



STAB Manual

Version 2.0

Simple
Tool for
Aggregate
Blending

Developed by:

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Salient Features



Blend upto 5 Aggregate Stockpiles



Filter Solutions by fixing one or more Stockpiles



Get Graphical Representation of chosen solutions




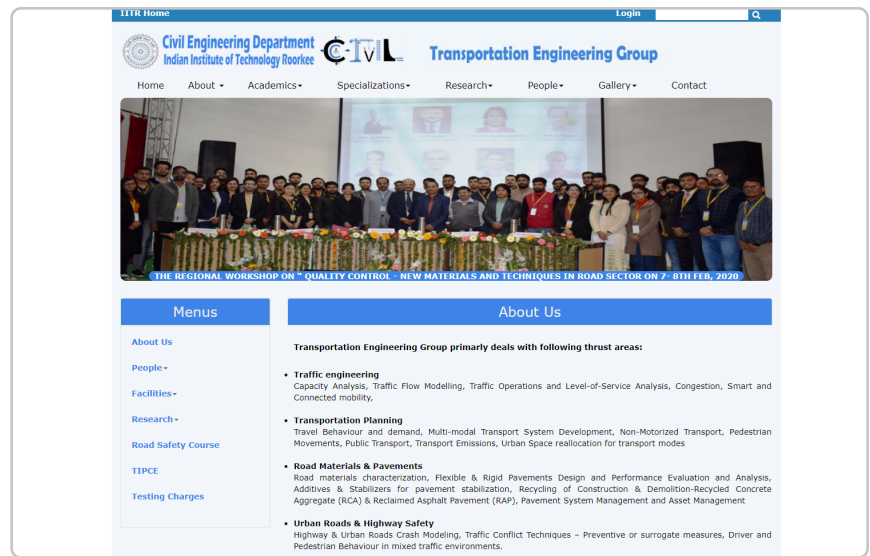
Save Report as .csv file.



1. Download & Installation

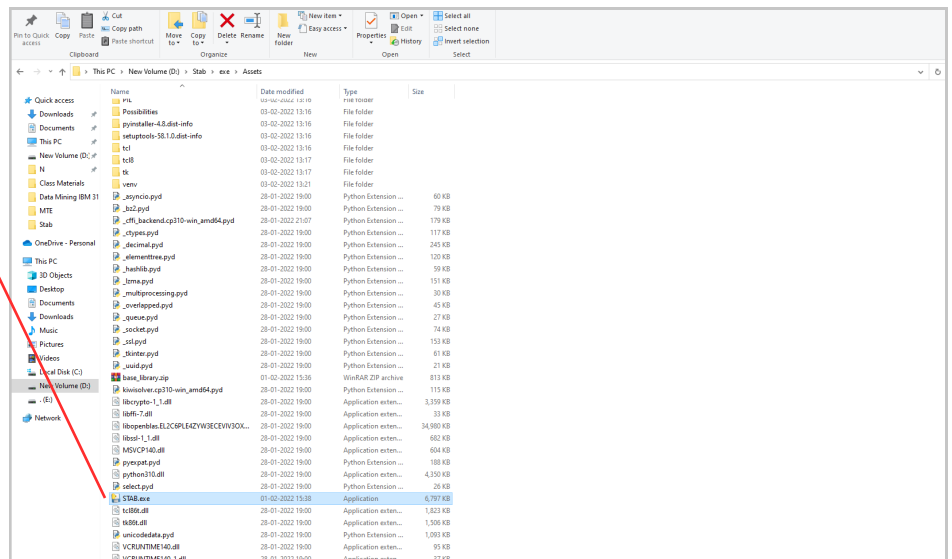
- Download the **Stab_version_2.zip** file from civil.iitr.ac.in/TEG/About

 civil.iitr.ac.in/TEG/About



- Extract the .zip file to a folder. In the folder, run **STAB_version_2.exe** file.

