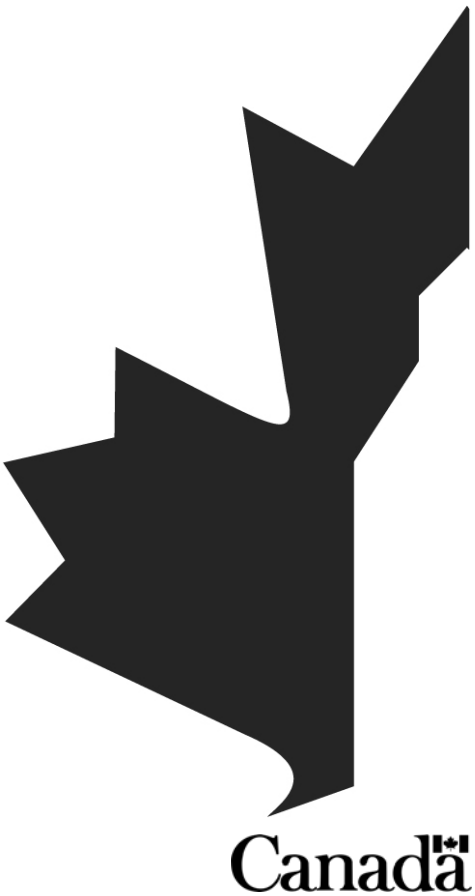
Canadian Grain Commission | Commission canadienne des grains

Sampling Systems Handbook and Approval Guide



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Chapter 1 General

1.1 Purpose

This *Sampling Systems Manual* outlines the policies and procedures of the Canadian Grain Commission (CGC) for automatic mechanical sampling systems used for official sampling purposes, including the requirements for approval, installation, examination, testing, and security. It also includes a discussion of manual sampling, which may be used **at the discretion of the CGC** when a lot of grain cannot be sampled by mechanical means.

A grain handling facility mandated or requesting CGC inspection services must install CGC-approved automatic sampling equipment to sample grain in the facility.

Throughout this manual the terms **official sample** and **unofficial sample** are used. **Official** samples are defined as those drawn under the direct control or continuous supervision of a designated grain inspector of the CGC. All other samples are considered **unofficial**, and grades or analyses apply only to the sample and not to the grain it is said to represent.

This manual is intended for use by CGC inspectors and by members of the grain trade, and supersedes any previous CGC sampling directives. It contains the following chapters:

- Chapter 1, General
  Explains the purpose of the manual, gives the authority under which it was prepared, and provides explanations of terms used throughout the manual
- Chapter 2, Responsibilities, approvals, and authorizations
  Describes the responsibilities of the various functions within the CGC and of the facility management, and describes the approval process
- Chapter 3, CGC sampler examinations
  Describes when examinations are required and what the examinations cover
- Chapter 4, Types of sampling systems
  Describes the requirements for sampling systems used for official sampling, and describes different types of samplers
- Chapter 5, Sampling systems: general requirements
  Describes the general requirements for sampling systems
- Chapter 6, Sampling systems: installation and use
  Describes the requirements for installation and location of sampling equipment, and the requirements for handling the samples
- Chapter 7, Drop sample check
  Describes how a drop sample check is conducted
- Chapter 8, Manual samplings
  Explains when manual sampling is permitted, and describes the sampling devices that may be used
- Chapter 9, CGC analysis and certification

1.2 Requirements for sampling systems

Automatic sampling systems used to collect official samples for CGC official inspection purposes must meet the requirements given in this manual.

Automatic sampling systems are designed to draw official samples of various types of commodities for a variety of applications and in various locations. Sampling systems are generally composed of one or more automatic devices that may be driven pneumatically, hydraulically, or electrically.

In order for an automatic sampling system to be acceptable for official CGC sampling, the facility must meet the following requirements:

- Install CGC approved samplers and major components of a sampling system
- Obtain CGC approval for the sampling system
- Maintain the sampling system, including conducting repairs and alterations in accordance with the manufacturer's specifications and in full view of the CGC
- Submit the system to CGC examination and testing at periodic intervals and after any modifications
- When obtaining official samples, operate the system in accordance with the manufacturer's instructions and CGC specifications

1.3 Authority

This manual has been prepared under the authority of sections 30 and 56 of the Canada Grain Act and of section 6 of the Canada Grain Regulations (cited below). Section 30 provides CGC Industry Services access to the operational control of automatic sampling systems when they are used to obtain official samples.

30 Subject to the regulations, an inspector

a) shall, on application for inspection and in order of receipt of application for inspection, make an official inspection of grain at any place where provision for inspection has been made; and

b) on making an official inspection of grain shall take an official sample of the grain in the manner prescribed and retain the sample for fifteen days or such longer periods of time as may be prescribed.

56. (1) The operator of a licensed grain elevator of any type shall install therein such equipment, provide such facilities and maintain the equipment and structure of the elevator in such a condition as may be prescribed in respect of elevators of that type or required by order of the Commission in respect of that elevator to ensure, as may be applicable, the efficient and accurate weighing, sampling, inspection, grading, drying, cleaning and accommodation of all grain, grain products and screenings received into or discharged from the elevator.

Section 6 Canada Grain Regulations

6. (1) Official samples may be taken,

a) subject to subsection (2), by a means of a mechanical sampler; or

b) in a location where the physical structure prohibits the installation of a mechanical sampler, by manual sampling.

(2) No official samples shall be taken by means of a mechanical sampler unless the mechanical sampler is

a) of a type approved by the Commission; and

b) installed, tested and maintained by the licensee under the direction of an inspector

1.4 Types of official sample

Official samples for grade and dockage assessment can be one of the types listed in the following table. The length of time the sample information is kept on file varies with the type of official sample.

Sample type	**Sample size**	**Period kept on file**
Terminal or transfer elevator inward carlot or truck-lot sample	Approx. one kilogram	20 days
Terminal, transfer, process, or primary elevator outward carlot or truck-lot sample	Approx. one kilogram	60 days
Terminal, transfer, or process elevator vessel sample	Approx. six kilograms	Not less than six months
Official samples of bulk or bagged grain	Approx. one kilogram, representing a container or carlot of bulk or bagged grain	Not less than six months
Terminal, transfer, process, or primary elevator weighover sample	Approx. one kilogram, representing a bin transfer	90 days

1.5 Types of unofficial sample

Unofficial samples can be one of the types listed in the following table.

Sample type	Sample size	Comments
Harvest Survey samples	Approx. 200–300 grams	Sample is manually drawn by producers or by private grain companies from producer deliveries, and used by the Grain Research Laboratory to provide analytical data on the quality of the new crop.
Unofficial submitted samples	Minimum 750 grams	Sample is drawn by a party other than the CGC and submitted to the CGC for quality assessment.
Guaranteed representative samples	Minimum 750 grams	Sample is drawn by a party other than the CGC and submitted to the CGC for quality assessment. The person requesting the assessment guarantees in writing that the sample is representative of the lot being sampled.

1.6 Definitions

The following terms are used throughout the manual with the meanings defined below.

- **Alteration**
  Modifications or changes made to the sampling system after the system was last tested—These include changes to sampler position, parts, speed, wiring, dust collection, etc. They also include changes to the grain handling system that may affect the sampling system, such as an increase in grain flow, change in belt speed, and use of new shipping bins.
- **Approval**
  The written approval to use new mechanical samplers—The approval is obtained by the CGC regional office in consultation with the chief grain inspector. The final CGC approval indicates that the sampling system has been proven for integrity and that the delivery system has been proven for repeatability.
- **Cancellation**
  The permanent withdrawal of sampler approval—In order for a cancelled approval to be reinstated, the facility must submit a new approval request, and the sampling system must undergo all necessary examinations and tests.

- **Commodities**
  The grain, grain products, or screenings found in a licensed elevator.
- **Operating controls**
  Controls used by CGC personnel for the normal operation of the sampling system—Operating controls include on/off control panel switches, timers, indicator lights, sample return, and pneumatic sample delivery.
- **Auxiliary controls**
  A device that duplicates or bypasses the operating controls or interrupts the exclusive CGC use of the sampling device.
- **Lockout control**
  The device used to disconnect the main power supply and bring the sampler to a zero energy state.
- **Primary sampler**
  The main sample collector installed at an inward or outward inspection sampling point in a licensed elevator.
- **Sample divider**
  The mechanical or gravitational divider used to reduce the size of the sample obtained by the primary sampler.
- **Suspension**
  A temporary withdrawal of sampler approval—The suspension is written confirmation by the CGC withdrawing the use of a sampler. A formal suspension may not be required if sampler problems are corrected immediately or before the sampler is used officially.

Chapter 2 Responsibilities, approvals & authorizations

2.1 Responsibilities

To accomplish the intention of section 30 (b) of the Canada Grain Act and section 6 of the Canada Grain Regulations, the CGC must retain operational control or have access to the operational control of automatic samplers and the authority to accept or reject the use of those devices. As proprietors of the sampling systems, elevator facilities must be aware of their responsibilities to obtain and maintain CGC approval of sampling systems.

