



## Certification Program for Dry Stone Masons

### GENERAL INFORMATION

The Dry Stone Conservancy (DSC) is a publicly supported nonprofit 501(c)3 organization whose purpose is preserving drystone structures and promoting the craft of drystone masonry—the technique of building rock fences and stone walls without mortar.

The Conservancy's Certification Program, federally registered in 2001, is designed to promote public confidence in dry-laid stone as a desirable building technique and in the skills of certified drystone craftsmen. As a part of this purpose, the DSC conducts training courses to teach generally accepted international drystone construction standards, and maintains a register of independent professional masons.

The DSC program is the only national certification program for dry stone craftsmen in the United States. The program was modeled after the highly successful professional registry of the Dry Stone Walling Association of Great Britain (DSWA), and was tailored to the needs of preservationists and professional designers in the United States, including the Kentucky Transportation Cabinet and the National Park Service.

Basic training in drystone fence building is regularly offered in Kentucky for aspiring craftsmen and the general public. Special courses are taught on request in other states for aspiring drystone masons, and at various national and state parks for park maintenance personnel. Advanced training is offered periodically in partnership with sponsoring agencies at restoration sites throughout the country. It is not mandatory, however, to attend a DSC training course to become certified.

All certified professional craftsmen are listed in the List of Certified Dry Stone Craftsmen, which is supplied upon request to government agencies and the general public. This list is posted on the DSC web site: [www.DryStoneUSA.org](http://www.DryStoneUSA.org). Certified craftsmen may incorporate the federally copyrighted DSC Registration Mark on their promotional materials.

For more information about the Conservancy and its programs, please visit our website at [www.drystone.org](http://www.drystone.org) or contact us at:

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859-266-4807

*The mission of the nonprofit Dry Stone Conservancy is to revive and promote the ancient craft of dry-laid stone masonry and to preserve existing drystone structures. The Conservancy is a publicly-supported 501(c)(3) nonprofit organization. Gifts are fully tax-deductible.*

## **CERTIFICATION LEVELS**

The Dry Stone Conservancy has multiple certification levels - for drystone masons, journeymen, master craftsmen, drystone authorities, examiners, instructors, and garden masons. All levels in the certification program are for professional drystone masons

Although participation in the DSC training program is not required for certification, it will be of great assistance in acquiring needed skills. As part of the training, the Instructors show slides and a how-to video, and carefully explain the theories of internationally accepted standards. Courses are hands-on and provide the trainees with instruction in every part of building a double-faced drystone fence, while providing continuous monitoring in the field.

### **BASIC DRYSTONE MASON (Level 1):**

Basic Drystone Mason is the first, beginning, level in the Dry Stone Conservancy's certification program. Candidates who pass the test for correctly building a wallhead, a low retaining wall, and a (timed) drystone fence section, achieve the initial level of Certified Drystone Mason.

### **JOURNEYMAN MASON (Level 2):**

Journeyman Mason is the second level in advancement in the Dry Stone Conservancy's certification program. It is earned by drystone masons with skills above the beginning (basic) level. Journeyman masons are skilled in building and repairing strong field fences, retaining walls, roadside fences, and streambank walls, as well as common drystone features such as curved fences, corners, culverts, and stepped foundations. Their abilities include sound techniques, durable construction, and a good production rate.

It will greatly assist a drystone mason who aspires to journeyman certification to participate in the DSC's training projects or to work with Journeymen or Master Craftsmen. These projects give the masons experience in more advanced construction and production techniques, ensure that they understand the theories of internationally accepted standards, and provide continuous monitoring in the field.

### **MASTER CRAFTSMAN (Level 3):**

Master Craftsman certifies masons who are fully proficient in all aspects of building freestanding fences, retaining walls up to 5 feet in height, special features commonly incorporated in drystone fences, and use of a variety of rock types. In addition to excellence in building drystone fences and retaining walls, the Master Craftsman builds pillars, arches, and stiles. Master Craftsmen must conduct their work in a fully professional manner. Essential requirements are construction techniques that provide structural strength combined with a superior production rate.

### **DRYSTONE AUTHORITY (Level 4):**

Drystone Authority is the highest level of achievement in drystone certification. A Drystone Authority can design, plan, and build advanced drystone structures—road-retaining walls, abutments, bridges, and bridge piers. The Drystone Authority must have attained accreditation as a Certified Master Craftsman, Certified Examiner and Certified Instructor. Candidates must possess distinguished drystone skills and knowledge.

