



Fairfield Inn and Suites

Pittsburgh, PA

Amanda Smith

AE Senior Thesis Presentation
Spring 2010

Structural Option
Advisor: Dr. Ali Memari

Fairfield Inn and Suites
Amanda Smith – Structural Option
Senior Thesis Presentation

- Existing Building Information
- Project Goals
- Structural Depth Study
 - Gravity System Redesign
 - Lateral System Redesign
 - Impact on Foundation
- Architectural Breadth Study
 - Façade Option
 - Façade Analysis
- Construction Management Breadth Study
 - Cost Comparison
 - Construction Schedule
- Conclusions and Recommendations
- Acknowledgments
- Questions and Comments

Existing Building Information

Location:

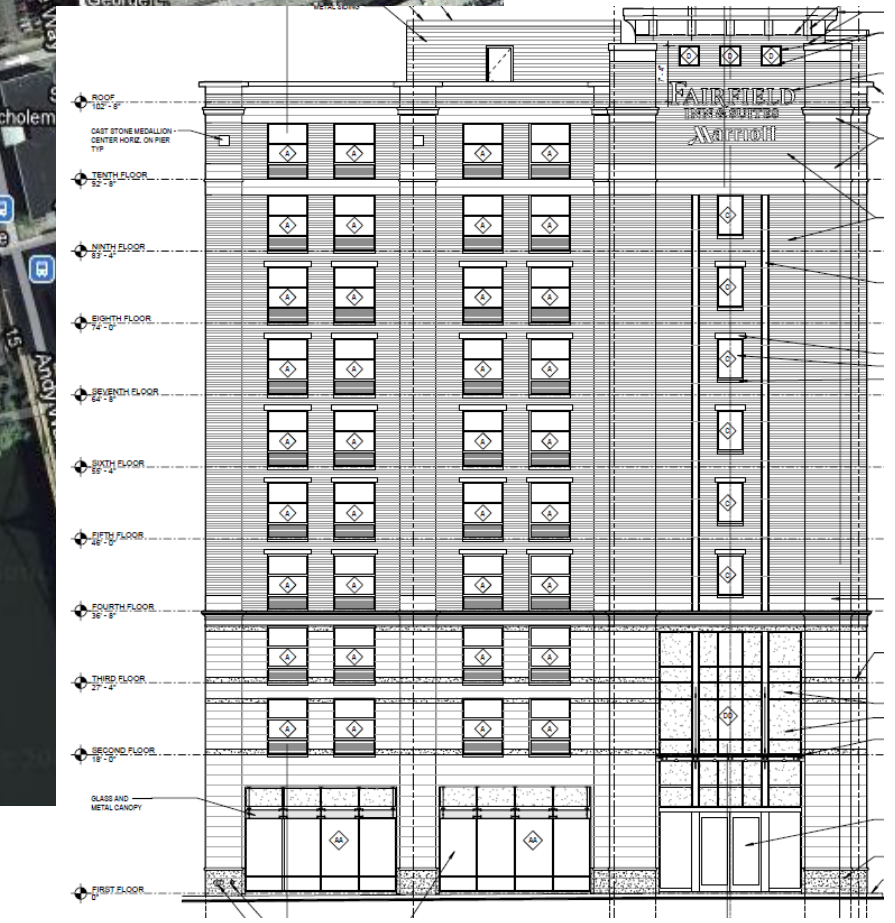
- Downtown Pittsburgh
- 228 Federal St, Pittsburgh, PA

Building Statistics:

- Occupancy - Hotel
- Size – 80,000 SF
- Stories – 10 stories above grade + 1 story below grade

Project Cost:

- \$19 million



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Existing Building Information

Architecture:

- 135 guest rooms with indoor pool and fitness center
- 18'-0" high lobby
- Glass curtain wall system extends above entrance to lobby
- Lobby windows shaded by 19'x10' steel supported glass canopies
- Exterior façade is cast stone to the 4th level, then brick veneer to the roof
- Roof composed of concrete plank slab and TPO roofing membrane