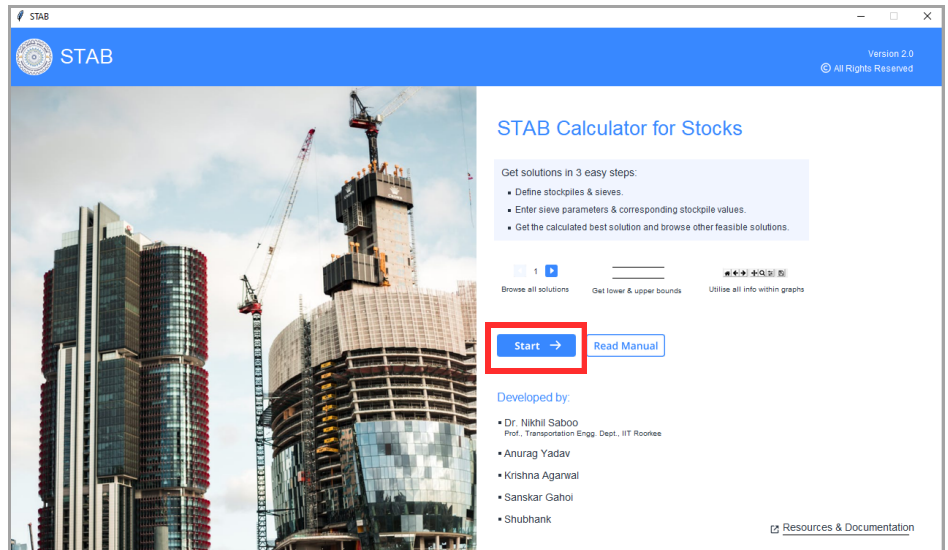
No installation required.



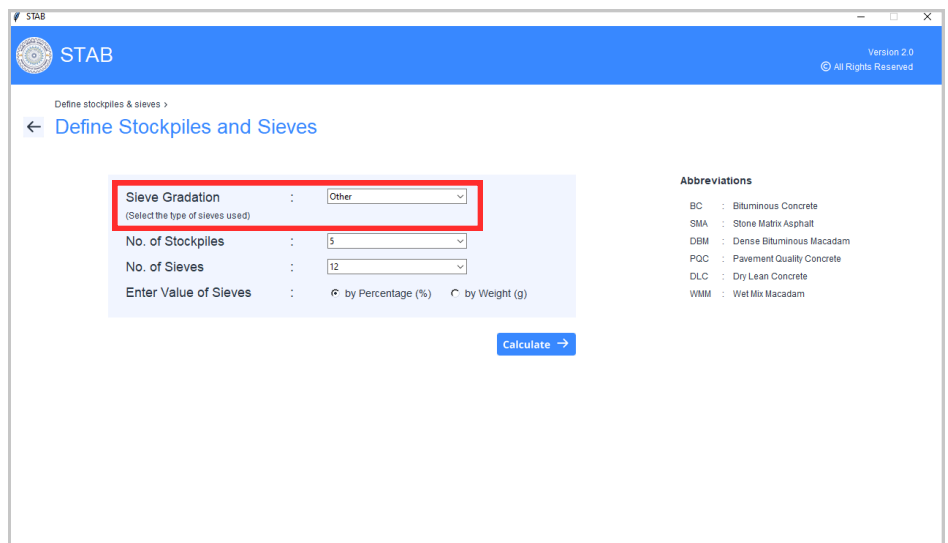


2. Using STAB

- Click **Start** to proceed



- Select the **Sieve Gradation** from the dropdown menu if you have one of the listed standard gradations, if not choose **"Other"**





2. Using STAB

- Select the **No. of Stockpiles & No. of Sieves**

STAB

Define stockpiles & sieves >

← Define Stockpiles and Sieves

Sieve Gradation : Other

Select the type of sieves used

No. of Stockpiles : 2

No. of Sieves : 1

Enter Value of Sieves : ☒ by Percentage (%) ☐ by Weight (g)

Calculate →

- If you have any standard Sieve gradation selected, then the no. of stockpiles and no. of sieves will be fixed accordingly

STAB

Define stockpiles & sieves >

← Define Stockpiles and Sieves

Sieve Gradation : DBM - 37.5mm

(Select the type of sieves used)

No. of Stockpiles : 5

No. of Sieves : 8

Enter Value of Sieves : ☒ by Percentage (%) ☐ by Weight (g)

Calculate →

Abbreviations

- BC : Bituminous Concrete
- SMA : Stone Matrix Asphalt
- DBM : Dense Bituminous Macadam
- PQC : Pavement Quality Concrete
- DLC : Dry Lean Concrete
- WMM : Wet Mix Macadam

- Select the data type to be entered in the future steps:

Note: If you choose “**by Weight**” here, you will see an option to calculate **%passing** after you enter all the weight values in the next step.

