

AFFILIATED ENGINEERING LABORATORIES, INC.

Engineering Consultants

Physical Location:
777 New Durham Road
Edison, NJ 08817

P.O. Box 3300
Edison, NJ 08818-3300

Phone (732) 429-1200
Fax (732) 429-1201
www.affiliatedinc.net

Preliminary Report

April 6, 2021

Hurvitz & Waldman, L.L.C.
1008 South New Road
Pleasantville, New Jersey 08232-3730

Attention: Mitch Waldman, Esq.

Re: Tasca, et al. v. Remington & Vernick, et al.
Our File Nos. W-4626 & W-4633

Dear Mr. Waldman:

As per your request, on 3/8/21 and 4/1/21 I performed inspections of the Tasca residence located at 301 N. Clermont Avenue and the McHugh residence located at 7605 Amherst Avenue, Margate City, New Jersey. These inspections were requested due to damages caused to these properties by utility work paid for by Margate City, designed by Remington & Vernick Engineers (RVE) and performed by Mathis Construction Company, Inc. (Mathis). This preliminary report has been prepared to discuss the current conditions of these properties.

The Tasca residence has been severely damaged due to undermining associated with the work. The writer has no first-hand knowledge regarding how the undermining conditions occurred. However, based upon equipment in the work area, the damage likely arose due to improper or defective dewatering equipment and techniques. The equipment in the work included 18-foot-long, 2-inch diameter dewatering well points that were screened at the bottom 3-feet. Some screens were stainless steel and others were PVC. Some were damaged, such that sand particles could bypass the screens and be removed with the flow of water as it is extracted by the pump via the 6-inch header system. The dewatering well points also had ball floats in the tips, which can malfunction after installation. Proper design of dewatering systems ensures that the screens are properly matched to the geotechnical properties of the soils and installed in an undamaged state such that dewatering does not remove soils. Further, monitoring of effluent ensures that only water and not soils is removed from the work area. Based upon the more than 7-inch vertical displacement of the ground surface along the Tasca residence as measured by the writer, significant soil loss occurred due to the project. Such soil loss resulted from improper specifications, improper design, improper dewatering equipment, improper operation of dewatering equipment, insufficient monitoring and observation of the work, or a combination of one or more of these factors.

Re: Tasca, et al. v. Remington & Vernick, et al.
April 6, 2021
Page 2 of 4

The result of the improperly executed work adjacent to the Tasca and McHugh residences has resulted in serious and significant damage to the foundations of these structures. The Tasca house is a wood-framed, two-story (bi-level) structure supported by a foundation constructed of four courses of 8-inch concrete block (CMU) on a 16-inch-wide unreinforced concrete footing. The CMU foundation is comprised of a perimeter CMU stem wall measuring approximately 22-feet long parallel to Amherst Avenue. A central wall runs down the center of the house, separating the crawlspace into a front section and a rear section. Both sections of the foundation have failed due to the utility work, as has the central wall. The rear wall of the Tasca foundation shows a gaping 3- to 4-inch-wide fracture through the footing and wall due to loss of soil support. Insulation stuffed into the wide fracture is keeping exterior backyard soils from sloughing into the crawlspace. The right wall has sunk and has rotated away from the sill plate of the house. The front wall has step-cracking and separation, and the central wall has blocks displaced due to the movement of the house. The writer noted that cribbing reportedly installed by Mathis as an emergency measure to support the Tasca house was failing and is insufficient to support the far-right side of the Tasca residence. The cribbing was placed beneath some of the floor framing (2x10 dimensional joists on 16-inch centers) in both the front and rear portions of the crawlspace but was held back from the right wall by approximately 48-inches. That 4-foot section of the house was supported by cantilevered 4x4s, of which at least one was cracking due to being overstressed. The deflection of those members will allow the house to continue to settle downward causing continued damage to interior and exterior finishes. Newly opened cracks are occurring at the front stoop, which abuts the front foundation wall. The writer's inspection of the house interior documented cracks in finishes and separations of finishes, including in the living room, kitchen, stairways, bathrooms, and bedrooms.

The foundation system for the McHugh residence is similarly constructed of CMU upon a shallow, spread footing. The undermining of the McHugh residence foundation has caused step-cracking in the structural block wall on the left side of the house (visible from within the garage) as well as separation and step-cracking along the front wall at both sides of the garage. Significant undermining of the subgrade has caused fracturing of concrete walkways on both properties, as well as widened expansion joints in the McHugh driveway. The concrete flatwork at the McHugh driveway has settled 1/2-inch to 3/4-inch along the garage floor and front wall.

Sounding of the concrete sidewalk also showed that at least one flag adjacent to the Tasca residence is undermined, resulting in a risk of collapse of the plain concrete sidewalk flag.