2.2 Responsibilities of the facility management

The operator of the facility that owns, leases, or operates the automatic sampler is responsible to:

- Provide a written letter of request for the approval of a sampling system
- Using form ISI-75, Request for Sampler Authorization (see Figure 2.1), provide all information needed for approval, including, grain flow, construction, design, and manufacturer's specifications
- Install all equipment subject to CGC approval as prescribed by the manufacturer
- Cooperate with CGC for the examination and testing of sampling systems
- Provide all necessary repairs, maintenance, and environmental considerations specified by the CGC and the manufacturer
- Provide written details to the CGC if:
  - Alterations to the system are planned
  - Physical changes to equipment or facility that may alter the grain flow to, through, or leaving the sampling system are planned
  - The sampling system will no longer be used to obtain official samples

2.3 Responsibilities of the CGC inspector in charge or the service centre operations supervisor

The CGC inspector in charge at a terminal elevator or the service centre operations supervisor must ensure and maintain the integrity of the automatic samplers within their area of responsibility. The inspector in charge, service centre operations supervisor, or designated employee of the CGC is responsible to:

- Conduct or provide supervision and assistance for initial authorization and approval, including completing form ISI-74b, Drop Sample Check (see Figure 2.2)
- Conduct or provide supervision and assistance for supplemental re-verifications
- Conduct condition and efficiency checks, and complete and distribute form ISI-74a, Sampler Condition and Efficiency Check (see Figure 2.3)
- Initiate and record sampler system monitoring

- In conjunction with the CGC regional office, suspend or reinstate the use of an automatic sampler for official inspections, when applicable
- Provide periodic information to the regional office regarding the condition and status of automatic samplers used for official inspections

2.4 Request for Sampler Authorization

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Request for Sampler Authorization

Facility name and location:	**CGC office:**
Type of elevator: ☐ Terminal ☐ Transfer ☐ Primary ☐ Process ☐ Other Approval requested for: ☐ All grains ☐ Restricted to:	
Sampler type: _____ for: ☐ Loading trucks ☐ Loading railcars ☐ Loading barges ☐ Loading vessels ☐ Unloading trucks ☐ Unloading railcars ☐ Unloading barges ☐ Unloading vessels	
Sampler manufacturer: **Model:** **Serial No.**	
Sampler installed in: ☐ Spout – cross-section dimensions _____ x _____ ☐ Belt end – width & height _____ x _____	
Sampler location:	Sampler powered: ☐ Electrically ☐ Pneumatically ☐ Hydraulically
☐ Rate of flow to sampler: _____ bph or tph. ☐ Belt flow to sampler: _____ bph or tph.	
Height and width of sample cutter opening _____ x _____	Sample cutter transverse speed _____ cm/min or in/min.
Timer: ☐ Analog ☐ Digital ☐ Internal	Timer minimum interval _____ Seconds. Normal sampler interval _____ Seconds.
Inspection access doors sealable:	
Divider manufacturer: **Model:** **Serial No.:**	
Divider located:	Divider reduction ration:
How and where is excess sample returned?	
Scale draft size: _____ tonnes	Weighing system approved by weights and measures:
Sample delivery system: ☐ Gravity drop from divider ☐ Pneumatic delivery	
Where is the final sample collected?	
In railcar or truck loading, how is the sample integrity preserved through the system?	
Shipping bins: ☐ Bin identifications	Bin capacities
Inspection facility and equipment	
Grading area located:	Colour of interior walls bench
Height of grading bench:	Light source from _____ bulb fixture.
Bulbs manufactured by:	Lux measured at grading bench:
Dockage tester:	Sample divider:
Protein machine: Model: **Serial No.:** **Modem:**	
Pearler:	
Facility health and safety	
Fall arrest available:	Mandatory hard hat and safety boots:
Muster station:	Alarms:
Washroom locations:	Smoking restrictions:
Special instructions:	
_____ Signed facility manager	_____ Signed CGC

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ISI-75 2004-10

Figure 2.1: Request for sampler authorization

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Drop sample check

Date:			Location:			CGC Inspector:			
Wheat			Sample weight	Riddle	Buckwheat	Aspiration	Total dockage	Carry-over weight	
Sample #		Control					0.00	Weight	
		Result					0.00	Riddle	0.00
		Variance	0.00	0.00	0.00	0.00	0.00	Buckwheat	0.00
		% Variance	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	Aspiration	0.00
Sample #		Control					0.00	Weight	
		Result					0.00	Riddle	0.00
		Variance	0.00	0.00	0.00	0.00	0.00	Buckwheat	0.00
		% Variance	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	Aspiration	0.00
Sample #		Control					0.00	Weight	
		Result					0.00	Riddle	0.00
		Variance	0.00	0.00	0.00	0.00	0.00	Buckwheat	0.00
		% Variance	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	Aspiration	0.00

Oilseeds/Other Grain			Sample weight	Round hole and riddle	Slotted	Aspiration	Total dockage	Carry-over weight	
Sample #		Control					0.00	Weight	
		Result					0.00	Riddle	0.00
		Variance	0.00	0.00	0.00	0.00	0.00	Buckwheat	0.00
		% Variance	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	Aspiration	0.00
Sample #		Control					0.00	Weight	
		Result					0.00	Riddle	0.00
		Variance	0.00	0.00	0.00	0.00	0.00	Buckwheat	0.00
		% Variance	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	Aspiration	0.00
Sample #		Control					0.00	Weight	
		Result					0.00	Riddle	0.00
		Variance	0.00	0.00	0.00	0.00	0.00	Buckwheat	0.00
		% Variance	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	**!Zero Divide**	Aspiration	0.00

Acceptance Basis

- Total sample weight must be within +/-1.5% and sample components within +/-10%.
- A single component of a sample may be outside +/-10% but all other components must be within +/-10% including the total dockage.
- A minimum of 2 samples is required for limited acceptance for either wheat or other grain and acceptance in both wheat and other grain provide unlimited acceptance.

Sample Preparation

- Control wheat samples should contain minimum - maximum levels of 1-2% (40-80 g) riddle; 2-3% (80-120 g) seeds and broken grain removable by the No. 5 buckwheat and 0.50-1% (20-40 g) aspiration.
- Control canola/other grain samples contain minimum - maximum levels of 1-2% (40-80 g) riddle; 2-3% (80-120 g) slotted material; 0.50-1% (20-40 g) aspiration. It is recommended that canola samples have a minimum moisture content of 8%.
- Control samples must weigh a minimum of 4 kg.
- Make dockage comparisons on the same equipment.
- Introduce samples into the delivery system as close as possible to the sample divider or sampler. A measured amount of between 100g – 200 g should be dropped approximately every 20 seconds.
- Note any difficulties or sample losses.

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ISI-74b

2004-10

Figure 2.2: ISI-74b, Drop sample check

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Sampler condition and efficiency check

Elevator facility name and location		Date	
		Period From: To:	
Sampler type	CGC identification	Model number	Serial number

Examine sampler item and check for acceptance (✓) or non-acceptance (x)			
Lighting around sampling area	☐	Sampler not modified	☐
Condition of excess sample return	☐	Sampler security intact	☐
Lockout and safety switches	☐	Condition of sample divider	☐
Safe access to sampling area and device	☐	Condition of sample delivery piping	☐
Cleanliness and condition of sampler	☐	Timer, panel board and indication lights	☐
Cross-stream type sampler	☐	Sample cutter dust seals (interior)	☐
Sample cutter free and clear	☐	Sample cutter traverses entire grain stream	☐
Sample cutter rhythm of operation	☐	No visible plugs or overflows	☐
Condition and operation of delivery system:			
Mechanical sampling system acceptable for use: Yes ☐ No ☐			
All remarks including non-acceptance remarks: Inspected and authorized			

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ISI-74a 2004-10

Figure 2.3: ISI-74, Sampler condition and efficiency report

2.5 Responsibilities of the CGC regional office

The CGC regional office must provide a senior inspector to ensure that the automatic samplers within the region are obtaining representative samples. A CGC regional office senior inspector, (together with the elevator management, the CGC inspector in charge, or the service centre operations supervisor, as warranted), is responsible to:

- Approve automatic sampler installations or alterations to automatic samplers by:
  - Reviewing installation drawings
  - Examining proposed installation sites
  - Providing CGC input on sampler location and design to facility management
  - Performing approval verifications and examinations on new or altered samplers
- Initiate or perform periodic or supplemental examinations of official samplers, associated equipment, and sites
- Review completed forms ISI-74a, Sampler Condition and Efficiency Check and ISI-4b, Drop Sample Check (see Figure 2.2) submitted by the CGC inspector in charge or the service centre operations supervisor
- Periodically review sampler systems monitoring at elevator facilities or CGC service centres
- Collaborate with the CGC inspector in charge or service centre operations supervisor with suspensions and reinstatements of automatic samplers for official inspections
- Maintain copies and records of:
  - Sampler installations and site drawings
  - Correspondence with facility management regarding automatic samplers
  - Condition and efficiency reports and drop sample check reports (ISI-74a and ISI-74b)
  - All data regarding approval testing, supplemental testing, and periodic testing of automatic samplers

2.6 Responsibilities of the office of the chief grain inspector

The chief grain inspector or designate, together with the CGC regional office, are responsible to:

- Evaluate and grant or deny approval of automatic sampling systems
- Provide technical support and/or supervision during initial or supplemental sampler approval verifications

The chief grain inspector or designate is responsible to:

- Maintain and update the requirements of the CGC sampling handbook
- Maintain an updated national database of all automatic sampling systems used for collecting official samples

- Provide statistical analysis of automatic sampling systems as required

2.7 Requesting information from the CGC

When preparing to install or modify an automatic sampler used to obtain an official sample, elevator facility management should contact the CGC chief grain inspector or regional office for information and assistance. The chief grain inspector or CGC regional office will provide the requested information to the elevator facility management and the appropriate CGC affiliates.

2.8 Requesting approval from the CGC

Facility management must request approval in writing from the chief grain inspector or CGC regional office for a proposed new automatic sampling system or for modifications to an existing sampling system. In the request, include the following:

- A copy of the manufacturer's installation drawing
- A complete description of the model and type of sampling equipment (using form ISI-75)
- A representative grain flow drawing or schematic of the intended location

The schematic must show as much detail of the proposed sampling system as possible, including whatever of the following are applicable:

- Scales, scale hoppers, and surge bins
- Dump pits, elevating legs, conveyers, cleaning, and shipping bins
- Loading or receiving spouts and belts
- Official CGC inspection office or sample collection location

See Figures 2.4 and 2.5 for examples of proposed sampling schematics.

