

JOB TASK ANALYSIS



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CLAY AND CONCRETE TILE SYSTEMS INSTALLER



NATIONAL ROOFING CONTRACTORS ASSOCIATION





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Job Task Analysis for ProCertified® Clay and Concrete Tile Systems Installer Certification

Introduction

This document presents an in-depth Job Task Analysis for professionals who install clay and concrete tile roof systems. A committee of subject matter experts who have extensive experience with installing these systems participated in developing this JTA to create the NRCA ProCertified Clay and Concrete Tile Systems Installer certification. This document also adopts applicable knowledge, skills and abilities referenced in the most recent editions of The NRCA Roofing Manual and certain installation guides published by Tile Roofing Industry Alliance.

Purpose and Scope

This JTA defines the general body of knowledge, skills and abilities typically performed by professional installers of clay and concrete tile roof systems.

A JTA is a foundational document for developing all certification programs. It helps define the requirements for the assessment and credentialing of system installers. Further, it helps establish the requirements for recognizing or accrediting related training and educational programs and in developing curricula. The tasks listed in this document—or modified versions thereof—may be used by states or organizations that wish to develop requirements for education or training to qualify existing or new industry installers. This JTA is intended to be all-inclusive of the knowledge, skills, abilities and attitudes expected for any qualified installer of clay and concrete tile roof systems.

Limits and Exceptions

In general, the job tasks listed in this document are grouped into common themes, or domains, which include: project safety; general work practices and communications; system materials; tools and equipment; materials installation; flashings and accessories installation; and housekeeping. Note the listed general workplace safety and general work practices and communication tasks are common to most system installations.

As noted, this JTA includes specific knowledge, skills and abilities for installing clay and concrete tile roof system flashings. Flashing designs typically include a variety of field-constructed, shop-fabricated and premanufactured accessories used to weatherproof the system at interruptions, penetrations and terminations. Many of these accessories are fabricated using other materials, including different metals, plastics and other materials. NRCA recognizes these accessories are integral components of successful system design that manufacturers may require to be integrated into a system installation to meet system performance requirements. However, the skill sets required for fabricators and installers of metal components in many cases are significantly different from those required for installers of clay and concrete tiles. Therefore, only the installation skills for flashing and accessory components typically performed by clay and concrete tile system installers are included in this JTA. It should be noted many related flashing and accessory installation skills are included in other ProCertification JTA documents.



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The NRCA ProCertified Clay and Concrete Tile Systems Installer certification is not a license to practice nor does it supersede any licensing requirements. It is assumed NRCA ProCertified Clay and Concrete Tile Systems Installers will comply with applicable federal, state and local laws and regulations. The tasks listed in this JTA will not all be relevant to every installation. Rather, they are meant as a comprehensive list of all tasks that could apply depending on the scope and complexity of any given installation. It also should be noted the tasks under each subsection are not necessarily listed in a prioritized order within a topic area.

NRCA ProCertified® Clay and Concrete Tile Systems Installer Examination Specifications

DOMAIN	DESCRIPTION	PERCENTAGE
1	Project safety	18%
2	General work practices and communications	4%
3	System materials	4%
4	Tools and equipment	9%
5	Materials installation	43%
6	Flashings and accessories installation	20%
7	Job-site housekeeping	2%
	Total:	100%