The writer was provided with a 3/26/21 *Notice to Residents* from RVE. The notice indicated that “*the contractor is reviewing the cause of the damage and we anticipate that construction will resume in the near future.*” The writer notes that the cause of the damage was removal of bearing soils from beneath the Tasca and McHugh houses due to the inappropriate methods implemented in the construction of the work. Those methods have permanently damaged the Tasca and McHugh house foundations and all resulting secondary damages caused by the

Re: Tasca, et al. v. Remington & Vernick, et al.
April 6, 2021
Page 3 of 4

movement of the houses and transfer of loads. A thorough review and revision of the project specifications by Margate City and its engineer, RVE, is warranted, as are the quality assurance and quality control programs. A project of this magnitude taking place within 6-feet, 6-inches of houses supported by shallow, spread-footing foundations on sand requires high levels of control to ensure that damage to adjacent properties does not occur.¹ Based upon the depth of trench boxes (measured to be 7-feet, 10-inches deep), manhole sections (9-feet, 6-inches including the uppermost ring) and 18-foot-long dewatering well points, the impact on adjacent properties with shallow foundations supported by sandy soils had to be paramount in the design and execution of the work deep below roadway grade. Based upon the writer's findings, the work methods were unsatisfactory for the as-found site conditions.

Based upon the 3/8/21 and 4/1/21 inspections, the writer's training, education, experience, licensure and certifications, and the foregoing, it is the writer's preliminary opinion that the Tasca house is in serious structural distress due to the fracture and settlement of the right-side foundation system caused by the Margate City municipal infrastructure project work. While the house is not currently at risk of imminent collapse, it will continue to move, and damage to exterior and interior finishes will get progressively worse until such time that the house foundation is replaced. The stability of the subgrade is also unknown, as voids created by the loss of soils may exist as was identified under a portion of the sidewalk adjacent to the Tasca property. Future foundation repair will likely require a deep foundation system with a grade beam to support new foundation walls. Due to the gross disturbance of the subsoils, a geotechnical investigation will be required at a minimum, as Chapter 4 of the International Residential Code – New Jersey Edition will treat the undermined soils as having "*shifting or other questionable soil characteristics*" and can no longer be considered "*undisturbed natural soils.*" Unless a more robust cribbing system is installed to support the entirety of the floor system under the Tasca residence or permanent repairs are made and the project review described above takes place, the writer does not recommend that Margate City's utility project continue. Further disturbance of the undermined soils can lead to greater damages to the Tasca property. Currently, the impacts on plumbing, gas and electrical systems are minor. However, continued movement of the Tasca residence can lead to damage to these systems. The gas utility entrance is in the garage (furthest from the failed foundation). Water and drain systems for the kitchen and a bathroom are proximate to the failed foundation area. The Tasca house cannot be occupied: (1) during foundation replacement work; (2) should the kitchen be rendered unusable by continued house movement; or (3) if the living room floor settles further, as the floor slope will be unsafe for occupancy by this elderly couple. Should the cantilevered 4x4s fail, extensive cracking in the living room, second-floor attic bedroom and kitchen finishes will occur. Kitchen cabinetry is already separating from walls, and cabinet doors are out of alignment.

Based upon the 3/8/21 and 4/1/21 inspections, the writer's training, education, experience, licensure and certifications, and the foregoing, it is the writer's preliminary opinion that the

¹ A removed sidewalk flag that was backfilled with stone was located 6-feet, 6-inches from the edge of the Tasca stoop and foundation wall.

Re: Tasca, et al. v. Remington & Vernick, et al.
April 6, 2021
Page 4 of 4

McHugh house foundation has been undermined and caused to fracture by the Margate City municipal infrastructure project work. The step cracking of the structural block wall is an indication of load transfer due to a fractured footing. Removal of the concrete flat work, driveway, fencing and walkway should be performed in the near term to allow proper foundation repairs prior to utility work continuing. Such repairs will likely include the installation of helical piles starting approximately 10-feet back from the front, left corner of the house and continuing along the front of the house to a point approximately 4-6 feet from the right side of the garage door opening. A system such as that engineered by RamJack will be required to raise the foundation. Like the Tasca foundation, a geotechnical investigation and proper deep foundation design is required by Code. Replacement of soils and concrete flatwork should only be performed after the stability and soundness of the underlying soils (no voids) has been confirmed. Once the foundation is restored, repairs to the brick cladding and interior garage surfaces can be performed.

All the writer's preliminary opinions within the entirety of this preliminary report have been offered to a reasonable degree of engineering certainty. The writer reserves the right to supplement this report should additional information become available.

Should you require additional information or further discussion, please do not hesitate to contact the writer.

Very truly yours,



Timothy J. Carlsen, P.E., CSP
Engineering Consultant

TJC/np