STUDY

Impact of Construction Type on Cost of Construction and Building Insurance Cost

MULTI-RESIDENTIAL STRUCTURES

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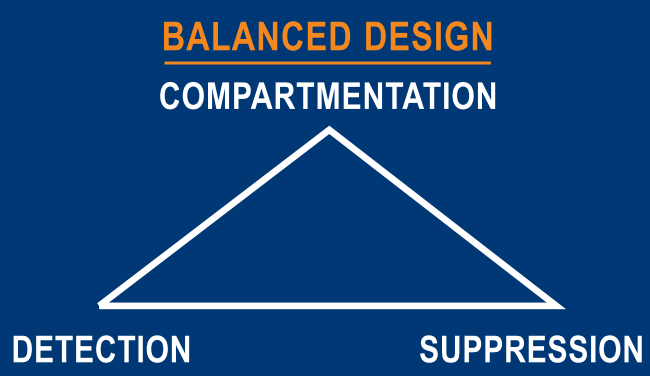
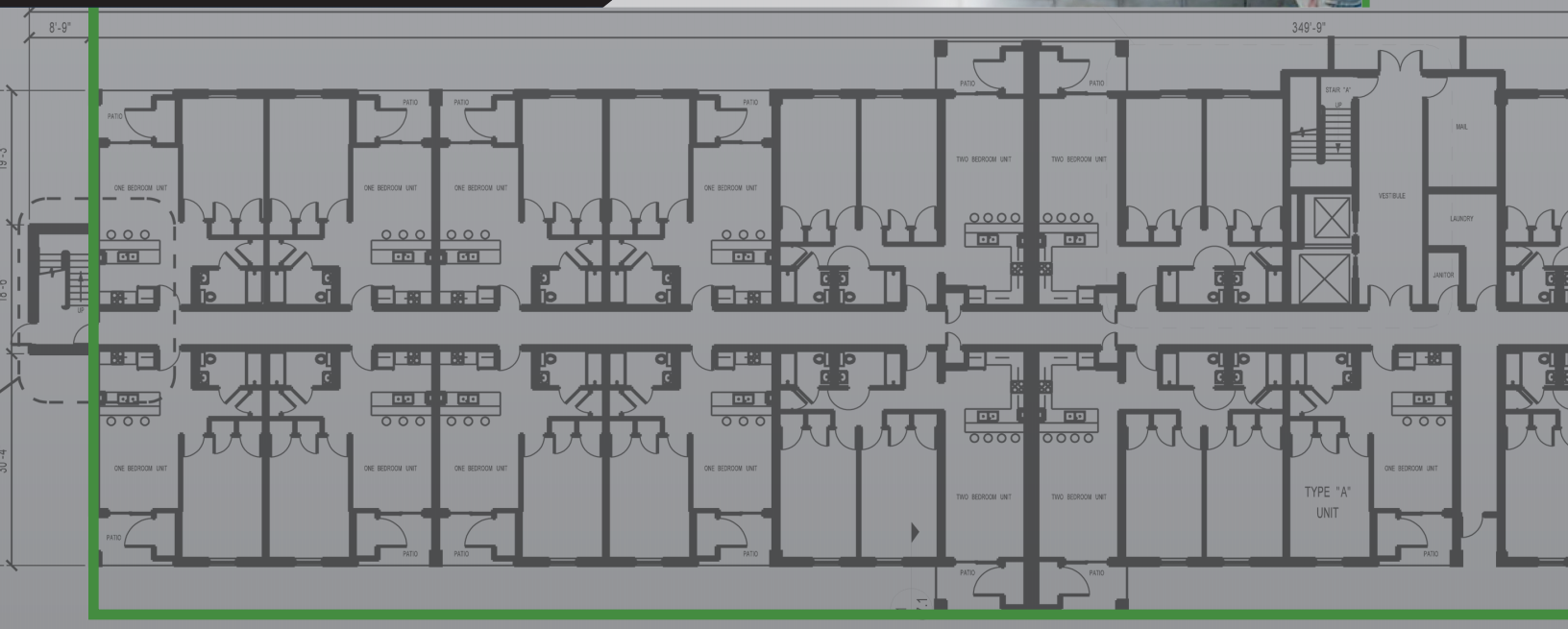




Detroit, Michigan

MAY 2025

Introduction

For the Detroit, Michigan May 2025 cost comparison it was decided to use union wages based on the local construction climate. The reader is referred to the *Study, Initial Cost of Construction, Multi-Residential Structures, October 2017* original report for a complete discussion on study design and methodology. It has been determined that the insurance industry recognizes that there is a relative risk differential between wood construction materials and the other materials used in this study. The differential risk is included in this study and reflected in the builder risk insurance costs. The builders risk insurance costs have been applied based on recognized building construction type, and Spring 2025 insurance rates.

