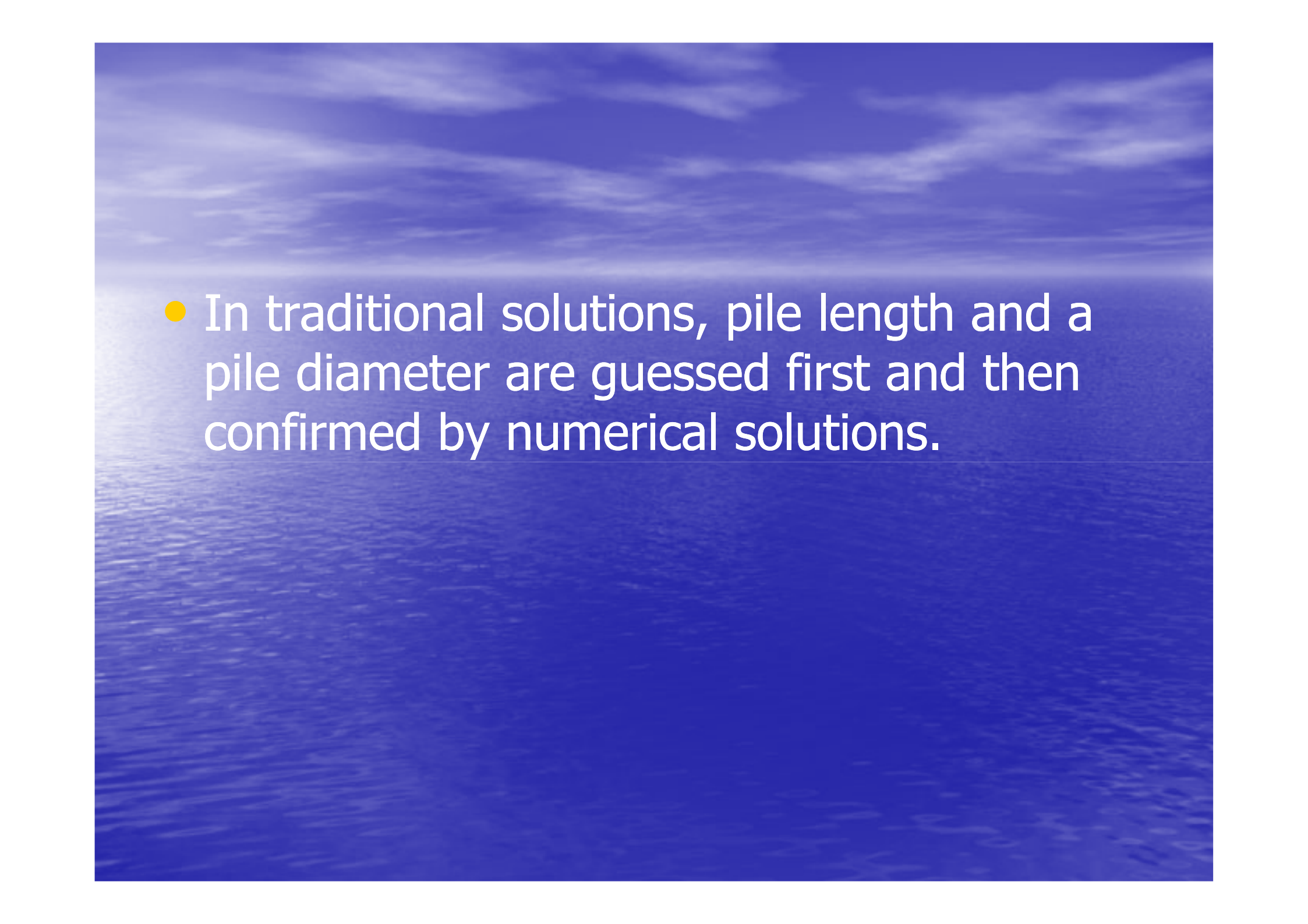


# **INFORMATION SYSTEM AND ARTIFICIAL INTELLIGENCE ORIENTED FOR NUMERICALLY DESIGN STAGE OF BRIDGE DEEP FOUNDATION SYSTEM**

