

JOB TASK ANALYSIS



NRCA
PROCertification®

SLATE SYSTEMS INSTALLER



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NATIONAL ROOFING CONTRACTORS ASSOCIATION





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Job Task Analysis for ProCertified® Slate Systems Installer Certification

Introduction

This document presents an in-depth Job Task Analysis for professionals who install natural slate 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 slate systems certification. This document also adopts applicable knowledge, skills and abilities referenced in The NRCA Roofing Manual.

Purpose and Scope

This JTA defines the general body of knowledge, skills and abilities typically performed by professional installers of natural slate 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 a robust but not exhaustive list of the knowledge, skills, abilities, and attitudes the NRCA expects from any qualified installer of natural slate 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 natural slate systems. Flashing designs typically include a variety of field-constructed, shop-fabricated and premanufactured accessories used to weatherproof the system at walls, changes in plane, penetrations and terminations. Many of these accessories are fabricated using other materials, including different metals, polymer-coated metals, and various underlayments and fasteners. NRCA recognizes these accessories are integral components of successful system design that are required to be integrated into the system installation to meet system performance requirements. It should be noted many of the related flashing and accessory installation skills are included in other ProCertification JTA documents.

NRCA ProCertified slate roof system certification is not a license to practice nor does it supersede any licensing requirements. It is assumed NRCA ProCertified slate roof system 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® Slate Systems Installer Examination Specifications

DOMAIN	DESCRIPTION	PERCENTAGE
1	Project safety	18%
2	General work practices and communications	4%
3	System materials	12%
4	Tools and equipment	13%
5	Materials installation	30%
6	Flashings and accessories installation	20%
7	Job-site housekeeping	3%
	Total:	100%

Job Description	Given instructions for installing a specific natural slate system, a ProCertified® Slate 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 stop work or implement corrective actions, if feasible, to ensure the 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 the 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 procedures for each day's use	
1.13	Determine safe and efficient roof access and egress locations	
1.14	Select, inspect, 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 without injuring yourself 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	
1.19	Confirm an adequate ground fault circuit interrupter-protected power source for each tool before use	
1.20	Identify hazards when handling and cutting sharp-edged materials	

DOMAIN 2	GENERAL WORK PRACTICES AND COMMUNICATIONS	4%
2.1	Define basic natural slate roofing terminology	
2.2	Perform basic roof calculations and measurements for laying out a natural slate roof and determine roof slope	
2.3	Review project specifications and follow supervisor's instructions	
2.4	Ask questions to 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 and express ideas about how to improve work processes	
2.10	Arrive at job sites on time	
2.11	Notify supervisors when resources are running low	
2.12	Perform all tasks with pride and achieve high-quality standards	
2.13	Take personal responsibility for and report mistakes	
2.14	Continuously seek and actively participate in education and training opportunities that enhance and grow a professional career	
2.15	Install and maintain temporary roof protection as required to maintain a weathertight roof throughout the installation process	
DOMAIN 3	SYSTEM MATERIALS	12%
3.1	Verify that slate color, type (origin) and size variations meet job requirements	
3.2	Identify and remove slates that contain pyrite/other impurities; are warped; or contain damaging knots, knurls, or cramps	
3.3	Ring slates and immediately remove any broken or unacceptable slates before installation,	
3.4	Verify/select compatible accessory materials and fasteners.	
DOMAIN 4	TOOLS AND EQUIPMENT	13%
4.1	Select the required tools and equipment for a given task	
4.2	Inspect tools and equipment condition before every use	
4.3	Use tools and equipment only for their intended purposes	
4.4	Cut and trim slates using the appropriate tool for detail or the thickness of the slates 68	
4.5	Punch nail holes in slates using a slater's hammer, nail set or other type of punch.	

