



NAGADI CONSULTANTS PRIVATE LIMITED

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NCD/G/Takenaka/016/2023

31st July 2023

Mr. Dipendra
Takenaka India Private Limited,
1st Floor, Tower 'C',
Vatika First India Place,
Mehrauli Gurgaon Road,
Gurgaon - 122002

Sub : Clarifications for the observations / comments and additional requirements for our report
G(D)4556

Ref: Our report no. G(D)4556, 15th July 2023 for the Proposed Factory of Bellsonica Auto
Component India Pvt Ltd., at Kharkhoda, Haryana

Dear Sir,

This is in reference to the above mentioned subject and your email dated 27th July 2023 regarding some clarifications and additional requirements.

As given to understand the observations/comments on our geotechnical report, point wise reply have been made in the tabular format sheet attached herewith. Also, for additional requirements, annexure sheets have been attached.

We hope you find this in order.

Regards

Y.S. Rana
Executive Consultant

encl.

Comments and Reply Sheet

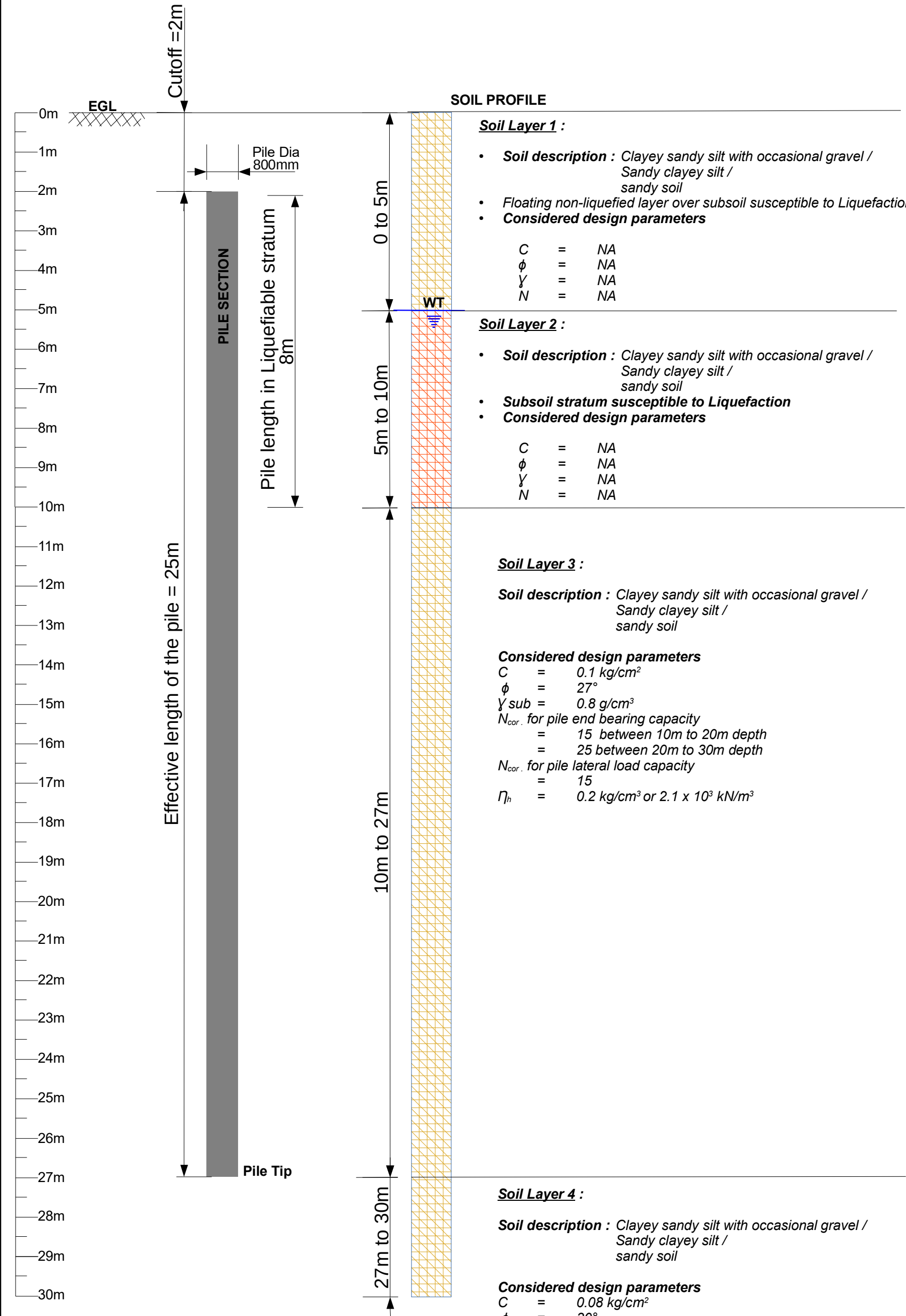
Annex-A (Typical Sketch of Pile Section and Soil Parameters for Pile Capacity Calculations)

