
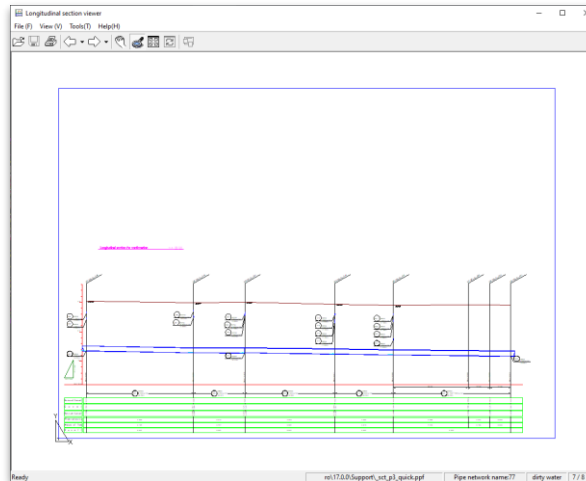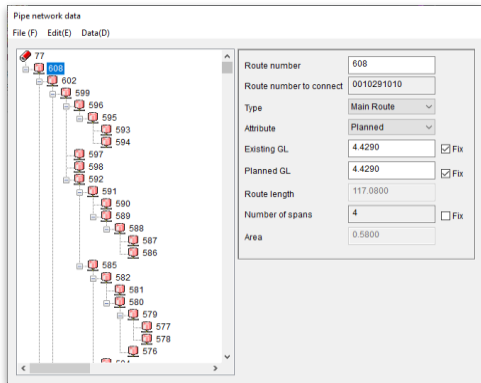
14

4. What is the procedure for creating a flow calculation sheet?

What information and settings are required for flow calculations?

1. Go to the longitudinal design mode.
2. Click ˝Longitudinal Design˝ - ˝Longitudinal Calculation˝ to perform a longitudinal calculation.
3. The message ˝Pipe network calculation has been successfully completed. is displayed at the end, it indicates that all longitudinal calculations have been completed.
4. Select another pipe network from the list in ˝Plane Design Mode˝ - ˝Pipe Network Switching ˝ Repeat steps 1 through 3 above.
5. Confirm that the flow calculation report format has been specified in the project.
6. Enter the items to be output to the flow statement from ˝Project˝ - ˝Edit Pipe Network Information˝
7. From ˝Report˝ - ˝Flow Statement Output,˝ set the output order, output unit, etc., and specify the pipe network name.
8. After completing the settings, click ˝Output Flow Calculation Sheet.

15

5. How do I complete a floor plan as a drawing for submission?
What formats are available for plan drawings created in PDP?

1．The plan styles used in PDP can be used for various type of plan view and provide expressive power that can be utilized for delivered drawings.
2．From ″View″ - ″Plan Style Management″, you can edit colors, line types, and layers for PDP objects on the plan (pipe network, manholes, underground facilities, sub-catchment lines, treatment division lines, etc.), edit pipe attributes (area value, diameter, extension, etc.) and manhole attributes (manhole number, ground elevation, manhole depth, etc.), and edit the number of manholes, manholes, and underground facilities.
3．After creating a plan style, you can save it as a style name.
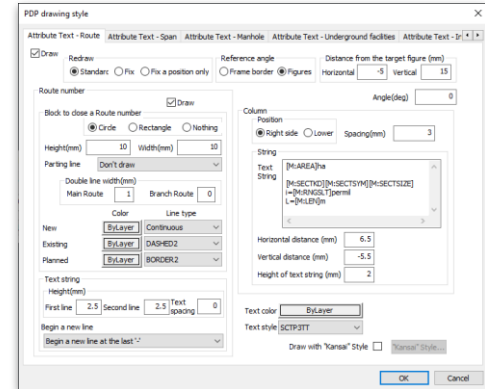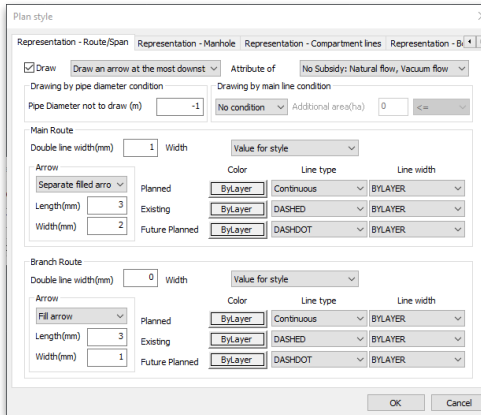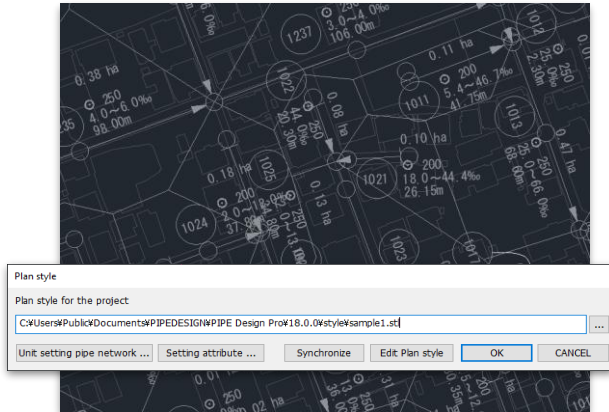
5. **How do I complete a plan style as a drawing for submission?**
   What points should I keep in mind when creating a plan style?