The regional office and the inspector in charge or service centre operations supervisor must keep each other informed about the status of installation and the progress of the authorization and approval for the sampling system.

2.9 CGC authorization and official approval

This section describes the process for obtaining authorization and official approval from the CGC.

1. When the CGC receives a request to approve a sampler, the CGC promptly examines the proposed sampling system and site schematic to determine whether it conforms to the basic requirements for installing and operating the automatic sampling system. The CGC reviews any perceived problem areas and discusses them with the facility management.
2. The CGC informs the requesting facility or their contractors in writing that the proposed system has been authorized in principle.
3. After the sampling system is installed, the CGC regional office, inspector in charge, service centre operations supervisor, or designate examines the system to determine

whether it complies with requirements. If it does not comply, the examiner notifies the facility management, who resolve the non-conformance issues.

4. The elevator facility gives access to the CGC regional office, inspector in charge, service centre operations supervisor, or designate, and helps them to conduct any dynamic or visual verifications of the sampling system.
5. Once the system is approved for use, the CGC regional office issues written approval to the facility management and to any other interested parties. The approval states that the sampler must be installed, serviced, operated, and maintained in a manner conforming to the CGC requirements and manufacturer's specifications.

2.10 Suspension of CGC approval

The inspector in charge or service centre operations supervisor has the authority to temporarily suspend CGC approval (stop accepting official samples from an automatic sampling system) when circumstances warrant such action. When repeated attempts to get the facility to correct infractions in a timely manner have failed, a final decision to permanently suspend approval may be made. This decision must be made jointly by the inspector in charge (or the service centre operations supervisor) and the CGC regional office. In cases where suspension is warranted, the CGC regional office forwards a written notice of suspension to the facility management and the chief grain inspector.

Infractions leading to suspension may include sampling systems that are

- Out of repair
- Found to have applied CGC security seals or locks missing without adequate explanations
- Found with unsatisfactory components or alterations
- Not maintained according to requirements or specifications
- Altered without CGC authorization
- Not examined and re-verified when due
- Inaccurate or unrepresentative

The CGC does not intend to restrict the facility's access to a sampling system. In cases where technicians have accessed a sampler without prior notification to the CGC, a verbal confirmation to the inspector in charge, service centre operations supervisor, or designate that modifications have been performed will suffice. The CGC will then examine the sampling system and replace any removed or destroyed seals.

A sampling system that has been suspended from official use will be returned to service once all necessary repairs or alterations are completed satisfactorily. Following an examination by the inspector in charge, service centre operations supervisor, or designate, the CGC will forward confirmation of reinstatement of the sampling system to the facility management.

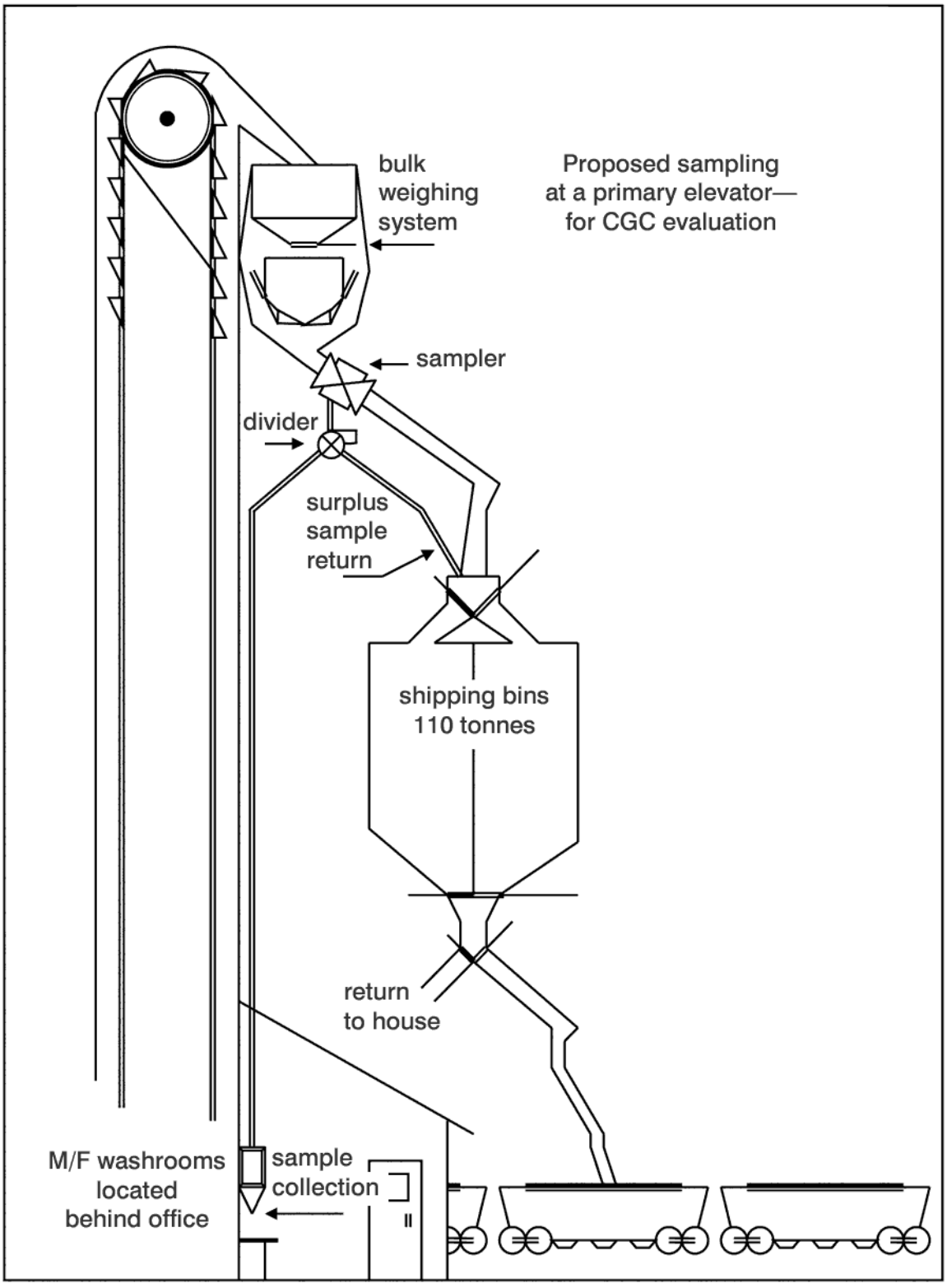

Figure 2.4: Proposed sampling schematic (primary elevator)

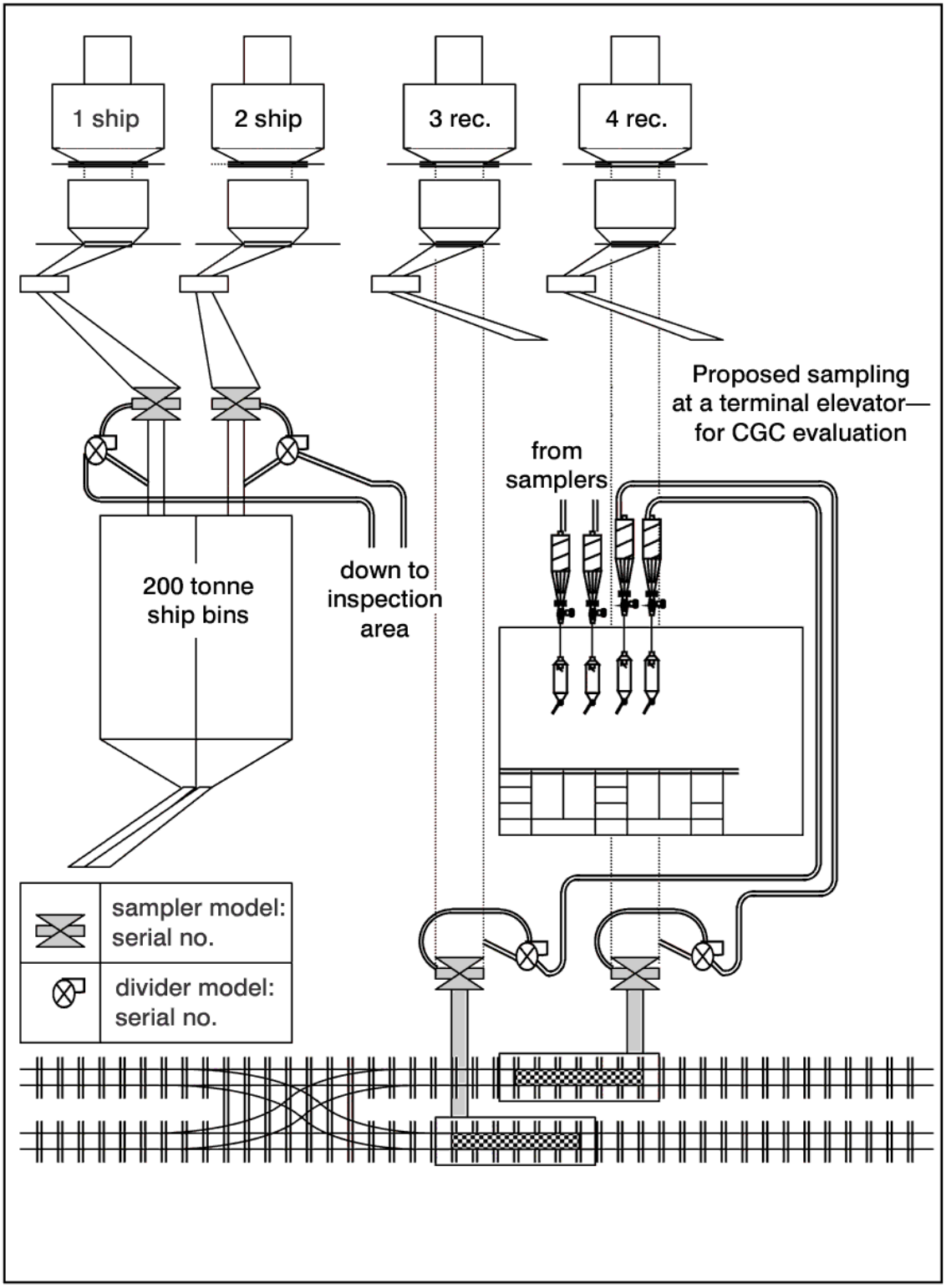

Figure 2.5: Proposed sampling schematic (terminal elevator)

Chapter 3 CGC sampler examinations

This chapter discusses when examination of a sampling unit is required.