Study Results and Discussion

The results of the construction cost study for each geographic location are presented in the following tables. The relative cost presented is a percentage of the conventional wood frame system.

Detroit, Michigan

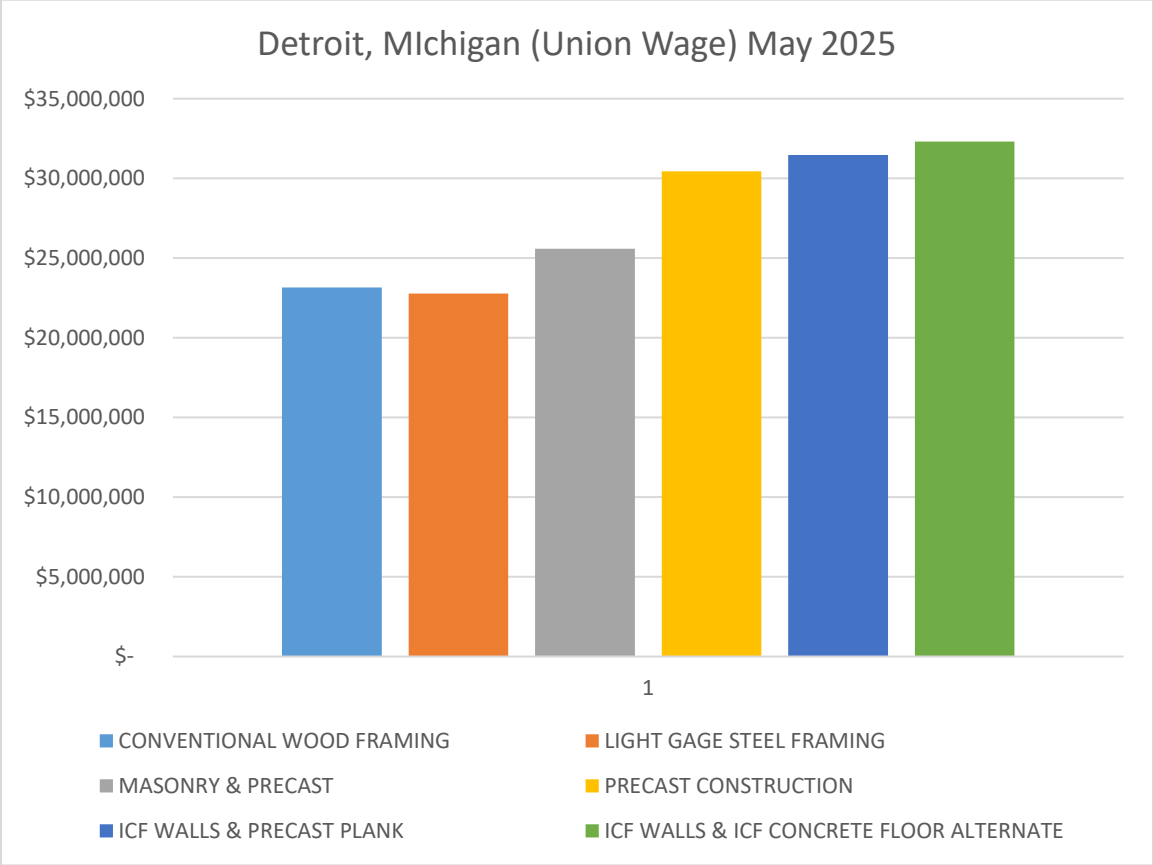
Detroit, Michigan- May 2025				
Union Wages				
Building System	Insurance Cost	Construction Cost	Cost/Sq Ft	Relative Cost
CONVENTIONAL WOOD FRAMING	$ 193,327	$ 23,158,092	$ 258.19	100
LIGHT GAGE STEEL FRAMING	$ 104,706	$ 22,782,254	$ 254.00	98
MASONRY & PRECAST	$ 74,806	$ 25,589,957	$ 285.30	111
PRECAST CONSTRUCTION	$ 88,892	$ 30,439,055	$ 339.37	131
ICF WALLS & PRECAST PLANK	$ 92,077	$ 31,467,949	$ 351.17	136
ICF WALLS & ICF CONCRETE FLOOR ALTERNATE	$ 94,476	$ 32,318,733	$ 360.32	140

The most cost-effective option is the load-bearing light-gauge steel wall system paired with a cast-in-place concrete slab over a light-gauge metal joist floor system. This system has a relative cost of 98 percent compared to the conventional lightweight wood-frame system.