   ・Determine the letter height, figure size, and letter top/bottom spacing that depend on the scale of the drawing. (Enter the value at the time of printing for each value.)
   ・When "Normal" is selected for "When redrawing", the text strings are displayed in conjunction with the movement of the PDP object.
   ・If you select "Fixed position only" for "When re-drawing," the position of the drawer string is kept and only the information changes automatically as the PDP object is moved.
   ・If you execute "File Output" - "Project Import", "Fixed Position Only" of "Plan Style" is invalidated, and it moves to the default position of the drawer.
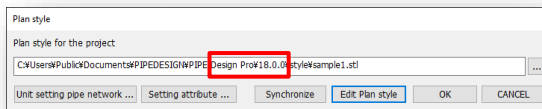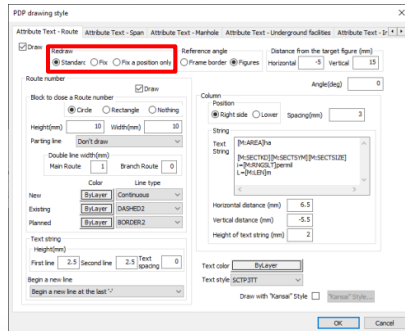
6.　What are the key points to keep in mind when designing sewers with PDP?

What are the key points to keep in mind when setting up the information needed for sewer design and when designing longitudinal sections?

Setting up PDP
• Is the scale of the drawing set at the time of starting PDP correct?　⇒ Check by "View" - "Change Scale"
• Is the treatment type correct when you create a pipe network?　⇒ Check the treatment type in "Information" - "Pipe Network Information".
• In "Longitudinal design mode", are the settings of "Project" - " Edit Flow Calculation method " and "Designing" - "Design parameter" correct?　⇒ Check and correct each item.
• The message "There are multiple flow ends" appears when performing "Build for Calculation".　⇒ Check if there are multiple pipe networks with the same name on the plan view, and use "Tools" - "Search routes" to search for the end of the flow and correct.
•

Flow and Longitudinal calculation
There are several conditions when a longitudinal calculation stops in the middle of a longitudinal calculation.

• The pipe section code is not found ⇒ Try to add a larger pipe section to the specified pipe section group.
• The pipe section code is not found ⇒ If the pipe section is invalid, right-click "Select PIPE section" on the longitudinal design data screen, and try to find the corresponding section code from the context menu "Select PIPE section".
• The pipe bottom height at the end point (pipe bottom height at the starting point) exceeds the limit ⇒ Try fixing the pipe bottom heights at the upstream and downstream sides.
• The pipe bottom height is fixed, so it cannot exceed the underground burial object ⇒ Try recalculating with the pipe bottom height set free.

7. **How do I create a plan + profile drawing?**
What is the procedure for creating a plan + longitudinal section?"

Plan view
After creating the pipe network on the plan view, perform the longitudinal section calculation by "Longitudinal section data construction".

