



**Pembroke Hopkins Park Construction Outreach Program**

13355 E. 3000 S. Rd., Pembroke Township, IL 60958

Tel: (815) 944-8897 Fax: (815) 944-5675

**Competencies / Objectives**

**MODULE 36101-01 – INTRODUCTION TO THE TRADE (15 Hours)**

1. Describe the highway/heavy construction trade.
2. Explain highway/heavy trade safety.
3. Identify and explain the plans and specifications used for highway construction.
4. Perform surveying and trade math.
5. Identify and explain the equipment used in highway/heavy construction.
6. Perform calculations required to determine grades and slopes (elevations).
7. Identify and explain grading requirements.

**MODULE 36102-01 – TRUCKS (7.5 Hours)**

1. Describe rigid frame trucks:
  - Dump trucks
  - Asphalt distribution trucks
  - Broom trucks
  - Transit-mix trucks
  - Fuel/lubrication trucks
  - Maintenance trucks
  - Water trucks
2. Describe truck components and controls.
3. Perform basic safety checks on trucks.
4. Identify and explain tractor trailer trucks and trailers:
  - Bulk haulers
  - Flat bed trailers
  - Low boy trailers
  - Belly dump trailers
  - Side dump trailers
  - End dump trailers
  - Live bottom (flow boy) trailers
  - Tankers

**MODULE 36103-01 – HEAVY EQUIPMENT (15 Hours)**

1. Identify and explain compaction equipment.
2. Identify and explain loaders.
3. Identify and explain backhoe loaders.



4. Identify and explain scrapers.
5. Identify and explain bulldozers.
6. Identify and explain excavators.
7. Identify and explain telescoping excavators.
8. Identify and explain motor graders.
9. Identify and explain skid steer loaders.
10. Identify and explain specialty equipment.

#### **MODULE 36104-01 – CRANES AND FORKLIFTS (7.5 Hours)**

1. Identify and explain the different types of construction cranes.
2. Perform crane inspections.
3. Describe crane operations and safety.
4. Identify and explain crane handbooks and records.
5. Identify and explain forklifts.
6. Demonstrate good lifting practices and proper rigging.

#### **MODULE 36105-01 – BELOW GRADE CONSTRUCTION (12.5 Hours)**

1. Identify and explain types and properties of soils.
2. Describe excavation support systems.
3. Identify and explain underground piping materials and fittings.
4. Describe joining methods for underground pipe.
5. Identify and explain box culverts and catch basins.
6. Describe installing underground pipe.

#### **MODULE 36106-01 – EARTHMOVING (12.5 Hours)**

1. Explain soil basics.
2. Identify and explain earthmoving methods.
3. Describe setting up and coordinating earthmoving operations.
4. Identify and explain earthmoving and compaction operations.
5. Identify and explain soil stabilization methods.
6. Identify and explain stabilized base courses.

#### **MODULE 36107-01 – PLANT OPERATIONS (7.5 Hours)**

1. Describe aggregate extraction.
2. Describe the processing of aggregates.
3. Explain the operation of a concrete plant.
4. Explain the operation of a hot mix asphalt plant.
5. Describe the operation of a pug mill.



### **MODULE 36108-01 – PAVING (7.5 Hours)**

1. Explain the operation of concrete paving equipment, including pavers, slip-form pavers, and texture/curing machines.
2. Describe concrete paving operations including grade control, making joints, hand paving, and reinforcement.
3. Explain concrete paving quality control.
4. Describe hot mix asphalt paving operations, including grade control, raking, and compaction.
5. Explain hot mix asphalt paving quality control.

### **MODULE 36109-01 – STRUCTURES (12.5 Hours)**

1. Identify and explain bridge components and different types of bridges.
2. Describe the purpose, structure, construction methods, and materials of different types of bridges.
3. Explain constructing bridge substructures.
4. Explain constructing bridge superstructures.
5. Describe the use and construction of walls and structures.
6. Explain using structural concrete for bridge and road construction.
7. Describe how structural steel is used in bridge and road construction