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| **Activity 3.1.6 Commercial Floor Systems** | |

Equipment

* Engineering notebook
* Pencil
* Printer
* **Keystone 2nd Floor Framing Hollow Core Precast**
* **Keystone 2nd Floor Framing Composite Slab**
* **Composite Floor Deck Load-Span Table**
* **Hollow Core 8 Load-Span Table**

Procedure

In order to create a second level for a commercial building two floor systems will be investigated for potential use as the second floor– cast-in-place concrete on metal deck (composite slab design) and precast hollow core concrete panels.

1. Research each of the floor systems for use as an elevated floor in a commercial building
2. Label the components of each system in the detail of the floor at the structural steel beam.
3. For each system, use the appropriate load-span table to select the most economical floor design to support the proposed superimposed floor load of **150 psf**. Note the specifications for each floor.
4. Give the specifications for the slab as indicated.
5. Which flooring system would you recommend for a commercial building? Justify your choice.

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| FLOOR TYPE | SKETCH | Specification |
| Composite Slab Design (cast-in-place concrete on metal decking) |  | * Normal Weight Concrete * Type 1.5 CF Composite Floor Deck * 3-span * \_\_\_\_\_\_\_\_span length * \_\_\_\_\_\_\_\_ slab thk. * \_\_\_\_\_\_\_\_ deck Type * \_\_\_\_\_\_\_\_ WWF * \_\_\_\_\_\_\_\_ allowable unshored clear span |
| Hollow core precast concrete floor panels |  | * \_\_\_\_\_\_\_\_span length * \_\_\_\_\_\_\_\_ panel width * \_\_\_\_\_\_\_\_ slab thk. * \_\_\_\_\_\_\_\_ No. & size of reinforcing strands |

**Conclusion**

1. Explain why the materials used in a residential floor system are different from a commercial system.
2. Describe the advantages of using precast concrete floor components.
3. When comparing two different concrete flooring systems (such as precast panels and cast-in-place slabs), what factors would you consider as you choose a system for a building design?

4. Describe how engineers can change the strength of a concrete floor so that it can carry a heavier load.