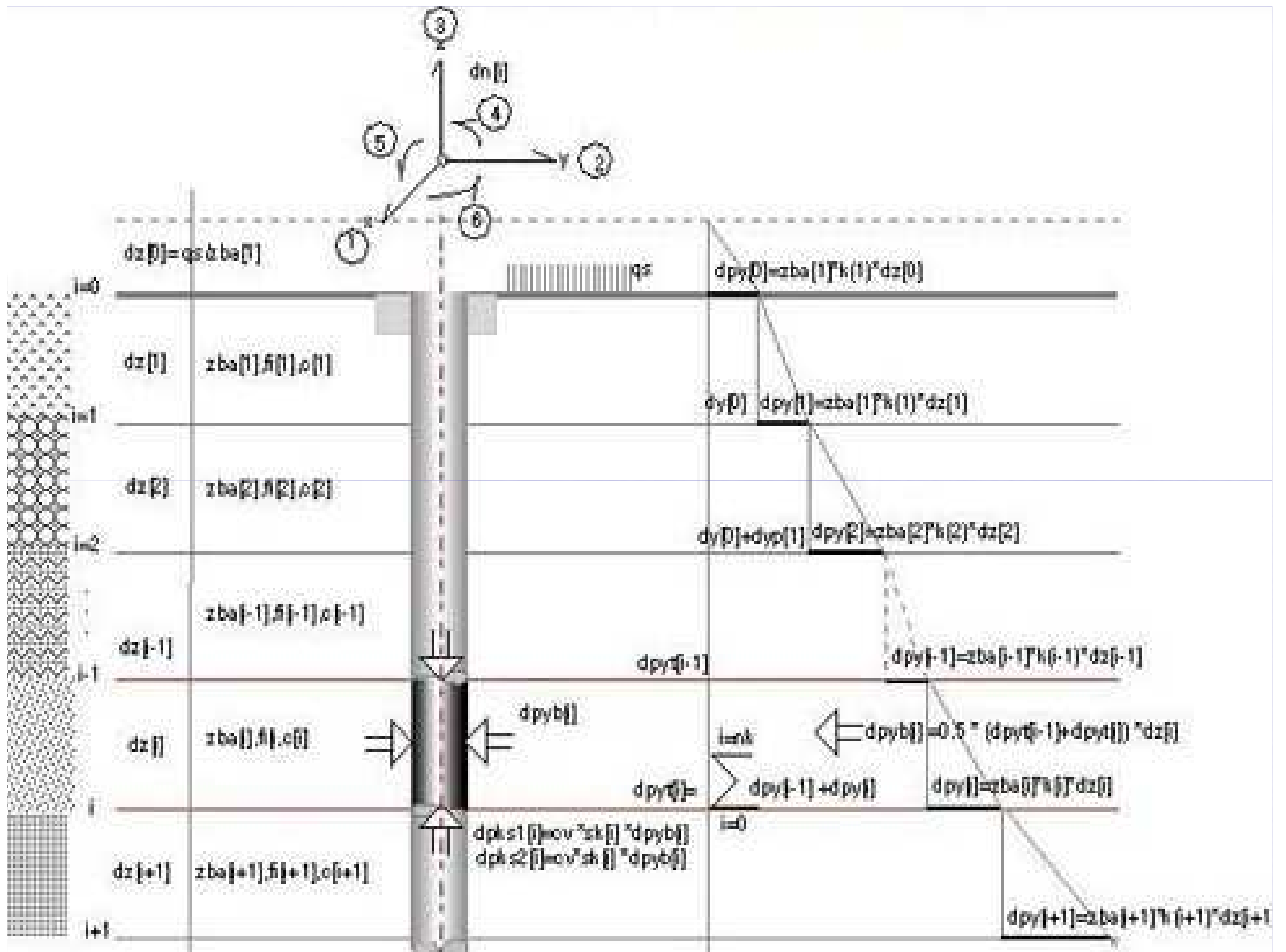
- Erhan Burak PANCAR
- Ondokuz Mayıs University / TURKEY