3.1 Initial approval examination

Before being put into service for obtaining official samples, any new or modified sampling units must be examined by CGC Industry Services.

Before requesting CGC approval, the facility should compare belt samples or spout samples (manually obtained using standard manual dipping methods or an acceptable alternative) with the mechanically obtained sample from the same lot, in order to prove likeness and quality preservation through the system.

Before granting approval, CGC Industry Services examines the sampling system using wheat and canola (if the requested approval is unconditional), or using an appropriate grain of choice (if the requested approval is conditional). The examination consists of a condition and efficiency check, a drop sample check, and an operational verification. It includes all items listed on form ISI-74a, Sampler Condition and Efficiency Check (see Figure 2.3), form ISI-74b, Drop Sample Check (see Figure 2.2), and any other items that CGC Industry Services considers to be necessary. Sampling systems must comply with the examination requirements in order to be approved.

- **Condition and Efficiency Check**
  In a condition and efficiency check, the sampling system is checked for all the items on form ISI-74a.
- **Drop Sample Check**
  In a drop sample check, three samples of known quality and quantity per grain group are introduced into the delivery system as close to the primary sampler as possible, and the samples are collected and analyzed for quantity and quality.
- **Operational Verification**
  Operational verification consists of a visual and operational confirmation that the sampling systems operates as generally described and delivers a sample conforming to the requirements of this manual (see Section 7.2). The verification may also include a comparison to manually obtained samples or to samples obtained by another automatic sampler to ensure the sample resembles the properties of the grain being sampled.

3.2 Periodic drop sample check and operational verification

The Regional CGC Office performs periodic drop sample checks and operational verification in the following circumstances:

- The facility has made major repairs to the sampling or sample delivery systems. If sampler or divider parts were replaced with the equivalent manufacturer components, or the replaced parts do not affect how the sample is obtained (for example, the drive motor or dust seal), then only a condition and efficiency check may be required.

- A sampling system has been relocated or the sample delivery system has been upgraded, changed, or modified.
- A sampling system has been shut down for longer than one year.
- CGC Industry Services personnel have sufficient evidence indicating that the sampling system is of questionable accuracy. Examples of such evidence include: noticeable variations between the quality of the grain and the sample, significant differences between samples of the same lot of grain drawn at the same time by different means of sampling, significant variations in the quantity of sample for the same lot sizes, or inexplicable variations between the inward and outward quality of the same lot of grain.

3.3 Scheduled condition and efficiency checks

Note: In addition to the scheduled checks discussed in this section, a condition and efficiency check is required whenever a drop sample check is performed (see Section 3.4).

Terminal and transfer elevators

At terminal and transfer elevators, the CGC inspector in charge conducts or supervises the condition and efficiency check on all sampling systems used for official sampling. These checks are required on a 3-month basis. For facilities that operate on a seasonal basis, the sampling system is checked when the system is brought into official use and then rechecked at 3-month intervals until the facility closes.

The inspector in charge:

- Using form ISI-74a (see Figure 2.3), completes (or reviews) the condition and efficiency report
- Retains a copy onsite
- Sends copies to the elevator facility management and the CGC regional office

The CGC regional office:

- Reviews the condition and efficiency reports
- Uses the information in the reports to make recommendations to the CGC inspector in charge and the facility management
- Provides the Chief Inspector with sampler reports as required

Primary elevators

At primary elevators, the service centre operations supervisor or designate conducts the condition and efficiency check on all sampling systems used for official sampling. These checks are required once per year. For sampling systems at facilities that request inspection service intermittently, the condition and efficiency check is conducted at the discretion of the service centre operations supervisor when service is requested and as warranted.

The service centre operations supervisor:

- Using form ISI-74a (see Figure 2.3), completes (or reviews) the condition and efficiency report
- Retains a copy onsite
- Sends a copy to the elevator facility management and the CGC regional office

The CGC regional office:

- Reviews the condition and efficiency reports
- Uses the information in the reports to make recommendations to the service centre operations supervisor and the facility management

3.4 Scheduled drop sample testing

Responsibility for performing these tests is the same as for the scheduled condition and efficiency checks (see Section 3.4).

Terminal and transfer elevators

At terminal and transfer elevators, a drop sample check on all sampling systems used for official sampling must be conducted at intervals equal to the weighover period of the facility or 36 months (whichever is less), or whenever required by the CGC.

Primary and process elevators

At primary or process elevators, a drop sample check on all sampling systems used for official sampling must be conducted at least once every 36 months or as required by the CGC.

3.5 Sampler System monitoring

Where an automatic sampling system is used to collect and deliver samples for official inspections, the CGC staff on site will visually monitor the sampling system. During this monitoring, a visual check of the samplers, dividers, and delivery systems will be made for leaks, diversions, and general operation. At sites where CGC staff is permanently located, checks will be recorded in a CGC facility sampler log. At all other locations, a record of the check is to be included with the official inspection documentation submitted to the service centre or regional office.

3.6 Lockout procedures

When testing or monitoring of any sampling system requires a CGC employee to access or get close to any moving parts of a sampling system, the facility must to provide industrial lockout procedures (see, for example, 29 CFR 1910.147 Control of Hazardous Energy Sources). Lockouts must be performed in full view of CGC staff and tagged until the inspection procedures are completed.

Chapter 4 Types of sampling systems

4.1 Sampling systems that are eligible for approval

In general, the CGC will give approval only to sampling systems that extract a complete and proportional cross-section of the grain stream (both height and width), proportionally reduce the sample size, and deliver the sample to the inspection area. (Exceptions are discussed in Section 4.3.) Samplers of this type are commonly referred to as cross-stream diverter-type samplers (see Figure 4.1). The dividers and the delivery system must conform to manufacturer specifications and must be constructed of the industrial durability required to operate in the environment where the system is located.

CGC approval for any new sampling concepts will be based on the ability of the proposed sampling system to extract a two dimensional (height and width) section of the grain stream, proportionally reduce the sample size, and deliver the sample to the inspection area.

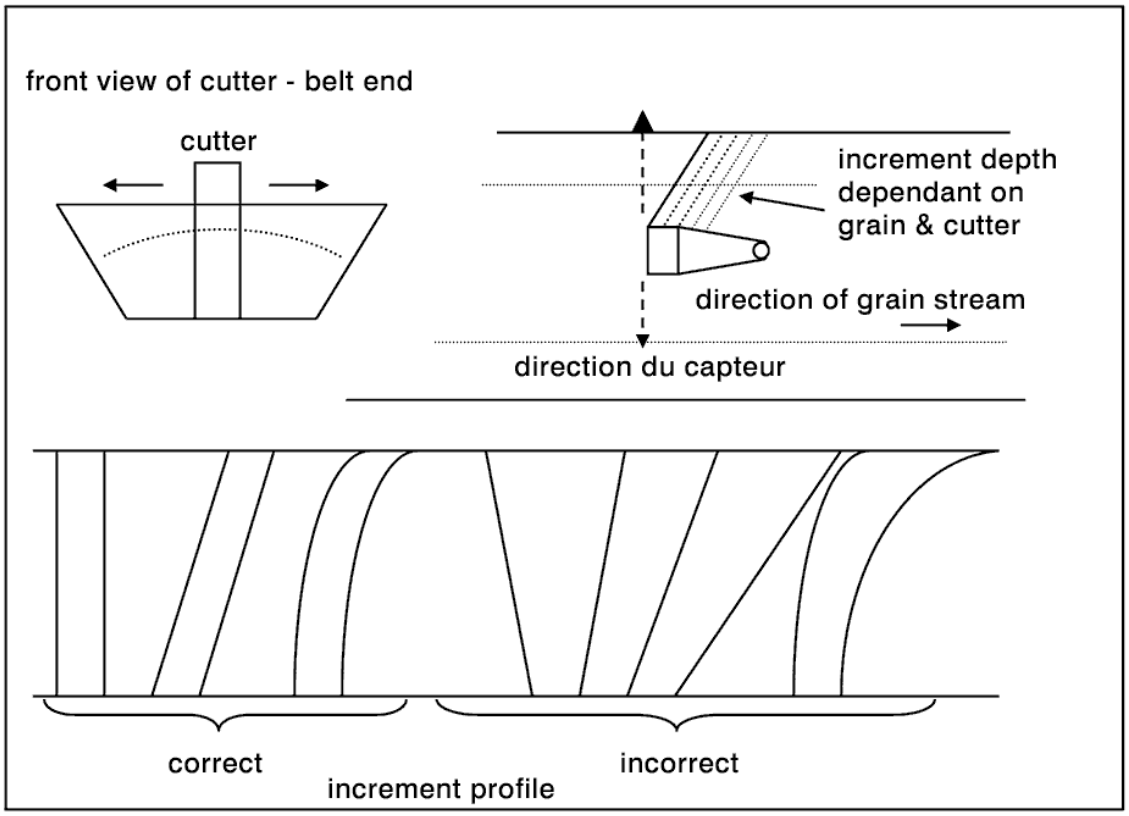

Figure 4.1: Cross-stream sampling

4.2 Arc-path cross-stream samplers

An arc-path cross-stream sampler is defined as sampler where the cutter rotates from a centre point and traverses the grain stream by following an arced path. These may be either *flowing stream* samplers or *falling stream* samplers (see Figures 4.2 and 4.3).

