



ALIGNED WITH
NCCER
NATIONAL
STANDARDS

MASONRY TRAINEE SKILLS STANDARDS

OD33152

COMPETENCY-BASED EDUCATION: OKLAHOMA'S RECIPE FOR SUCCESS

BY THE INDUSTRY FOR THE INDUSTRY

Oklahoma's *CareerTech* system of competency-based education uses industry professionals and certification standards to identify the knowledge and abilities needed to master an occupation. This industry input provides the foundation for development of instructional materials that help prepare the comprehensively trained, highly skilled employees demanded by our workplace partners.

TOOLS FOR SUCCESS

CareerTech relies on three basic instructional components to deliver competency-based instruction: skills standards, curriculum materials, and competency assessments.

Skills standards provide the foundation for competency-based instruction in Oklahoma's *CareerTech* system. The skills standards outline the knowledge, skills, and abilities needed to perform related jobs within an industry. Skills standards are aligned with national skills standards; therefore, a student trained to the skills standards possesses technical skills that make him/her employable in both state and national job markets.

Curriculum materials contain information and activities that teach students the knowledge and skills outlined in the skills standards. In addition to complementing classroom instruction, curriculum resources provide supplemental activities to enhance learning and provide hands-on training experiences.

Competency Assessments test the student over material outlined in the skills standards and taught using the curriculum materials. When used with classroom performance evaluations, written competency assessments provide a means of measuring occupational readiness.

Although each of these components satisfy a unique purpose in competency-based education, they work together to reinforce the skills and abilities students need to gain employment and succeed on the job.

MEASURING SUCCESS

Written competency assessments are used to evaluate student performance. Results reports communicate competency assessment scores to students and provide a breakdown of assessment results by duty area. The results breakdown shows how well the student has mastered skills needed to perform major job functions and identifies areas of job responsibility that may require additional instruction and/or training.

Group analysis of student results also provides feedback to instructors seeking to improve the effectiveness of career and technology training. Performance patterns in individual duties indicate opportunities to evaluate training methods and customize instruction.

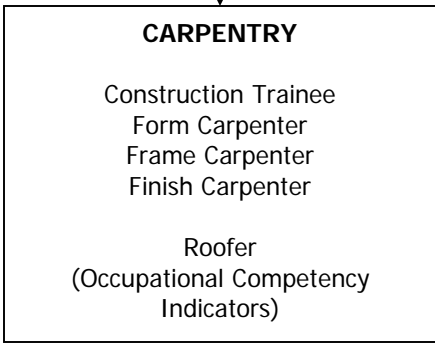
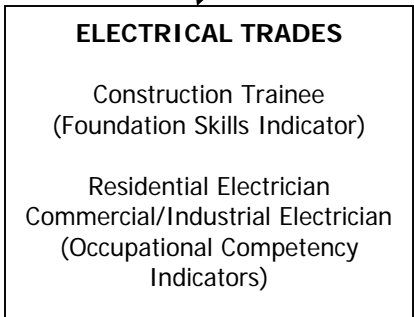
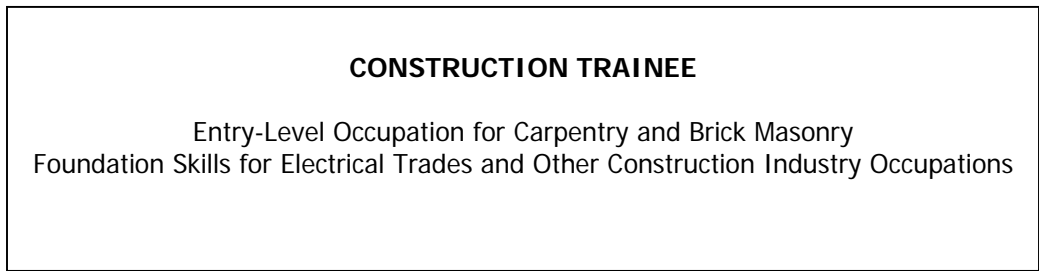
TRUE TO OUR PURPOSE

"Helping Oklahomans succeed in the workplace" defines the mission of Oklahoma *CareerTech* and its competency-based system of instruction. Skills standards, curriculum, and assessments that identify and reinforce industry expectations provide accountability for programs and assure *CareerTech*'s continued role in preparing skilled workers for a global job market

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Prior to the 2004-2005 school year, Construction Trainee was included in the Skills Standards published for Carpentry and Brick Masonry; beginning with the 2004-05 school year, Construction Trainee was removed from these two documents and is now published separately as *Construction Trainee Skills Standards* (OD33001). Construction Trainee is still recognized as an entry-level occupation for Carpentry and Brick Masonry. For the 2004-05 school year and beyond, Construction Trainee is recognized ONLY as a prerequisite to completing the Residential or Commercial Electrical Trades competency test.