Longitudinal design
-In "Longitudinal design mode," perform longitudinal calculation by "Build for calculation"-"Designing" - "Calculation".
-Click "Layout Longitudinal section" of "Longitudinal Section" - "Layout Longitudinal Section" to automatically lay out the entire line. Click "Plan view mode"-"Save and Close".

Plan Longitudinal section
Open [Option]-[Plan Longitudinal section] - [Create Plan & Longitudinal sections] dialog box.
Insert the drawing of plan and longitudinal section and the plan and longitudinal section drawing. The plan and profile drawings are grouped together, so they can be ungrouped after moving.
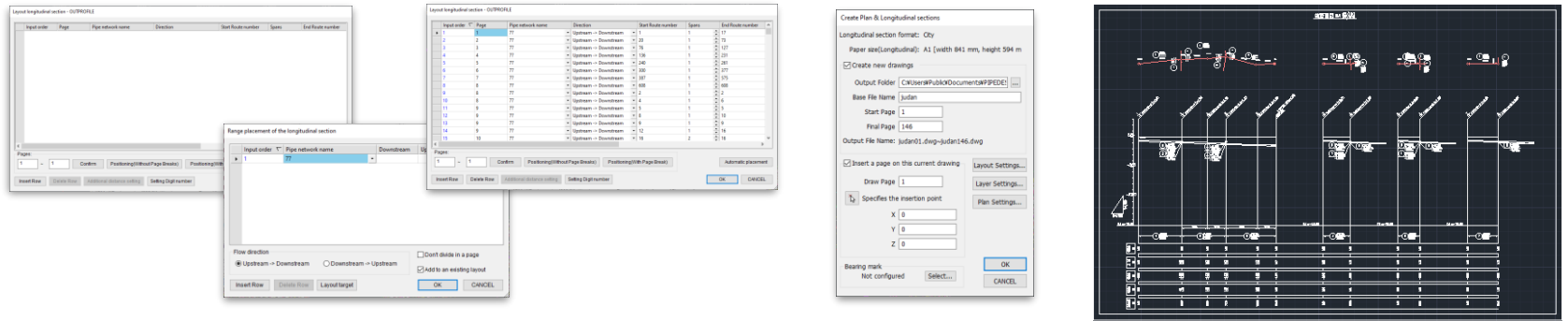
8. How can a project be shared among multiple people?
What are the advantages to working with multiple people on a project?

Advantages
• If a project involves a single city, it can be divided up and worked on by multiple people.
• Multiple areas can be combined into a single file to complete a drawing.

How do I merge the results of divided work?
• The drawing is exported to a file by selecting "Output" - "Export PDP project information".
• Import the above export file into the drawing to be merged using "Output" - "Import PDP project information".
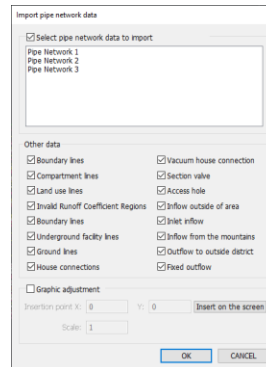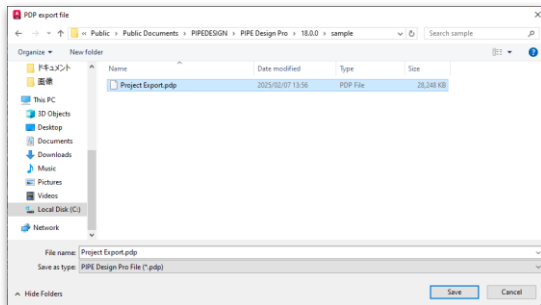
8. How can a project be shared among multiple people?
What should I be aware of when merging drawings?

The boundaries of the treatment area, drainage area and so on as boundaries for the division work. In order to integrate this data into a single integrated data, PDP objects (routes, manholes, sub-catchment lines, underground utilities, land use area lines, etc.) should not be duplicated.

