OPERATION MANUAL
RESISTIVITY_DIGITAL

APPLICATION: Resistivity_digital

ABSTRACT

Procedure for operating Application ‘RESISTIVITY_DIGITAL’ on www.sashonapp.com

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1. Introduction:

Technology development has always played an important role in the field of Engineering from the early Industrial Revolution till date. For any project, time is an essence and cost of project is directly impacted by time. With advancement of technology, time taken for a project can be optimized and greater control over cost be achieved. In project Engineering, repetitive type of work is usually involved with variable parameters and time & manpower is required to complete the work. A customized application development can reduce the time & manpower requirement by efficiently calculating and displaying the output parameters from input parameters.

2. Aim:

Our main aim is to understand the requirement of a project, study input and output parameters, design an application, provide support & training till application is optimized and upload on our website www.sashonapp.com and use it from anywhere in the world.

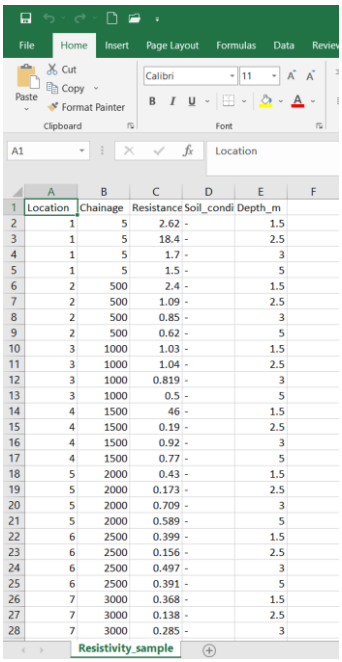
There are many applications available for different fields which are window based and have license requirement. The license is usually perpetual / annual rental basis and initial investment cost is high and is not affordable to many Clients. If it is installed in a particular System, we may not be able to access from other places.

We offer a web based customized application which can be operated from anywhere in the world 24 x 7 and Client can use it on pay per use basis, which will be very less compared to the initial investment and how many times it is being used.

3. RESISTIVITY_DIGITAL Application:

This application is developed for pipeline surveying domain. Usually resistivity of soil is measured along the pipeline route at certain intervals based on which cathodic protection for pipeline is designed. Detailed analysis is required to arrive at various parameters for which this program is designed. A detailed analysis report is prepared in Excel and Pdf format.

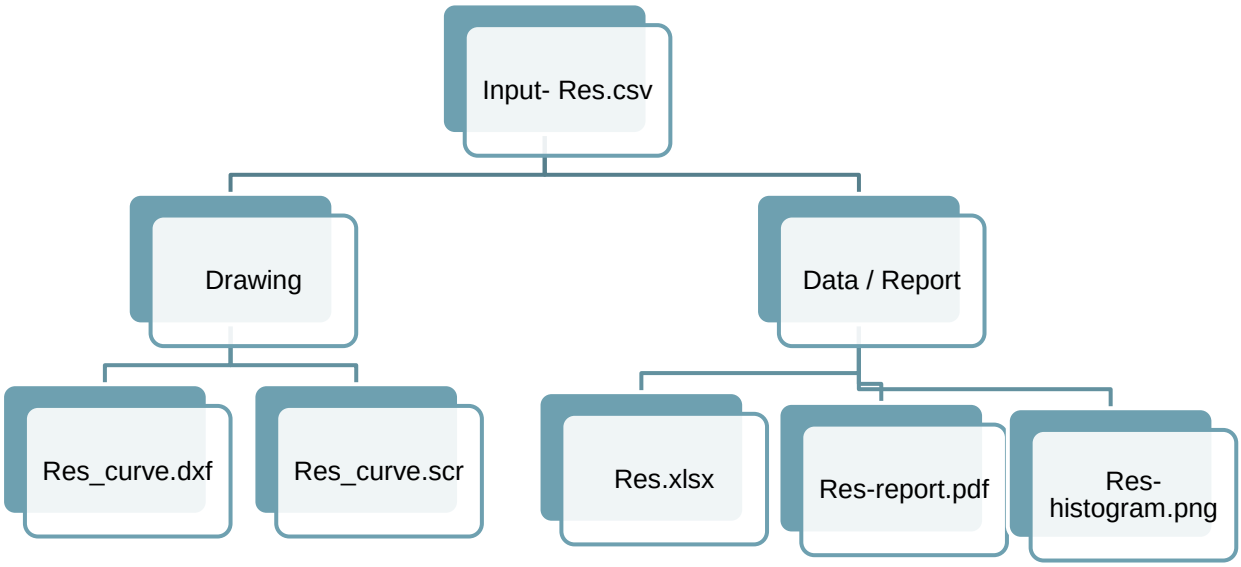
Figure 1: Input Data Format



Location	Chainage	Resistance	Soil_condi	Depth_m
1	5	2.62	-	1.5
1	5	18.4	-	2.5
1	5	1.7	-	3
1	5	1.5	-	5
2	500	2.4	-	1.5
2	500	1.09	-	2.5
2	500	0.85	-	3
2	500	0.62	-	5
3	1000	1.03	-	1.5
3	1000	1.04	-	2.5
3	1000	0.819	-	3
3	1000	0.5	-	5
4	1500	46	-	1.5
4	1500	0.19	-	2.5
4	1500	0.92	-	3
4	1500	0.77	-	5
5	2000	0.43	-	1.5
5	2000	0.173	-	2.5
5	2000	0.709	-	3
5	2000	0.589	-	5
6	2500	0.399	-	1.5
6	2500	0.156	-	2.5
6	2500	0.497	-	3
6	2500	0.391	-	5
7	3000	0.368	-	1.5
7	3000	0.138	-	2.5
7	3000	0.285	-	3

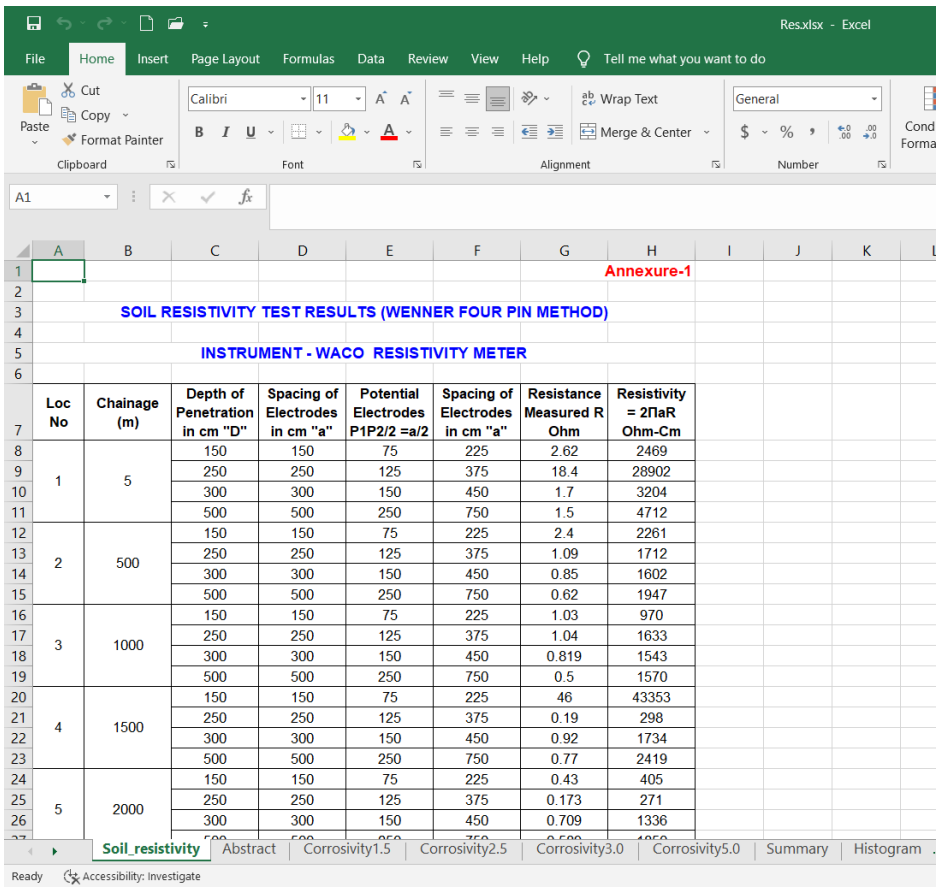
4. Programming Process:

Figure 2: Programming Process



5. Output Format:

Figure 3: Output Format Res.xlsx



Res.xlsx - Excel

File | Home | Insert | Page Layout | Formulas | Data | Review | View | Help | Tell me what you want to do

Annexure-1

SOIL RESISTIVITY TEST RESULTS (WENNER FOUR PIN METHOD)

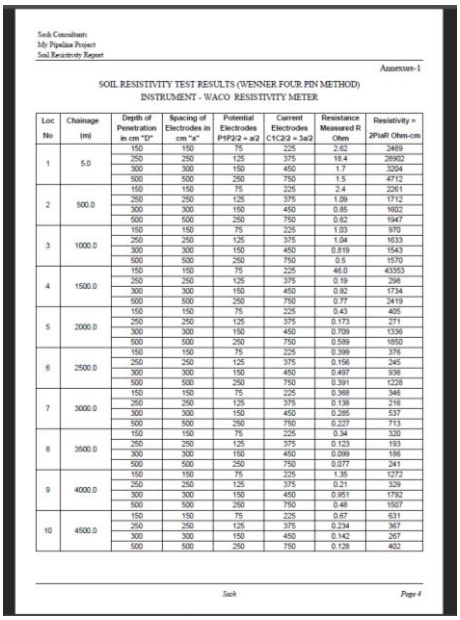
INSTRUMENT - WACO RESISTIVITY METER

Loc No	Chainage (m)	Depth of Penetration in cm "D"	Spacing of Electrodes in cm "a"	Potential Electrodes P1P2/2 =a/2	Spacing of Electrodes in cm "a"	Resistance Measured R Ohm	Resistivity = 2ΠaR Ohm-Cm
1	5	150	150	75	225	2.62	2469
		250	250	125	375	18.4	28902
		300	300	150	450	1.7	3204
		500	500	250	750	1.5	4712
2	500	150	150	75	225	2.4	2261
		250	250	125	375	1.09	1712
		300	300	150	450	0.85	1602
		500	500	250	750	0.62	1947
3	1000	150	150	75	225	1.03	970
		250	250	125	375	1.04	1633
		300	300	150	450	0.819	1543
		500	500	250	750	0.5	1570
4	1500	150	150	75	225	46	43353
		250	250	125	375	0.19	298
		300	300	150	450	0.92	1734
		500	500	250	750	0.77	2419
5	2000	150	150	75	225	0.43	405
		250	250	125	375	0.173	271
		300	300	150	450	0.709	1336

Soil_resistivity | Abstract | Corrosivity1.5 | Corrosivity2.5 | Corrosivity3.0 | Corrosivity5.0 | Summary | Histogram

Ready | Accessibility: Investigate

Figure 4: Output Format Res-report.pdf



Sash Consultants
My Pipeline Project
Soil Resistivity Report

Annexure-1

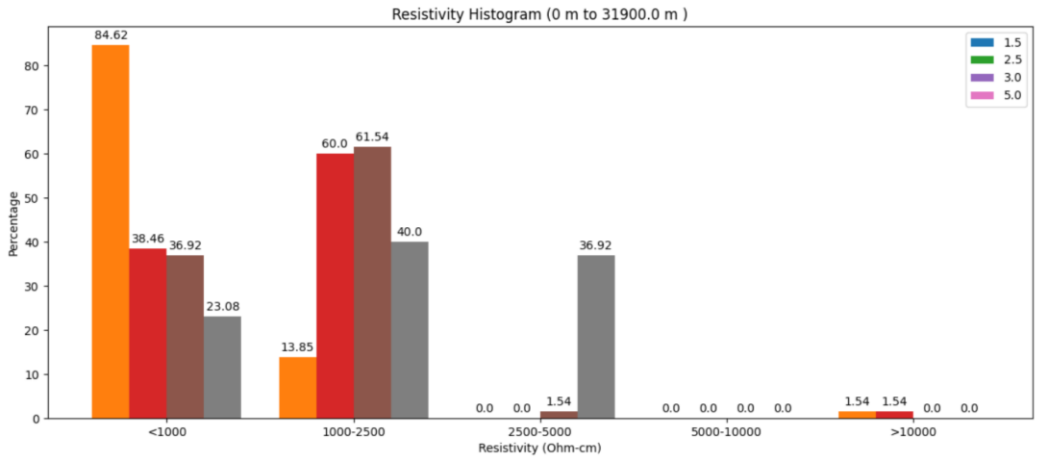
SOIL RESISTIVITY TEST RESULTS (WENNER FOUR PIN METHOD)
INSTRUMENT - WACO RESISTIVITY METER

Loc No	Chainage (m)	Depth of Penetration in cm "D"	Spacing of Electrodes in cm "a"	Potential Electrodes P1P2/2 = a/2	Current Electrodes C1C2/2 = 3a/2	Resistance Measured R Ohm	Resistivity = 2PiaR Ohm-cm
1	5.0	150	150	75	225	2.62	2469
		250	250	125	375	18.4	28902
		300	300	150	450	1.7	3204
		500	500	250	750	1.5	4712
2	500.0	150	150	75	225	2.4	2261
		250	250	125	375	1.09	1712
		300	300	150	450	0.85	1602
		500	500	250	750	0.62	1947
3	1000.0	150	150	75	225	1.03	970
		250	250	125	375	1.04	1633
		300	300	150	450	0.819	1543
		500	500	250	750	0.5	1570
4	1500.0	150	150	75	225	46.0	43353
		250	250	125	375	0.19	298
		300	300	150	450	0.92	1734
		500	500	250	750	0.77	2419
5	2000.0	150	150	75	225	0.43	405
		250	250	125	375	0.173	271
		300	300	150	450	0.709	1336
		500	500	250	750	0.589	1850
6	2500.0	150	150	75	225	0.399	376
		250	250	125	375	0.156	245
		300	300	150	450	0.497	936
		500	500	250	750	0.391	1228
7	3000.0	150	150	75	225	0.368	346
		250	250	125	375	0.138	216
		300	300	150	450	0.285	537
		500	500	250	750	0.227	713
8	3500.0	150	150	75	225	0.34	320
		250	250	125	375	0.123	193
		300	300	150	450	0.099	186
		500	500	250	750	0.077	241
9	4000.0	150	150	75	225	1.36	1272
		250	250	125	375	0.21	329
		300	300	150	450	0.951	1792
		500	500	250	750	0.48	1507
10	4500.0	150	150	75	225	0.67	631
		250	250	125	375	0.234	367
		300	300	150	450	0.142	267
		500	500	250	750	0.128	402

