Frequently Asked Questions
About the
STRUCTURAL LOG GRADING PROGRAM

1.   *What is the Log Homes Council Grading Program?*

The Log Grading Program is a cooperative effort of participating member companies and administrated by the National Association of Home Builders for use by members of any of the Building Systems Councils (Builder, Modular, Panelized or Log).   In addition to funding grading activities, fees assist in the funding of continual program updating, training of member companies and QSA s, development of more effective grading systems, education of code officials and other ancillary professions that affect the log home industry.

The Log Homes Council Grading Program is accredited by the International Accreditation Service as **Inspection Agency AA-698**, and is recognized by the International Codes Council as meeting the requirements of ISO Standard #17020 for Inspection Agencies grading building materials used in code-approved structures. The LHC Grading Program was the first accredited grading program for structural logs. Initiated in 1977, work to develop the ASTM standard that allowed for the grading of the numerous shapes, sizes, species and configurations of wall logs, round and sawn round timbers culminated in ASTM Standard D3957 Standard *Practices for Establishing Stress Grades for Structural Members Used in Log Buildings.*

2.   *Who can use the program?*

Members of any of the Building Systems Councils are eligible to use the grading program. Most users are members of the Log Homes Council, but members of the Builder s council are eligible too.

How does a company become a member of the Grading Program? The company must first be a member of the Building Systems Councils. Log Homes Council members also need to either use an existing QSA in their area, or advise the Program Administrator that they will need one trained and in place. In addition, the company will provide information regarding the volume of logs/number of structures built per year in order to determine the number and timing of the third-party inspection visits the QSA will be required to perform.

3.   *What does the company need to do to use the Program?*

The Company needs to be a Building Systems Councils Member and make application for the program by contacting Ed Burke, Program Administrator. Following provision of production information and information about building method and type of logs/timbers used, payment of annual operations, administration and third-party inspection fees, certification of at least one employee as a grader, and payment of fees to be paid to the company s Quality Supervisory Agency (third-party inspector), the company is ready to start grading.

4.   *What does it cost to use the Program?*

The Builders Council membership fee is $125 (US) / year. Otherwise, the costs are the same for both Log Homes Council and Builders Council members.

1. The Administration fee is $210 +$90/QSA Inspection (minimum of three, maximum of 6/year depending on production),

2. The Operations fee for 2008 is $1,370, and covers certification of the program, a portion of the training and other costs of running the program. The operations fee is prorated quarterly for new members joining during the calendar year after 1 January.

3. QSA inspection fee ranges from $75 up to $250 each , depending on the cost negotiated between the QSA and the company. The Grading Program takes care of making payment to the QSA for their inspections. Remember, it is the responsibility of the member company to provide the name of a prospective QSA to the program administrator and take care of any expenses that person would incur during certification as a QSA.

5.   *How do graders get certified?*

Graders are certified one of two ways. The first, and most common, is to attend a grading seminar held at central location, or arrange with the grading program administrator to have training at the company.

A new member company receives its first log grading training session without additional charge for instructor fee or travel expenses. Subsequent training sessions will require the company to reimburse the grading program for the cost of the training including instruction stipend and travel expenses for the instructor.

The second method of obtaining additional certified graders is by a current employee apprenticing with a certified grader at the company or with the QSA, and then passing the written and practical examinations to be administered by the Member Company s QSA. Those candidates passing with a 70% on the written exam and a 95% on the practical exam (5% overgrades allowed, 10% undergrads allowed) will be issued certificates. Other than the cost of the training, if any, there is no additional fee to be paid for the addition of Certified Graders to the Company s roster.

6.   *How are the logs grade-marked?*

The grading program is quite flexible in how it allows for the marking of individual pieces in a package. The principal means of conveying the grade of any individual piece is the combination of marks made on the log and a written Certificate of Inspection that accompanies the package during shipment and is part of the document file given to the customer upon delivery. This certificate of inspection serves as the principal document explaining the grading system, number of pieces and other information germane to the duties of the building official. Each log is marked according to a system set up by the company and may include a standard grade stamp, crayon marks, tags or brands. In the case of many applications, the certificate of inspection will indicate that all logs are of a certain grade or higher. A check of the plans will allow the building inspector to see that the minimum grade of log in all positions in the structure have been met or exceeded by all of the logs.