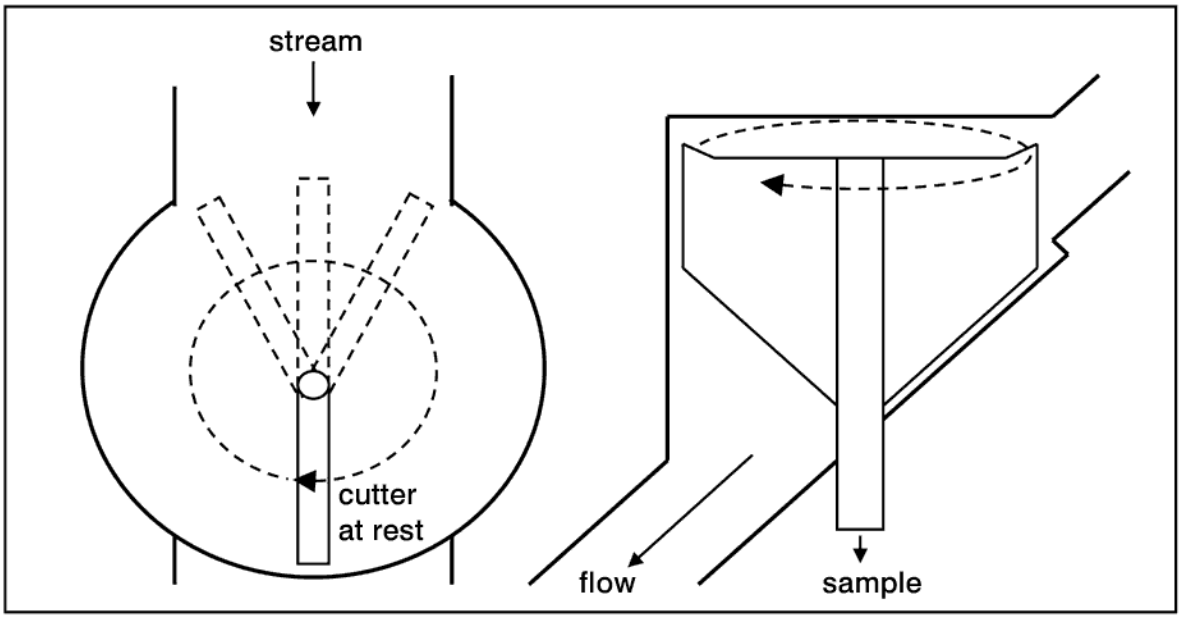

Figure 4.2: Arc-path cross-stream sampler—flowing stream

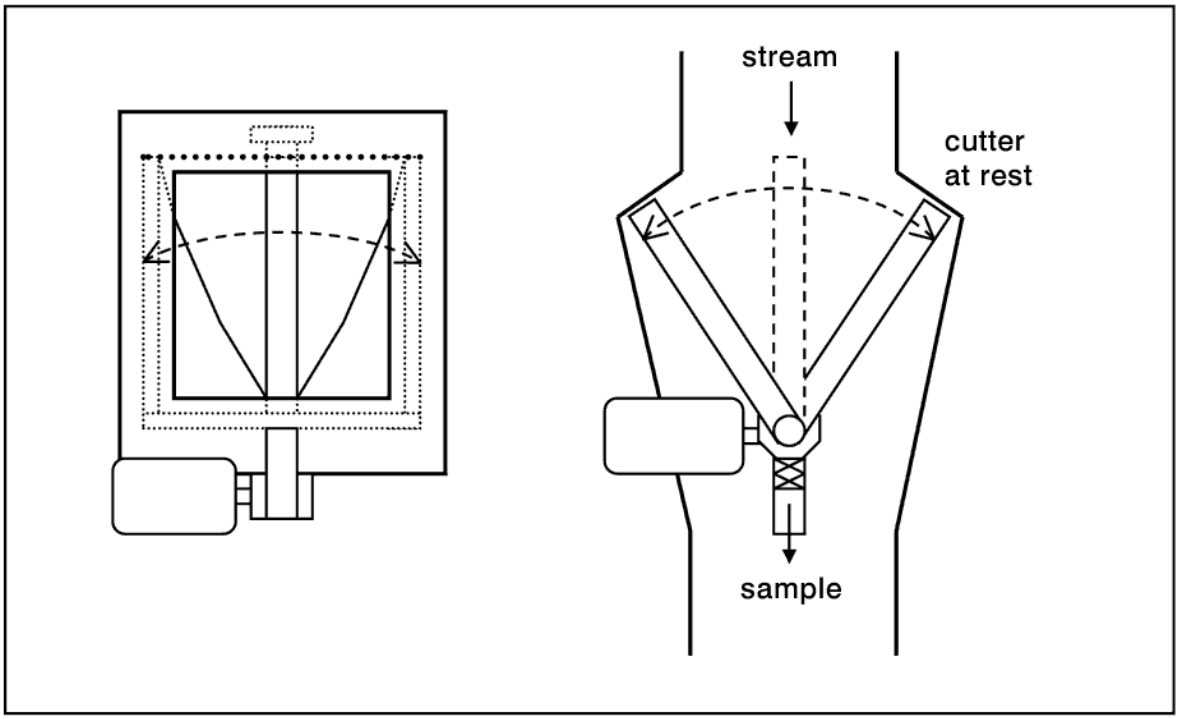

Figure 4.3: Arc-path cross-stream sampler—falling stream

Arc-path samplers may be approved for official inspection purposes, provided that the cutter opening exposes a minimum of 1.9 cm (¾ (0.75) inch), measured perpendicular to the grain stream, as the cutter enters and exits the grain stream (see Figure 4.4).

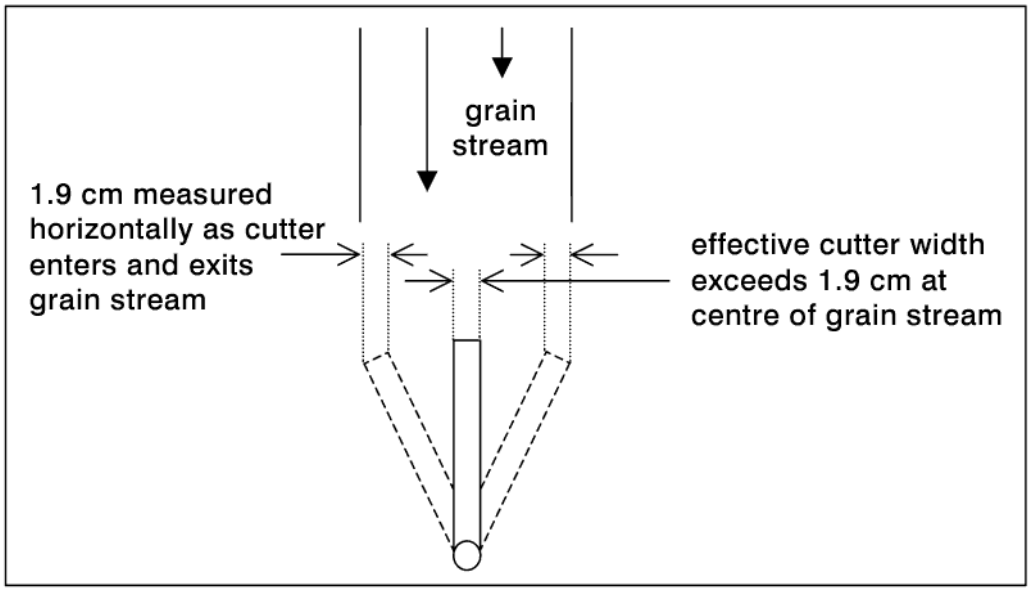

Figure 4.4: Cutter opening requirement for arc-path cross-stream samplers

4.3 Non-conforming and previously approved samplers

Woodside samplers (see Figure 4.5) strip/auger samplers (see Figure 4.6) or point type samplers (see figure 4.7) that were previously approved by the CGC are no longer authorized for regular official CGC purposes.

At the discretion of the CGC, an existing non-conforming sampling system may be used to sample grain during a weigh-over provided that the sampling system is under the direct observance of the CGC.