Sash

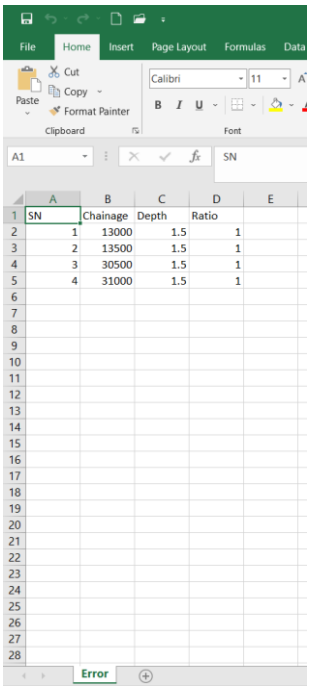
Page 4

Figure 5: Output Format Res-histogram.png



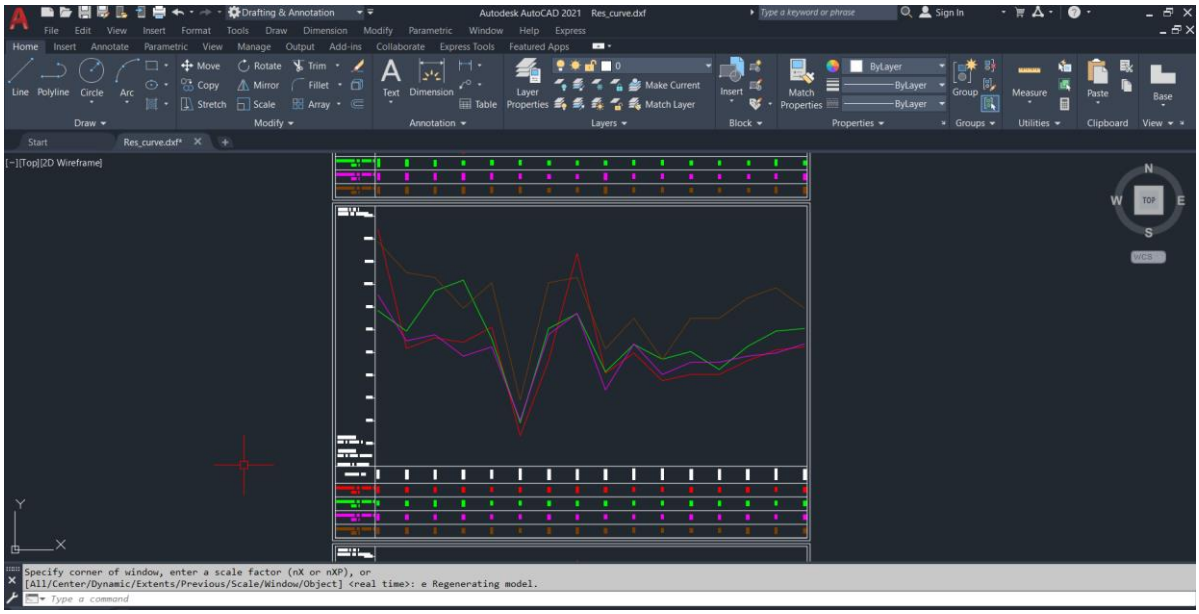
The program also checks for error which is the ratio of resistivity at 1st depth whether it is greater than 2 or less than 0.5 and if it is 1. If conditions are satisfied, this file will not be generated.

Figure 6: Output Format Error.xlsx



	A	B	C	D	E
1	SN	Chainage	Depth	Ratio	
2	1	13000	1.5	1	
3	2	13500	1.5	1	
4	3	30500	1.5	1	
5	4	31000	1.5	1	

Figure 7: Output Format Res_curve.dxf

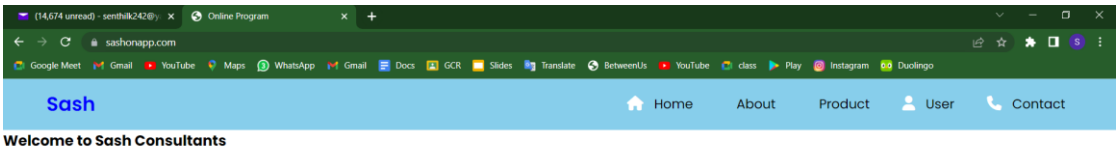


A script file for pdf printing Res-curve.scr is also generated.

6. PROGRAM OPERATION:

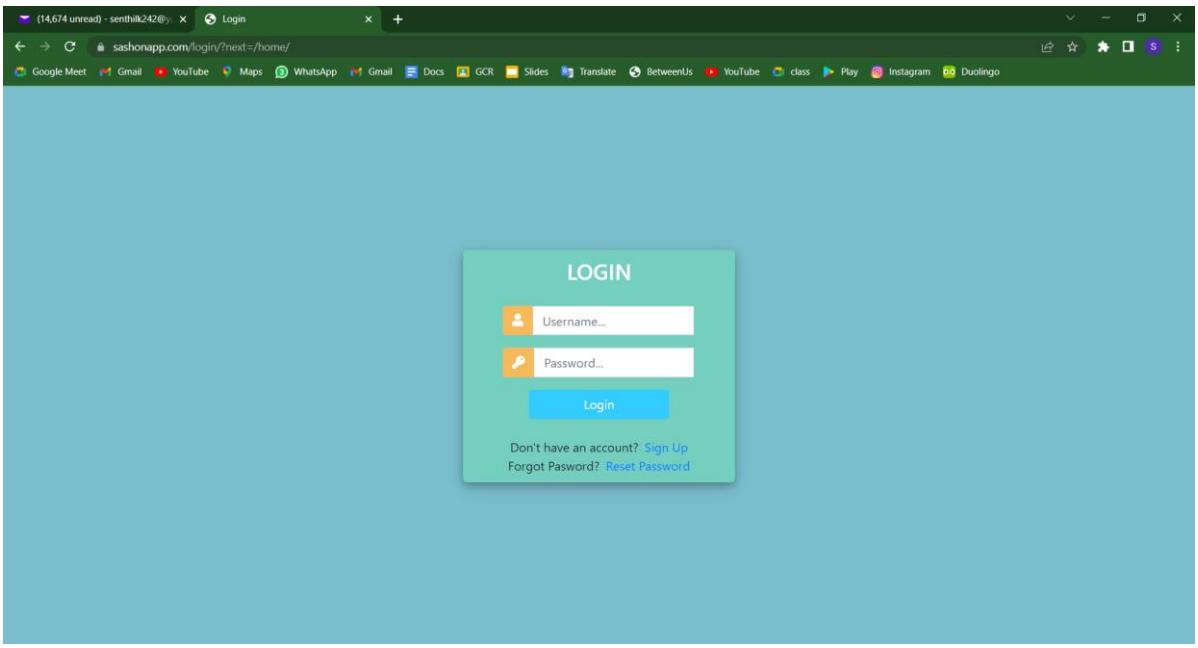
First of all, open the website www.sashonapp.com and the following page is displayed.

Figure 8: Website



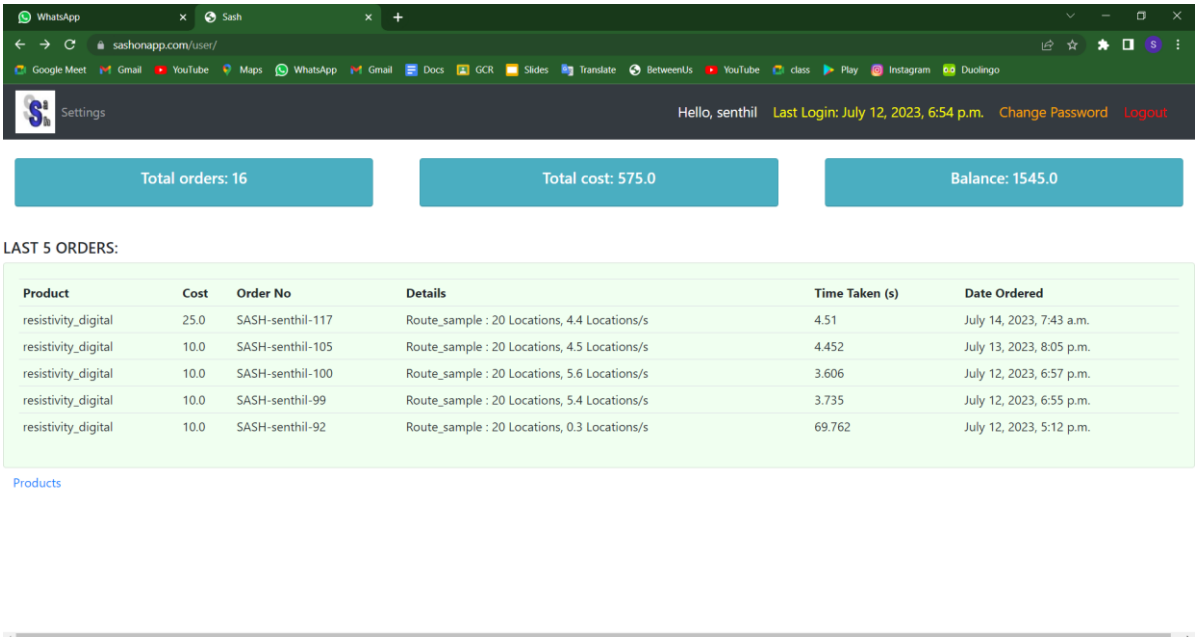
Click User on the webpage and shall be redirected to User Login Page.