- Bridge foundations are often constructed in difficult ground conditions such as liquefiable soil, collapsible soil, landslide areas, swelling soil, soft and highly compressible soil and underground caves. Deep foundations may be needed under these circumstances and piles are used in deep foundations.

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- In traditional solutions, pile length and a pile diameter are guessed first and then confirmed by numerical solutions.

- In this report, susceptible solution is obtained for a pile under the axial load by moving forward an intelligent differential object through different soil layers.

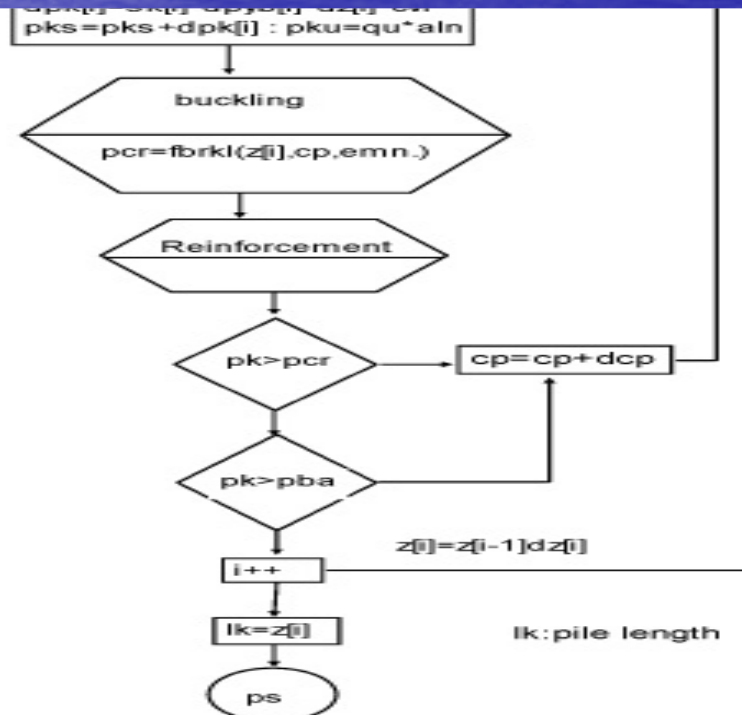
- Axial load is balanced with friction, edge effect and factor of safety by forming numerical solution and interior control sub system and by using information system orientation.



- In intelligent solution, variable intelligent object with a  $dz$  thickness up to layers is defined with impacts coming from bridge. This object is solved by Information System and Artificial Intelligence technology.

- Solution susceptibility is up to limit values and conditions used in numerical solution as a data, geotechnical properties of soil layers and construction element material information susceptibility.







