

Helical Pile Foundation for Alexan Broadway Parking Structure

Howard A. Perko, Ph.D., P.E.
Magnum Piering, Inc.



August 2008

DFI Case Histories
Deep Foundations



Outline

- Project Introduction
- Foundation Design
- Installation
- Load Testing
- Conclusions

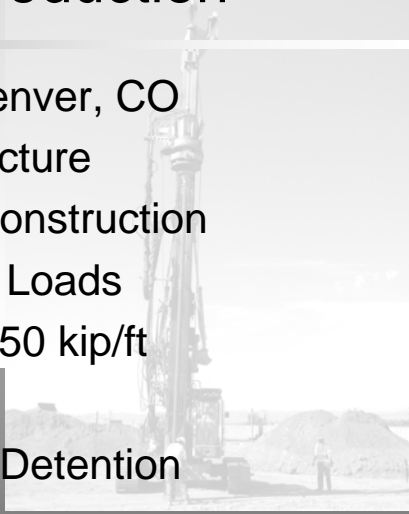
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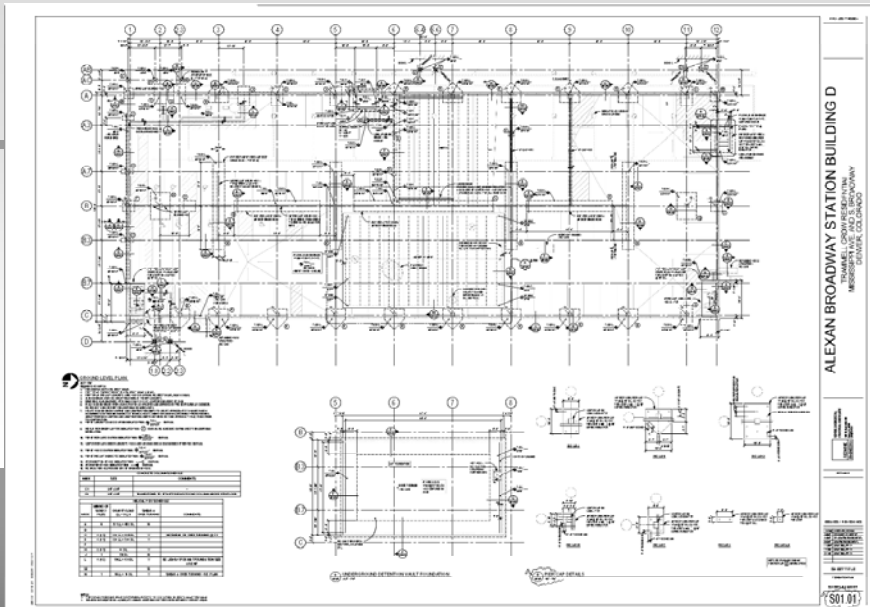
Project Introduction

- Brownfield Site in Denver, CO
- 4-Story Parking Structure
- Pre-cast Concrete Construction
- 50 - 500 kip Column Loads
- Shear Wall Loads = 50 kip/ft
- 36,000 sf Footprint
- Underground Storm Detention



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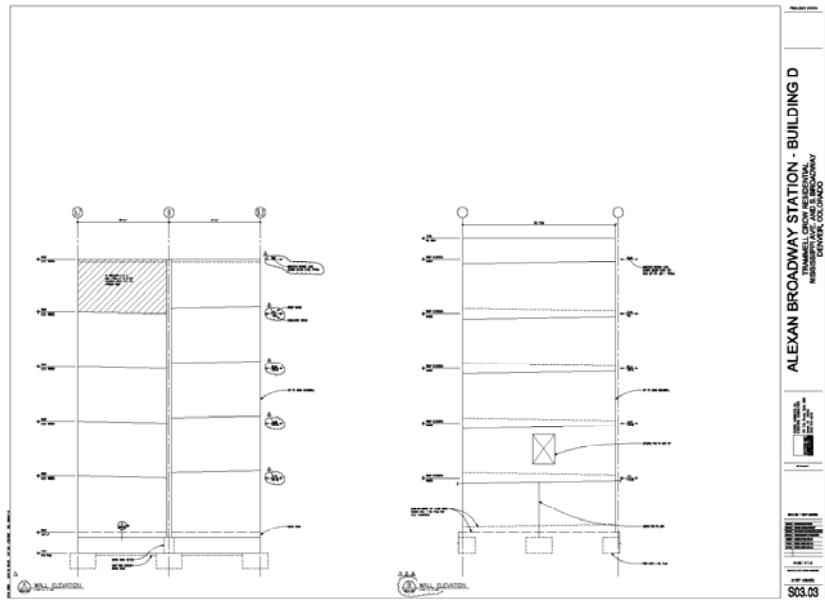
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Subsurface Conditions