Job Description	Given instructions for installing a specific clay or concrete tile roof system, a ProCertified® Clay and Concrete Tile Systems Installer must be able to:	
DOMAIN 1	PROJECT SAFETY	18%
<i>General workplace safety</i>		
1.1	Comply with all employer’s safety instructions, policies and rules	
1.2	Participate actively in discussions with supervisors (e.g., foreman, superintendent or safety director) about specific hazards likely to be found on a job site and their controls before the start of each day’s work	
1.3	Ask supervisors to explain unclear safety instructions	
1.4	Notify supervisors and other crew members immediately of any unsafe work conditions discovered during construction and implement corrective actions, if feasible, to ensure safety of others.	
1.5	Recognize the specific safety regulations published by the Occupational Safety and Health Administration (OSHA) or other organizations with jurisdiction that may apply to a given job site	
<i>Specific workplace safety</i>		
1.6	Confirm fall-protection systems are set up during all construction phases	
1.7	Use and maintain fall-protection system(s) following manufacturer’s and employer’s policies and instructions	
1.8	Identify safety equipment and devices required to meet project requirements	
1.9	Locate safety data sheets for all materials being used on the job	
1.10	Review and implement the information provided in SDSs	
1.11	Select and wear required personal protective equipment when hazards are present	
1.12	Maintain PPE following manufacturer’s instructions and employer’s policies and instructions	
1.13	Determine safe, and efficient roof access locations	
1.14	Select, set up and use ladders following manufacturer’s and employer’s instructions and policies before each day’s use	
1.15	Lift, move and set materials, tools and equipment without injuring oneself or others	
1.16	Use hand and power tools only after receiving training	
1.17	Inspect all hand and power tools and equipment for damage before use	
1.18	Tag and remove damaged tools or equipment from job sites and report them to supervisors and other crew members following employer’s policies and instructions	
DOMAIN 2	GENERAL WORK PRACTICES AND COMMUNICATIONS	4%
2.1	Define basic roofing terminology	
2.2	Perform basic roof calculations and measurements	
2.3	Accurately follow all instructions given for a projects’ specification	
2.4	Ask questions to review and clarify instructions	
2.5	Review work goals, tasks and objectives with supervisor to start each day	



2.6	Remain flexible when work conditions unexpectedly change	
2.7	Participate in and contribute to problem-solving discussions	
2.8	Collaborate with other team members	
2.9	Share work experience and knowledge with others	
2.10	Arrive at job sites on time	
2.11	Express ideas about ways to improve work processes	
2.12	Respect everyone	
2.13	Actively seek feedback on your performance	
2.14	Notify supervisors when resources are running low	
2.15	Perform all tasks with pride and seek to achieve high-quality standards	
2.16	Take personal responsibility for and report mistakes	
2.17	Continuously seek and actively participate in education and training opportunities that enhance and grow a professional career	
DOMAIN 3	SYSTEM MATERIALS	4%
3.1	Explain the function(s) of all clay or concrete tile roof system materials and accessories	
3.2	Identify the various types of clay or concrete tiles	
3.3	Identify and select the materials and accessories required for a given specification	
3.4	Determine underlayment roll size, types and coverage	
3.5	Determine area of coverage provided by each tile type	
3.6	Locate and review manufacturer's installation instructions	
3.7	Identify potential problems when handling and cutting tile materials	
3.8	Explain how weather conditions may affect tile installations	
3.9	Recognize and react to defective or damaged materials following employer's policies and manufacturer's recommendations	
DOMAIN 4	TOOLS AND EQUIPMENT	9%
4.1	Select the required tools and equipment for a given task	
4.2	Inspect tool and equipment condition before every use	
4.3	Use tools and equipment only for their intended purposes	
4.4	Only operate powered tools and equipment that the candidate has been trained to use and follow manufacturer's instructions	
4.5	Maintain tools and equipment per manufacturer's instructions	
4.6	Select electrical extension cords to match the power requirement of a tool	
4.7	Confirm an adequate ground fault circuit interrupter (GFCI)-protected power source for each tool before use	
4.8	Clean tools and equipment after each use	



