

IFS TEXWEAR Extension)

631, KUTUBPUR, FATULLAH, NARAYANGONJ
(23.6471165, 90.5020197)
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Buildings Information

1. ETP Building is a partial seven storied (G+M+6) reinforced concrete (RC) building.
2. Utility shed is a single storied shed.

Observations

Inconsistency in the design report

2.6 Material and other properties

The material strength plays a vital role in design of building structure. And the strength-deformation characteristics of the building structures depend largely on the stress strain characteristics of the materials. The materials strengths are considered in the design of the building structure are as follows:

Strength of concrete: Compressive strength of concrete is 4000 psi according to construction drawing.

Table: Strengths of concrete and steel reinforcement

Material property	Existing Structure Value (psi)
Compressive strength of concrete (column) according to construction drawing	4000
Compressive strength of concrete (beam & slab) according to construction drawing	4000
Yield strength of steel reinforcements, f_y according to construction drawing	60,000

Note: Concrete cylinder test report & yield strength test of reinforcement has been attached in attachment.

Material strength in design report

The factory has 14 sets of cylinder test report, among them 7 sets from slab, 2 sets retaining wall, 1 set from base and 2 is unknown. In the DEA report, factory have considered concrete strength 4000 psi (27.5 MPa) for column but no cylinder test report is available for the column. Also, as per design report, foundation punching adequacy is marginal considering concrete strength 27.5 MPa. The building engineer is required to confirm the in-situ concrete strength for columns and review the design of the columns and foundations accordingly.

Flexural and punching adequacy of mat foundation has been checked using SAFE model.

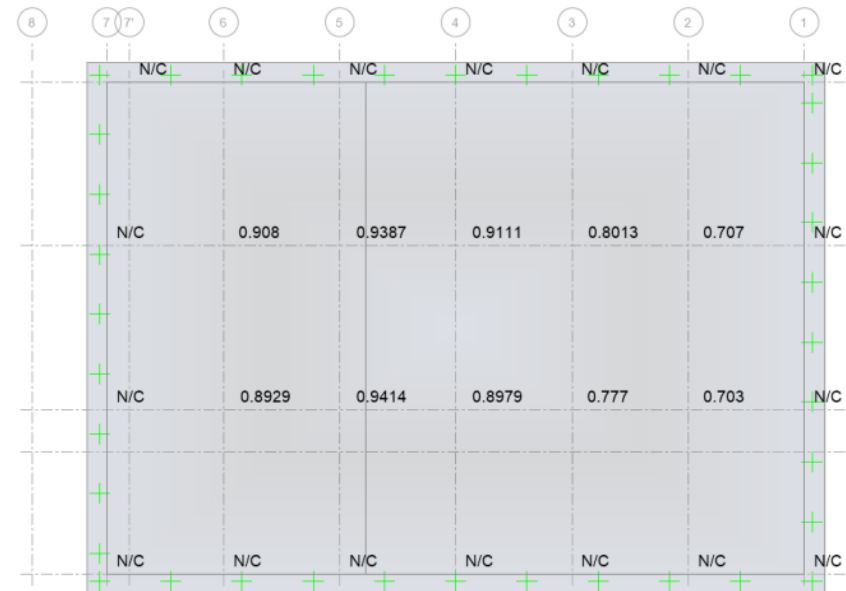
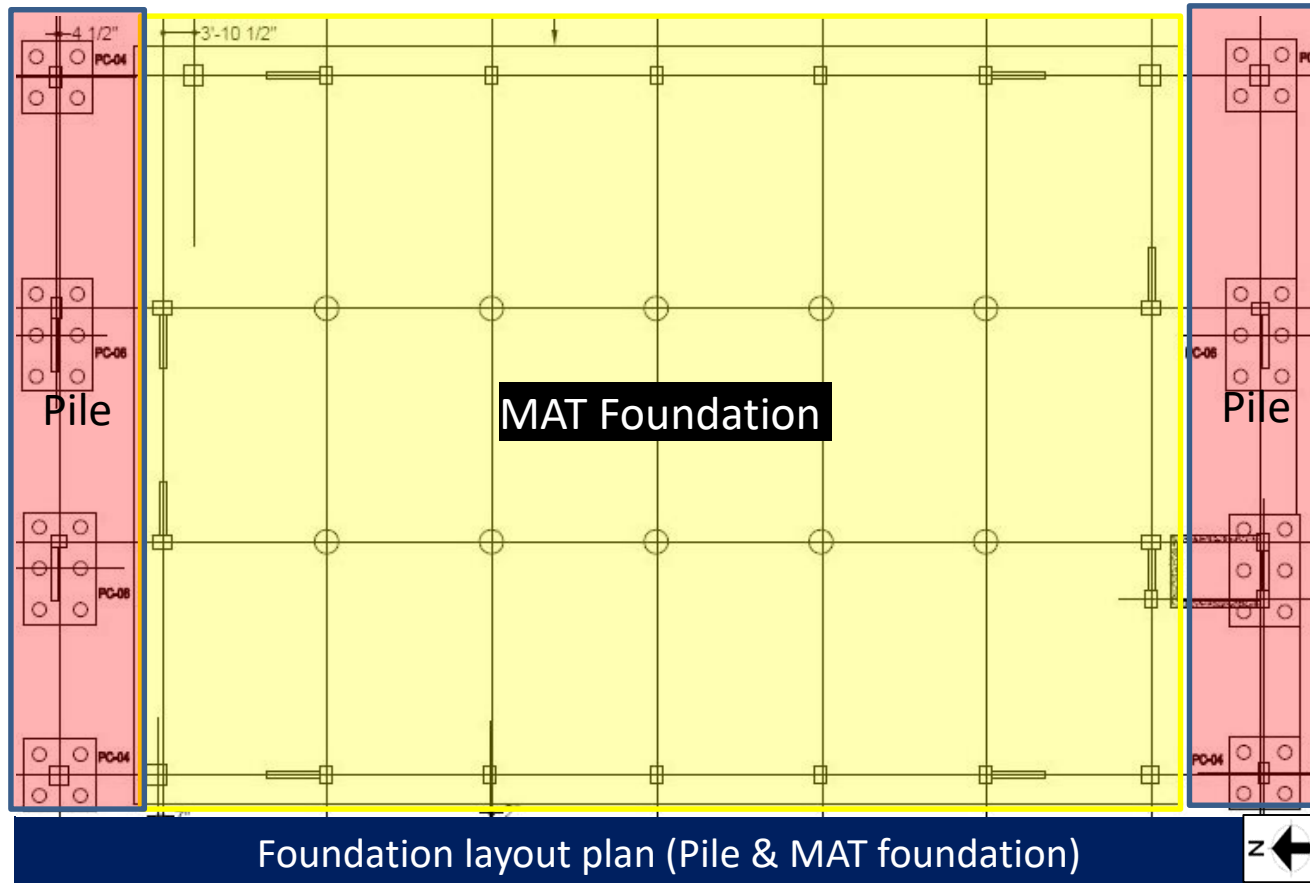