# Pile System



Kzksunu.exe

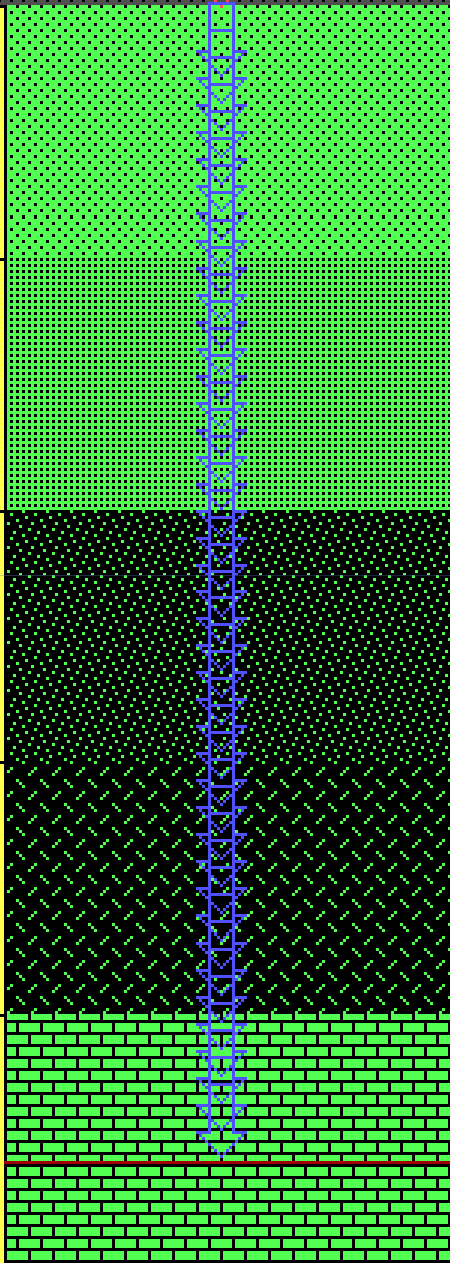
## Soil Data

200 t

E=2

## Pile Informations

soil	w/u	c	Sa	Nspt	zi	Ps	Pe	Po	Do	as
CH	1.965	0.6	30	9	1	0.3572	0.6633	1.02	65	33.17
					1.5	1.25	0.995	2.245	65	33.17
					2	2.679	1.658	4.337	65	33.17
					2.5	4.643	1.99	6.633	65	33.17
					3	6.965	2.322	9.287	65	33.17
					3.5	9.644	2.653	12.3	65	33.17
					4	12.86	3.317	16.17	65	33.17
					4.5	16.61	3.648	20.26	65	33.17
					5	20.72	3.98	24.7	65	33.17
CL	1.865	0.3	31	11	5.5	25.18	4.312	29.49	65	33.17
					6	30.18	4.975	35.16	65	33.17
					6.5	35.72	5.307	41.02	65	33.17
					7	41.61	5.638	47.25	65	33.17
					7.5	47.86	5.97	53.83	65	33.17
					8	54.65	6.633	61.28	65	33.17
					8.5	61.97	6.965	68.93	65	33.17
					9	69.65	7.297	76.95	65	33.17
					9.5	77.69	7.628	85.31	65	33.17
SM	1.965	0.6	30	15	10	86.26	8.292	94.55	65	33.17
					10.5	95.37	8.623	104	65	33.17
					11	104.8	8.955	113.8	65	33.17
					11.5	114.7	9.287	123.9	65	33.17
					12	125	9.95	135	65	33.17
					12.5	135.9	10.28	146.2	65	33.17
					13	147.2	10.61	157.8	65	33.17
					13.5	158.9	11.28	170.2	65	33.17
					14	171.3	11.61	182.9	65	33.17
GC	1.845	0.2	32	18	14.5	183.9	11.94	195.9	65	33.17
					15	197	12.27	209.3	65	33.17
					15.5	210.6	12.93	223.5	65	33.17
					16	224.7	13.27	237.9	65	33.17
					16.5	239.1	13.6	252.7	65	33.17
					17	254	13.93	267.9	65	33.17
					17.5	269.3	14.59	283.9	65	33.17
					18	285.2	14.92	300.1	65	33.17
					18.5	301.5	15.26	316.7	65	33.17
GW	1.845	0.2	32	18	19	318.1	15.59	333.7	65	33.17
					19.5	335.2	16.25	351.5	65	33.17
					20	352.9	16.58	369.5	65	33.17
					20.5	370.9	16.91	387.8	65	33.17
					21	389.3	17.25	406.6	65	33.17



## Conclusion:

- This numerical solution shows that there is a need to solve engineering problems by using information technology effectively especially as a requirement of an information era.