DOMAIN 5	MATERIALS INSTALLATION	43%
<i>General preparation</i>		
5.1	Set up and inspect all safety-related equipment and devices	
5.2	Determine the installation sequence for all required system components	
5.3	Determine fastening patterns and attachment requirements for all materials and accessories	
5.4	Stage and position all required materials, tools and equipment	
5.5	Inspect all materials and accessories for damage; replace as necessary	
<i>Substrate preparation</i>		
5.6	Visually inspect substrate to ensure it is secure, firm, smooth, clean, frost-free and dry before installing materials	
5.7	Notify supervisor and other crew members immediately of any deteriorated or otherwise unacceptable substrate conditions discovered during construction and implement corrective actions, if feasible, to ensure safety of others	
5.8	Repair unacceptable substrate conditions as instructed by supervisor	
<i>Underlayment layout and attachment</i>		
5.9	Sequence and install all types of underlayment to meet project requirements and manufacturer's instructions	
5.10	Lap underlayment and flashing materials to ensure water flows over the laps, penetration flashings and accessories and not against them	
5.11	Unroll, remove release film and adhere water and ice dam protection membranes without wrinkles, buckles or voids	
5.12	Unroll underlayment without wrinkles, buckles or voids and attach as specified	
5.13	Set and maintain specified underlayment sidelaps and endlaps	
5.14	Ensure ventilation openings are unobstructed after underlayment installation is completed	
5.15	Repair or replace damaged underlayment before covering with tile	
<i>Batten, vertical stringer, hip and ridge nailer layout and attachment</i>		
5.16	Ensure batten or vertical stringer placement meets requirements for tile type and job conditions	
5.17	Determine the position of the first and last tile courses	
5.18	Measure, mark and chalk lines to achieve straight and parallel horizontal and vertical tile alignment to meet project requirements and manufacturer's instructions	
5.19	Measure, cut and attach battens, counterbattens, shims and eave cant strips	
5.20	Measure, cut and attach specified hip and ridge nailers	
<i>Tile layout and attachment</i>		
5.21	Determine loading locations and tile quantities to meet project requirements and manufacturer's instructions.	
5.22	Determine tile installation sequence following project requirements and related manufacturer's instructions	
5.23	Verify and select fastener types and lengths to meet project requirements and manufacturer's instructions	
5.24	Cut battens, tiles and accessories without damaging underlying materials	



5.25	Set, align and attach eave closures or bird stops as required
5.26	Set, align and attach all tiles to ensure positive water drainage
5.27	Ensure tile alignment and even courses are maintained on all slopes
5.28	Maintain manufacturer's minimum specified headlap on all slopes
5.29	Ensure all fasteners are not underdriven or overdriven
5.30	Ensure all mechanically fastened tiles are firmly attached in proper nail holes to meet project requirements and manufacturer's instructions
5.31	Attach tiles using spray-applied foam adhesives
5.32	Cut, set and attach tiles around penetrations and dormers while maintaining specified overlap, exposure and alignment
5.33	Cut, set and attach field tiles into valleys and against hip nailers using various attachment methods
5.34	Ensure ventilation openings are unobstructed in the finished roof system
5.35	Replace any cracked or damaged tiles by the end of each day's work
DOMAIN 6	FLASHINGS AND ACCESSORIES INSTALLATION 20%
6.1	Identify all components of a specific flashing detail
6.2	Demonstrate knowledge of the function(s) of all flashing detail components
6.3	Stage and position all required flashing materials, tools and equipment
6.4	Determine and follow the installation sequence for all required flashing components and accessories
6.5	Determine the attachment method for each flashing component and accessory, including fastener type and locations to meet project requirements and manufacturer's instructions
6.6	Install ventilation accessories including continuous ridge, static, mechanical and powered vents
6.7	Install drip edge metal flashings at perimeter rake and eave edges in proper sequence with underlayment materials to meet project requirements and manufacturer's instructions
6.8	Install valley metal to meet project requirements and manufacturer's instructions
6.9	Prepare, cut, align and attach hip and ridge tiles and seal fastener penetrations
6.10	Prepare, cut, align and attach rake trim tiles according to manufacturer's instructions
6.11	Install deck flashing components where an attachment or penetration is made to or through the roof deck
6.12	Install top flashing components where an attachment or penetration is made to or through the roof deck
6.13	Install vertical surface flashing components and accessories where tiles intersect walls, chimneys and curbs, including apron, pan, step, kickout, backer or cricket flashings
6.14	Install transition flashing at all roof slope transitions, including steep to low, low to steep and steep to steep transition areas
6.15	Apply weather-blocking materials at all flashing, hip and ridge and accessory details to meet project requirements and manufacturer's instructions



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DOMAIN 7	JOB-SITE HOUSEKEEPING	2%
7.1	Continuously remove construction waste and debris from all substrates, roof surfaces, curbs, chimneys, vents, skylights or other roof surfaces and job-site grounds	
7.2	Remove dust from cutting tile by the end of each day	
7.3	Immediately clean spills of mastics, sealants, solvents or chemicals from roof surfaces	
7.4	Continuously keep gutters or other roof drainage systems clear of materials or debris	
7.5	Maintain clean footwear on all installed tile surfaces	
7.6	Immediately correct any incidental damage to newly installed tiles following manufacturer's guidelines	
7.7	Ensure completed roofing project is left clean and free of scrap, excess fasteners, waste materials or other debris	