

# Facilities Maintenance Technician Standards

## Volume II

Home Builders Institute

## Introduction

We are pleased to present this summary of residential and light commercial facilities maintenance technician standards. The goal of this project is to establish national standards for the residential and light construction industry that reflect industry skill requirements. The standards will provide a basis for the certification and training of workers as well as objective benchmarks for employee selection and training needs. In addition, educators will find the standards useful for designing curricula and evaluating individual training outcomes.

These standards by themselves do not represent a model training program. Rather, these standards are designed to be a source in developing training programs and curricula and evaluating outcomes of residential facilities management training programs.

Facilities maintenance standards have been developed and validated for trainees entering their second year of training

and skilled level technicians. Standards are developed and validated for the following fourteen critical work functions: Safety and OSHA Regulations, Tools and Equipment, Pest Prevention, HVAC, Trash Compactors, Electrical Maintenance, Elevators, Painting, Practical Electrical Theory, Plumbing, Appliance Repair and Replacement, Carpentry, Groundskeeping, Organization of Work Tasks.

Critical work functions describe the major tasks and content areas of work within a specialty. Key activities or major tasks and knowledge involved in completing critical work functions are also provided.

Performance Indicators, or skill standards, which help determine when critical work functions and key activities are being performed competently, are referenced to critical work functions.

In addition, applied academic skills required to perform key activities are provided. These include mathematics,

communications, and practical electrical theory. Safety requirements involved in completing key activities have also been identified.

This report summarizes each of the fourteen critical work functions or duty areas into two pages. The first or front page lists the critical work function and plumbing specialties that perform the work function. Key activities, performance indicators, applied academic skills and safety requirements are also listed on the front page.

Descriptions of the codes used on the first page of each standard are listed on the second or back page.

This format offers a concise presentation of the critical parts of each standard. For more detailed information the reader is encouraged to review the complete report *Facilities Maintenance Standards Volume I* published by the Home Builders Institute.

# HBI National Facilities Maintenance Skill Standards

**Critical Work Function** (Major concentration in career area): **SAFETY and OSHA**

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently?)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>				<b>References</b> <i>(Nationally recognized training materials)</i>
		<b>Math</b>	<b>Com.</b>	<b>Mat.</b>	<b>Safe</b>	
Applied Safety Rules	Understand and apply OSHA regulations that cover facilities maintenance work activities.	1,2	1,2,3		1,2,3,4,5,6,7	
	Apply basic fall protection safety procedures.	2,3	1,2,3	1,2	1,3,6	
	Apply all OSHA, EPA, and DOT hazardous materials safety procedures.	1	1,2,3	1,2	2,3,7	
	Apply electrical safety procedures in NEC and local codes and regulations.	1,2	1,2,3	1,2	3,4,6,7	
	Apply safety and maintenance procedures for power tools and cords.	1,2	1,2,3	1,2	3,4	
	Apply OSHA ladders safety and maintenance procedures.	2,3	1,2,3	1,2	1,3,6	

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

### Skill Level

### Percent of Key Activities Performed

Percent of all facilities maintenance technicians who perform key activities

100%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified



## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent of Key Activities Performed
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Percent of all facilities maintenance technicians who perform key activities

100%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified



## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent of Key Activities Performed
		Percent of all facilities maintenance technicians who perform key activities 100%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified



## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent of Key Activities Performed
-------------	--	-------------------------------------