7. *What about third party check grading of my company s grading?*

Quality Supervisory Agencies (QSA) perform the third party inspection of the grading practices and record keeping at the Member Company. The QSA is contracted by the member company for a fee not to exceed $150 (US) per inspection, for a minimum of two inspections. The QSA can be any trained and certified individual without financial ties to the company. Oftentimes, consulting foresters, university professors, and other forest and wood utilization-related professionals are called on to be QSA s. They will first coordinate with the company and the program administrator to determine the number and approximate timing of the inspection visits, and then inspect the grading activities of the company, with special attention paid to accuracy of visual grading and completeness of record keeping.

Certified Graders cannot overgrade more than 5% of the number of pieces in any particular unit of graded timbers/logs or home packages. While undergrading a log or logs does not jeopardize the structural integrity of a building, it does undervalue a piece and does not allow the best use of an expensive raw material. One of the goals of the grading program is to promote internal quality control and good stewardship of the forest resource. Log grading, and the accompanying appropriate use of engineering stress levels associated with a particular grade, size and species of log, is a means to most efficiently utilize building logs and timbers at their highest rated capacity.

8. *How does a company arrange for a Quality Supervisory Agency?*

Typically, the QSA is someone that the company either knows or knows of. In some areas of Canada and the US, there are QSA s already serving log home builders, and will be willing to provide these services to the new member company. In other parts of the country, however, new QSA candidates will have to be identified, contacted and shown the value of the service to the company or companies in the area. The steps for having a QSA certified for service to a company are as follows:

- The member company checks with the program administrator to see if a QSA is available in the member company s immediate area
- If no QSA is nearby, the member company makes inquiries of area foresters, logging contractors, natural resource, engineering or science teachers or college professors to see if they would be interested in becoming a QSA for theirs and other companies in the area.
- For screening purposes, contact the program administrator with the name(s) of potential candidates, including a resume.
- Provide expenses for the QSA to attend a grading seminar in a central location or an on site training session at the member company s facilities. It is often quite cost-effective to have the training session hosted by an area company and have other companies attend the seminar and share in the costs of the seminar (travel and instructor s fee)

9. *Does a QSA have to pay to become certified?*

No there is no initial or annual fee associated with being certified as a QSA. The funding of the QSA to attend a training seminar is a matter to be settled between the member company and the QSA.

10. *Does a QSA have to pay a yearly fee to be able to perform inspections?*

No, there is no annual fee to serve as a QSA.

11. *How many inspections does the QSA have to perform each year at a company?*

The minimum number of QSA inspections required in a calendar year is based on the number of packages or volume of gross raw material graded by the member company.

- Companies producing handcrafted log homes can determine the number of QSA visits by using either the total number of packages produced in a year or the total gross log volume (measured in cubic feet, bd. ft Scribner or cubic meters) purchased (see following table).
- Companies that produce non-structural half-log wall systems and structural roof, vertical and horizontal support systems of logs or timbers determine the number of inspections based on the gross volume of logs and timbers to be graded for structural purposes (see following table).
- Companies that purchase and utilize raw logs for milling of profiled logs must use the number of home packages sold, as do companies that manufacture or purchase profiled logs made from cants
- For the purposes of determining the number of inspection visits, a package will consist of dwelling and outbuildings for one customer/order. Thus, a home, separate garage and guest house, all ordered and produced at one time, will be considered a "package". If a guest house or other habitable structure is ordered in quantities greater than one for the same customer, e.g. 6 small rental cabins for a lake resort, the total order should be based on the total volume of logs to be used in the structures

Using information provided by the Member Company and its QSA, as well as the following table, the Program Administrator determines the appropriate number of grading program inspections to be performed by a Member Company s QSA. It is incumbent upon the Member Company to contact the QSA and Program Administrator if the amount of raw material to be graded in the year changes enough to warrant either an addition or subtraction in the number of required inspections. The QSA should check periodically with the Member Company regarding the actual volume of logs being graded or number of homes being produced. The Member Company should inform the QSA and the Program Administrator if at any time during the year the company s log volume use or package production changes its required number of inspections. QSAs providing inspection services for companies whose production requires fewer than six inspections should check with the company on a bi-monthly basis to determine if the number of required inspections has changed.