Two versions of the competency test for Construction Trainee were previously published—*Carpentry Construction Trainee* (#9306) and *Brick Masonry Construction Trainee* (#9203). One version of this test is now published—*Construction Trainee* (#33001).

MASONRY TRAINEE SKILLS STANDARDS Frequency and Criticality Ratings

- Duty A: Orientation to the Trade
- Duty B: Communication Skills
- Duty C: Employability Skills
- Duty D: Basic Safety
- Duty E: Identify/Safely Use Hand, Power, and Masonry Tools
- Duty F: Introduction to Construction Math
- Duty G: Read/Interpret Blueprints
- Duty H: Measurements, Drawings, and Specifications
- Duty I: Mortar
- Duty J: Masonry Units and Installation Techniques
- Duty K: Residential Masonry
- Duty L: Grout and Other Reinforcement
- Duty M: Metal Work in Masonry
- Duty N: Construction Techniques and Moisture Control
- Duty O: Elevated Work
- Duty P: Repair and Renovate Brick Work

Frequency: represents how often the task is performed on the job. Frequency rating scales vary for different occupations. The rating scale used in this publication is presented below:

- 1 = less than once a week
- 2 = at least once a week
- 3 = once or more a day

Criticality: denotes the level of consequence associated with performing a task incorrectly. The rating scale used in this publication is presented below:

- 1 = slight
- 2 = moderate
- 3 = extreme

Duty A: Orientation to the Trade

CODE	TASK	F/C
	Level One (Introduction to Masonry)	
A.01	Discuss the history and uses of masonry.	1 / 2
A.02	Describe modern masonry materials and methods.	2 / 2
A.03	Understand career ladders and advancement possibilities in masonry work.	2 / 2

A.04	Describe the skills, attitudes, and abilities needed to work as a mason.	2 / 2
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Duty B: Communication Skills

CODE	TASK	F/C
	Core Competencies	
B.01	Demonstrate the ability to understand information and instructions that are presented in both written and verbal form.	2 / 3
B.02	Demonstrate the ability to communicate effectively in on-the-job situations using written and verbal skills.	2 / 3

Duty C: Employability Skills

CODE	TASK	F/C
	Core Competencies	
C.01	Explain the construction industry, the role of the companies that make up the industry, and the role of individual professionals in the industry.	2 / 2
C.02	Demonstrate critical thinking skills and the ability to solve problems using those skills.	3 / 3
C.03	Demonstrate knowledge of computer systems and explain common uses for computers in the construction industry.	1 / 2
C.04	Demonstrate effective relationship skills with teammates and supervisors, exhibit the ability to work on a team, and demonstrate appropriate leadership skills.	2 / 2
C.05	Be aware of workplace issues such as sexual harassment, stress, and substance abuse.	2 / 2

DUTY D: Basic Safety

CODE	TASK	F/C
	Core Competencies	
D.01	Identify the responsibilities and personal characteristics of a professional craftsman.	2 / 2
D.02	Explain the role that safety plays in the construction crafts.	2 / 3
D.03	Describe what job-site safety means.	2 / 3
D.04	Explain the appropriate safety precautions around common job-site hazards.	2 / 2
D.05	Demonstrate the use and care of appropriate personal protective equipment. <ul style="list-style-type: none"> • Hard hat • Safety glasses • Ear protection • Clothing, jewelry, footwear • Dust masks • Steel toed boots 	3 / 3
D.06	Follow safe procedures for lifting heavy objects. <ul style="list-style-type: none"> • Apply ergonomics 	3 / 3
D.07	Describe safe behavior on and around ladders and scaffolds.	3 / 3

D.08	Describe and demonstrate knowledge of the Occupational Safety and Health Act (OSHA) <ul style="list-style-type: none"> HazCom and MSDS bloodborne pathogens 	2 / 3
D.09	Describe fire prevention and fire fighting techniques.	2 / 2
D.10	Define safe work procedures around electrical hazards.	2 / 3