### **INSTRUCTOR CERTIFICATION AND EXAMINER CERTIFICATION:**

Certified Instructor and Certified Examiner awards are given to Master Craftsmen who have taken DSC-sponsored or DSWA training courses, and have passed the requirements to become Certified Instructors and/or Examiners.

## **THE APPLICATION PROCESS**

### **HOW TO APPLY FOR ANY CERTIFICATION LEVEL:**

Prior to beginning any work to be examined or submitting photos of completed work, please obtain the current certification requirements and a Test Application Form from the Dry Stone Conservancy. Complete the form and return it to the DSC with the application fee at least two weeks prior to the test date. DSC's certification exam days are usually held in central Kentucky in the spring and fall.

Applicants may apply for certification at basic, journeyman, and master levels without having been certified at other levels, but they must fulfill all the requirements for all previous certification tests.

### **APPLICATION FEES:**

For all certification levels, a non-refundable fee is payable in advance of assessment, to cover examination costs and examiners' fees. These fees may be periodically adjusted; check with the DSC office for the current fee rates. In 2006 the fees for examinations taking place in central Kentucky on DSC-sponsored Exam Days are \$50 for basic certification, \$100 for journeyman, and \$150 for master craftsman. Candidates may also make special arrangements for examinations outside the central Kentucky region or at times other than DSC-sponsored certification days, but will incur additional charges to cover all expenses.

### **POINTS REQUIRED FOR PASSING:**

For each certification level, the applicant's work must receive minimum passing marks for EACH test detail. A TOTAL of 70 points out of 100 are required to pass tests at Basic level, 78 points for Journeyman, and 85 points for Master level. The points required for each construction detail are provided with DSC test applications and instructions. Correct techniques are explained in the DSC training handbook, *Building and Repairing Dry Stone Fences and Retaining Walls*. Unsuccessful candidates at any level should practice for at least three months before re-applying.

### **THE CERTIFICATION PANEL:**

Field tests at all levels will be conducted by accredited Examiners appointed by the Dry Stone Conservancy. Two Examiners are needed for all levels above Basic. The Examiners will inspect the work, review the photographs, complete the mark sheets, and send a summary of their assessments to the DSC Certification Panel. The Panel will collect references, correlate and evaluate records, and supply reports on the assessments to the applicants.

## **GENERAL REQUIREMENTS, ALL LEVELS**

The DSC will inform expected applicants of the date and place of forthcoming examinations. With permission from the property owner, applicants may visit the site the day before the examination and practice working with the rock. For the basic level only, applicants may dismantle the damaged fence section to bare earth, sort the rock, and prepare the ground prior to the timed test.

For examinations requiring photographs, the photos should be of sufficient detail for analysis, showing (1) the site before any work commenced, (2) the prepared ground and the organization of materials, (3) the completed foundation, (4) the project midway to completion, showing the interior of the structure, (5) the tie level(s), (6) the fence top ready for the cover course, and (7) the completed structure. Please write on the back of each photo the exact location (owner's name, address, distance from the nearest intersection, name of intersection, and location on the property). A sketch map is helpful.

Applicants must submit the names, addresses, and telephone numbers of three clients of their projects so that the Certification Panel may independently obtain opinions regarding the skill and professionalism of the candidates.

All applicants must explain personal safety precautions to the Examiners, as listed in *Building and Repairing Dry Stone Fences and Retaining Walls*.

Applicants at all levels must be able to identify projects that are beyond their abilities. They must be able to identify and explain to the Examiners projects that require the expertise of a Journeyman, Master Craftsman, or Drystone Authority. They must know when projects require by law the expertise of professional historic preservation consultants and/or licensed landscape architects, engineers, or architects.

### **CONDITIONS OF CERTIFICATION**

In order to insure that employers retain confidence in the Conservancy's List of Certified Dry Stone Craftsmen, we ask that every applicant carefully note the following Conditions of Certification:

- Certified masons may not represent themselves in any way that implies a higher level of certification than they have earned. This includes advertising, business cards and letterheads, as well as word of mouth.
- Certified masons may not represent themselves or practice as Dry Stone Conservancy examiners or instructors until they have completed and passed the training and requirements to complete the examiner and instructor certifications.
- Certified drystone masons whose subsequent work falls below that produced for their tests may have their certifications revoked by the Conservancy. They will be removed from the certified list until their work improves to the required standards and they have passed re-testing.
- Certified craftsmen are expected to conduct themselves as professionals, and to manage their businesses in a reliable, ethical, skilled, and sober manner. The Conservancy will investigate complaints from employers, agencies, and the public, and valid complaints will result in de-certification. The DSC will remove from the certified list anyone who brings the Conservancy and/or the Certification Program into disrepute.