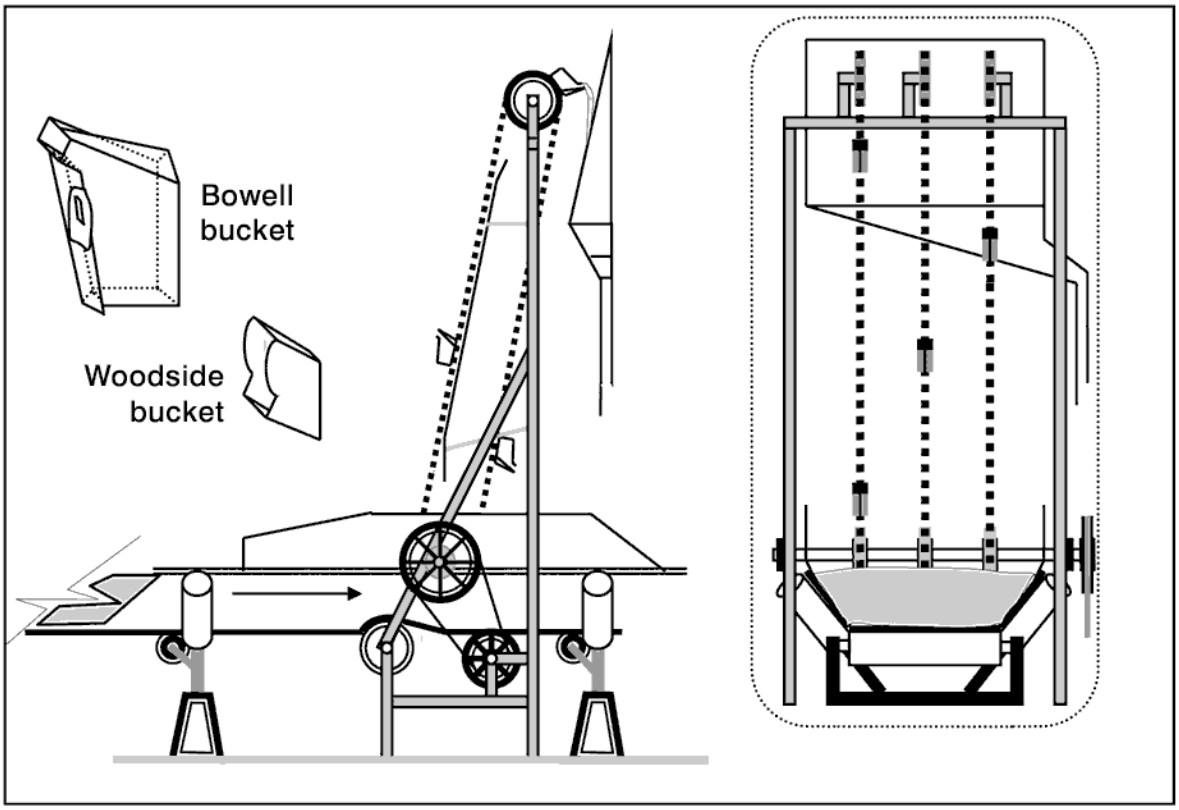

Figure 4.5: Woodside sampler

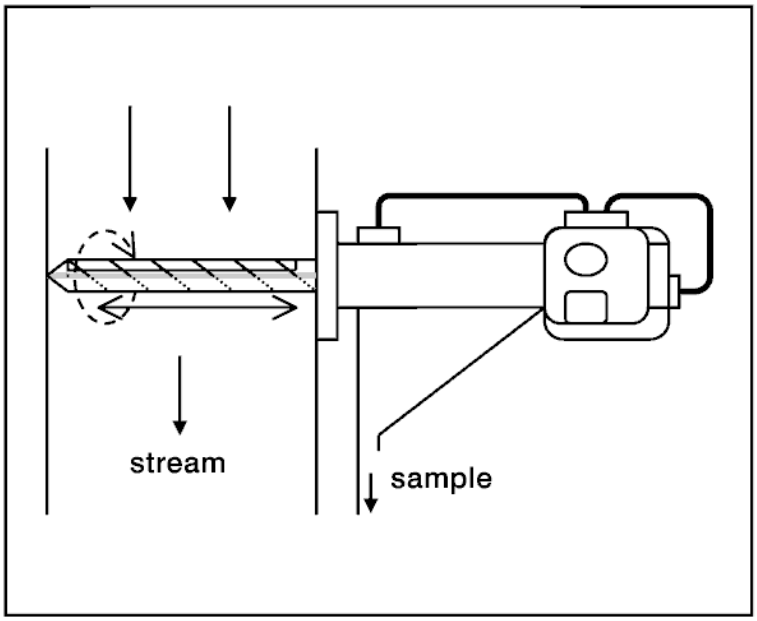

Figure 4.6: Strip/auger sampler

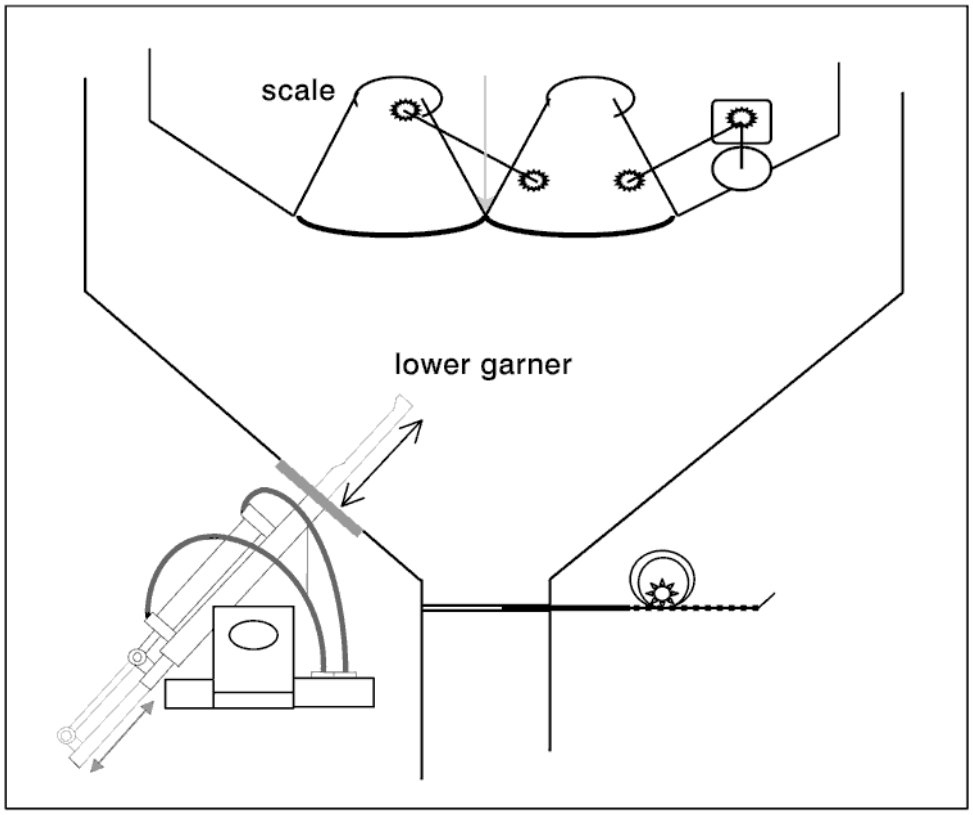

Figure 4.7: Point type sampler

Chapter 5 Sampling systems: general requirements

5.1 Intended use

The design, composition, and construction of a sampling system and its associated equipment must suit the environment, the installation location, and the intended official use of the sampling system. The device must be able to withstand normal operation within the facility without loss of reliability or accuracy. Under normal operation, any moving parts must remain operable and any adjustments must remain reasonably constant.

5.2 Marking

The primary sampler and associated divider or pneumatic components must be permanently marked to show the manufacturer, model, and serial numbers. The rated maximum throughput capacity must also be marked on the device or be readily available based on the model number.

5.3 Repeatability

The overall dimension of the sample entry and sample cutter must be adequate for the volume and velocity of the grain being sampled, and must allow:

- All grain presented for sampling to be accepted as the collection opening passes through the grain stream
- The sample cutter to deliver the entire collected sample to the divider for reduction or to the final sample collection site

When collecting official samples:

The rate of grain flow past the sampler should not be less than 25% of the rated maximum capacity of the grain elevation/conveying system.

All sampling systems installed within an elevator must provide a similar quantity of sample when used for the same purpose. The quantity of sample delivered must be within 10% of any other sampling system when sampling the same type and quantity of grain.

5.4 Speed of traverse

Any non-programmable speed setting must be set to maximize the efficiency and effectiveness of the sampling system. The traverse speed of the sample cutter across the grain stream must be set at 0.47 – 0.51 metre per second (18 – 20 inches per second) and at an even rate of acceleration.

5.5 Power, air, and hydraulic sources

Electrical power sources for the operation of a sampler and any associated equipment must be maintained at a constant voltage to ensure the smooth and unaffected operation of the equipment.

Air or hydraulic sources for the operation of a sampler and any associated equipment must be maintained at a constant and uniform pressure to ensure the smooth and unaffected operation of the equipment. If the operation of any equipment attached to the same air or hydraulic supply affects the operation of the sampling system, a separate air or hydraulic supply will be required.

5.6 Controls

During the operation of a sampling system for official inspections, the control of the timer and resets must be under the direction of the CGC staff on site or be readily available to them. If a grain flow indicator is required to verify grain flow rates, it must be made available. Equipment controls must be marked conspicuously and be within viewing range of the CGC staff.

5.7 Enclosure and access

All sampling components must be maintained within protective enclosures. The sampling system must have strategically located access points for inspections. The locations must allow for ready and easy examination of the sampler components, including the sample cutter openings, motion activation equipment, and dust seals.

5.8 Sample collector openings

The opening of a sampler cutter must be at least 1.9 cm (¾ (0.75) inch) wide, measured horizontally to the grain stream (see Figure 5.1). The opening may be reinforced with narrow support braces to provide structural support and eliminate any distortions to the opening.

A gravity or automatic sample divider must be adequately sized to reduce the quantity of sample from the primary sampler without backing up. Sample divider openings used to select the final sample must be at least 1.9 cm (¾ (0.75) inch) measured horizontally to the primary sampled grain stream.