Annex-B (Typical Sketch of Shallow Foundation and Soil Parameters for Foundation Calculations)

COMMENTS AND REPLY SHEET

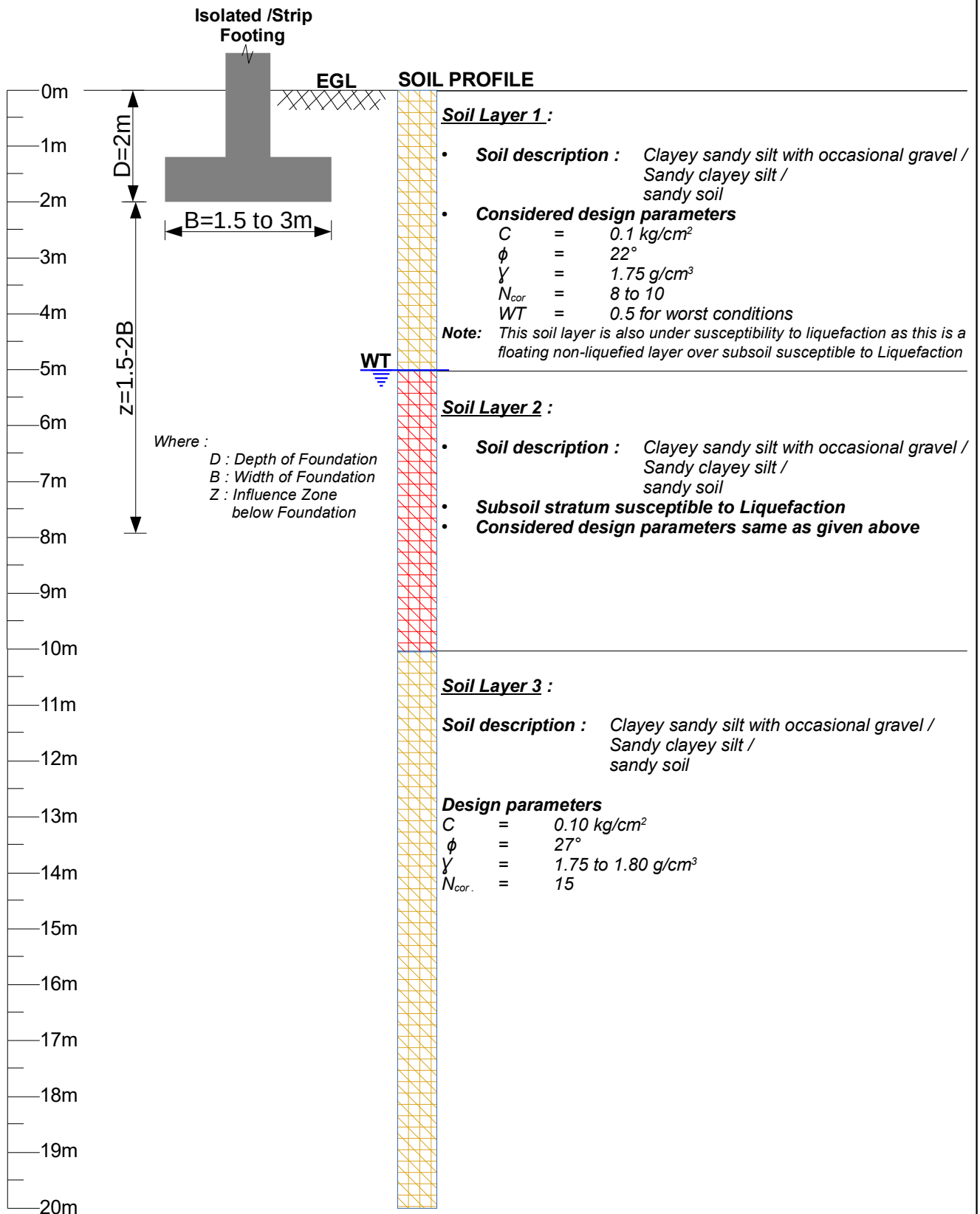
Sr. No.	Client Comment (Takenaka)	Reply (Nagadi)
	Date : 27-07-2023	Date : 31-07-2023
1	Please provide soil parameters summary (layer/strata wise) that need to be used for pile capacity calculation and safe bearing capacity calculation for open foundation based on soil test data's.	Please refer attached soil profile for soil parameters summary for pile capacity calculations and shallow foundations calculations.
2	In your report SBC of soil is mentioned at shallow depth, but we have deep pit, so requested to provide SBC at more deeper level (say 4m,5m,6m,7m & 8m level).	As subsoil strata down to 10m depth has been considered to be susceptible to liquefaction, shallow foundations for any of the major structures are not feasible down to the liquefiable stratum i.e. 10m. However, allowable bearing pressures for Isolated/Strip footings at shallow depths have been provided only for minor structures of less importance at ground level considering that in the event of an earthquake, there is a possibility that the foundations may under go differential settlements which may cause distress to these minor structures and repair/reconstruction of the these structures may be taken up accordingly.
3	In your pile bearing capacity calculation sheet, pile tip resistance is calculated based on N values considering non-plastic silt or very fine sand, but friction resistance is calculated considering C & PHI values. Also for pile frictional resistance C & PHI values considered in your calculation is same for complete length of pile. So, please clarify the reason for consideration of same.	