

# JOB TASK ANALYSIS



**NRCA**  
PROCertification®

## MODIFIED BITUMEN SYSTEMS INSTALLER



NATIONAL ROOFING CONTRACTORS ASSOCIATION





National Roofing Contractors Association  
10255 W. Higgins Road, Suite 600  
Rosemont, IL 60018-5607  
(847) 299-9070  
Website: [nrca.net](http://nrca.net)  
Email: [nrca@nrca.net](mailto:nrca@nrca.net)

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# Job Task Analysis for ProCertified® Modified Bitumen Systems Installer Certification

## Introduction

This document presents an in-depth Job Task Analysis for professionals who install polymer-modified bitumen roof systems. It includes torch-applied, hot-applied, cold-applied and self-adhering application methods.

A committee of subject matter experts who have extensive experience installing these systems developed this JTA to create the NRCA ProCertified Modified Bitumen 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 polymer-modified bitumen 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 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 represents a comprehensive but not exhaustive list of the knowledge, skills, abilities and attitudes the NRCA expects from any qualified installer of polymer-modified bitumen roof systems.

## Limits and Exceptions

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

This JTA includes specific knowledge, skills and abilities for installing polymer-modified bitumen roof systems. Flashing designs typically include various 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, polymer-coated metals and other materials. NRCA recognizes these accessories are integral components of successful system design that manufacturers may require to be integrated into the system installation to meet system performance requirements. Generally, installation skills for these related flashings and accessories are certified separately in other NRCA ProCertification credentials.

The NRCA ProCertified Modified Bitumen Systems certification is not a license to practice nor does it supersede any licensing requirements. It is assumed NRCA ProCertified Modified Bitumen 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.

### NRCA ProCertified® Modified Bitumen Systems Installer Examination Specifications

DOMAIN	DESCRIPTION	PERCENTAGE
1	Project safety	18%
2	General work practices and communications	4%
3	System materials	7%
4	Tools and equipment	8%
5	Materials installation	20%
6	Membrane seaming	20%
7	Flashings and accessories installation	20%
8	Job-site housekeeping	3%
	<b>Total:</b>	<b>100%</b>

<b>Job Description</b>	<b>Given instructions for installing a specific polymer-modified bitumen roof system, a ProCertified Modified Bitumen Systems Installer must be able to:</b>	
<b>Domain 1</b>	<b>PROJECT SAFETY</b>	<b>18%</b>
<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 (such as a 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 the safety of others.	
1.5	Recognize the specific safety regulations published by the Occupational Safety and Health Administration 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 the 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	
1.13	Determine safe and efficient roof access and egress 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 without injuring yourself or others	
1.16	Inspect all hand and power tools and equipment for damage before use	
1.17	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	
1.18	Confirm ground fault circuit interrupter protected power source for each tool before use	
1.19	Identify burn and odor hazards specific to working with polymer-modified systems; select and use required PPE when exposed to them	
1.20	Identify hazards when handling and cutting sharp-edged materials	
1.21	Follow the best safety practices established in the NRCA/MRCA CERTA program when using open-flame roofing equipment	
1.22	Explain the activities, best practices and frequency for conducting a fire watch when using an open-flame roofing torch	

1.23	Describe the risks when using an open-flame torch or mopping hot bitumen around rooftop ventilation equipment (air intake/exhaust)	
1.24	Coordinate with the site safety supervisor to ensure inspected and working fire extinguishers are available near the work being performed	
<b>DOMAIN 2</b>	<b>GENERAL WORK PRACTICES AND COMMUNICATIONS</b>	<b>4%</b>
2.1	Define basic roofing terminology	
2.2	Perform basic roof calculations and measurements	
2.3	Review project specifications and follow supervisor's instructions	
2.4	Ask questions to review and clarify instructions	
2.5	Review work goals, tasks and objectives with the 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 solicit feedback on one's performance	
2.14	Notify supervisors when resources are running low	
2.15	Perform all tasks with pride and achieve high-quality standards	
2.16	Report and take personal responsibility for mistakes	
2.17	Continuously seek and actively participate in education and training opportunities that enhance and grow a professional career	
<b>DOMAIN 3</b>	<b>SYSTEM MATERIALS</b>	<b>7%</b>
3.1	Explain the function(s) of all polymer-modified bitumen system materials and accessories	
3.2	Identify the various types of polymer-modified bitumen roofing materials	
3.3	Locate and review the roof system manufacturer's installation instructions with supervisors before work begins	
3.4	Identify and select the specified materials, fasteners and accessories required for a given application	
3.5	Identify incompatible materials and substrates	
3.6	Handle and cut materials without damaging substrates or underlying materials	
3.7	Describe the effects of varying weather or environmental conditions during application of polymer-modified bitumen materials	
3.8	Describe the difference between embedded metal flashings and base flashings	