The number of QSA visits is designed to ensure that both a high percentage of the graded logs and timbers destined for use in log structures is check-graded, and that the total year s production and records will be inspected. The inspections should be conducted throughout the production year, with the last (or second in the case of companies needing the minimum three inspections) inspection taking place near the end of the production year so that as many package files as possible can be inspected for Certificate of Inspection inclusion and the number of packages and/or volume of logs used can be determined. It is the responsibility of the QSA to make certain that the criteria for determining the number of inspections for the year have been met, and that an adequate number of inspections have been made.

In some situations 100% of the graded logs will be checked, while in cases of large companies producing 100 or more house packages per year 5 to 10% of the production will be checked.   As a point of reference, the LHC Grading Program s QSAs check-grade several times the amount of lumber inspected in sawmills by lumber grading agencies that often check-scale less than 0.1% of any particular mill s annual production.

Minimum required number of QSA inspections based on Member Company production.

# QSA Inspections / Calendar Year	# Packages / Calendar Year[1]	Total Raw Log Volume/year (m^3)[2]	Total Raw Log Volume/year $(ft.^3)$[3]	Total Raw Log Volume/year $(bd.ft.)$[4]	Total Raw Log Volume/year (cords)
3	1-12	1440	51,000	315,000	630
4	13-16	1920	68,000	420,000	840
5	17-20	2400	85,000	525,000	1,051
6	20+	2400+	85,000 +	525,000+	1,051+

[1]Annual number of packages is generally the criterion used by Member Companies producing machine-profiled log packages and their QSA's, or whose production consists of both manufactured and handcrafted packages. Handcrafting and half-log panel companies and their QSA's may find that using either number of packages produced or structural log and timber volume purchased and graded will be the best way to determine the number of QSA visits. Following receipt of information from the Member Company and QSA, the final determination of the required number of QSA inspections is the responsibility of the Grading Program Administrator.

[2]Assumes 120m^3 of building logs in the "standard" log home (1,500 ft^2 (140 m^2) floor plan with framed gables and structural log roof support structures. This equates to approximately 100 typical lodgepole pine, spruce, cedar, red or eastern white pine or 65 coastal Douglas-fir building logs.

[3]Assumes 35.3 ft^3/m^3 log volume

[4]Assumes 6.3 bd.ft. (log scale) of building logs in 1 ft^3. log scale of building logs

[5]Assumes 500 bd.ft. log scale / cord of building

12. *Who pays the QSA?*

The member company contracts with the QSA for their services and submits the year s inspection fees to the NAHB with the remainder of the grading program fees and the NAHB pays the QSA who invoices the Grading Program for the services.

13. *When and how can my company join?*

A company may join at any time of the year.

14. *When and how can a company have personnel certified to grade?*

A company s employees can be certified at any general grading seminar, or may arrange for a training seminar to be held in their facility. The company may join with others in the area in sharing the cost of the seminar, thus reducing the costs for each company. It is often less expensive to have the training professional travel to the company s facility. Central training seminars, such as the upcoming session in April of 2008 at Coeur d'Alene, ID, are a good way to defray training costs since grader candidates can attend the annual meeting. LHC member companies generally prefer to have individual training at their facility.

15. *What materials will I need to bring to a grading certification course?*

Candidates will need to have a tape measure, slope-of-grain scribe, clipboard, pencils and paper for notes. Clothing appropriate for the expected weather, depending on season, is required. All other materials, including a copy of the grading manual for every candidate, will be provided. The grading manual will be sent to the company or individual candidates 2-3 weeks prior to the shortcourse. Each candidate will be required to complete the open-book written exam prior to the shortcourse in order to be better prepared for the training. In essence, the written examination becomes a self-paced learning tool for each candidate.