Get % Passing

- And when you are good to go, click on continue

Continue →



2. Using STAB

- On the next page, Enter the values of % passing/wt. retained corresponding to each sieve size:

STAB Version 2.0
Define stockpiles & sieves > Enter values >
← Enter Values

| | Size(mm) | Lower Bound | Upper Bound | Stockpile 1 | Stockpile 2 | Stockpile 3 | Stockpile 4 | Stockpile 5 |
|---------|----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sieve 1 | 45 | 100 | 100 | | | | | |
| Sieve 2 | 37.5 | 95 | 100 | | | | | |
| Sieve 3 | 25.5 | 63 | 93 | | | | | |
| Sieve 4 | 13.2 | 55 | 75 | | | | | |
| Sieve 5 | 4.75 | 38 | 54 | | | | | |
| Sieve 6 | 2.36 | 28 | 42 | | | | | |
| Sieve 7 | 0.3 | 7 | 21 | | | | | |
| Sieve 8 | 0.075 | 2 | 8 | | | | | |

Calculate →
Reset

- If you had selected “Other” as the sieve gradation, you also need to enter the lower and upper bounds for all the sieves in the selected gradation:

STAB Version 2.0
Define stockpiles & sieves > Enter values >
← Enter Values

| | Lower Bound | Upper Bound | Stockpile 1 | Stockpile 2 | Stockpile 3 | Stockpile 4 | Stockpile 5 |
|----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sieve 1 | | | | | | | |
| Sieve 2 | | | | | | | |
| Sieve 3 | | | | | | | |
| Sieve 4 | | | | | | | |
| Sieve 5 | | | | | | | |
| Sieve 6 | | | | | | | |
| Sieve 7 | | | | | | | |
| Sieve 8 | | | | | | | |
| Sieve 9 | | | | | | | |
| Sieve 10 | | | | | | | |
| Sieve 11 | | | | | | | |
| Sieve 12 | | | | | | | |

Calculate →
Reset



2. Using STAB

Example:

- Standard Gradation

STAB Version 2.0
Define stockpiles & sieves > Enter values >
← Enter Values

| | Size(mm) | Lower Bound | Upper Bound | Stockpile 1 | Stockpile 2 | Stockpile 3 | Stockpile 4 | Stockpile 5 |
|---------|----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sieve1 | 26.5 | 100 | 100 | 98.34649029 | 100 | 100 | 100 | 100 |
| Sieve2 | 19 | 90 | 100 | 72.63708129 | 100 | 100 | 100 | 100 |
| Sieve3 | 13.2 | 59 | 79 | 12.49199915 | 88.02588997 | 100 | 100 | 100 |
| Sieve4 | 9.5 | 52 | 72 | 2.368252614 | 47.05501618 | 100 | 100 | 100 |
| Sieve5 | 4.75 | 35 | 55 | 0 | 1.035598706 | 40.45751634 | 100 | 100 |
| Sieve6 | 2.36 | 28 | 44 | 0 | 0 | 4.705882353 | 95.39170507 | 100 |
| Sieve7 | 1.18 | 20 | 34 | 0 | 0 | 0.588235294 | 66.359447 | 100 |
| Sieve8 | 0.6 | 15 | 27 | 0 | 0 | 0.522875817 | 47.92626728 | 100 |
| Sieve9 | 0.3 | 10 | 20 | 0 | 0 | 0.45751634 | 31.79723502 | 100 |
| Sieve10 | 0.15 | 5 | 13 | 0 | 0 | 0.392156863 | 19.8156682 | 100 |
| Sieve11 | 0.075 | 2 | 8 | 0 | 0 | 0.326797386 | 9.677419355 | 97 |