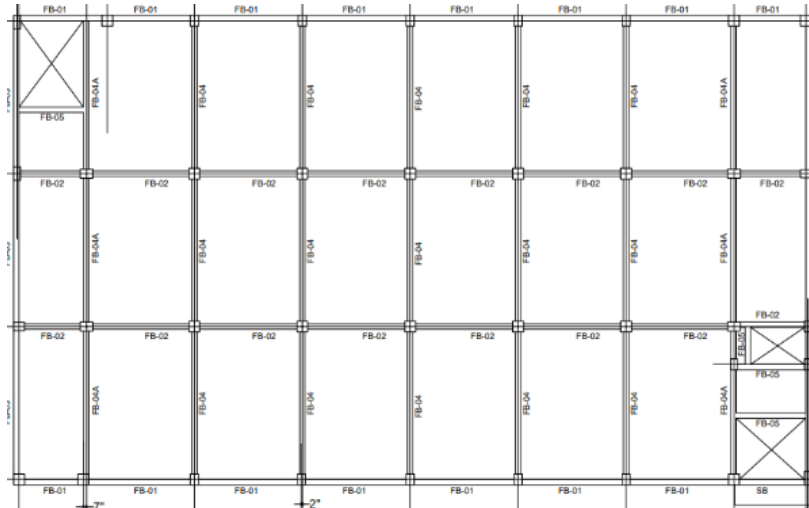
Fig.: Punching ratio from SAFE Model

Foundation punching stress in design report



Both shallow and deep foundation constructed in the structure. Building engineer is required to check the allowable settlement of the foundations and incorporate it in the design report.

Discrepancies in the as-built drawing



6th floor beam layout (two way slab)



6th floor onsite beam layout (one way slab).

During inspection 6th floor beam layout was found not matched with as built drawing. Secondary beam was found in 6th floor level which was not shown in drawing. The building engineer is required to survey the structure and update the as built drawings accordingly.

Electrical conduit passes through main structural beams



Electrical conduits have been passes through the main structural beams throughout various floor levels of the building. The building engineer is required to investigate the conditions and report on this matter to verify the structural integrity of the beams are not compromised.

Stagnant of water on the roof



Stagnant of water observed on the roof. The factory is required to improve the roof drainage system.

Lack of lateral stability system



Lateral load transfer media (compression strut) and load resisting system (bracing) was not observed in the structure. Also, as-built design documents were not available. The building engineer is required to carry out Engineering Assessment (EA) to check the lateral stability system and prepare design documents as per BNBC 1.9.1

Test Carried Out



Stone chips aggregate concrete in the column of ETP Building



Ferro Scanning

Problems Observed

ETP Building:

Item 01: Inconsistency in the design report.

Item 02: Discrepancies in the as-built drawing.

Item 03: Electrical conduit passes through main structural beams.

Item 04: Stagnant of water on the roof.

Utility Shed (Shed-16):

Item 05: Lack of lateral stability system.

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Inconsistency in the design report.	The building engineer is required to confirm the in-situ concrete strength (by taking minimum 4 cores) for columns and review the design of the columns and foundations accordingly.	6-weeks
02	Inconsistency in the design report.	Check the allowable settlement of pile & MAT foundations and incorporate it in the design report.	6-weeks
03	Inconsistency in the design report.	Carry out suggested remedial works if necessary.	6-months
04	Discrepancies in the as-built drawing. (ETP Building).	Building engineer is required to survey the structure and prepare accurate as-built drawings.	6-weeks
05	Electrical conduit passes through main structural beams. (ETP Building)	The building engineer is required to investigate the conditions and report on this matter to verify the structural integrity of the beams are not compromised.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
06	Electrical conduit passes through main structural beams. (ETP Building).	Carry out any remedial works if necessary.	6-weeks
07	Stagnant of water on the roof. (ETP Building).	Building engineer is required to provide adequate number of water outlets and improve the roof drainage system with adequate slope.	6-months
08	Lack of lateral stability system. (Utility Shed).	The building engineer is required to carry out Engineering Assessment (EA) to check the lateral stability system and prepare design documents as per BNBC 1.9.1 with necessary remedial actions.	6-weeks
09	Lack of lateral stability system. (Utility Shed).	Carry out the remedial works as per EA.	6-months