-The pipe network names also need to be carefully designed. The names of the pipe network should be easy to understand and not duplicate.
-PDP objects that do not need to be divided into networks, such as land use area lines, should be divided into separate PDP objects and each PDP object should be closed.
-The land use area is necessary to get the area and to calculate the length and width of each divided drawing.
-The underground utility lines are also necessary to get the area and to calculate the length of each section in each drawing.
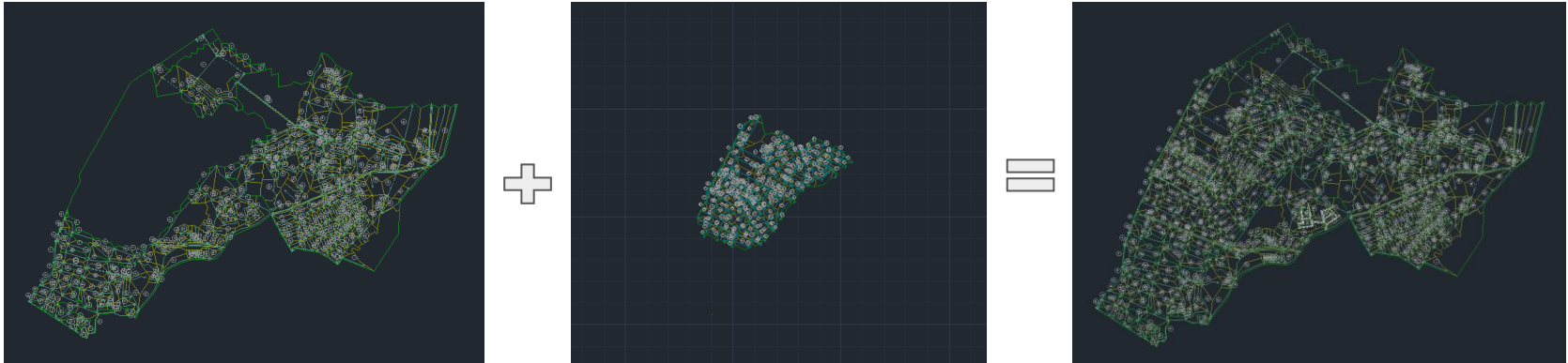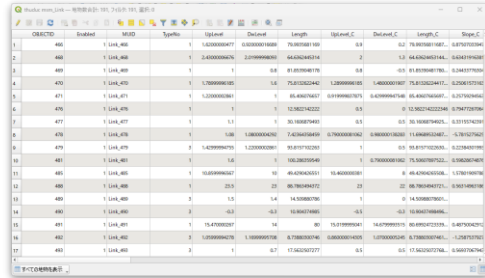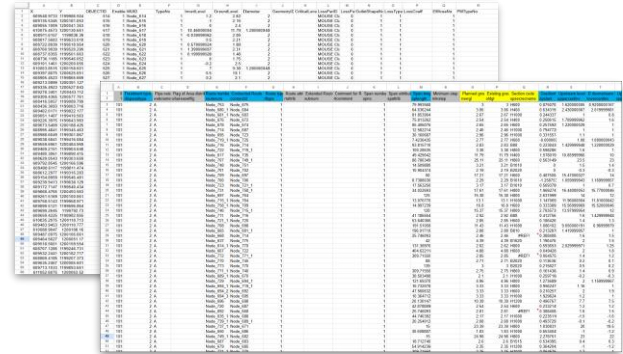
9. How do I convert sewer ledger data from GIS to PDP data?
   What are the steps required to convert sewer ledger data from GIS to PDP data?

1. Select "Open Attribute Table" for the culvert or manhole in QGIS.
2. Open the attribute table for culverts and manholes. Select and copy the necessary rows based on the field "Subdivision".
3. Paste the culvert and manhole information into the respective Excel sheet.
4. Create a file for importing the PDP (open the PDP sample data and copy it).
(Open the PDP sample data and select "Option"-"Export CSV " to output a csv file of the template for PDP import.)

9. How do I convert sewer ledger data from GIS to PDP data?
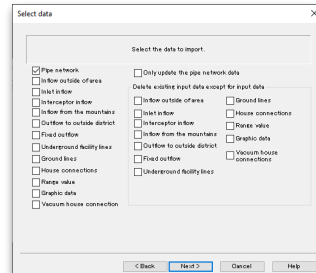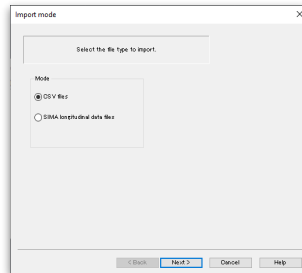What are the steps required to convert sewer ledger data from GIS to PDP data?