Duty E: Identify/Safely Use Hand and Power Tools

CODE	TASK	F/C
	Level One (Masonry Tools and Equipment)	
E.01	Identify and name the tools used in performing masonry work.	3 / 3
E.02	Identify and name the equipment used in performing masonry work.	3 / 3
	Masonry (Introduction and Safety)	
E.03	Describe how each tool is safely used and maintained.	3 / 3
	Level One (Masonry Tools and Equipment)	
E.04	Describe how the equipment is safely used and maintained.	3 / 3
E.05	Use the correct procedures for fueling and starting a gasoline-powered tool.	2 / 2
E.06	Associate trade terms with the appropriate tools and equipment.	3 / 3
E.07	Demonstrate the correct procedures for assembling and disassembling scaffolding according to federal safety regulations, under the supervision of a competent person.	3 / 3

Duty F: Introduction to Construction Math

CODE	TASK	F/C
	Core Competencies	
F.01	Add, subtract, multiply, and divide whole numbers, with a calculator.	3 / 3
F.02	Use a standard ruler to measure.	3 / 3
F.03	Add, subtract, multiply, and divide fractions.	2 / 2
F.04	Add, subtract, multiply, and divide decimals, with a calculator.	2 / 2
F.05	Convert decimals to percents and percents to decimals.	2 / 2
F.06	Convert fractions to decimals and decimals to fractions.	2 / 3
F.07	Recognize and use standard units of length, weight, volume, and temperature.	2 / 2
F.08	Recognize some of the basic shapes used in the construction industry and apply basic geometry to measure them.	3 / 3

Duty G: Read/Interpret Blueprints

CODE	TASK	F/C
	Core Competencies (Introduction to Blueprints)	
G.01	Recognize and identify basic blueprint terms, components, and symbols.	2 / 3
G.02	Relate information on blueprints to actual locations on the print.	2 / 2
G.03	Recognize different classifications of drawings.	2 / 2

G.04	Interpret and use drawing dimensions.	2 / 2
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Duty H: Measurements, Drawings, and Specifications

CODE	TASK	F/C
	Level One and Masonry (Mathematics, Drawings, and Specifications)	
H.01	Work with numbers involved in the masonry trade	3 / 3
H.02	Read a mason's measure.	3 / 3
H.03	Recognize, identify, and calculate areas, circumferences, and volumes of basic geometric shapes.	3 / 3
H.04	Identify the basic parts of a set of drawings.	3 / 3

Duty I: Mortar

CODE	TASK	F/C
	Level One (Masonry)	
I.05	Name and describe the primary ingredients in mortar and their properties.	3 / 3
I.06	Identify the various types of mortar used in masonry work.	3 / 3
I.07	Describe the common admixtures and their uses.	3 / 3
I.08	Identify the common problems found in mortar application and their solutions.	3 / 3

Duty J: Masonry Units and Installation Techniques

CODE	TASK	F/C
	Level One (Masonry)	
J.01	Describe the most common types of masonry units.	3 / 3
J.02	Describe and demonstrate how to set up a wall.	3 / 3
J.03	Lay a dry bond.	3 / 3
J.04	Spread and furrow a bed joint, and butter masonry units.	3 / 3
J.05	Describe the different types of masonry bonds.	3 / 3
J.06	Cut brick and block accurately.	3 / 3
J.07	Lay masonry units in a true course.	3 / 3

Duty K: Residential Masonry

CODE	TASK	F/C
	Masonry	
K.01	Understand the requirements for construction of various types of residential foundations.	2 / 2
K.02	Identify and explain the characteristics, uses, and installation techniques for brick pavers.	2 / 2
K.03	Lay out and construct steps, patios, and decks made from masonry units.	2 / 2
K.04	Lay out and construct chimneys and fireplaces.	2 / 3

Duty L: Grout and Other Reinforcement

CODE	TASK	F/C
	Masonry	
L.01	Name and describe the primary ingredients in grout and their properties.	3 / 3
L.02	Identify the different types of grout used in masonry work.	2 / 3
L.03	Describe the common admixtures and their uses.	2 / 3
L.04	Describe the use of steel bar reinforcement in masonry construction.	2 / 2
L.05	Use the proper techniques to apply grout in low and high lifts.	2 / 2

