NicNevol
Engineering Services

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454 Royal Tern Road – Vibration & Settlement Monitoring

Location: Jacksonville Beach, FL (Duval County)
Owner: Richard Doran – Private Residence
Markets: Residential, Structural Monitoring, Geotechnical Engineering
Services: Vibration Monitoring, Settlement Monitoring, Structural Protection.

Project Description
NicNevol Engineering Services performed a geotechnical exploration and evaluation for subsurface conditions beneath the southbound lane of SR 121 at Tom Norman Road in Macclenny, FL.

The study was requested by GAI Consultants to support roadway rehabilitation and design. Field activities included two (2) Standard Penetration Test (SPT) borings advanced to depths of 15 and 20 ft using a CME 55 drill rig with continuous flight augers.

Subsurface conditions revealed asphalt (6 in.) over limerock (8 in.), followed by fine sands, clayey sands, and organics at shallow depths. Below 6 ft, soils consisted of gray clay with sand and organics, clayey sands, and silty sands at depth. Groundwater was encountered at 2.1–3.0 ft below surface.

Recommendations included undercutting unsuitable soils, replacement with compacted structural fill, stabilization of weak clays/organics, and groundwater control during construction.

NicNevol Responsibilities
- Installing and operating vibration monitoring equipment.
- Conducting settlement surveys during and after construction activities.
- Establishing vibration thresholds and reviewing exceedances.
- Documenting field data and preparing monitoring logs.
- Providing final report confirming compliance with structural protection standards.

Project Highlights

- Client: Richard Doran – Private Residence.
- Monitoring period: Aug 30 – Sept 23, 2021.
- Construction monitored: pad fill, dewatering, compaction by vibratory roller/bulldozer.
- Equipment: Instantel vibration monitor + geophone; settlement monitoring with survey level.
- Vibration thresholds:
- Warning level: 0.4 in/s PPV.
- Stop-work level: 0.5 in/s PPV (U.S. Bureau of Mines criteria).
- Results:
- Maximum vibration recorded = 0.025 in/s PPV (well below thresholds).
- No structural settlement or movement observed.
- Conclusion: Adjacent construction activities did not produce damaging vibrations or settlements at the residence.

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Delivering engineering expertise that supports safer, stronger infrastructure.

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