

T-BlockCalc

Help and Operating Instructions

Overview

The programme is designed to allow the user to calculate the size of a thrust block for a range of pipe types, bend angles and soil conditions. The user first selects a pipe type from a drop down list of pipe materials and then selects a bend angle from another drop down list. Next the user selects the nominal pipe diameter from a further list of pipe sizes. The list presented to the user is dependant on the pipe material that has been previously selected. The programme will automatically select the internal pipe diameter for the pipe selected based on the pipe type and nominal diameter. The user then inputs the maximum water pressure expected in the pipe. The water pressure should be input in Bar. Next the user inputs the soil type from a drop down list of soil types. Once the soil type has been selected the user will be presented with a list of soil bearing strengths which are dependant on the type of soil that has been selected. The programme assumes that the thrust block height will be equal to the nominal pipe diameter and calculates the necessary minimum length of the thrust block.

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Worksheet tabs

The programme contains a number of worksheet tabs, these are named 'Help', 'Cover sheet', 'Input Reducers', 'Input Bends' and 'Input Tees'

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| 'Help' tab - | 'Help' tab contains the Help and Operating instructions for the programme |
| 'Cover Sheet' tab -
programme print out. | The 'Cover Sheet' tab contains the cover sheet template for the |
| 'Input Reducers' tab -
related to pipe reducers. | The 'Input Reducers' sheet tab contains the main part of the programme |
| 'Input Bends' tab -
related to pipe bends. | The 'Input Bends' sheet tab contains the main part of the programme |
| 'Input Tees' tab -
related to pipe tees. | The 'Input Tees' sheet tab contains the main part of the programme |

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Inputting data **Only place data in boxes marked in blue**

Fitting Type - There are three different sheets that the user can use to calculate the size of thrust block required. These sheets are named 'Input_Reducers', 'Input_Bends' and 'Input_Tees'. The user should select the sheet to match the fitting as necessary.

Pipe Material - The pipe material proposed or existing should be selected from the drop down menu. Once the pipe material has been selected the programme automatically selects the correct range of available nominal pipe sizes for that particular type of pipe.

Water Pressure - The maximum water pressure that is expected in the piping system should be input by the user. The user should remember that test pressures may be well above the maximum working pressure in the pipe.

Soil Type - The type of soil is selected from a drop down menu. There is a choice of 29 categories based on the soil types listed in the structural engineers handbook. The categories include a couple of soil types where the bearing pressure of the soil is so low that a thrust block cannot be used and no pressure pipes should be placed in this type of soil. These soil types are only included for the sake of completing the table. If necessary the user should agree the soil type with the Local Authority or the authority having jurisdiction over the project.

Soil Bearing Strength - The user should input the soil bearing strength from the drop down list presented. The list soil bearing strengths presented to the user is dependant on the soil type selected. Again where necessary the soil bearing strength should be agreed with the Local Authority or the authority having jurisdiction.

Thrust Block Length - The programme will automatically calculate the length of the thrust

Thrust Block Height - The programme assumes that the thrust block height will be equal to the nominal diameter of the pipe plus 300mm minimum plus the nominal pipe diameter divided by four.

Thrust Block Design - The user should design and locate the thrust blocks as shown on the typical drawings shown below. If due to a combination of pipe size and soil conditions the thrust block becomes excessively long the user should increase the height of the block and reduce the length such that the new area is equal to the original area. Depending on the depth of cover above the pipe it may be necessary to increase the height of the block in the downward direction rather than the upward

Thrust Block Reinforcement - The user should consult a structural engineer for larger thrust blocks particularly those required for pipe reducers as these blocks can be considered as beams and may well require reinforcement.

Factor of Safety - The programme includes a factor of safety. This factor of safety is set at 1.5 times the required minimum size for the thrust block.

Creating an additional row

To create an additional row press the "Create Thrust Block" button this activates a macro, which will add a new line below the existing line. To add a further line press the "Create Thrust Block" button again

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Removing a row

To remove a row press the "Delete Thrust Block" button. This activates a macro which will remove the last row. To remove a further row press the "Delete Thrust Block" button again.

Setting the print area

To set the print area of the "Input" sheets press the "Set Print Area" button. This activates a macro, which will set the print area ready for printing.