# PROFESSIONAL CERTIFICATION, LEVEL 1

## Requirements for Certification as a Basic Drystone Mason

### TEST REQUIREMENTS

Applicants must build a double-faced drystone fence, 4 feet tall and 7 feet long, measured at tie level, to the specifications in the testing instructions (obtainable from the DSC office). The test section may have a slope on each end of 60 degrees or more, measured from horizontal (unless otherwise approved). The test is to be built in 8 hours in the presence of the Examiners. If the test is part of an existing fence, it must match the original fence in appearance. Applicants must supply their own batter frames or re-bar, hammers, pegs, and string.

Within 3 days of the test day, applicants are also required to build a wallhead.

Applicants must also have had experience building a 2-foot retaining wall, either as part of a training class, or under the supervision of a Journeyman or Master. The Instructor or Supervisor must attest to the applicant's ability to correctly build a 2-foot retaining wall.

For out-of-state applicants, submit detailed photographs of your wallhead and retaining wall. Photos should be of sufficient detail for analysis, showing (1) the site before any work commenced, (2) the prepared ground and the organization of materials, (3) the completed foundation, (4) the project midway to completion, showing the interior of the structure, (5) the tie level(s), (6) the fence top ready for the cover course, and (7) the completed structure. Please write on the back of each photo the location and owner's name, address and phone number.

### ADDITIONALLY

All applicants must explain personal safety precautions to the Examiners, as listed in *Building and Repairing Dry Stone Fences and Retaining Walls*.

Applicants must be able to explain to the Examiners the structural theory for freestanding drystone fences as shown in *Building and Repairing Dry Stone Fences and Retaining Walls*.

Applicants must agree NOT to build retaining walls more than four feet tall, unless under direct supervision of a Journeyman or Master.

Applicants who do not pass on the first try will be informed of the reasons. The DSC will try to help failed applicants improve their skills. Help may be the offer of a place on another training course, or work with a certified journeyman or master.

See also General Requirements All Levels and Conditions of Certification.

# PROFESSIONAL CERTIFICATION, LEVEL 2

## Requirements for Certification as a Journeyman

### TEST REQUIREMENTS

Applicants must dismantle and rebuild, in 8 hours in the presence of the Examiners, a damaged fence section 4 feet tall and 10 feet long (measured at the tie level). The angle of slope on the ends of the test section is to be no less than 60 degrees from horizontal (unless otherwise approved). The rebuilt section must match the visual appearance of the original fence. Several applicants may build their test sections on the same day on the same fence, but each test section must be separate from the others and must be built solely by the applicant. Lengths for each test will be marked out by the Examiners.

In addition to the timed test, applicants must build a simple retaining wall 4 feet tall and 10 feet long, using the principles in *Building and Repairing Dry Stone Fences and Retaining Walls*. The applicant must submit photographs of the retaining wall that are of sufficient detail for analysis as explained above in the General Requirements. The submitted section must be built entirely by the applicant, but the entire wall (beyond the 10-foot section) may be a group project. The applicant must explain to the Certification Panel the drainage requirements, grade preparation, and structural theories for retaining walls.

In addition to their fences, applicants must independently build and submit photos of three of four coping styles: single, double, flat, or boulder.

Applicants must also independently build a stepped foundation on a steep slope, a linteled drain, a curved fence, and a corner. They must submit photos of each step in the building process and explain to the Examiners the structural theories for each. If help is essential for a particular feature, primarily because of rock size, applicants may request DSC approval beforehand to have a helper lift those rocks.

For features requiring photographs, the photos should be of sufficient detail for analysis, showing (1) the site before any work commenced, (2) the prepared ground and the organization of materials, (3) the completed foundation, (4) the project midway to completion, showing the interior of the structure, (5) the tie level(s), (6) the fence top ready for the cover course, and (7) the completed structure. Please write on the back of each photo the exact location and owner's name, address and phone number.

### ADDITIONALLY

Applicants must explain to the Examiners or Certification Panel the structural theory for freestanding drystone fences. They must describe the three major types of fence styles and the principles for structural stability for each variation as explained and diagramed in *Rock Fences of the Bluegrass*.

Applicants must demonstrate to the Examiners or Certification Panel their abilities to interpret drawings and plans, and how to calculate the amount of material needed for a project.