At the other end of the spectrum, the most expensive system insulated concrete form (ICF) walls with an ICF concrete floor costs 40 percent more than the conventional lightweight wood-frame system.

The load-bearing masonry wall system with precast concrete plank floors is priced 11percent higher than the conventional wood framing but offers several advantages. While the conventional lightweight wood-frame system meets only the minimum fire rating required for Type V-A construction under the International Building Code (IBC), the load-bearing masonry system complies with the more stringent requirements of Type I-B construction. As such, it qualifies as fire-resistive construction, in contrast to the combustible nature of the wood-frame system and the non-combustible classification of the light-gauge steel system.

These distinctions in construction type and fire resistance significantly impact builder's risk insurance rates. Non-combustible framing systems are typically insured at rates over three times higher than fire-resistive systems, while wood-frame systems can be insured at rates more than ten times higher.



In addition to the initial cost of construction, lifecycle cost is affected by the building construction type. While this is very difficult to quantify for maintenance costs, overall and material performance level over time, it is being acknowledged by the insurance industry. Keeping in mind that the property insurance cost is greatly affected by many external factors, and is highly dependent on the building occupancy type, there is a recognized difference in the property insurance based on the construction materials and thus construction type. The following table presents the builder's risk insurance cost, the initial cost of construction, the building insurance cost, and the cost of providing building insurance for ten (10) years and twenty (20) years. The costs are compared using the conventional wood framed system as the baseline in the "relative cost" evaluation.

Detroit, Michigan - May 2025 Union Wages Building System	Builders Risk Insurance Cost	Construction Cost	Contingency	Property Insurance Annual	Total 10 Year Cost	10 Year Relative Cost	Total 20 Year Cost	20 Year Relative Cost
CONVENTIONAL WOOD FRAMING	$ 193,327	$ 23,158,092	$ 2,494,127	$ 69,474.28	$ 23,852,835	100	$ 24,547,578	100
LIGHT GAGE STEEL FRAMING	$ 104,706	$ 22,782,254	$ 2,453,649	$ 45,564.51	$ 23,237,899	97	$ 23,693,544	97
MASONRY & PRECAST	$ 74,806	$ 25,589,957	$ 2,756,038	$ 30,707.95	$ 25,897,036	109	$ 26,204,116	107
PRECAST CONSTRUCTION	$ 88,982	$ 30,439,055	$ 3,278,286	$ 36,526.87	$ 30,804,324	129	$ 31,169,592	127
ICF WALLS & PRECAST PLANK	$ 92,077	$ 31,497,949	$ 3,392,329	$ 37,797.54	$ 31,875,924	134	$ 32,253,900	131
ICF WALLS & ICF CONCRETE FLOOR ALTERNATE	$ 94,476	$ 32,318,733	$ 3,480,728	$ 38,782.48	$ 32,706,558	137	$ 33,094,383	135

Note: Total 10 year cost includes construction cost and 10 years of property insurance premiums

The load-bearing masonry wall system with precast concrete plank floor system is not the lowest initial cost system, but when the cost of insurance is factored into the evaluation, the system looks more favorable without even considering the other financial benefits. This reinforces the benefits of the resilient, non-combustible, fire-resistive construction methods.

Study Conclusions and Recommendations

Based on the construction cost estimates prepared by Mr. Maholtz, the cost associated with using a compartmentalized construction method utilizing a concrete based construction material was very favorable with light weight conventional wood frame construction cost and light gage steel framing construction cost. The masonry and precast concrete-based construction systems were within a 11 percent initial cost increase over the lightweight conventional wood frame construction system. In many cases this amount can be partially offset by the contingency budget typically recommended for the owner to carry for unanticipated expenditures during the project.

The minimal increase in construction cost can also help pay for itself over the life of the structure. Materials like concrete masonry, precast concrete, and cast-in-place concrete have many other advantages beyond their inherent fire performance including resistance to mold growth, resistance to damage from vandalism, and minimal damage caused by water and fire in the event of a fire in the building. In many cases, with this type of construction the damage outside of the fire compartment is minimal. This provides for reduced cleanup costs and quicker reoccupation of the structure.