Duty M: Metal Work in Masonry

CODE	TASK	F/C
	Masonry	
M.01	Describe the uses and installation of vertical reinforcement.	2 / 2
M.02	Describe the uses and installation of different types of horizontal joint reinforcements and ties.	2 / 2
M.03	Describe the uses and installation of different anchors, fasteners, and embedded items.	2 / 2
M.04	Describe the installation of hollow metal frames.	2 / 2
M.05	Describe the functions and installations of sills and lintels.	2 / 2

Duty N: Construction Techniques and Moisture Control

CODE	TASK	F/C
	Masonry	
N.01	Explain and demonstrate techniques for constructing masonry around windows, doors, and other openings.	3 / 3
N.02	Explain the requirements for wall bracing and demonstrate the techniques used to construct pilasters and other types of bracing.	2 / 2
N.03	Identify the various types of insulation used in conjunction with masonry construction and explain installation techniques.	2 / 2
N.04	Identify the need for moisture control in various types of masonry construction and demonstrate the techniques used to eliminate moisture problems.	2 / 2

Duty O: Elevated Work

CODE	TASK	F/C
	Masonry	
O.01	Describe the appropriate steps necessary for setting up and maintaining elevated workstations.	2 / 2
O.02	Properly operate material handling and hoisting equipment.	2 / 2
O.03	Describe the safety requirements and guidelines employed in elevated and high-rise construction.	1 / 1
O.04	Describe basic activities that can be used on the job to prevent elevated workstation accidents.	2 / 2
O.05	Understand scaffolding positioning and how it affects laying technique.	2 / 2

DUTY P: Repair and Renovate Brick Work

CODE	TASK	F/C
P.01	Use personal safety protection items as required <ul style="list-style-type: none">• Safety glasses• Gloves• Hard hat• Respirator• Hearing protection• Steel toed boots	3 / 3
P.02	Mark the damaged brick(s) to be removed	1 / 1
P.03	Remove damaged brick using hand tools	2 / 3
P.04	Remove damaged bricks using power tools	2 / 3
P.05	Clean up the area before beginning the repair/renovation of the wall	2 / 2
P.06	Replace damaged bricks <ul style="list-style-type: none">• Tuckpointing• Tool joint	3 / 3

**MASONRY TRAINEE
SKILLS STANDARDS**

**Crosswalk of Curriculum and National Standards to
CIMC Curriculum**

AS=Assignment Sheet

JS=Job Sheet

Curriculum:

- 1) Fundamentals of Bricklaying
- 2) Brick and Block Masonry
- 3) Stone, Panel, and Tile Installation

Duty A: Orientation to the Trade

CODE	TASK	Curriculum
	Level One (Introduction to Masonry)	
A.01	Discuss the history and uses of masonry.	
A.02	Describe modern masonry materials and methods.	
A.03	Understand career ladders and advancement possibilities in masonry work.	1) A1.1-A1.2
A.04	Describe the skills, attitudes, and abilities needed to work as a mason.	1) A1.3-A.113 AS A1-1 to A1-7

Duty B: Communication Skills

CODE	TASK	Curriculum
	Core Competencies	
B.01	Demonstrate the ability to understand information and instructions that are presented in both written and verbal form.	
B.02	Demonstrate the ability to communicate effectively in on-the-job situations using written and verbal skills.	

Duty C: Employability Skills

CODE	TASK	Curriculum
	Core Competencies	
C.01	Explain the construction industry, the role of the companies that make up the industry, and the role of individual professionals in the industry.	
C.02	Demonstrate critical thinking skills and the ability to solve problems using those skills.	
C.03	Demonstrate knowledge of computer systems and explain common uses for computers in the construction industry.	
C.04	Demonstrate effective relationship skills with teammates and supervisors, exhibit the ability to work on a team, and demonstrate appropriate leadership skills.	
C.05	Be aware of workplace issues such as sexual harassment, stress, and substance abuse.	