Applicants must know and explain to the Examiners current Occupational Safety and Health Administration (OSHA) safety standards. Current standards may be obtained from the your state's Labor Cabinet: in Kentucky: Kentucky Labor Cabinet, Division of Education and Training in Frankfort, telephone 502-564-6895.

See also General Requirements All Levels and Conditions of Certification.

# PROFESSIONAL CERTIFICATION, LEVEL 3

## Requirements for Certification as a Master Craftsman

### TEST REQUIREMENTS

Each applicant must build, in 8 hours in the presence of the Examiners, a freestanding double-faced drystone fence 4 feet tall and 12 feet long (measured at tie level), incorporating a special feature.

Kentucky applicants must design, build, and submit photographs taken during repair or construction of an “edge fence,” 4 feet tall and 8 feet long, and explain to the Certification Panel the structural theory for the work. Applicants from other states must design, build, and submit photographs of a (pre-approved) special fence or wall type or feature indigenous to their regions.

Applicants must also design, build and submit photographs of the other special features not built for their timed tests: a stile, arch, and pillar (at least 4 feet tall and 2 feet square). The required features may be part of a group project, but must be designed and built by the applicant alone. Applicants must explain to the Certification Panel the structural theories for each required feature as described in *Building Special Features in Dry Stone* (obtainable from the DSC office or the DSWA).

Applicants must also build and submit photographs of a (pre-approved) special feature or project of their own choosing. Marks for this feature will be based on difficulty as well as technique.

Applicants must submit photos to the Certification Panel showing their abilities to use the rock type that was not part of their timed tests

- (1) flatly-bedded rock, or
- (2) rounded or angular (irregular) rock, depending on the applicant’s local rock type.

For features requiring photographs, the photos should be of sufficient detail for analysis, showing (1) the site before any work commenced, (2) the prepared ground and the organization of materials, (3) the completed foundation, (4) the project midway to completion, showing the interior of the structure, (5) the tie level(s), (6) the fence top ready for the cover course, and (7) the completed structure. Please write on the back of each photo the exact location and owner’s name, address and phone number.

### ADDITIONALLY

Applicants must have participated in an accredited training course on load-bearing drystone retaining walls over 10 feet in height, and have demonstrated to the project instructor/supervisor competency in building such a wall.

They must demonstrate to the Examiners their abilities to work and shape rock; and how to move and lift heavy rocks, using sleds, rollers, lifting straps, chains, cables, tongs, and chain dogs; and work-site safety regarding machinery, equipment, and scaffolding.

Applicants must describe to the Examiners or Certification Panel site and materials variables that affect a project’s design including but not limited to: bearing capacity of the soils; surcharge; flood conditions; compression strength; weathering and frictional resistance of rock types; suitability of various backfill, drainage, and footing materials; and building codes and ordinances. Two registered, licensed landscape architects are on the DSC staff and board to assist with these subjects, if needed.

See also General Requirements All Levels and Conditions of Certification.

PROFESSIONAL CERTIFICATION, LEVEL 4  
Requirements for Certification as a  
Drystone Authority

TEST REQUIREMENTS

A candidate for Drystone Authority certification must independently design, organize, and supervise construction of a surcharged retaining wall at least 5 feet tall and 20 feet long, according to the principles in the training video, *How to Build Drystone Retaining Walls*, and the DSC special paper, *Building Retaining Walls on Surcharged Sites*.

Candidates must have assisted with design, organization, and construction supervision with a DSWA Master Craftsman or DSC Drystone Authority on at least one additional major construction project such as a road-retaining wall, bridge, bridge piers or abutments, or large streambank retaining wall.

ADDITIONALLY

Candidates must demonstrate on the ground or illustrate on paper to the Certification Panel the engineering principles according to international standards for load-bearing drystone retaining walls over 10 feet in height, as taught in accredited seminars on major drystone retaining walls.

Candidates must explain to the Certification Panel the structural theories for vaulted bridges.

Drystone Authority candidates must also understand government regulations and public health, safety, and welfare issues that affect project design and implementation, including but not limited to: historic preservation and environmental assessments, and permit requirements of the Divisions of Water and Natural Resources and the Army Corps of Engineers. The DSC holds periodic classes regarding these issues.

The DSC may ask a licensed structural engineer to help evaluate Drystone Authority examinations.

See also General Requirements All Levels and Conditions of Certification.

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Reviewed and Revised January, 2006



## Summary of Drystone Elements Required for Certification

See also General Requirements for all levels, “Additionally” for each Level and Conditions of Certification.