<b>DOMAIN 4</b>	<b>TOOLS AND EQUIPMENT</b>	<b>8%</b>
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 and maintain tools and equipment for their intended purposes and per manufacturer's instructions	
4.4	Only operate powered tools and equipment he or she has been trained to use	
4.5	Verify electrical extension cords match the power requirement of a tool	
4.6	Clean and maintain all tools and equipment daily including but not limited to torches, hoses, mops, luggers and propane tanks	
<b>DOMAIN 5</b>	<b>MATERIALS INSTALLATION</b>	<b>20%</b>
<b><i>General preparation: All application methods</i></b>		
5.1	Inspect and verify all fall protection and other safety-related equipment and devices are properly set up and used for the projects' duration, as directed by supervisor	
5.2	Determine the installation sequence for all required roof system components	
5.3	Load, stage and position all required materials, tools and equipment as directed by supervisor	
5.4	Inspect all materials and accessories for damage before application and replace as necessary	
<b><i>Substrate preparation: All application methods</i></b>		
5.5	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	
5.6	Ensure wood nailers, curbs, drains and other penetrations are secured in place	
5.7	Install cant strips as specified including and be able to miter inside and outside corners	
5.8	Visually inspect substrate to ensure it is reasonably smooth, clean, frost-free and dry before installing materials	
5.9	Recognize the need for and perform nightly tie-ins where old roofing materials meet new materials during reroofing projects	
<b><i>Sheet layout and attachment: All application methods</i></b>		
5.10	Determine roll installation sequencing based on the project specification	
5.11	Determine direction(s) to unroll membrane rolls	
5.12	Move, set, align, unroll and adjust sheets as directed in sequenced locations with other crew members, maintaining specified side lap alignment and without wrinkles, buckles, fishmouths or voids	
5.13	Maintain positive water flow over all side laps and seams	
5.14	Unroll, cut and allow sheets to relax to meet manufacturer's specifications	
5.15	Backroll and reset relaxed sheets	
5.16	Unroll and cut membrane field plies or sheets to go around penetrations and maintain consistent side lap and exposure	



5.17	Extend membrane field plies or sheets up onto vertical surface of the flashing substrate beyond the top of cant strips to meet manufacturer's specifications and project requirements
5.18	Stagger sheet side laps from base sheets to meet manufacturer's specifications and project requirements
5.19	Set, align and stagger sheet end laps at specified dimensions
5.20	Terminate field sheets at drain sumps to meet manufacturer's specifications and project requirements
5.21	Select required fasteners and attach membrane sheets in locations that meet manufacturer's specifications and project requirements
5.22	Drive all fasteners straight and true without overdriving or underdriving
<b><i>Membrane application—Torch applied</i></b>	
5.23	Uniformly apply heat to the sheet field and side lap while unrolling membrane without overheating and achieve full sheet adhesion
5.24	Use only a single-burner, low-output (105k Btu or less) "detail" torch or an automated electric hot air welder when sealing side and end lap seams
5.25	Embed granules at granule-to-granule seam and lap locations to meet manufacturer's requirements
5.26	Roll membrane seams with a weighted roller to meet manufacturer's specifications and job-site conditions
5.27	Achieve the manufacturer's specified bitumen bleedout
5.28	Apply and embed seam granules as required while bitumen is hot to achieve desired aesthetics
<b><i>Membrane application—Hot applied</i></b>	
5.29	Maintain and monitor hot bitumen temperature at the point of application to meet manufacturer's specifications and job-site conditions
5.30	Uniformly mop hot bitumen to adhere sheets to substrate using continuous mopping, spot mopping, or mop and flop methods to meet manufacturer's specifications and job-site conditions
5.31	Immediately unroll membrane sheets into hot bitumen without walking on installed membrane
5.32	Control hot bitumen bleedout at side and end laps to meet manufacturer's specifications
5.33	Apply and embed seam granules while bitumen is hot as required to achieve desired aesthetics
<b><i>Membrane application—Cold applied</i></b>	
5.34	Verify substrate conditions meet the membrane manufacturer's requirements before applying primers or adhesives
5.35	List the types of primers and adhesives used in cold-applied systems
5.36	Apply primers or adhesives only when environmental conditions meet manufacturer's requirements
5.37	Apply primers and adhesives using the recommended application tools and meet the manufacturer's specified rates of coverage under the job-site conditions