Figure 9: User Login



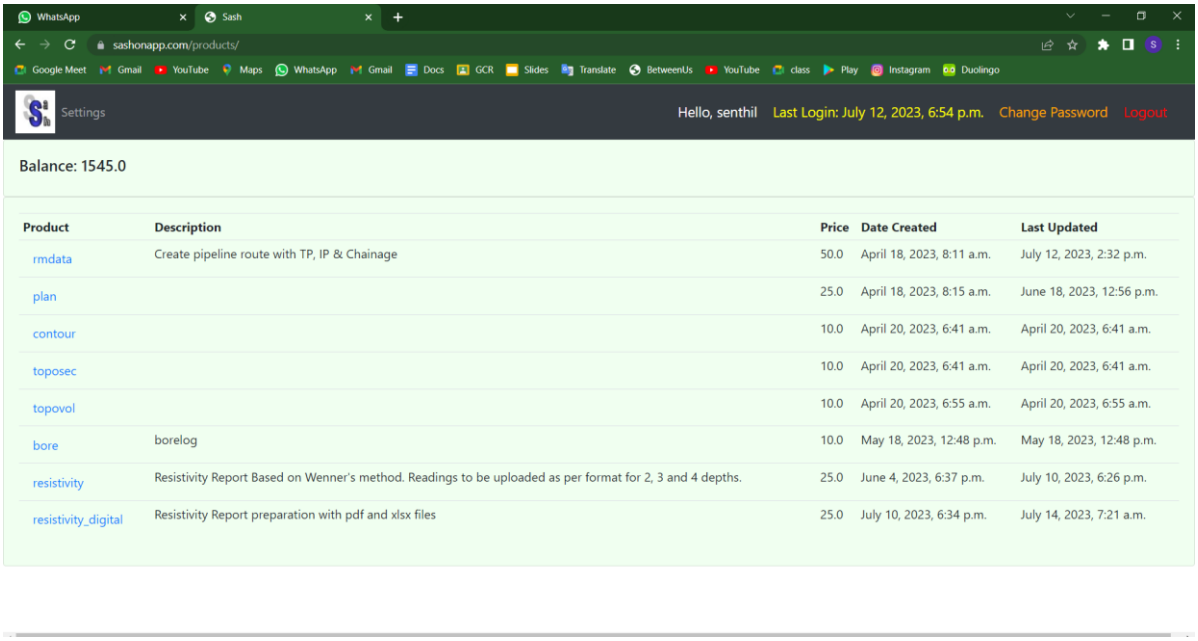
Enter credentials and click Login and shall be redirected to Customer Page.

Figure 10: Customer Page



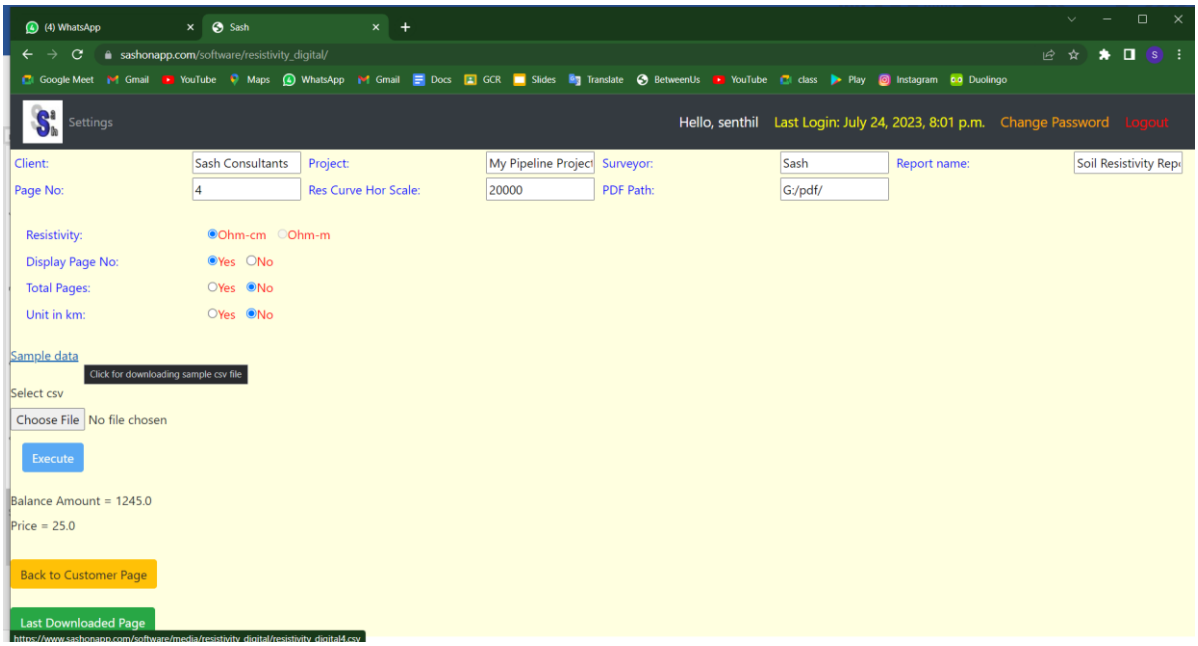
Click on Products link and shall be redirected to customized Products Page.

Figure 11: Customized Product Page



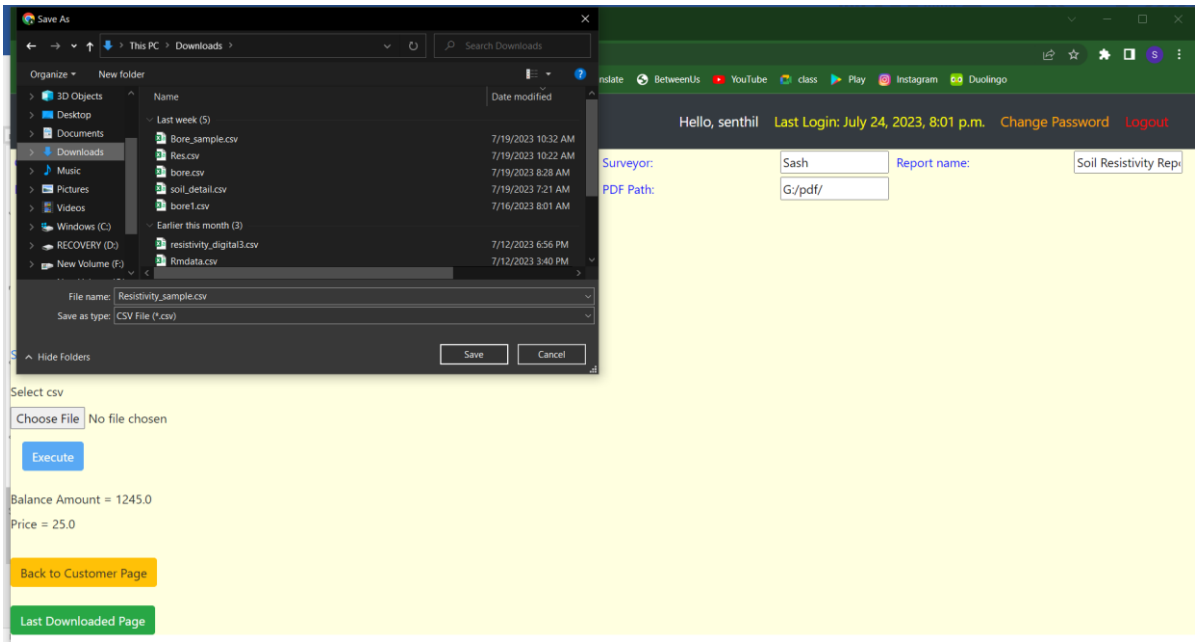
Click on Product resistivity_digital and shall be redirected to Product **resistivity_digital** Page. The Client, Project and Report name shall be displayed in header section of report. The horizontal scale for Resistivity curve can be adjusted. The start page number for report can be entered as per requirement. Do not keep it blank. If page number is not required, choose No for Display Page No section. For calculating stretch and corrosivity, selection of unit in km / m is possible by choosing relevant option. Similarly if total pages are to be displayed, choose Yes in Total Pages section. The local folder in Client's system where the pdf files for resistivity curves are to be generated shall be entered in PDF path section.