4.6	Drill nail holes in slates in localized areas (e.g., hips for cleats).	
4.7	Install and remove roof planks and roof jacks/slater's roof brackets.	
4.8	Remove slates using a slate ripper.	
4.9	Know when and how to remove roof access equipment (i.e., how to break down the project).	
DOMAIN 5	MATERIALS INSTALLATION	30%
<i>General preparation</i>		
5.1	Determine the installation sequence for all required system components.	
5.2	Stage and position all required materials, tools and equipment	
5.3	Inspect all materials and accessories for damage; replace as necessary	
5.4	Blend, sort and cull slates to meet project requirements.	
<i>Substrate preparation</i>		
5.5	Visually inspect substrate to ensure it is secure, firm, smooth, planar, clean, frost-free, and dry before installing materials.	
5.6	Notify supervisor and other crew members immediately of any deteriorated substrate conditions discovered during construction and implement corrective actions, if feasible, to ensure the safety of others.	
5.7	Repair substrate defects as directed by supervisor.	
<i>Underlayment layout and attachment</i>		
5.8	Determine sequencing for underlayment installation.	
5.9	Lap underlayment materials (side laps and end laps; laps between different underlayment materials) as specified and in accordance with manufacturer's instructions.	
5.10	Unroll and attach underlayment without wrinkles, buckles, or voids and attach as specified.	
5.11	Ensure all openings are marked and unobstructed after underlayment placement	
5.12	Repair or replace damaged underlayment immediately and before covering with slates.	
<i>Slates layout and attachment</i>		
5.13	Install cant and starter slates at eave as specified.	
5.14	Measure and mark layout for horizontal and vertical alignment installation of the slates.	
5.15	Install all slates measuring from the eave to achieve and maintain required exposure and head lap appropriate for the roof's slope.	
5.16	Determine slate layout when slating up and around roof projections, such as dormers, to avoid narrow slates and for courses to align properly.	

5.17	Determine and select nail types and lengths to meet project requirements.	
5.18	Maintain specified slate offset (side lap), exposure, head lap and alignment on all slopes.	
5.19	Maintain specified spacing at bond lines (keyways/rain courses).	
5.20	Ensure all nails are firmly attached, driven flush (not overdriven, under-driven or skewed) in specified nail hole locations and there are no exposed nail heads in the completed roof system (except at last installed ridge slate).	
5.21	Cut, set, and attach slates around penetrations and dormers, etc., while maintaining specified drainage space separation, head lap, exposure, offset and alignment.	
5.22	Repair broken slates using the slate hook method and/or the nail and bib method as required by roof placement or project specification.	
5.23	Cut, align, and attach slates in valleys with flashings as specified.	
5.24	Ensure all roof system penetrations and accessories are in place and flashed during placement of slates.	
5.25	Cut, align, and attach ridge and hip slates and associated wood blockers/nailers with flashings, as specified.	
5.26	Immediately mark any broken or cracked slates and remove and replace these slates before completion of the roof.	
5.27	Layout and/or trim approach slates at rakes, valleys, walls and elsewhere as required to avoid use of sliver (narrow) slates and maintain required minimum offset.	
5.28	Adjust (reduce) course exposure several courses below ridge to avoid overly short course at top of slope and ensure proper head lap with ridge slates.	
DOMAIN 6	FLASHINGS AND ACCESSORIES INSTALLATION	20%
6.1	Identify 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.	
6.6	Install fasteners that are galvanically compatible with flashing materials and appropriate for the substrate.	
6.7	Install and secure flashings as specified.	
6.8	Install drip edge metal flashings at perimeter rake and eave edges.	
6.9	Install penetration flashing components, including flanges and accessories, where slates intersect penetrations	
6.10	Install flashing components and accessories at all roof slope transitions, including steep-to-low, low-to-steep and steep-to-steep transition areas.	

6.11	Install skylight flashing components and accessories.
6.12	Install flashings at valleys, vertical walls, chimneys, ridges, hips, and equipment curbs.
6.13	Identify and apply sealant at locations where required.
6.14	Install snow retention systems as specified.
6.15	Work in conjunction with lightning protection system, window, equipment installers and other trades working above the roof line.
DOMAIN 7	JOB-SITE HOUSEKEEPING
	3%
7.1	Continuously remove construction waste and debris from all substrates, roof surfaces, curbs, chimneys, vents, skylights, or other surfaces.
7.2	Continuously keep gutters or other roof drainage systems clear of materials or debris.
7.3	Maintain clean footwear on all installed slate surfaces.
7.4	Protect installed slate surfaces from damage and other construction debris.
7.5	Immediately correct any incidental damage to newly installed slates.
7.6	Ensure every completed roofing project is left clean and free of scrap, excess fasteners, waste materials or other debris.
7.7	Properly store, protect, and secure slate shingles, flashings, and accessory materials on the job site.
7.8	Provide and store “attic stock” (such as maintenance stock or extra slate shingles that can be used for future repair work) as specified.