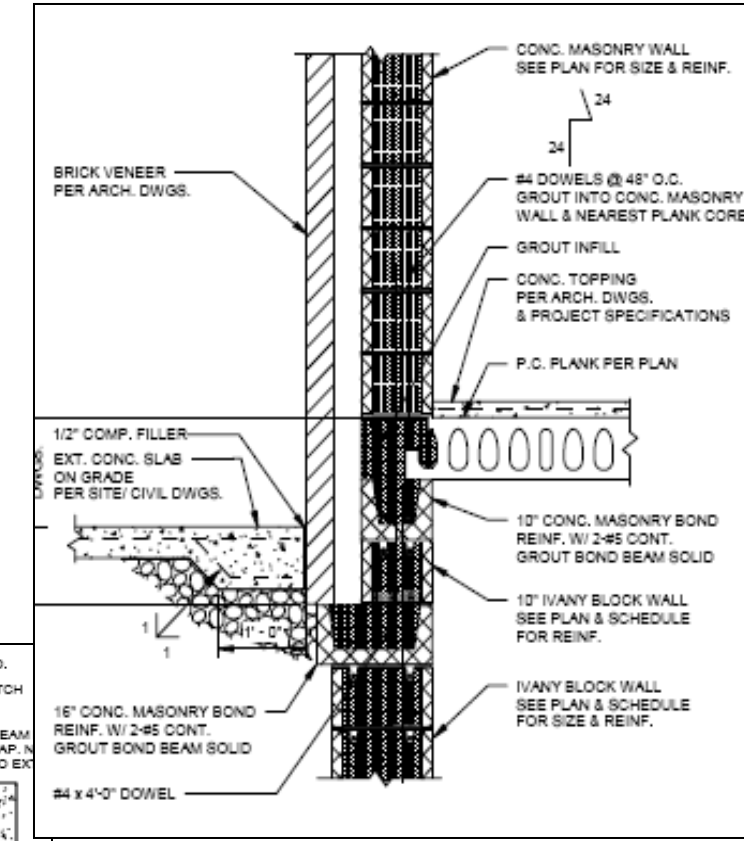
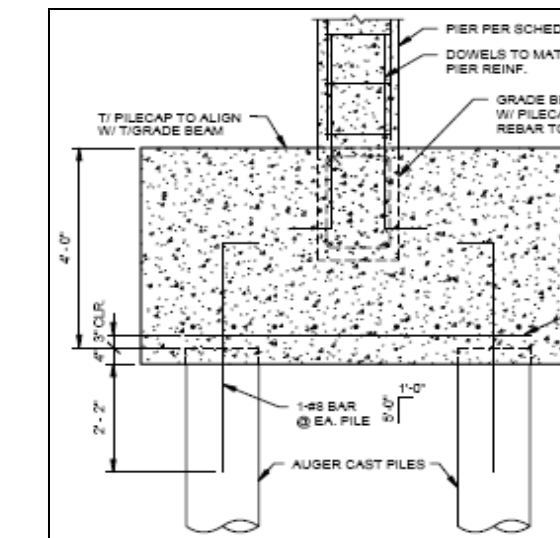
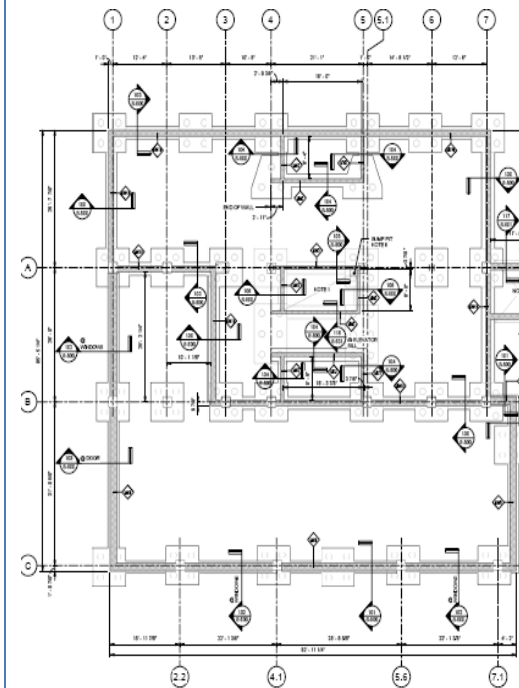
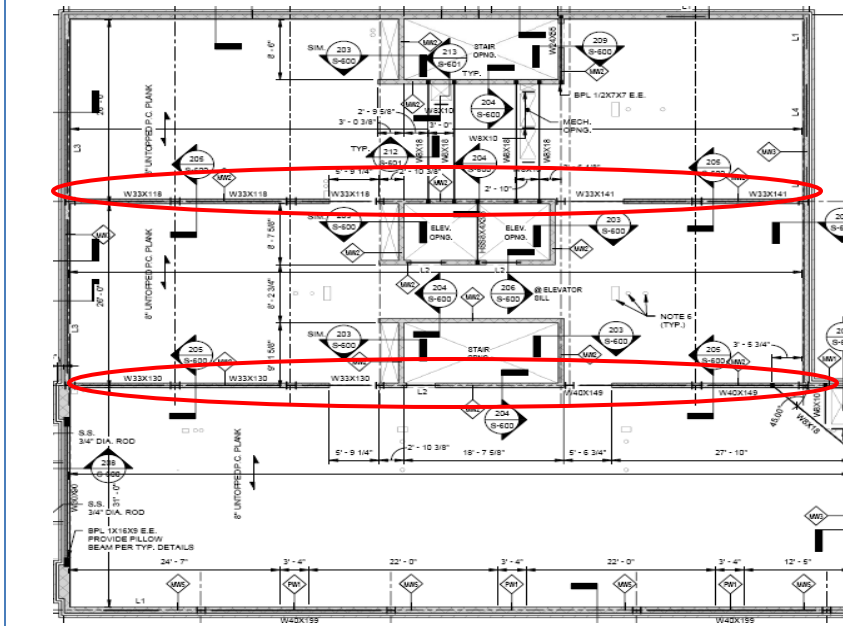
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Existing Building Information

Structural System

- 8" Precast concrete plank floor system
- Concrete masonry load bearing walls
 - surround perimeter
 - core staircases and elevator shaft
 - run along interior of building in E-W direction
- Lateral resistance provided by concrete masonry shear walls
 - 10" around perimeter
 - 8" at core
- Auger cast concrete piles and grade beam foundation
- Transfer beams at second floor



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Project Goals

Structural Depth Study: Redesign Gravity System

- Steel columns and beams

Structural Depth Study: Lateral Force Resisting System Redesign

- Shear walls
- Lateral System Optimization
- Foundation check

Architectural Breadth Study

- Facades changes

Construction Management Breadth Study

- Cost Comparison
- Construction schedule impacts