Figure 12: Resistivity_digital Page



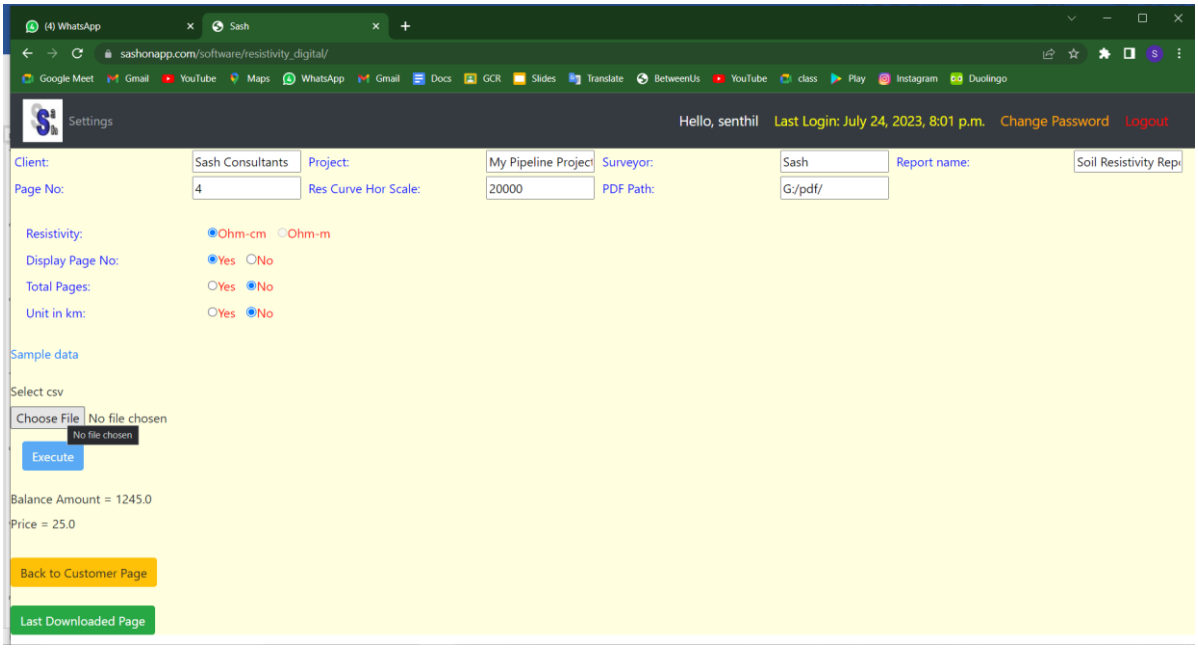
A sample data is already uploaded on the website. Click on Sample data and file can be downloaded and saved to desired folder in Client's system.

Figure 13: Downloading Sample file



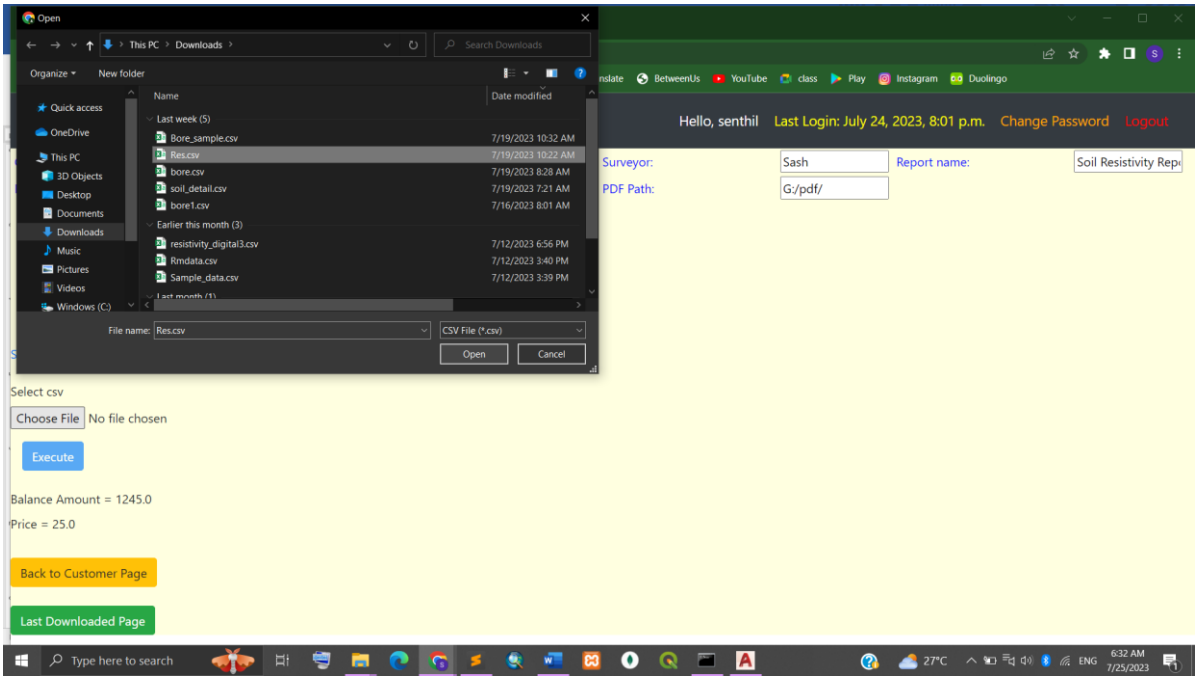
Now Go to Choose File under Select csv.

Figure 14: Selection of Input file



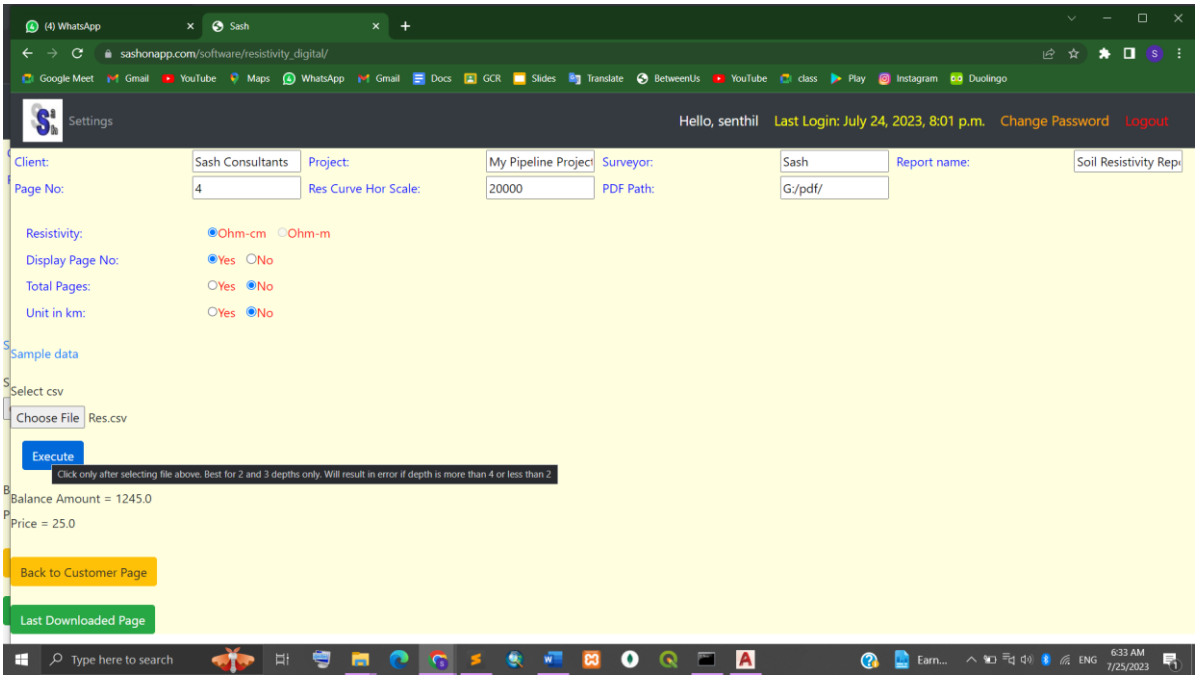
Select the sample file Route_sample.csv and Click Open.