DUTY D: Basic Safety

CODE	TASK	Curriculum
	Core Competencies	
D.01	Identify the responsibilities and personal characteristics of a professional craftsperson.	
D.02	Explain the role that safety plays in the construction crafts.	1) A2.2-A2.3
D.03	Describe what job-site safety means.	1) A2.4, A2.19-A2.20 AS A2-1 & A2-2
D.04	Explain the appropriate safety precautions around common job-site hazards.	1) A2.4, A2.19-A2.20 AS A2-1 & A2-2
D.05	Demonstrate the use and care of appropriate personal protective equipment. <ul style="list-style-type: none"> • Hard hat • Safety glasses • Ear protection • Clothing, jewelry, footwear • Dust masks • Steel toed boots 	1) A2.18
D.06	Follow safe procedures for lifting heavy objects. <ul style="list-style-type: none"> • Apply ergonomics 	1) A2.21 JS A2-1
D.07	Describe safe behavior on and around ladders and scaffolds.	1) A2.5-A2.6 C3.6-C3.9, C3.18 AS C3-1
D.08	Describe and demonstrate knowledge of the Occupational Safety and Health Act (OSHA) <ul style="list-style-type: none"> • HazCom and MSDS • bloodborne pathogens 	1) A2.4, A2.10-A2.16
D.09	Describe fire prevention and fire fighting techniques.	1) A2.9
D.10	Define safe work procedures around electrical hazards.	1) A2.4

Duty E: Identify/Safely Use Hand and Power Tools

CODE	TASK	Curriculum
	Level One (Masonry Tools and Equipment)	
E.01	Identify and name the tools used in performing masonry work.	1) C1.1-C1.3
E.02	Identify and name the equipment used in performing masonry work.	1) C3.1, C3.3, C3.11 C4, all
	Masonry (Introduction and Safety)	
E.03	Describe how each tool is safely used and maintained.	1) C1.4-C1.12 C1.16A to C1.16D JS C1-1 to C1-4 C4, all 2) A1.14
	Level One (Masonry Tools and Equipment)	
E.04	Describe how the equipment is safely used and maintained.	1) C3.2, C3.12, C4 all, E1.5, E1.10, E1.15

E.05	Use the correct procedures for fueling and starting a gasoline-powered tool.	2) A1.14
E.06	Associate trade terms with the appropriate tools and equipment.	
E.07	Demonstrate the correct procedures for assembling and disassembling scaffolding according to federal safety regulations, under the supervision of a competent person.	1) C3.1, C3.4-C3.10, C3.19a JS C3-1

Duty F: Introduction to Construction Math

CODE	TASK	Curriculum
	Core Competencies	
F.01	Add, subtract, multiply, and divide whole numbers, with a calculator.	1) B1.1-B1.7
F.02	Use a standard ruler to measure.	
F.03	Add, subtract, multiply, and divide fractions.	1) B1.8-B1.15
F.04	Add, subtract, multiply, and divide decimals, with a calculator.	1) B1.16-B1.20
F.05	Convert decimals to percents and percents to decimals.	1) B1.21-B1.24
F.06	Convert fractions to decimals and decimals to fractions.	1) B1.21-B1.24
F.07	Recognize and use standard units of length, weight, volume, and temperature.	1) B1.25-B1.30
F.08	Recognize some of the basic shapes used in the construction industry and apply basic geometry to measure them.	1) B1.25-B1.26

Duty G: Read/Interpret Blueprints

CODE	TASK	Curriculum
	Core Competencies (Introduction to Blueprints)	
G.01	Recognize and identify basic blueprint terms, components, and symbols.	
G.02	Relate information on blueprints to actual locations on the print.	
G.03	Recognize different classifications of drawings.	1) B3.2
G.04	Interpret and use drawing dimensions.	1) B3.13-B3.17 AS B3-1 TO B3-17

Duty H: Measurements, Drawings, and Specifications

CODE	TASK	Curriculum
	Level One and Masonry (Mathematics, Drawings, and Specifications)	
H.01	Work with numbers involved in the masonry trade	
H.02	Read a mason's measure.	1) B2.1-B2.5
H.03	Recognize, identify, and calculate areas, circumferences, and volumes of basic geometric shapes.	1) B1.25-B1.30
H.04	Identify the basic parts of a set of drawings.	1) B3.1-B3.9

Duty I: Mortar

CODE	TASK	Curriculum
	Level One (Masonry)	

I.05	Name and describe the primary ingredients in mortar and their properties.	2) A1.3
I.06	Identify the various types of mortar used in masonry work.	2) A1.1, A1.4, A1.6 3) C3.9
I.07	Describe the common admixtures and their uses.	2) A1.9
I.08	Identify the common problems found in mortar application and their solutions.	2) A1.5, A1.7-A1.8 A1.10-A1.11