Percent of all facilities maintenance technicians who perform key activities

100%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified

# HBI National Facilities Maintenance Skill Standards

## Critical Work Function (Major concentration in career area): Tools and Equipment

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently?)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>				<b>References</b> <i>(Nationally recognized training materials)</i>
	NAHB Performance Standards 2004	Math	Com.	Mat.	Safe	
Hand Tools	Select and properly use measuring, marking, leveling and layout tools including plumb bobs, spirit levels and tape measures.	1,2,3,4	1,2,3,4	1,2	7	
	Select and properly use boring and cutting tools including drill bits, saws and cold chisels.	1,2,3,4	1,2,3,4	1,2	3,7	
	Select and properly use fastening and dismantling tools including hammers and wedges.	1,2,3,4	1,2,3,4	1,2	3,7	
Portable Power Tools						
	Select and properly use power saws, drills and drivers including reciprocating saws, portable drills and skill saws.	1	1,2,3	1,2	3,4,7	
	Select and properly use planes, routers and sanders.	1	1,2,3	1,2	3,4,7	
	Select and properly use fastening tools including powder-actuated fastening tools.	1	1,2,3	1,2	3,4,7	

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent of Key Activities Performed
		Percent of all facilities maintenance technicians who perform key activities 100%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified

# HBI National Facilities Maintenance Skill Standards

## Critical Work Function (Major concentration in career area): **Tools and Equipment**

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently?)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>				<b>References</b> <i>(Nationally recognized training materials)</i>
	NAHB Performance Standards 2004	Math	Com.	Mat.	Safe	
Stationary Tools	Select and properly use miter, chop, band and table saws and drill presses.	1,2,3,4	1,2,3	1,2	2,3,4,7	
Blueprints and Building Codes	Correctly identify, describe and locate major elements of building floor plans and elevations.	1,2,3	1,2,3	1		
	Correctly locate site features using plot plans.	1,2,3	1,2,3	1		
	Understand the importance of following national, state and local building codes.	1,2,3	1,2,3	1		
Organization of Work Tasks	Establish priorities for carrying out work-related tasks.		1,2,3			
	Assign tasks based on priorities and resources available.		1,2,3			
	Carry out assignments using work order system.		1,2,3			

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent of Key Activities Performed
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Percent of all facilities maintenance technicians who perform key activities	100%
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## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified



## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent of Key Activities Performed
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Percent of all facilities maintenance technicians who perform key activities

90%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified

# HBI National Facilities Maintenance Skill Standards

**Critical Work Function** (Major concentration in career area): Heating, Ventilation and Air Conditioning Systems

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently?)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>				<b>References</b> <i>(Nationally recognized training materials)</i>
	NAHB Performance Standards 2004	Math	Com.	Mat.	Safe	
Safety, Tools and Equipment	Understand and apply OSHA regulations related to HVAC practices.		1,2,3			
	Apply all OSHA, EPA and DOT hazardous materials safety requirements.		1,2,3			
	Apply all safety and maintenance procedures for power and hand tools, gauges and measurement devices and equipment used to maintain HVAC systems.	1,2	1,2,3	1,2	1,2,3,4,6,7	
HVAC Maintenance	Perform general maintenance procedures including tightening belts, adjusting pulleys and replacing filters on HVAC units according to manufacturer's specifications.	1,2	1,2,3	1,2	1,2,3,4,6,7	
	Perform general maintenance of boiler, burner and chilling systems according to manufacturer's specifications.	1,2	1,2,3	1,2	1,2,3,4,6,7	
	Clean coils and lubricate motors.		1,2,3	1,2	2,3,6,7	

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

### Skill Level

### Percent Who Perform Key Activities

Percent of all facilities maintenance technicians who perform key activities

92%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified

# HBI National Facilities Maintenance Skill Standards

**Critical Work Function** (Major concentration in career area): Heating, Ventilation and Air Conditioning Systems

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently?)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>				<b>References</b> <i>(Nationally recognized training materials)</i>
	NAHB Performance Standards 2004	Math	Com.	Mat.	Safe	
<b>HVAC Maintenance (cont.)</b>	Calibrate and adjust thermostats and humidistats according to manufacturer specifications	1,2	1,2,3	1,2	7	
	Follow systematic diagnostic and troubleshooting practices consistent with manufacturer's specifications.	1,2	1,2,3	1,2	7	
	Record electrical measurements and temperatures not meeting specified operating parameters.	1,2	1,2,3	1,2	7	
	Repair and replace electrical devices, zone valves and circulator pumps according to manufacturer's specifications.	1,2	1,2,3	1,2	1,2,3,6,7	
	Maintain and service condensate systems.	1,2	1,2,3	1,2	1,2,3,6,7	
	Replace thru-wall air conditioners according to manufacturer's specifications.	1,2	1,2,3	1,2	1,2,3,6,7	