Figure 15: Uploading Input file



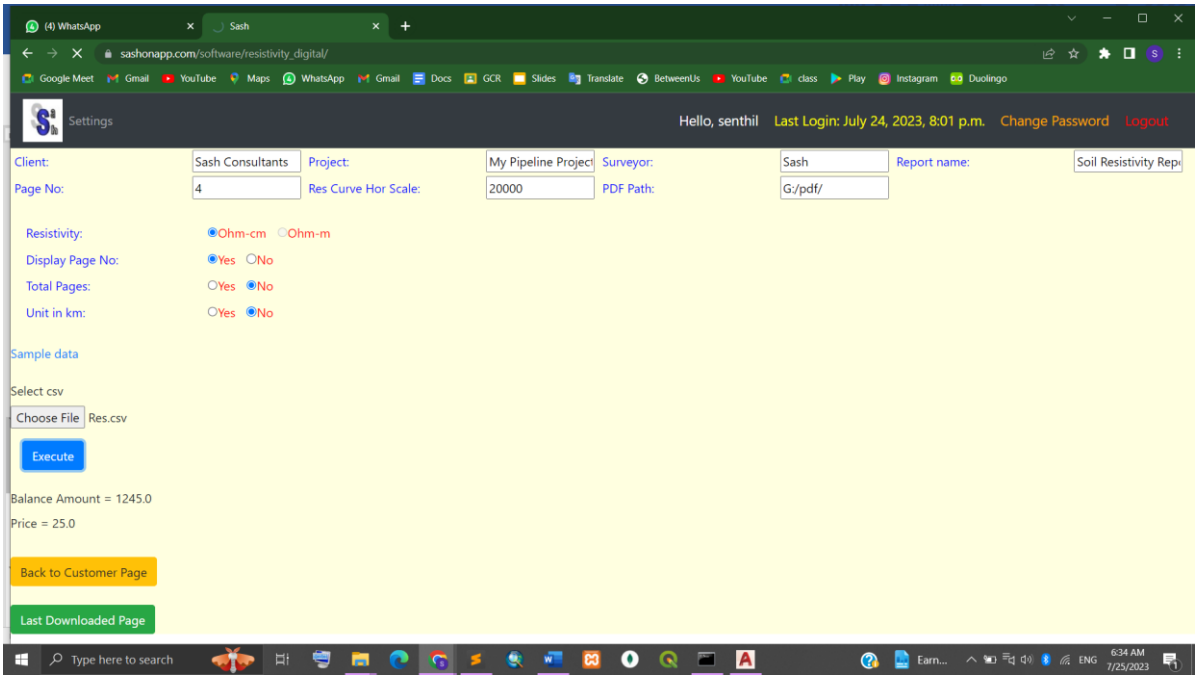
The selected file name shall be displayed near Choose File button and Execute button shall be activated.

Figure 16: Activation of Execute Button



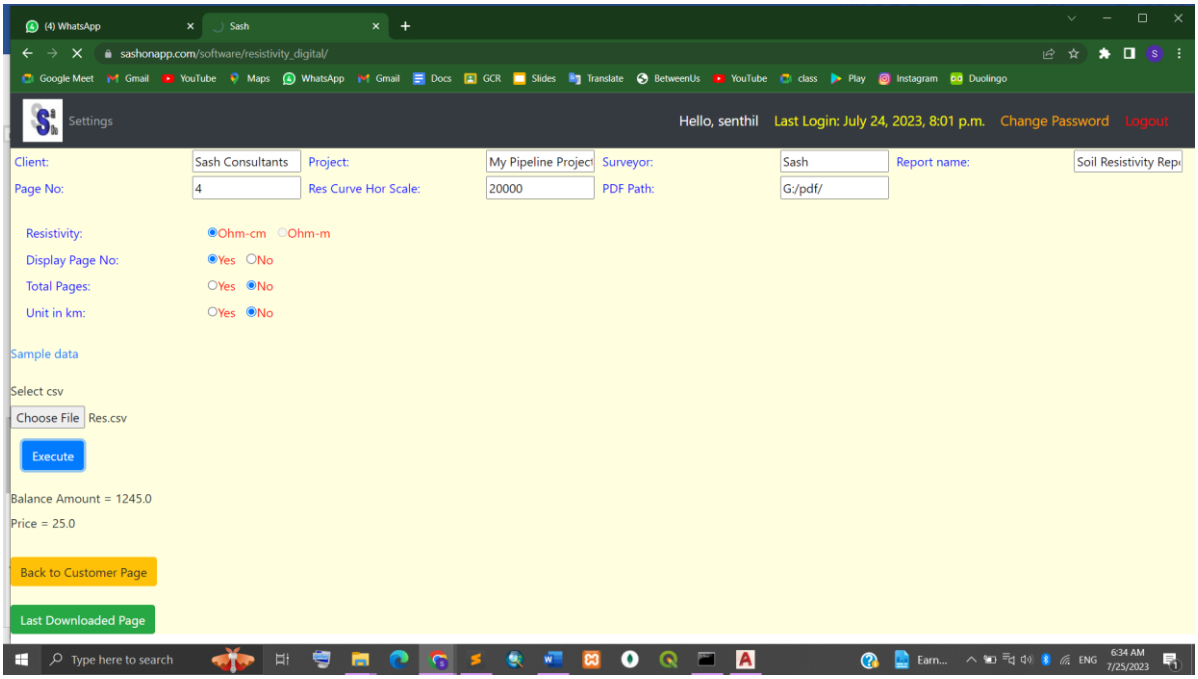
Click on Execute button

Figure 17: Execute Application



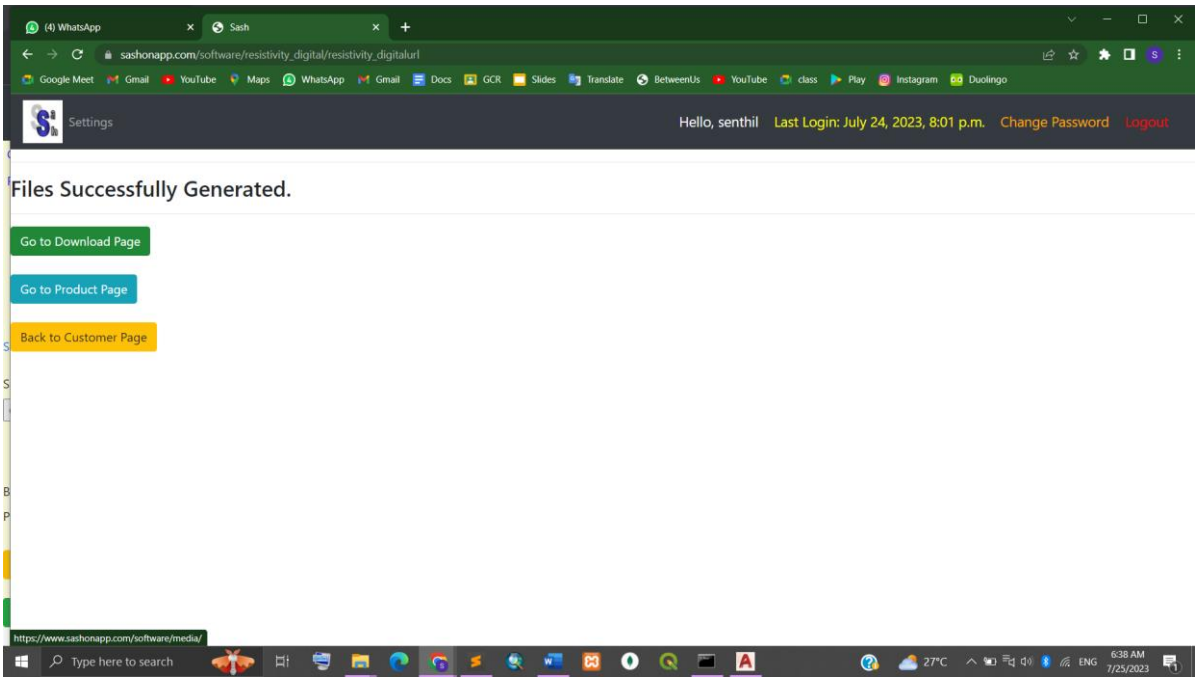
The application is in progress as shown below:

Figure 18: Application Progress Page



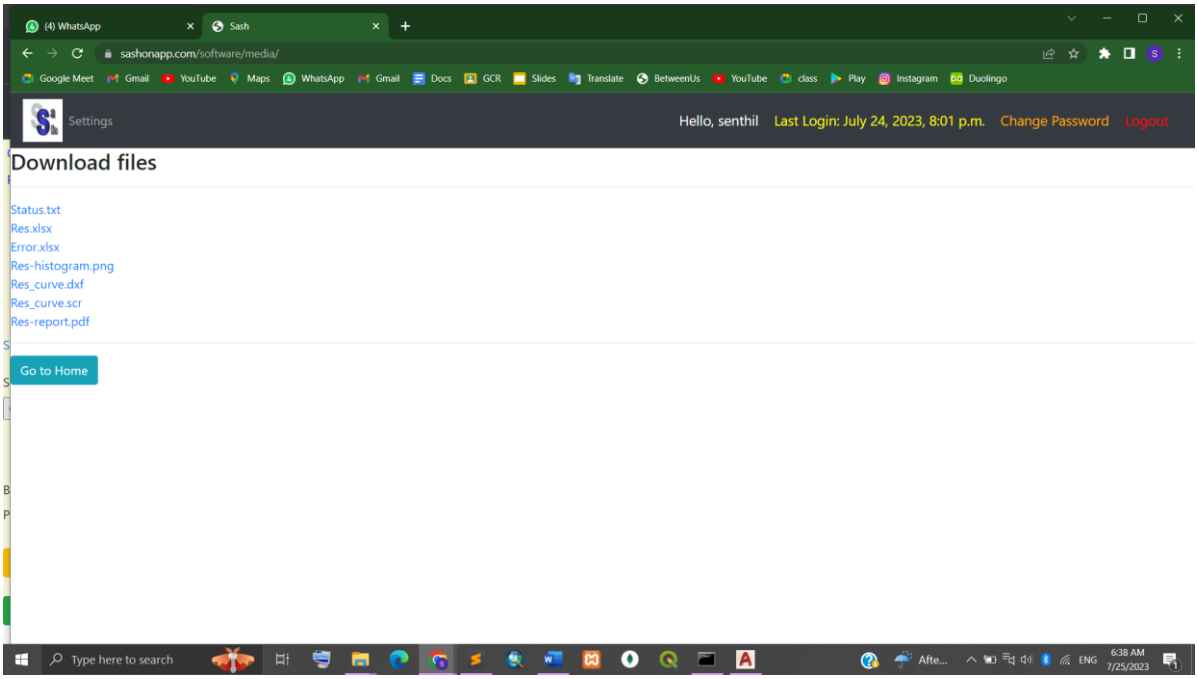
The following page shall be displayed.

Figure 19: Output Files successfully generated Page



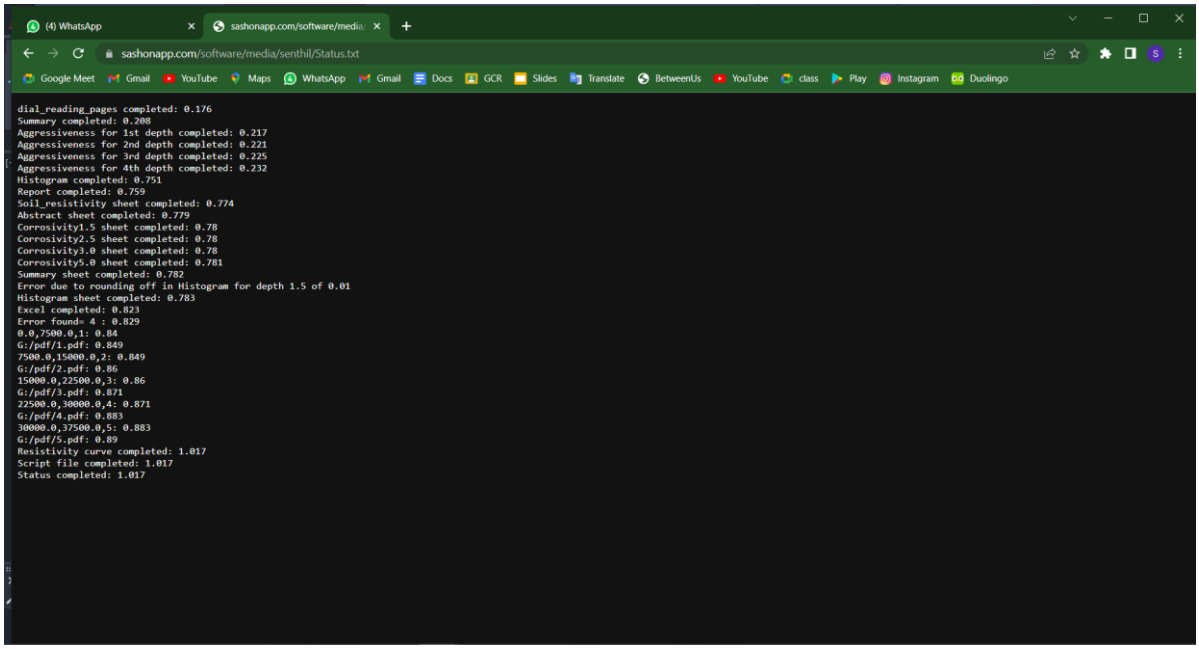
Click on Go to Download Page. The output files are displayed as shown below.

Figure 20: Output Files for download



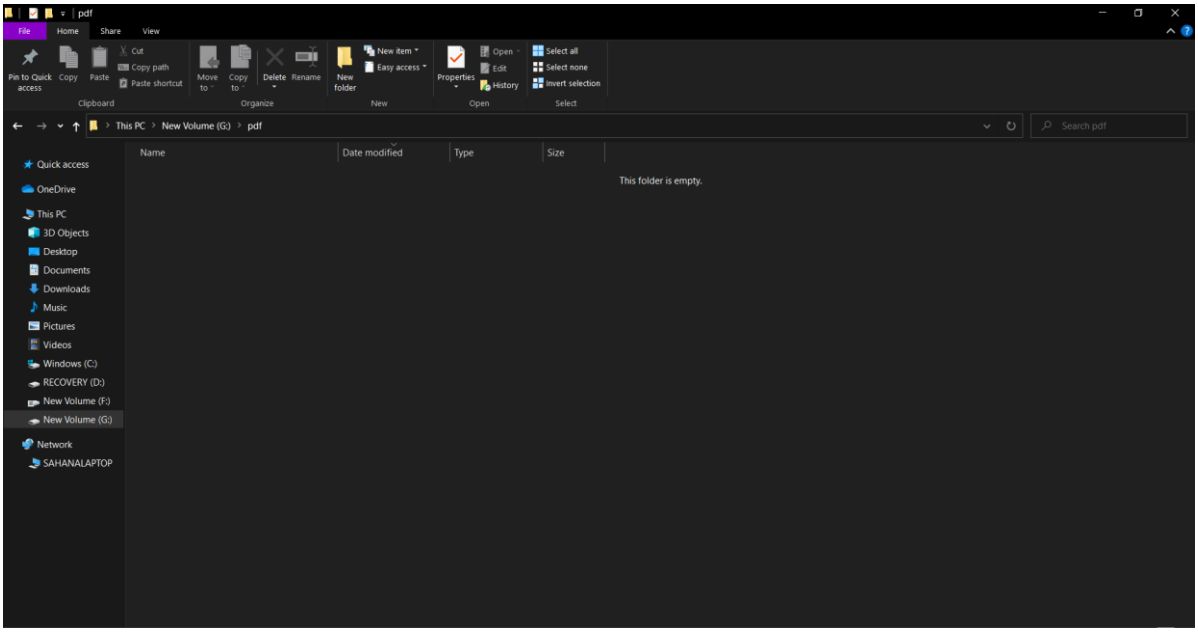
Download the files individually to desired directory and save. Click on Status.txt and following shall be displayed which shows the processes involved and time taken to complete the process.