The recognition of the advantages of non-combustible, and fire-resistive cement based construction is reinforced by the insurance industry through a large reduction in builders risk insurance rates, and a large reduction in the on-going building insurance rates paid by the building owners.

Based on the results of this study, we recommend that a similar study be undertaken to evaluate use of similar construction techniques and their associated construction cost impact on other typical building types like, schools, retail establishments, and commercial office buildings.

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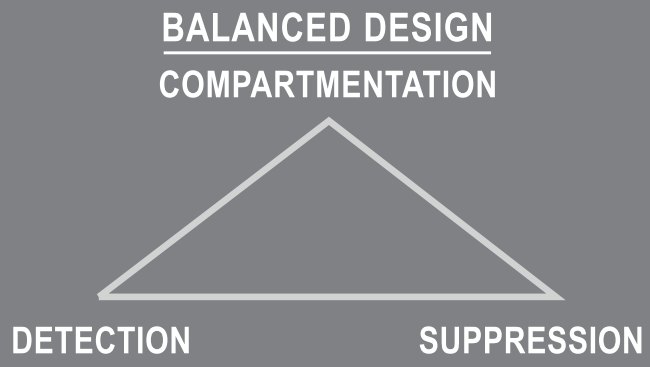

Michigan Masonry Coalition

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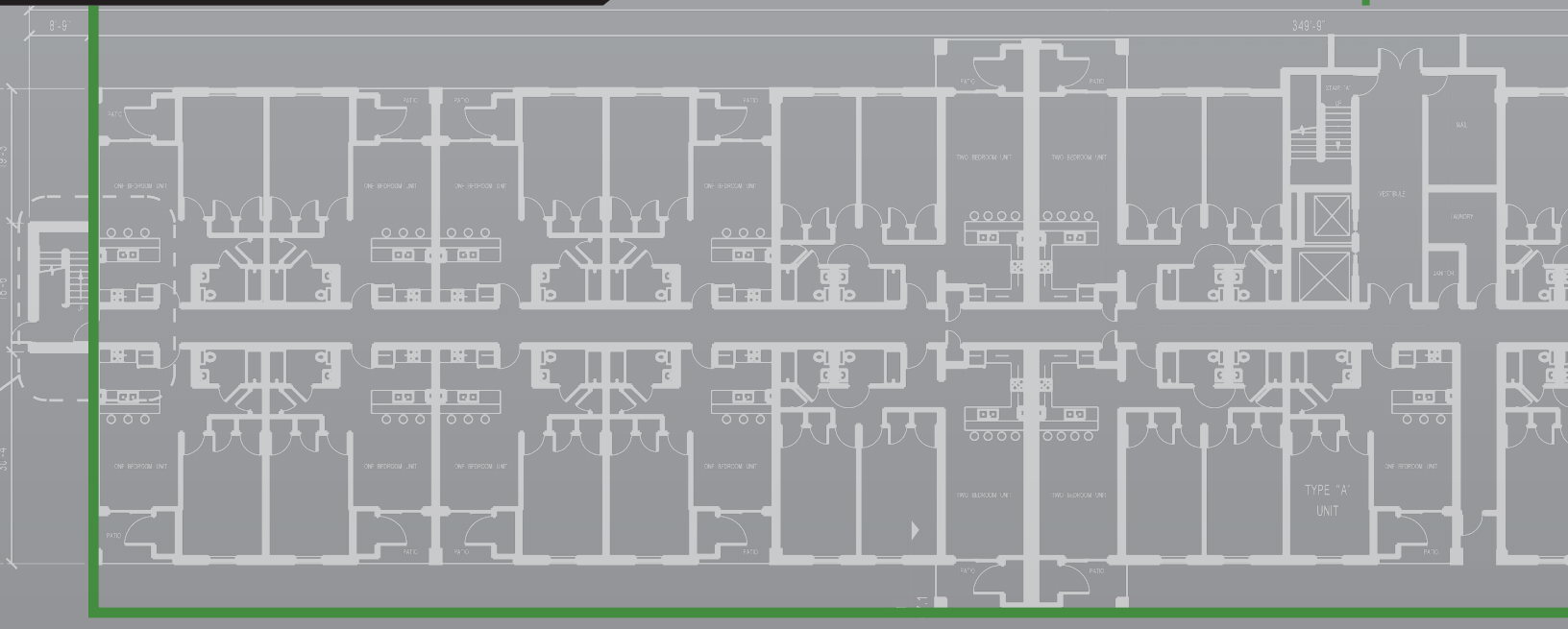

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