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent Who Perform Key Activities
-------------	--	------------------------------------

Percent of all facilities maintenance technicians who perform key activities

92%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified



## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent Who Perform Key Activities
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Percent of all facilities maintenance technicians who perform key activities

75%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified

# HBI National Facilities Maintenance Skill Standards

**Critical Work Function** (Major concentration in career area): **Electrical Maintenance**

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently?)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>				<b>References</b> <i>(Nationally recognized training materials)</i>
	NAHB Performance Standards 2004	Math	Com.	Mat.	Safe	
Safety, Tools and Electrical Plans	Understand and apply OSHA regulations that cover electrical practices.		1,2,3			
	Apply electrical safety procedures in NEC and local codes and regulation.		1,2,3			
	Apply all safety and maintenance procedures for power and hand tools, gauges and measurement devices and equipment used to maintain electrical systems.	1,2	1,2,3	1,2	1,2,3,4,6,7	
Electrical Materials and Supplies	Correctly identify and select electrical fixtures, boxes and switches and different size and type of wire.	1,2	1,2,3	1,2		
	Correctly identify and select Ohm meters, VOHM meters and other electrical measuring devices.	2	1,2,3	1,2		

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

### Skill Level

### Percent Who Perform Key Activities

Percent of all facilities maintenance technicians who perform key activities

68%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified



## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

### Skill Level

### Percent Who Perform Key Activities

Percent of all facilities maintenance technicians who perform key activities

68%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified

# HBI National Facilities Maintenance Skill Standards

**Critical Work Function** (Major concentration in career area): **Electrical Maintenance**

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently?)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>				<b>References</b> <i>(Nationally recognized training materials)</i>
	NAHB Performance Standards 2004	Math	Com.	Mat.	Safe	
Electrical Maintenance Procedures (cont.)	Perform tests of medical alert systems according to manufacturer's specifications and report any malfunctions to supervisor.		1,2,3	1,2		
	Perform tests of GFCI receptacles and replace defective receptacles according to manufacturer's specifications.		1,2,3	1,2		
	Repair and replace interior and exterior lighting fixtures.	1,2	1,2,3	1,2	1,3,4,6,7	
	Replace light bulbs, ballasts and photo cells with proper bulb, ballast or cell.	1,2	1,2,3	1,2	1,3,4,6,7	
	Locate and troubleshoot underground shorts and repair/splice connection according to manufacturer's specifications.	1,2	1,2,3	1,2	1,3,4,6,7	

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

### Skill Level

### Percent Who Perform Key Activities

Percent of all facilities maintenance technicians who perform key activities

68%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified



## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent Who Perform Key Activities
-------------	--	------------------------------------

Percent of all facilities maintenance technicians who perform key activities

75%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified

# HBI National Facilities Maintenance Skill Standards

## Critical Work Function (Major concentration in career area): **Painting**

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently?)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>				<b>References</b> <i>(Nationally recognized training materials)</i>
	NAHB Performance Standards 2004	Math	Com.	Mat.	Safe	
Surface Preparation	Identify and select proper surface finishes.	1,2	1,2	1,2	1,2,6,7	
	Identify and select proper finishing tools for different type of finishes.		1,2	1,2	1,2,6,7	
	Prepare surface and site properly for finishing including sanding, caulking and covering exposed surfaces.		1,2	1,2	1,2,6,7	
	Apply paint using roller and brush according to manufacturer's and job specifications.		1,2	1,2	1,2,6,7	
	Apply paint using paint sprayer according to manufacturer's and job specifications.		1,2	1,2	1,2,6,7	
	Clean and store paint materials including brushes, thinners, spray guns according to manufacturer's specifications and OSHA regulations.		1,2	1,2	1,2,6,7	
Temporary Work Platforms	Safely erect, use and dismantle single stage scaffolds according to manufacturer's and OSHA regulations.	1,2	1,2,3	1,2	1,3,6,7	