Figure 21: Status.txt



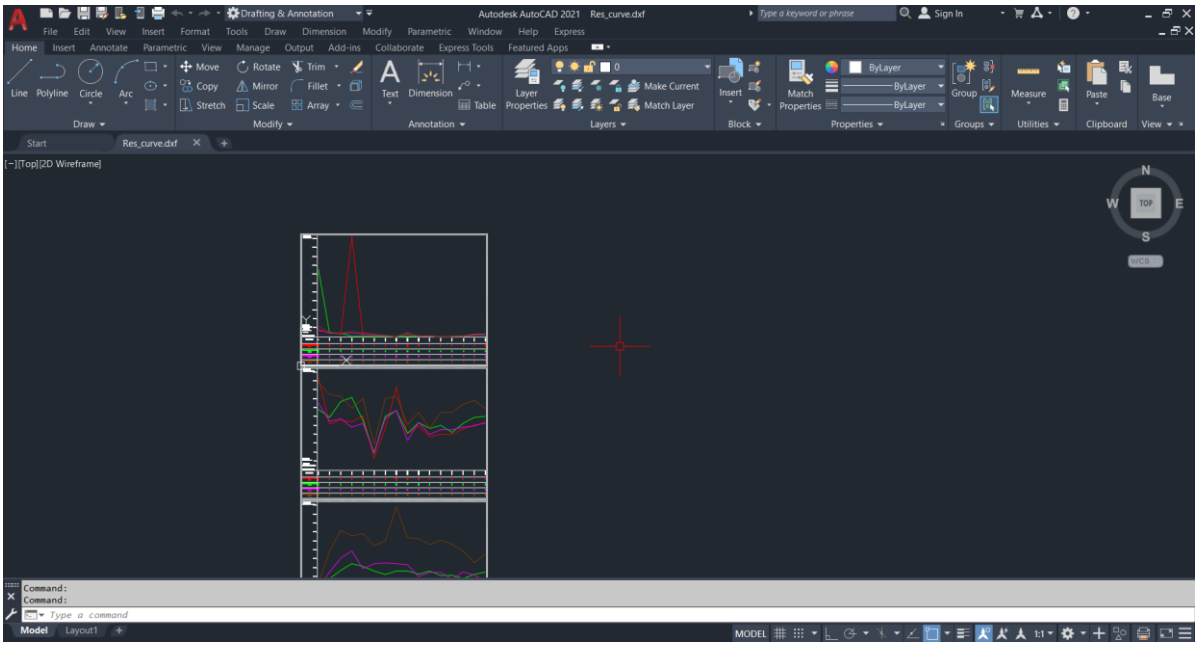
We had selected G:/pdf in Pdf path section and have created a folder pdf in G: drive of our local system.

Figure 22: Initial PDF folder view



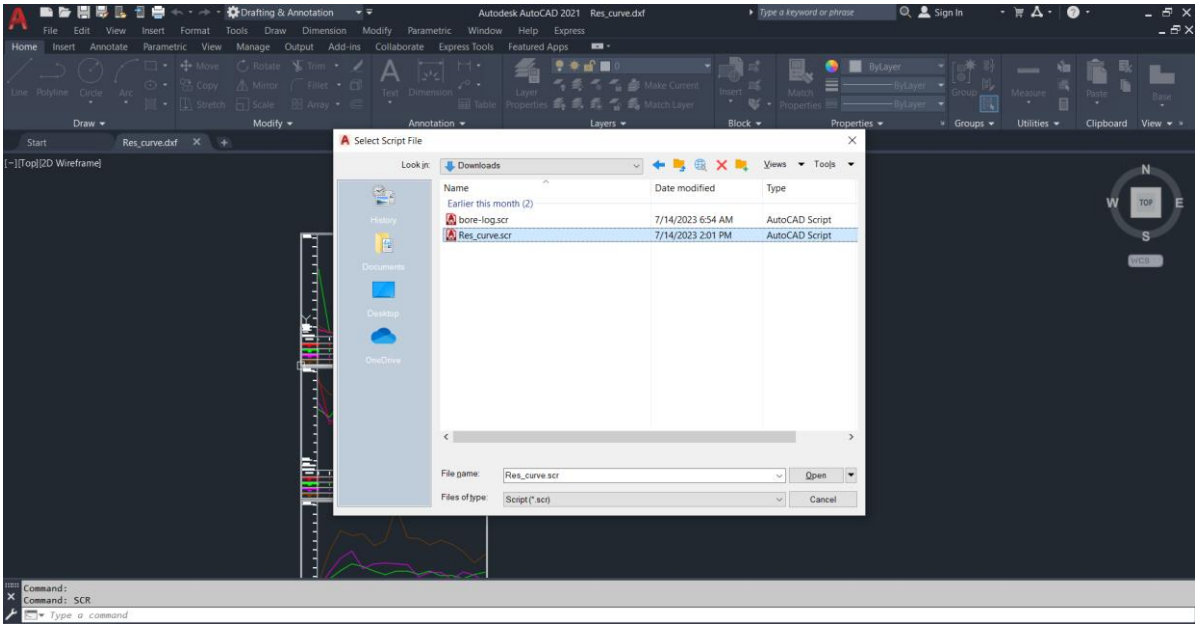
Once the Res-curve.dxf files and Res-curve.scr files are downloaded, open Res-curve.dxf file.

Figure 23: Opening file Res-curve.dxf



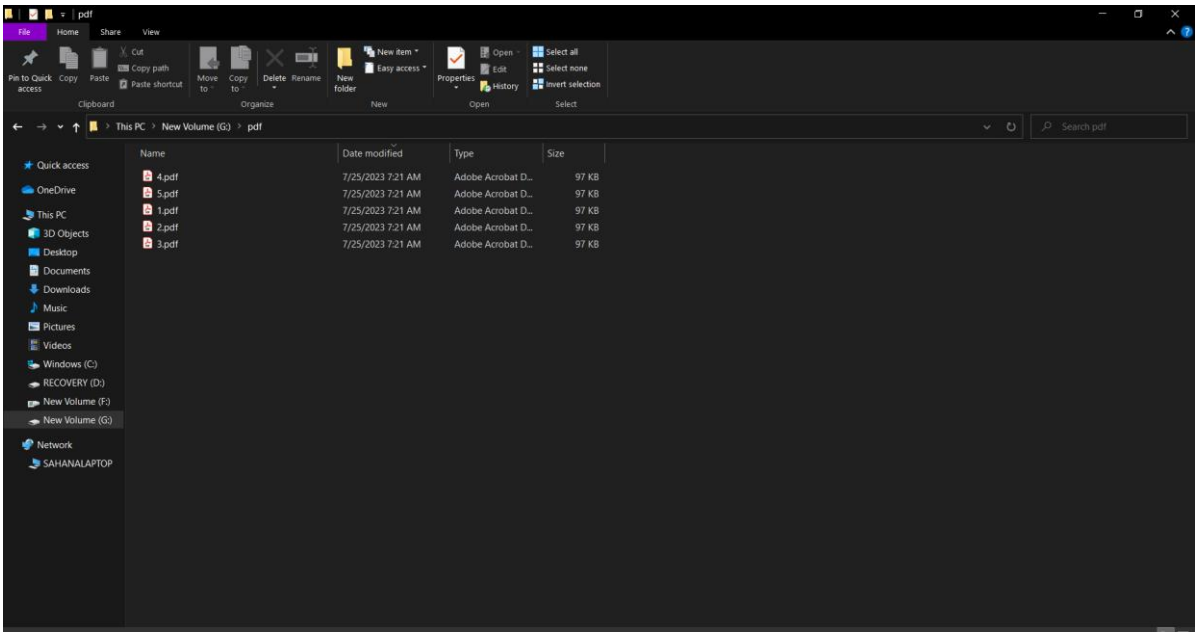
Type command scr and select Res-curve.scr.

Figure 24: Selection of Res-curve.scr



Now go to G:/pdf folder. The pdf files for resistivity curves are created.

Figure 25: Final PDF folder view



Click on 2.pdf to open.