5. Open the csv file and assign a value to each field (treatment type, pipe network name, area distribution, route number...). (For details, please refer to Chapter 27 "Edit CSV" in the User's Guide).
6. Refer to the "Pipe Culvert" and "Manhole" tabs, and enter data for "Route Number," "Destination Route Number," and "Span Length" in the "PDP" tab. However, "101" starting from the third row of column A is the information for each span. Line "110" is the information on the end of each span.
7. After editing P, copy this data and create a separate csv file.
8. Start PDP, define Pipe Cross Section DB and Manhole DB by "New", and create a new project with scale 1:2500.
9. Start the "Import CSV" command of PDP, select the CSV file, turn off "Only update the Pipe Network Data", and select the pipe network.
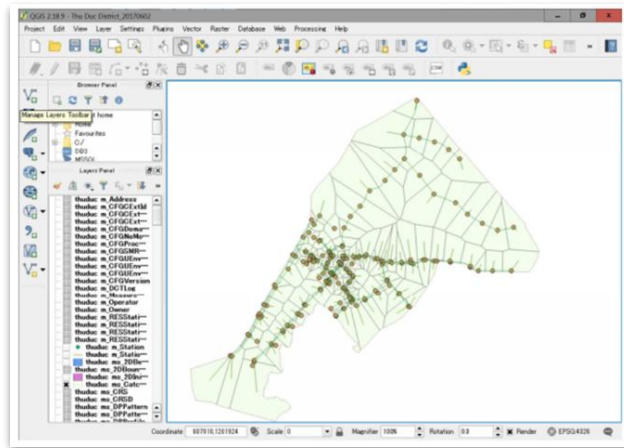
9. How do I convert sewer ledger data from GIS to PDP data?
    What are the steps required to convert sewer ledger data from GIS to PDP data?

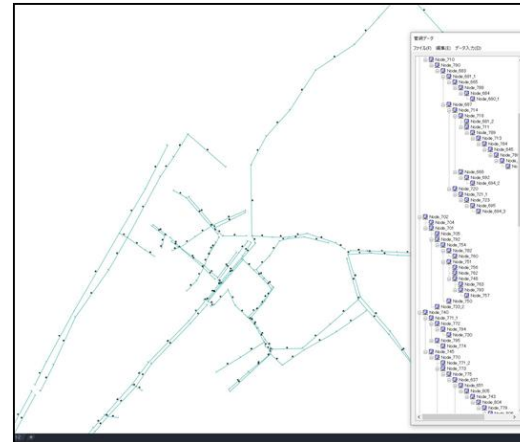10. Select the csv file individually and click the "Finish" button.
11. Start importing and confirm that it finishes successfully.
   Select "Update and exit".

QGIS data

PDP data

## 10. What are the steps required to create a quantity calculation?

What are the steps required to create a quantity calculation?