Requirements	Level 1 Basic Drystone Mason	Level 2 Journeyman	Level 3 Master Craftsman	Level 4 Drystone Authority, Garden Mason, Instructor, or Examiner
TIMED drystone fence, 4 ft tall x 7 ft long, in 8 hours	X			
Wallhead, built within 3 days of test	X			
Retaining wall, low (1.5 to 2 ft tall) with flat caps (can be part of workshop)	X			
TIMED drystone fence, 4 ft tall x 10 ft long, dismantle & rebuild, in 8 hours		X		
Retaining wall, 4 ft high x 10 ft long		X		
Stepped foundation on steep slope		X		
3 Coping types, of 4 types - single, double, flat, or boulder		X		
Linteled drain		X		
Curve		X		
Corner		X		
TIMED drystone fence, 4 ft tall x 12 ft long with special feature, in 8 hours			X	
Edge fence or boulder wall, depending on national region, 4 ft tall, 8 ft long			X	
Drystone fence using irregular, rounded or flat-bedded rock (other than the rock type used on the timed test).			X	
Arch			X	
Pillar, minimum 4 feet tall x 2 feet square			X	
Stile			X	
Special feature of the applicant=s choice (pre-approved)			X	
For special awards, see the full DSC Certification Program descriptions				X

The required built elements above are in addition to the Additional verbal responses and practical demonstrations at each certification level and the General Requirements for all levels.

Applicants may apply for Levels 2, 3, or 4 without having been certified at the basic Level 1, but they must fulfill all the requirements for all previous certification tests.

# Guidelines for Inspecting / Examining Kentucky Drystone Fences & Retaining Walls

(Modified from DSWAGB's *Key Points for Examiners*)

## Preparation and Execution of Foundations

- a) Foundation dug down to firm subsoil and leveled. If building on fill, compact to specifications.
- b) Foundation stones laid with length running into wall, at least half of stone depth under the wall above.
- c) Foundation correct width for wall height, plus specified projection both sides.
- d) Foundation well packed with stones of diminishing sizes (not gravel)
- e) Largest available stones are used in the foundation.

## Wall Build and Packing – First and Second Lift

- a) Stones placed tightly together with no gaps.
- b) Face stones with minimum 1/3 depth and maximum 2/3 depth running into wall.
- c) No running joints further than two rows of stones.
- d) If built random, i.e. not coursed, there should be a definite level line at tie height.
- e) Good use of hearting, thoroughly packed, carefully hand placed and pinned, not thrown or dumped in.
- f) Tight wall faces, stones should not move when kicked.
- g) No face pinning or chinking. Leveling plates are acceptable if well tied into wall and adequate thickness.
- h) Definite level line at cover course height.
- i) Largest stones used in bottom lift, gradual transition to thinnest stones in upper courses.

## Tie Stones

- a) Laid at approximately 1-yard intervals, on center, with 2" to 4" projection (or as specified).
- b) Walls taller than 4 feet require additional rows of ties at 18" vertical spacing, with staggered placement.
- c) Check that ties are lying solidly on the wall, well packed with no voids or daylight and no movement.
- d) If long ties are unavailable, shorter overlapping ties can be used provided they overlap at least 6 inches.

## Cover Course

- a) Covers laid with flattest side down in a continuous row with 1 to 2 inch projection both sides (or as specified).
- b) Check that covers are lying solidly on the wall, well packed with no voids or daylight and no movement.

## Coping and Finish

- a) Copes should sit solidly on their own bases rather than propped up on pinning.
- b) Copes placed at specified angle, single or double as specified.
- c) Double copes should have tie copes placed at one-yard intervals.
- d) Check that copes do not move, copes are well locked with minimal pinning, pins neat and blended into wall.

## Batter

- a) Wall should come in smoothly and evenly at specified batter.
- b) No visible bulges or hollows.
- c) Face stones selected and placed with faces that follow batter. No visible stepping in of courses.

## Line and Straightness

- a) Obvious correct use of lines to guide work, set taut and level for correct wall dimensions, batters, levels and stone course heights as specified.
- b) Ties and covers placed at same level, evenly spaced.
- c) No bends or bulges in length of wall.
- d) Curves smooth and continuous, without bends or angles, correct batter preserved inside and outside of curve.

## Wallheads

- a) Stones well tied back along the wall faces.
- b) Good selection of stones laid 2-on-1 and 1-on-2, using larger stone than face stones.
- c) Minimum depth of stone running into the wall maintained for upper and lower lifts.
- d) If coped, the wallhead should be topped with a single block of sufficient height and weight to support copes.