(a) Based on our past experience in the pile designing for the last more than four decades with the same approach (i.e. considering C-phi for friction capacity & N value for pile end bearing capacity), the pile load test results have given quite satisfactory results for various projects at different locations as provided to us by the clients time to time. Hence the same reliable approach is being followed. (b) As the subsoil strata between 10m and 27m depth wherein the pile shall embedded, is generally clayey sandy silt down to the depth investigated except for random thin layers of silty sand/ occasional thin layers sandy soils inbetween and also the c-phi parameters are not significantly varying between 10m and 27m depth, hence average of c-phi parameters between above mentioned depths along pile shaft have been considered for pile friction capacity calculations. However, to calculate the pile end bearing capacity, significant change in the N values beyond a depth of about 20m has been observed. Hence, to calculate the pile end bearing capacity, corrected N =15 has been considered for pile resting at 17m depth and corrected N=25 has been considered for pile resting at 22m and 27m depths.
4	Minor typographical errors (a) clause no. 7.3.1 (b) with in table of clause no. 7.3.1 (c) clause no. 8.1.3	Minor typographical errors shall be corrected as observed.

TYPICAL SKETCH OF PILE SECTION AND SOIL LAYERS
(Soil Parameters for Pile Capacity Calculations)



Note : The above sketch is not to scale

TYPICAL SKETCH OF SHALLOW FOUNDATION AND SOIL LAYERS (Soil Parameters for Shallow Foundation Calculation)



Note : The above sketch is not to scale