1. Select "Option" - "Output quantity sheet".
2. Export the csv file required for the quantity sheet.
3. Select "OK" in the "Open an excel file for quantity sheet? dialog box, click the "OK" button.
4. From the Excel menu, select "Add-ins" and the "Quantity Report" menu will appear.
5. Select "Style Setting" from the "Quantity Report" menu, select "Excavated Soil Amount" and click the "Set" button.
6. Select "Create Excavated Soil Quantity Report..." and click "OK" to output. Click "OK" to output the data.
7. Select "Edit style" to create a new style.
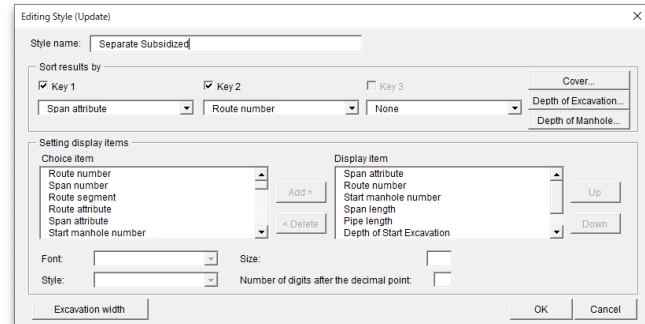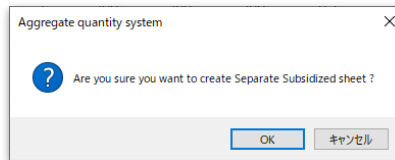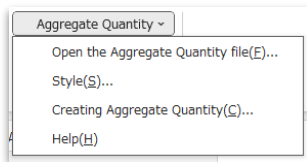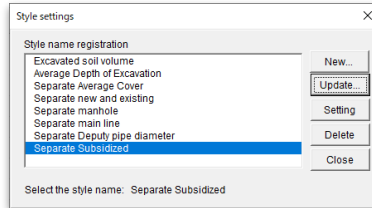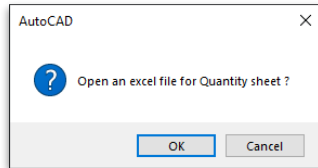
11．Is it possible to display the results of a longitudinal section of a pipeline on a plan view? What operations are required to display the results of a longitudinal section calculation on a plan view?

1. Select "View" - "Highlighting".
2. Select "Target" from "Target Objects" (span, node, manhole sub-pipe...).
3. Select the target item from the attribute values. In this case, select "Margin rate," which is the flow capacity.
4. For "Expression," select a layer name, color, line width, and radius, and enter values.
5. Click the "Run" button, and polylines and circles will appear on the PDP object on the plane.
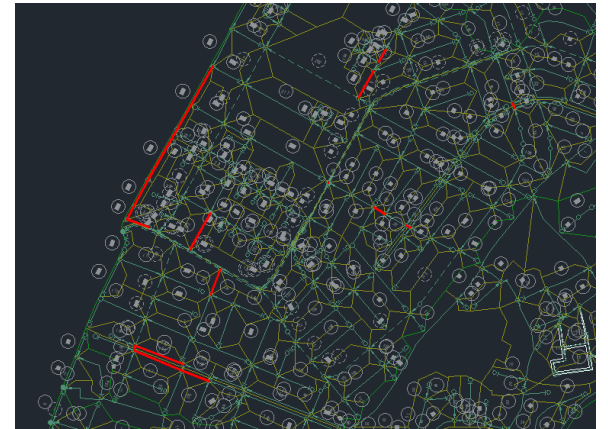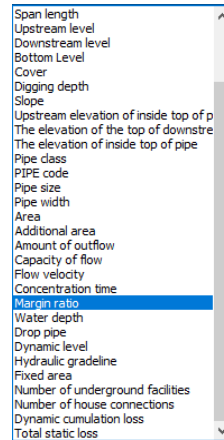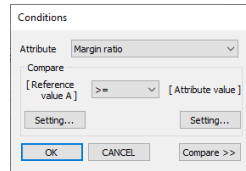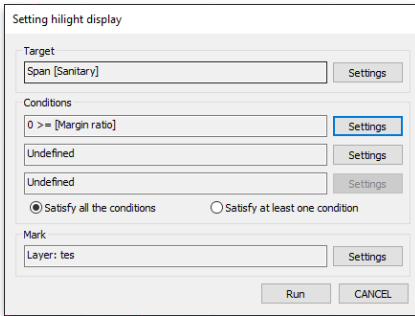
12. What are the settings when there are multiple land use regions?

What is the procedure for setting up and reflecting this in the design information?