20 feet Trash Fill

10 feet Loose Sand

5 feet Expansive Claystone
Sandstone Bedrock

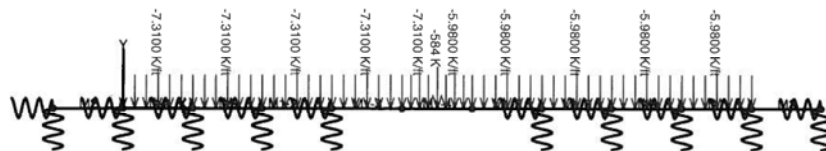


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Shear Wall Model

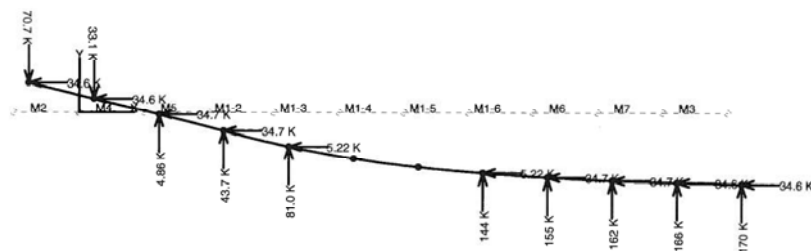


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Shear Wall Results

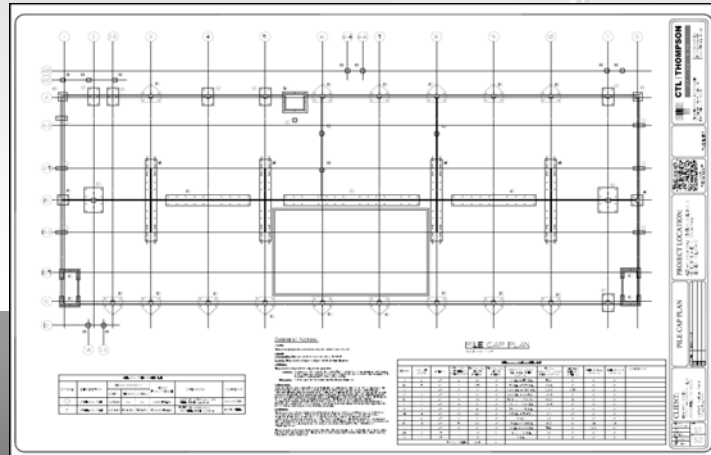


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Foundation Plan



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Green Alternative



- Efficient Design of Helical Pile Resulted in Reduced Carbon Footprint

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Installation



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Installation



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Installation



- Monitor Torque Readings until Driving Criteria is Satisfied
- 42,000 ft-lbs

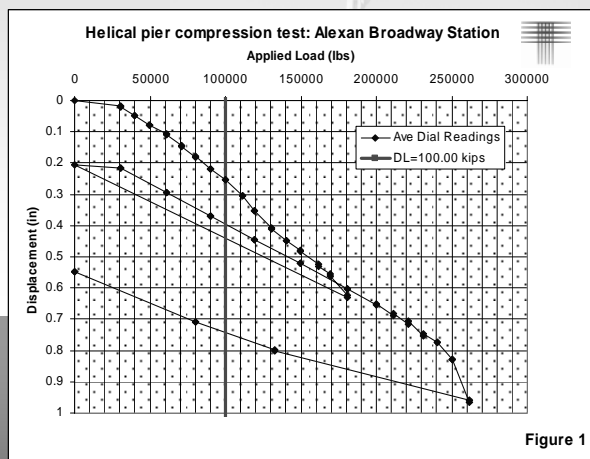


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Compression Load Testing

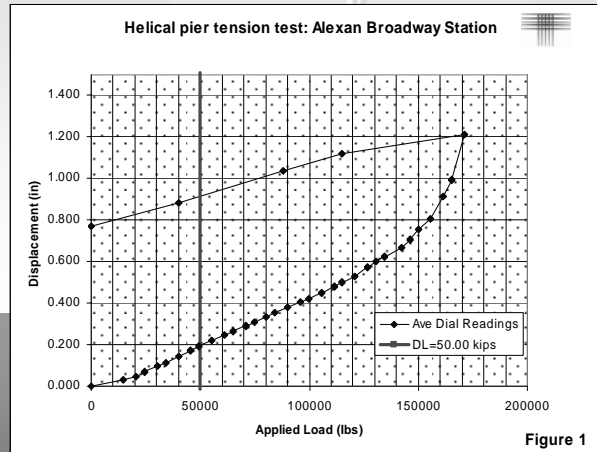


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Tension Load Testing



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Conclusions

- Large Diameter Helical Piles Support Loads as High as 50-100 Tons
- Helical Piles are an Effective Foundation for Brownfield Sites
- Helical Piles are an Environmentally Friendly Foundation
- Quality Assurance through Calculations, Torque Monitoring, and Load Tests

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