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent Who Perform Key Activities
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Percent of all facilities maintenance technicians who perform key activities	92%
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## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified



## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent Who Perform Key Activities
-------------	--	------------------------------------

Percent of all facilities maintenance technicians who perform key activities

92%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified



## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

### Skill Level

### Percent Who Perform Key Activities

Percent of all facilities maintenance technicians who perform key activities

76%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified

# HBI National Facilities Maintenance Skill Standards

## Critical Work Function (Major concentration in career area): **Plumbing**

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently?)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>				<b>References</b> <i>(Nationally recognized training materials)</i>
	NAHB Performance Standards 2004	<b>Math</b>	<b>Com.</b>	<b>Mat.</b>	<b>Safe</b>	
Plumbing Maintenance (cont.)	Clean and replace traps, drains and vents including use of snake or rod to clean drain lines.		1,2,3	1,2	2,7	
	Clean and service grease traps.		1,2,3	1,2	2,7	
	Caulk and seal fixtures according to manufacturer's specifications.		1,2,3	1,2	2,7	
	Fabricate and solder copper pipe with correct fittings as required for job without any leaks.	1,2,3	1,2,3	1,2	2,3,7	
	Locate and repair leaks in pipes and fixtures.	1,2	1,2,3	1,2	2,7	
	Service, install and repair water heaters according to manufacturer specifications.	1,2	1,2,3	1,2	2,7	
	Test and set hot water temperature according to manufacturer specifications.	1,2	1,2,3	1,2	2,7	
	Follow and apply all national and local building codes.	1,2	1,2,3	1,2	2,7	

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent Who Perform Key Activities
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Percent of all facilities maintenance technicians who perform key activities

76%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified



## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

### Skill Level

### Percent Who Perform Key Activities

Percent of all facilities maintenance technicians who perform key activities

63%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified

# HBI National Facilities Maintenance Skill Standards

**Critical Work Function** (Major concentration in career area): **Carpentry**

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently?)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>			<b>References</b> <i>(Nationally recognized training materials)</i>	
	NAHB Performance Standards 2004	<b>Math</b>	<b>Com.</b>	<b>Mat.</b>	<b>Safe</b>	
Wood Products	Describe the general properties of hardwood and softwoods commonly used by facilities maintenance technicians. Describe the effects of moisture content on different wood products. Perform estimating and take-off quantities for simple one-step carpentry projects.	1,2	1,2,3	1,2	2	
				1,2,3	1,2	
			1,2	1,2,3,4	1,2	
Engineer Products, Panels and Sheet Goods	Correctly identify and select the following products: plywood, OSB, siding, particleboard, drywall, wallboard and cement board, fiberboard including hardboard, MDF and others) insulation board, waterproofing membranes, plastic laminates and metal framing products.	1,2	1,2,3	1,2	2	
Framing	Correctly identify wall, door and window framing components.	1,2	1,2,3		7	
Interior Carpentry Maintenance	Repair and replace interior trim.	1,2,3	1,2,3	1,2	1,3,4,6,7	
	Repair and replace interior doors.	1,2,3	1,2,3	1,2	1,3,4,6,7	
	Repair and replace door hardware and re-key locks.	1,2,3	1,2,3	1,2	1,3,4,6,7	

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent Who Perform Key Activities
-------------	--	------------------------------------

