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7/17/2023

To: Erick J Kist
Building official
Town of New Fairfield
4 Brush Hill Rd
New Fairfield, CT 06812

Re: Parking structure at 43 Sylvan Rd, New Fairfield CT

Mr. Kist,

On 7/14/2023 a representative from Marchetti Consulting Engineers (MCE) performed a cursory review of parking structure foundation at the above mentioned address. The purpose of this review was to determine the structural stability and overall construction of the foundation for the parking area. What follows is a description of the structure, observed conditions, and recommendations for the foundation so that the structure can be completed.

Description of Structure:

The parking structure is located on the south-west location of the lot; the lot slopes very steeply from the south-west to the north-east, meaning the parking structure top of foundation wall is at grade on the south-west and is a retaining wall on the north-east. The parking structure is approximately 30’ by 20’ wide by 10’ at the tallest. The intention of this parking structure is to park vehicles and allow for a flat space for activities. See Photograph1 for an overall view of the structure:

Photograph 1: Overall view of parking structure.

Observed Conditions:

At the time of the review the foundation walls were cast but no backfill was installed so the interior of the foundation wall could be observed. The walls are reinforced concrete, approximatrely12" thick. Along the north-east wall, there are five (5) 12"x12" counter forts/buttresses to support the exposed wall height of 10' (Photograph 2). These buttresses are anchored into the bedrock with 24"x24"x24" reinforced concrete blocks. The system is in place to brace the free standing wall from lateral forces due to surcharge as well as the retained soil fill.

Photograph 2: Overall view of counter forts/buttresses.

The walls themselves have what appear to be #5 verticals @ 12” o.c. extending from the top of the wall. Although the construction was not observed, it is assumed that the reinforcement continues through the wall. The majority of the surrounding area is exposed crystalline bedrock; therefore the foundation is assumed pinned into the bedrock (Photograph 3).

Photograph 3: Bedrock observed at stem wall casting.

It was observed that there are some tree trunk and roots still present in the excavation (Photograph 4)

Photograph 4: Observed tree truck/roots in excavation.

Recommendations/discussion:

Based on the observed conditions, the existing construction appears to be to code: The braced wall condition presented by the counter forts/buttresses stabilizes the wall from any lateral pressure exerted on it. The reinforcement appears to be #5's @ 12" o.c. which is appropriate for the unbraced height of the wall and an assumed 4,000 psi foundation. Although the wall reinforcement could not be determined, and ACI318 requires any wall which is 12" thick to be double matt reinforced, IBC Table 1807.1.6.2 Concrete Foundation Walls recommends that the minimum reinforcement bar size and spacing for a 12" thick wall, with 10' maximum unbalanced backfill height be #6's @ 38" o.c. which is the equivalent of #3's @ 12" o.c..

Based on the observed conditions, the following is recommended to complete the installation:

1. It is recommended that the existing tree trunk and roots be removed prior to any backfilling operation; when the tree eventually deteriorates and rots, then the backfill located on top of the tree will shift causing subsidence of the soil strata.
2. No behind the foundation wall drainage was noted, so it is recommended that a curtain drain be installed and pitched to the north-east corner of the foundation walls. From there, the drainage line can penetrate the foundation and then pitch to an engineered storm water retention system.
3. Clean, run of bank fill, having little to no clays should be installed as backfill and compacted in lifts to ensure that no voiding occurs and that all of the soils are uniform. A

rainwater catch basin should also be installed in the center of the slab to ensure no ponding, and soil transfer can occur. This catch basin should also be piped into an engineered storm water retention system to ensure no down slope erosion occurs due to the increased impervious surface.

Although the existing foundation reinforcement could not be determined, it is assumed based on historic construction methods and observed conditions that the parking area foundation is most likely stable and additional modification is not required to ensure that the foundation remain stable.

If you have any questions, please do not hesitate to contact me directly.

Sincerely,

Zach Marchetti PE
Marchetti Consulting Engineers