16. *How will Certified Grader and Quality Supervisory Agent candidates be tested?*

Formal testing consists of a 100 question, open-book written test that leads the candidate through the grading manual. The questions, in true-false, multiple choice and fill-in-the-blank format, cover the history, administrative and practical application segments of log grading, as well as the section on wood properties, insects, decay and stain organisms, wood-water relations and mechanical properties. A minimum score of 70% is required to pass the written examination. This examination, along with a Grading Program Manual and Training Guide shall be distributed 2-3 weeks prior to the shortcourse. It is imperative that the candidates complete the written exam prior to the shortcourse, as this will provide each candidate with the critical information needed during the shortcourse. Having the candidates work their way through the manual by doing the exam prior to the on-site training and examination shortcourse allows for a one-day shortcourse to be taught, and results in less lost time and a better understanding of wood, log home structural design issues and quality control in structural log grading.

The practical exam will be held in the afternoon of the shortcourse and will consist of candidates individually grading numbered logs and timbers. A maximum of 5% of the logs can be overgraded, that is, assigned a grade higher than the correct grade, as determined by the instructor. There is no additional penalty for assigning a grade two increments higher than the actual grade. A maximum of 10% of the logs can be undergraded. This policy keeps candidates from purposely undergrading to be certain of passing the course.

17. *What is the topical outline and schedule for the grading course?*

The day begins in the classroom with a discussion and correcting of the written test, which takes about an hour. The grading course continues with a discussion of fundamental wood structure and properties, and the use of the estimated mechanical properties, as determined by visual stress grading. After a break, the discussion will turn to the defects used to evaluate the grade of the log, including knots, ring shake, checks, slope of grain, sapstain, heartstain and incipient decay, live-tree decay, service decay, insect damage and infestation, crook, sweep, taper and out-of-round. After lunch, the yard becomes classroom, and everyone receives individual instruction gets lots of practice grading actual building logs and timbers. Defects and other interesting features will be pointed out, and everyone will get a turn grading a different log for the class, explaining their methods and reasoning. The practical exam takes about 1.5 to 2 hours, depending on the number and speed of the candidates. After everyone is done, the class regrades each test log and sees what the grade of each test log was. Each student will know how he or she did at the end of the shortcourse. The instructor will grade each written and practical exam and the results will be available within a few days following the shortcourse. A certificate of qualification for both Certified Graders and Quality Supervisory Agencies will be provided.

18. *Can a person become a certified grader without their company a member of the grading program?*

For the successful candidates whose companies have not yet joined the program, the certification can be held in escrow for two calendar years following passing the written and practical tests. When the company completes the application process and is accepted into the program, the people who passed the exams will be certified and the company can begin grading logs.

19. *Can a certified grader change employers and still maintain their certification.*

No. If a certified grader changes employers, they must be re-tested and recertified by an instructor or QSA. The company they now work for must also be a member of the grading program for them to regain their certification. Hiring a person who was a certified grader for a member company does not allow a non-member company grade logs.

20. *As a certified grader can I grade anybody s logs as a freelance grader?*

Generally, non-member companies cannot have their logs graded in this program. The grading program is set up for use by the member companies, and the use of the grading program by a non-participating company is strictly limited. One-time only grading of non-member company packages is contradicting the intent of advocating continuous quality control in the log processing and crafting stage.

21. *As a QSA, can I perform third-party inspections for more than one company?*

QSA s can provide third party inspections for any number of companies, so long as the company agrees to contract with that QSA for its third-party services.

22. *What happens if there is a disagreement between the customer and the log home company regarding grading issues?*

The grading rules of the program have specific procedures to be followed in the event a dispute involving log grading ever develops. There are provisions for regarding the logs, with a policy and procedure set up for payment of regarding fees.

23. *Where can I learn more about the program?*

Ed Burke
Grading Program Administrator
Wood Science Associates
2617 Garland Drive
Missoula, MT 59803
(406) 251-6189
edwinjburke@gmail.com