1. Select "Create Object" - "Create land Use lines" and create a closed area (for sewage: unit sewage volume, for stormwater: runoff coefficient).
2. Once the closed area is created, specify the coefficient set number for the area in the "Specified region".
3. "Default region" is an area outside the designated area.
4. The area of each line in question is automatically obtained for each coefficient by "Tools"-"Get the area of routes".
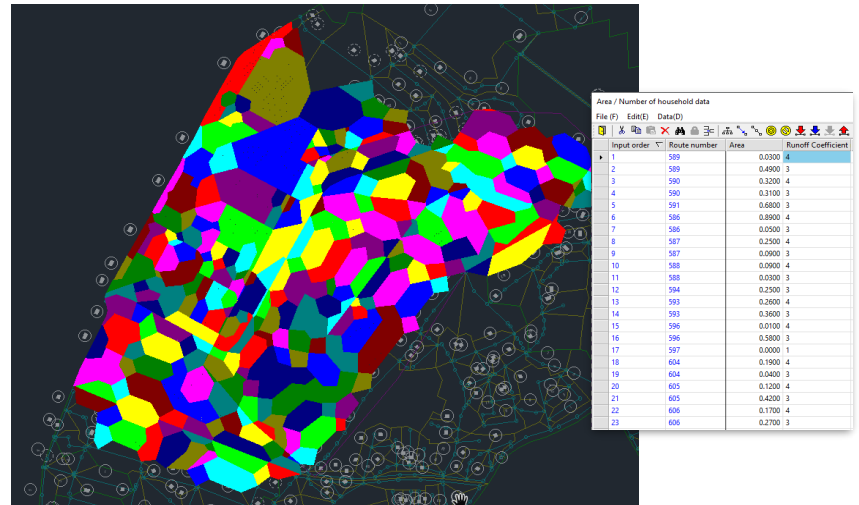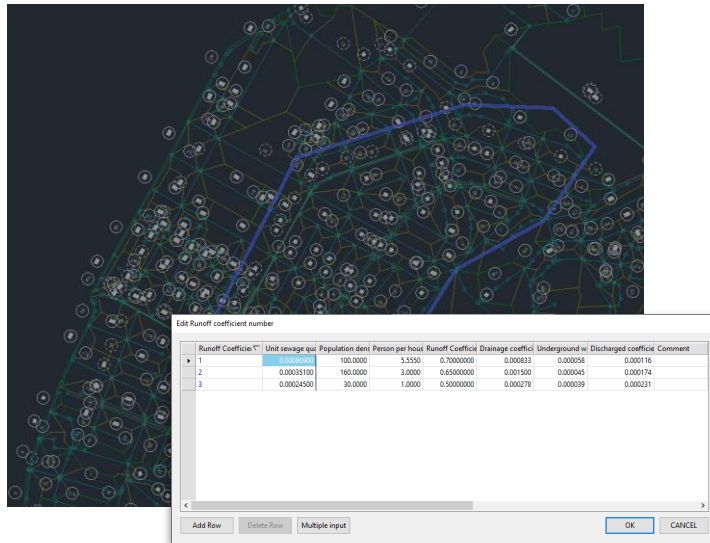
13. How do I account for underground utilities in the design of house connection pipes?
What information and settings are required to account for subsurface deposits in the design of house connection pipes?

1. "House connection pipe design is included as a standard feature and can be performed on a per-pipe basis. The optional house connection pipe design described here is a list of multiple house connection pipe designs, which can be batch designed by selecting conditions in "Settings" - "Calculation".
The optional installation pipe design described here can be used to design multiple installation pipes in a list and select conditions in "Settings"-"Calculation".
2. If an underground structure intersects the house connection pipe, the separation value between the underground utilities and the house connection pipe is displayed, and the house connection pipe bottom height can be redesigned after confirming the value. The pipe bottom height of the house connection pipe can be redesigned after confirming the value.

14. What is the procedure for creating a traverse line?

What information and settings are required to create a traverse line?

1. place arrowheads on the left and right side of the road at the location of the desired transect in "Options" - "Create Traverse line".
2. enter the width, location, depth, and width of pipe excavation on each transect for the conduit and underground utilities.
3. in "Options" - "Create Traverse", indicate the left and right ends of the conduit roadway and enter the number, excavation width, and slope.
4. Create the crossing information in CAD according to each crossing line position. The crossing number is specified by the layer name (OUDAN_***). The drawing unit is 1=1m.
5. Save the above drawing as a DXF file (R12).
6. Select "Option" - "Create Traverse" to automatically draw each cross section. There is also a function to convert survey data format SIMA files to DXF files (see Chapter 25 of the User Manual). (See Chapter 25 of the User Manual.)

**Thank you for your interest in our activity.
If you should have more questions, feel free to contact us.**

PIPE DESIGN ,Inc.

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