Calculate →
Reset

- Or otherwise

STAB Version 2.0
Define stockpiles & sieves > Enter values >
← Enter Values

| | Lower Bound | Upper Bound | Stockpile 1 | Stockpile 2 | Stockpile 3 | Stockpile 4 |
|---------|-------------|-------------|-------------|-------------|-------------|-------------|
| Sieve1 | 100 | 100 | 100 | 100 | 100 | 100 |
| Sieve2 | 90 | 100 | 88.02588997 | 100 | 100 | 100 |
| Sieve3 | 70 | 88 | 47.05501618 | 100 | 100 | 100 |
| Sieve4 | 53 | 71 | 1.035598706 | 40.45751634 | 100 | 100 |
| Sieve5 | 42 | 58 | 0 | 4.705882353 | 95.39170507 | 100 |
| Sieve6 | 34 | 48 | 0 | 0.588235294 | 66.359447 | 100 |
| Sieve7 | 26 | 38 | 0 | 0.522875817 | 47.92626728 | 100 |
| Sieve8 | 18 | 28 | 0 | 0.45751634 | 31.79723502 | 100 |
| Sieve9 | 12 | 20 | 0 | 0.392156863 | 19.8156682 | 100 |
| Sieve10 | 4 | 10 | 0 | 0.326797386 | 9.677419355 | 97 |

Calculate →
Reset

- And when you have entered all the values, click calculate:

Calculate →



2. Using STAB

- On the Results window, you get the no. of possible solutions to the given values, the detailed values & graph of the best solution & other options.

Total number of possible integral solutions with the given values

Save all possible solutions as a .csv file to view them in Excel.

Properties of Stockpile (in % passing) **best solution***

Use these options to analyze the **graph** by:

- Pan
- Zoom
- Scale filter
- Save graph

STAB

Define stockpiles & sieves > Enter values > Result >

Result

No. of possible solutions: 915

Save Report

Best solution

Values

| Stockpiles | Percentage(%) |
|-------------|---------------|
| Stockpile 1 | 37 |
| Stockpile 2 | 6 |
| Stockpile 3 | 52 |
| Stockpile 4 | 5 |

Filter Solutions

Graph

Lower Limit Upper Limit Solution

Percentage Passing (%)

Sieve Number

Note:

Best solution: Best solution is defined by minimizing the root mean square error from the mid point gradation. Mid point gradation is the mean of upper bound and lower bound values.

Save report feature: Save solution as a csv file.

Filter solutions feature: Get alternative solutions to this search by fixing values of particular stockpiles. You can also see the graph plotted for any particular solution by entering values for all stockpiles.

Find alternate solutions with constraints on one or more stockpiles.

STAB

Define stockpiles & sieves > Enter values > Result > Fix stockpiles >

Fix Stockpile(s)

No. of possible solutions: 915

Best solution

Values

| Stockpiles | Percentage(%) |
|-------------|---------------|
| Stockpile 1 | 40 |
| Stockpile 2 | |
| Stockpile 3 | |
| Stockpile 4 | 2 |

Filter by Fixing

Graph

Best solution: Best solution is defined by minimizing the root mean square error from the mid point gradation. Mid point gradation is the mean of upper bound and lower bound values.

Save report feature: Save solution as a csv file.

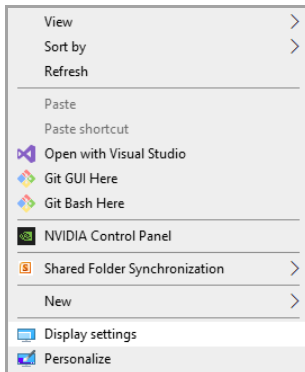
Filter solutions feature: Get alternative solutions to this search by fixing values of particular stockpiles. You can also see the graph plotted for any particular solution by entering values for all stockpiles.



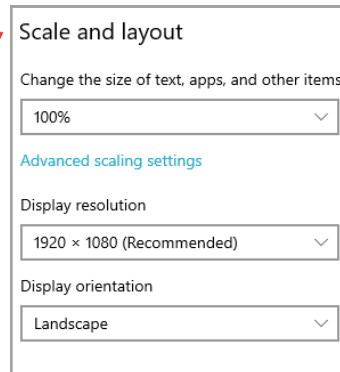
3. Help & Feedback

- In case the STAB window covers up all of your screen and/or STAB window appears to be bigger than the screen area, kindly change the display settings on your device to increase resolution.

1. Right Click

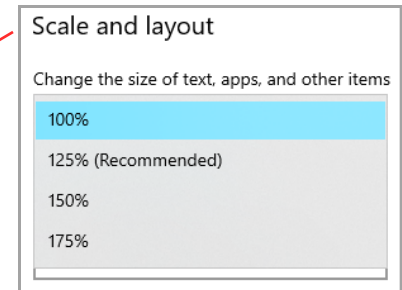


2. Go to Display settings



3. Under Scale & Layout

4. Reduce the zoom size to 100%



- For any further queries kindly contact:

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