Percent of all facilities maintenance technicians who perform key activities

90%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified

# HBI National Facilities Maintenance Skill Standards

**Critical Work Function** (Major concentration in career area): **Carpentry**

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently?)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>				<b>References</b> <i>(Nationally recognized training materials)</i>
		<b>Math</b>	<b>Com.</b>	<b>Mat.</b>	<b>Safe</b>	
Interior Carpentry Maintenance (cont.)	Repair and replace cabinets and shelving.	1,2,3	1,2,3	1,2	1,3,4,6,7	
	Repair and replace suspended ceiling systems.	1,2,3	1,2,3	1,2	1,3,4,6,7	
	Repair and replace windows and screens.	1,2,3	1,2,3	1,2	1,3,4,6,7	
	Repair and replace floor and wall tile and fixtures.	1,2,3	1,2,3	1,2	1,3,4,6,7	
	Repair and replace carpet.	1,2,3	1,2,3	1,2	1,3,4,6,7	
	Repair and replace wall and ceiling insulation.	1,2,3	1,2,3	1,2	1,3,4,6,7	
	Repair and install drywall and plaster walls.	1,2,3	1,2,3	1,2	1,3,4,6,7	
	Repair and install wall sheet paneling.	1,2,3	1,2,3	1,2	1,3,4,6,7	
	Repair and install kitchen and bath counter tops.	1,2,3	1,2,3	1,2	1,3,4,6,7	

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent Who Perform Key Activities
-------------	--	------------------------------------

Percent of all facilities maintenance technicians who perform key activities

90%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified



## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

Skill Level		Percent Who Perform Key Activities
-------------	--	------------------------------------

Percent of all facilities maintenance technicians who perform key activities

90%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified

# HBI National Facilities Maintenance Skill Standards

**Critical Work Function** (Major concentration in career area): **Groundskeeping**

<b>The Work</b> <i>(What does the worker need to do to be able to perform the work competently?)</i>		<b>The Worker</b> <i>(What knowledge does the worker need and who performs activity?)</i>				
<b>Key Activity</b> <i>(The major tasks or knowledge involved in completing the CWF)</i>	<b>Performance Indicators</b> <i>(Indicators to determine when the key activity is being performed competently)</i>	<b>Additional Knowledge</b> <i>(Additional skills and knowledge required to perform key activities)</i>				<b>References</b> <i>(Nationally recognized training materials)</i>
		<b>Math</b>	<b>Com.</b>	<b>Mat.</b>	<b>Safe</b>	
Groundskeeping	Maintain and police grounds including mowing, edging, planting, mulching, leaf removal and other task as assigned.	1,2	1,2,3	1,2	2,3,7	
	Perform basic small engine repair and preventive maintenance according to manufacturer's specifications.	1,2	1,2,3	1,2	2,3,4,7	
	Perform basic swimming pool maintenance not requiring certification.	1,2	1,2,3	1,2	2,3,7	
	Remove refuse and snow as required.	1,2	1,2,3	1,2		
	Maintain public areas including hallways, kitchens and lobbies.	1,2	1,2,3	1,2		
	Repair asphalt using cold-patch material.	1,2	1,2,3	1,2		

## Facilities Maintenance Standards Skill Level and Applied Academics

These scales will be used to assess performance to standard and required knowledge necessary to achieve competency.

### Skill Level

### Percent Who Perform Key Activities

Percent of all facilities maintenance technicians who perform key activities

37%

## Applied Academics

### Mathematics

1. Measurement
2. Arithmetic
3. Layout
4. Applied Geometry

### Communications

1. Follow Verbal Directions
2. Follow Written Directions
3. Give Simple Directions
4. Give Complex Directions

### Safety

1. Fall Protection
2. Hazardous Materials
3. Electrical Protection
4. Power-Activated Tools
5. Concrete
6. Ladders and Scaffolds
7. Personal Protection Equipment

### Materials

1. Select Appropriate Materials
2. Apply Materials as Specified