

Wellington Condominiums
Exton, PA
Senior Thesis Final Report

BUILDING FOR THE FUTURE



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Wellington Condominiums

Exton PA

Extraordinary Residences Exceptional Lifestyle



Design and Construction Team:

Owner: The Hankin Group

General Contractor: Wellington Commercial Construction

Construction Manager: Wellington Commercial Construction

Architects: Minno & Wasko Architects and Planner

Engineers: Liberty Engineering

General Scope:

Size: 147,069 S.F. 4 Story luxury condominiums w/ Parking Garage

Building Cost: \$18.1 million

Schedule: September 2005 thru May 2007

Project Delivery: CM @ Risk



Architecture:

- Designed in the tradition of grand estate homes
- Situated at Eagleview community town center
- 8 designs with a choice of décor being "traditional" or "contemporary"
- Designated areas for concerts, shopping, dining and fun
- Building surrounded by landscaped parks and native woods
- Stylish brick and cast stone exterior veneer
- Composite slate roof and membrane roof w/ copper eave drip edge



M.E.P. Systems:

- Fire protection system includes sprinklers, fire alarms and smoke detectors throughout each residence and public areas
- Building access communication system, telephone, cable and internet ready
- HVAC is an all air gas fired furnace supplying each condominium residence
- Main Electrical Distribution switch board is 1600 Amp, 3 phase, 120/208 V
- The main electrical distribution connects to 4 meter banks which are then broken down to each individual apartments

Construction and Structural:

- Being built in a very developed commercial neighborhood
- Geotech report indicated site had variance in quality of soils
- Installed permanent dewatering system before actual construction
- Delay in Permits and architectural approvals pushed façade construction to winter
- Foundation utilizes 18" strip and column footings w/ 5" slab on grade
- First floor makes use of a 12" heavily reinforced two way flat plate concrete slab
- Other floors use innovative Hambros Joist 3" slab on deck composite system



Wellington Features:

- 48 unique floor plans up to 2,300 S.F.
- Great views from large bay windows
- Hardwood floors in all living areas
- Polished Granite Countertops
- Elegant lobby entry





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A.1 Executive Summary

The Wellington Condominiums Project was investigated to identify areas of a project that were good candidates for further research in: alternative methods of construction, value engineering, and schedule compression.

The main body of research that was conducted concerning the construction industry is: What are the decisions that industry members make in providing and utilizing new formwork products? Who makes the decision to use a new formwork product and when? What process of action can manufactures and suppliers do to promote new formwork products? Who takes the responsibilities and risks? Can a process and procedure be created and implemented to help aid the construction industry? These questions and more are further explored in greater detail in the following sections to come.

The Hambros Joist Composite Deck System Analysis builds off the main research as taking a project level look to determine whether or not this system was correctly selected for the Wellington Condominiums Project. Many problems have resulted because of this system and further research as to alternative methods and means is examined. An acoustical breadth is provided here to investigate the claims of the manufacturer and supplier as stating the 2.5" deck slab to the Hambros Joist Composite Deck System is very good to industry standards for minimal vibration and sound transfer.

The third analysis is a foundation redesign which targets where a majority of the delays and change orders to the project resulted. This is of great interest to the project team due to the tremendous amount of resources that had to be applied to correct the problem. Another area of concern is that the foundation system required a large amount of time and cost to the project which pushed back the façade construction to the winter months. The foundations system would be challenged by redesigning the system to a mat slab foundation. Many reasons as to why a mat slab foundation would be preferred are detailed in the following sections. The structural breadth will take a deeper look as to whether or not a mat slab foundation system would be of greater value to the project.

The final analysis builds off the early delays that occurred on the construction of the foundation system. Since the schedule was pushed back, the façade construction would not begin until the winter months. This creates a need for the project team to think of alternative ways of constructing the building. The first floor consists of pre cast panels and follows with typical masonry construction up to the 4th floor. An analysis is performed on the comparison between utilizing pre-cast for the entire structure and rather than just for the first floor. Caution will be used when changing the building composition of the building façade by utilizing renders of the project.