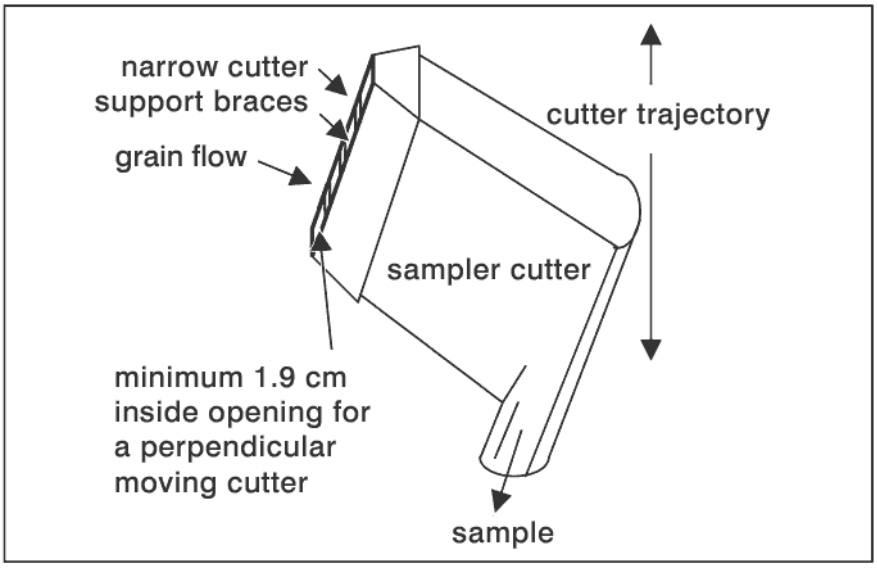

Figure 5.1: Sampler cutter/braces

5.9 Sample return

Where the sampler system is installed downstream of a weighing system in a shipping installation or upstream of a weighing system in a receiving installation, means must be provided to return the surplus sample back to the source grain lot. Where miniature bucket elevators, screw conveyers, or drag conveyers are used to move the surplus sample, they must be adequately sized to prevent a backlog of grain in the system.

Either the return line for the sample must be to a neutral air pressure location, or automatic means must be in place to prevent any dust or lightweight material from being pressured back into the sample divider or from being vacuumed or vented out of the sample divider.

5.10 Sample delivery lines

Sample delivery lines from the sample divider to the inspection area must follow the most direct route to the inspection area with as few bends as possible (see Figure 5.2). In particular:

- Delivery lines must not have a turn radius greater 90 degrees and must be laid vertically or horizontally as much as possible.
- The delivery conduit must be cut squarely and the inside edges honed to remove any roughness or burrs.
- Conduit for negative or positive pressures must be connected with an airtight coupling.
- An electrical path must be maintained over the entire delivery system with suitable grounding points to discharge any static build up. (It is recommended that sample delivery lines be of metal conduit construction, aluminum straight pipe, and stainless steel elbows.)

- The air intake on pneumatic systems must be equipped with a suitable cover to stop unwanted material from being introduced into the official sample. The cover must be removable to allow for inspection and any necessary testing.

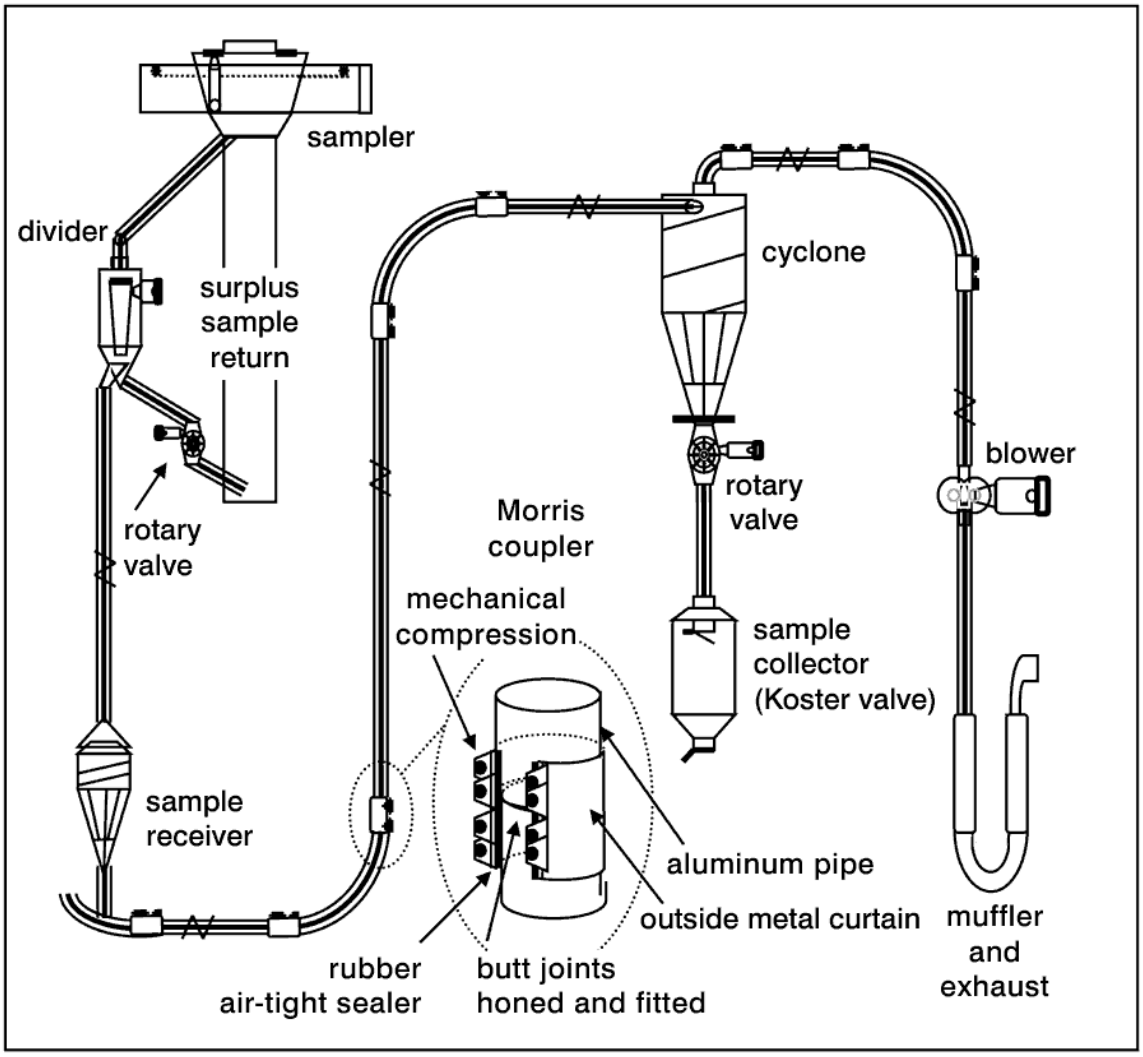

Figure 5.2: Delivery lines for samples

5.11 Sampler delivery access

A sampler delivery system must have an access point as close to the primary sampler as possible and after any sample divider, to allow the CGC to introduce CGC drop samples.

5.12 Clearing between lots

The entire sampling system must be as self-clearing as possible to prevent sample contamination from one lot of grain to another.

Chapter 6 Sampling systems: installation and use

6.1 Location and installation

The location selected for a proposed sampling system must meet the requirements of the CGC. Any nearby equipment must not adversely affect the operation of the sampler or delay its operation in any manner. Lighting in the area of the sampler must be sufficiently intense (approximately 100 lux) and preferably permanently installed in order to allow visual inspections of the sampler.

6.2 Segregation of samples

This section describes how to locate samplers and segregate samples in such a way as to ensure that the sample is representative of the grain lot.

- On inward (receiving) sampling systems, the sampler must be located before or immediately after the initial elevation. The sample is considered representative only after the entire lot of grain being sampled has passed the sampler.
- On outward (shipping) sampling systems, the sampler must be located after the final elevation and as close as practical to the end of the loading spout. The sample is considered representative only after the entire lot of grain being sampled has passed the sampler.
- Samplers located in spouts must not come after a vertical drop of more than 15 metres or be within 0.6 metre of any bends in the spouting.
- Before beginning a shipment to railcars, the grain delivery system must be purged with the grain to be officially sampled. The purge must be to the furthest return-to-house point in the shipping system. The grain delivery system must also be purged in the same way if the elevator operator changes the grade or grain to be sampled.
- Outward samplers used for loading railcars must be installed or operate in such a way that the railcar into which the sampled grain is loaded can be identified for each sample.
- Where the sampler is located above the weighing system, or below the scale but before shipping or pre-weigh bins, there must be automated means available for CGC staff, such as bin or hopper empty sensors, to identify that the grain being sampled has been delivered to the carrier.

6.3 Divider installation

The divider associated with a sampler must be installed in accordance with the manufacturer's specifications and be reasonably close to the main sampler. The divider installation site must be free of hazards, have adequate space for inspecting the device, and be sufficiently clean from dust, spilled grain, and refuse. Lighting in the area of the divider must be sufficiently intense (approximately 100 lux) and preferably permanently installed. Dividers may be of the swing arm type or the rotary type (see Figure 6.1).

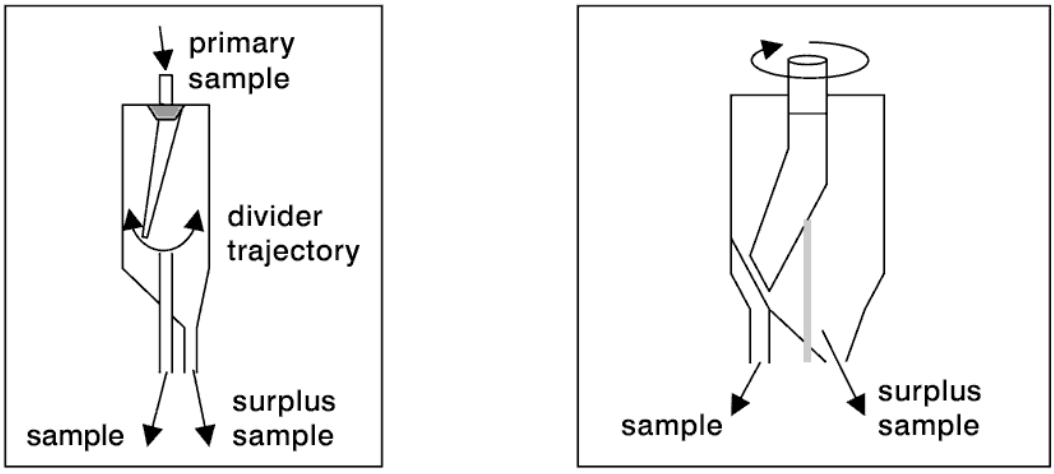

Figure 6.1: Swing arm divider and rotary divider

6.4 Timer installation and use

Sampler timers may be either analog or digital, and must have a maximum 1-second dial or timer interval setting. A sampler timer must be accurate to within ±1 second of the cycle time.