Duty J: Masonry Units and Installation Techniques

CODE	TASK	Curriculum
	Level One (Masonry)	
J.01	Describe the most common types of masonry units.	2) A2.1-A2.8
J.02	Describe and demonstrate how to set up a wall.	2) A2.1-A2.3, B2.9 B2.14-B2.16B JS B2-1 & B2-2
J.03	Lay a dry bond.	2) A2.15, JS A2-1
J.04	Spread and furrow a bed joint, and butter masonry units.	
J.05	Describe the different types of masonry bonds.	2) A2.9-A2.14 B2.10-B2.11
J.06	Cut brick and block accurately.	1) C2.7 JS C2-1 TO C2-3
J.07	Lay masonry units in a true course.	2) B1, all & B2.4-B2.8 JS B1-1 to B1-6

Duty K: Residential Masonry

CODE	TASK	Curriculum
	Masonry	
K.01	Understand the requirements for construction of various types of residential foundations.	3) A1, all
K.02	Identify and explain the characteristics, uses, and installation techniques for brick pavers.	2) B4.8-B4.13, B4.29 JS B4-1
K.03	Lay out and construct steps, patios, and decks made from masonry units.	3) A1.10A to A1.10C C3, all JS A1-1 to A1-3 JS C3-1 & C3-2
K.04	Lay out and construct chimneys and fireplaces.	2) B3, all JS B3-1 to B3-4

Duty L: Grout and Other Reinforcement

CODE	TASK	Curriculum
	Masonry	
L.01	Name and describe the primary ingredients in grout and their properties.	2) B2.12
L.02	Identify the different types of grout used in masonry work.	2) B2.12, B4.15-B4.16 3) C3.10-C3.14
L.03	Describe the common admixtures and their uses.	

L.04	Describe the use of steel bar reinforcement in masonry construction.	2) A3, all & B2.13 JS A3-1 to A3-2
L.05	Use the proper techniques to apply grout in low and high lifts.	

Duty M: Metal Work in Masonry

CODE	TASK	Curriculum
	Masonry	
M.01	Describe the uses and installation of vertical reinforcement.	2) B4.18-B4.19
M.02	Describe the uses and installation of different types of horizontal joint reinforcements and ties.	3) A4, all JS A4-1 to A4-7
M.03	Describe the uses and installation of different anchors, fasteners, and embedded items.	2) A3.2
M.04	Describe the installation of hollow metal frames.	
M.05	Describe the functions and installations of sills and lintels.	3) A3, all JS A3-1 to A3-2

Duty N: Construction Techniques and Moisture Control

CODE	TASK	Curriculum
	Masonry	
N.01	Explain and demonstrate techniques for constructing masonry around windows, doors, and other openings.	2) B4.1-B4.7
N.02	Explain the requirements for wall bracing and demonstrate the techniques used to construct pilasters and other types of bracing.	
N.03	Identify the various types of insulation used in conjunction with masonry construction and explain installation techniques.	2) B4.20-B4.22
N.04	Identify the need for moisture control in various types of masonry construction and demonstrate the techniques used to eliminate moisture problems.	1) E2, all JS E2-1 TO E2-4

Duty O: Elevated Work

CODE	TASK	Curriculum
	Masonry	
O.01	Describe the appropriate steps necessary for setting up and maintaining elevated workstations.	
O.02	Properly operate material handling and hoisting equipment.	1) C3.13
O.03	Describe the safety requirements and guidelines employed in elevated and high-rise construction.	
O.04	Describe basic activities that can be used on the job to prevent elevated workstation accidents.	
O.05	Understand scaffolding positioning and how it affects laying technique.	1) C3.13-C3.10, C3.19a JS C3-1

DUTY P: Repair and Renovate Brick Work

CODE	TASK	Curriculum
P.01	Use personal safety protection items as required <ul style="list-style-type: none"> • Safety glasses 	1) A2.18

	<ul style="list-style-type: none"> • Gloves • Hard hat • Respirator • Hearing protection • Steel toed boots 	
P.02	Mark the damaged brick(s) to be removed	
P.03	Remove damaged brick using hand tools	
P.04	Remove damaged bricks using power tools	
P.05	Clean up the area before beginning the repair/renovation of the wall	
P.06	Replace damaged bricks <ul style="list-style-type: none"> • Tuckpointing • Tool joint 	