5.38	Fold, roll or set membrane sheets into cold adhesives without wrinkles, buckles or voids and maintain sheet alignment	
5.39	Achieve adhesive bleedout that meet manufacturer’s specifications	
5.40	Broom or roll in sheets with uniform pressure to promote membrane adhesion and meet manufacturer’s specifications	
5.41	Use only a single-burner, low-output (105k Btu or less) “detail” torch or electric hot air welder to seal side and end laps when heat-fused seams are specified	
5.42	Apply and embed seam granules before adhesives set to achieve desired aesthetics	
<b><i>Membrane application—Self-adhering</i></b>		
5.43	Apply primers to substrate when required and meet manufacturer’s specified rate of coverage	
5.44	Set, align, cut and dry-set membrane sheets in position before applying adhesives or removing release films	
5.45	Fold back dry-set membrane sheets and temporarily hold in place to facilitate release film removal	
5.46	Score, slit and fully remove release films from the folded-back sides of self-adhering sheets without damaging underlying sheet adhesive or reinforcement and without tearing the film	
5.47	Remove any remaining torn release film pieces from membrane adhesive before setting sheets in place	
5.48	Fold self-adhering sheets back into place without wrinkles, buckles or voids and maintain sheet and side lap alignments	
5.49	Immediately broom or roll the entire membrane surface to promote adhesion between membrane and substrate and meet manufacturer’s specifications and job-site conditions	
5.50	Remove side lap seam release film when present after membrane sheets are set in place	
5.51	Hand roll self-adhering side lap seams to meet manufacturer’s specifications	
5.52	Apply cold adhesives at granule-to-granule seams and laps to meet manufacturer’s specifications and job-site conditions	
<b>DOMAIN 6</b>	<b>MEMBRANE SEAMING</b>	<b>20%</b>
6.1	Trim corners of underlying membrane at end laps and T-joints to meet manufacturer’s specifications	
6.2	Inspect completed side and end lap conditions as work progresses to verify weather-tight integrity and immediately correct deficiencies following manufacturer’s recommendations	
6.3	Use weighted seam rollers to promote adhesion between materials and to meet manufacturer’s specifications	

<b>DOMAIN 7</b>	<b>FLASHINGS AND ACCESSORIES</b>	<b>20%</b>
7.1	Recognize where inadequate space is provided between roof drains, curbs, parapet walls and other penetrations and report to supervisors	
7.2	Install backer plies and base flashing sheets at vertical walls and curbs	
7.3	Fasten backer plies and base flashing sheets to substrates to meet manufacturer's specifications and project requirements	
7.4	Install all components of a liquid-applied membrane flashing when specified at vertical walls, curbs and penetrations to meet manufacturer's specifications	
7.5	Apply specified primers to embedded edge and metal flashing components; install backer and membrane stripping plies to meet manufacturer's specifications	
7.6	Install penetration pocket flashings including grout and pourable fillers to meet manufacturer's recommendations	
7.7	Install drain flashings including soft metal components, "target" membrane stripping sheets, clamping rings, bolts and drain accessories to meet manufacturer's specifications and project requirements	
<b>DOMAIN 8</b>	<b>JOB-SITE HOUSEKEEPING</b>	<b>3%</b>
8.1	Maintain a high level of cleanliness of substrates, membrane seams and finished surfaces	
8.2	Continuously remove all construction waste and debris from all rooftop surfaces, curbs, HVAC equipment, skylights or other surfaces during and after daily work	
8.3	Immediately clean spills of adhesives, solvents or chemicals from membrane surfaces	
8.4	Remove any materials or debris that may block roof drainage	
8.5	Ensure sharp-edged materials, fasteners, tools and equipment do not cut, puncture or scrape finished membrane surfaces	
8.6	Ensure every completed roofing project is left clean and free of scrap, waste materials, loose fasteners or other debris	
8.7	Protect all finished membrane surfaces from damage, dirt and other construction debris throughout a project's duration	
8.8	Immediately mark and repair any physical damage that may occur to newly installed membranes following manufacturer's recommendations	