At facilities where the timers reside in the programmable logic controller of the facility, access to the programming must be made available on request. The facility must bring any adjustment to the timing of the sampler to the attention of the CGC inspector on site.

When loading or unloading railcars or trucks, the timer of a cross-stream sampler used for official samples must be set to an interval not greater than 20 seconds. The divider reduction rate and the sampler timer interval must be set to collect a sample quantity representing between 0.0025 percent and 0.0075 percent of the lot being sampled.

When loading or unloading vessels or barges, the timer of a cross-stream sampler must be set to an interval not greater than 45 seconds. The divider reduction rate and the sampler timer interval must be set to collect a sample quantity representing between 0.0005 percent and 0.001 percent of the lot being sampled.

When loading railcars where the sampler is below the weighing system, it is permitted to interlock the sampler with a scale draft counter if the following is met:

- Where the draft of the bulkweighing system is less than 8 tonnes, the sampler may be timed to traverse at approximately the middle of the draft discharge or it may traverse

at a random interval during the discharge The random interval must not be controlled by an operator and must ensure that the sampler traverses during the period when grain is flowing.

It is also acceptable to have the sampler traverse the grain stream based on the time during which grain is actually flowing past the sampler in a spout. To accomplish this, a flow detector is installed immediately before or after the sampler and is integrated with the sampler control. The flow sensor activates the sample interval timer when product is flowing in the spout and stops the time when there is no flow. When flow is detected again, the interval timer resumes from the point where it stopped.

For example, if the sample interval is 20 seconds and flow stops when the elapsed time since the sampler last traversed is 16 seconds, the sampler traverses when flow has resumed for 4 seconds.

6.5 Blending limitations

Subject to the limitations of the Canada Grain Act and the Canada Grain Regulations, the blending of grain must be completed in an even and uniform manner before the grain reaches the sampler.

6.6 Integrity of grain lots

Means must be provided to prevent the addition of grain or other commodities to the grain stream, or the removal of any portion of the sampled grain, after it has passed the sampler. Feeder spouts or diversion spouts after the sampler must be sealable with CGC security seals, keyed locks, or positive electronic means under the direction of the CGC. If, during official CGC inspections, security means are found to be missing or to have been tampered with, the shipment or lot will be rendered non-representative.

The sampling, weighing, and delivery systems must not be manipulated, operated, or circumvented in any manner intended to purposefully influence, degrade, or bias the sample, any part of the sample, or the lot of grain the sample represents.

Chapter 7 Drop sample check

7.1 Preparation

For any drop sample checks, the facility must assist with arrangements to prepare the sampling equipment for testing.

The CGC prepares and evaluates any drop samples on equipment tested, approved, and maintained by the CGC.

7.2 Method

In a drop sample check, three samples of known quality and quantity per grain group are introduced into the delivery system as close to the primary sampler as possible. After the drop samples are dropped or pneumatically conveyed through the sample delivery system, they are recovered and analyzed for quantity and quality (see ISI-74b, Drop Sample Check, Figure 2.2). In order to pass the drop sample check, a minimum of two recovered samples per grain group must meet the requirements.

Requirements for drop samples:

- Drop samples must each weigh approximately four kilograms.
- For wheat samples, dockage components must meet the following requirements:
  - No. 25 Riddle material.....Min. 1%, max. 2% (40 – 80 grams)
  - No. 5 buckwheat material .....Min. 2%, max. 3% (80 – 120 grams)
  - No. 4 Aspiration material.....Min. 0.5%, max. 1.0% (20 – 40 grams)
  - Total dockage.....140 – 240 grams
- For canola samples, dockage components must meet the following requirements:
  - No. 7 Round hole and riddle material .....Min. 1%, max. 2% (40 – 80 grams)
  - .32 Slotted material.....Min. 2%, max. 3% (80 – 120 grams)
  - No. 5 Aspiration material.....Min. 0.5%, max. 1.0% (20 – 40 grams)
  - Total dockage.....140 – 240 grams

Note: Where canola is unavailable, other grains such as peas, soy, or corn can be substituted. Dockage components must meet the same requirements as for canola.

- On recovery, the overall loss of a drop sample must not be more than 1.5 percent of the original weight (that is, not more than 60 grams in a 4-kilogram sample).
- Analysis results for the recovered samples must be within 10 percent of the values of the original sample for at least three of the four components.

7.3 Subject to CGC discretion

Before granting final approval or certification of an automatic sampling system, the CGC will review the system in a way that matches its usual day-to-day operation. Where possible, this evaluation will be conducted at the same time as official CGC service is provided after a successful drop sample check, and in a way that matches the prospective operation of the sampling system at the facility.

Chapter 8 Conventional sampling (Non-cross-stream)

8.1 General

Samples to be forwarded to the CGC for analysis that are obtained by a conventional sampling method outlined in Chapter 8 must be accompanied by a CGC "Sample Record and Information Slip"—Form I-120 (Section 8.2). The record must clearly state the method and the equipment by which the sample was taken and any conditions present that may have an influence on the sampling process.

Samples obtained by conventional methods that are to be presented to the CGC for official certification analysis must:

- be obtained by authorized personnel using CGC procedures and appropriate sampling equipment.
    1 Authorized personnel include CGC personnel or third party agencies accredited by the CGC.
    2 CGC procedures include all CGC directives, methods, policy bulletins, and memorandums.
    3 Appropriate sampling equipment includes the conventional sampling devices listed herein.
- be of the prescribed quantity (Section 1.4 – Types of official samples and Section 1.5 – Types of unofficial samples),
- be properly identified including the method by which it was taken,
- be handled securely without being mixed with other grain samples or bulk grain, and,
- include, where required for moisture analysis, a minimum sub-sample of 300 grams in an airtight container alongside the primary sample.

Samples presented to the CGC for analysis that are taken by anyone other than the CGC or an accredited third party will be only eligible to receive a CGC Submitted Sample Certificate Type 1 or Type 2. The sampling methodology used to collect the sample may be referenced on the certificate.

The maximum number of railcar or container sub-lot samples that may be combined for analysis and inclusion on one CGC certificate is 10.

Sampling and sample-reducing equipment

Hand scoop – see chapter 9 for applicable certification

The hand scoop (Figure 8.1) is a sampling device consisting of a rigid material scoop attached to a 50-100 centimetre handle which is stiff and durable. The sample collector capacity must be a minimum of 50 grams and not more than 200 grams.

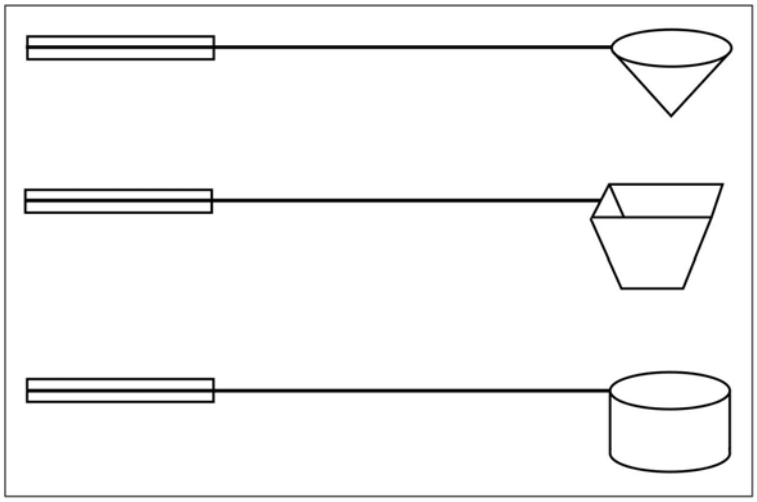

Figure 8.1: Hand scoop

Bag trier – see chapter 9 for applicable certification

The bag trier (Figure 8.2) is a sampling device consisting of an elongated core shaft that has a slotted opening along its length. The slot opening or sample trough must measure a minimum of 19 mm (¾ inches).

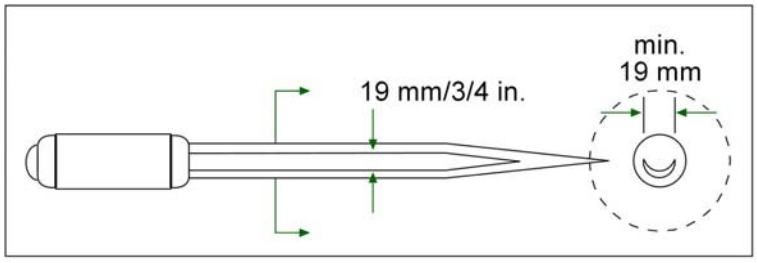

Figure 8.2: Bag trier

Grain probe – see chapter 9 for applicable certification

The grain probe (Figure 8.3) is a sampling device consisting of an outer sleeve and an inner tube with perforations at regular intervals along its length. It is used for sampling bulk grain in railway cars, trucks, containers, bins, or holds of ships. Probes vary in length from 1 meter (40 inches) to 3.65 meters (144 inches). Grain probes may be of "open handled or compartmentalized" construction.

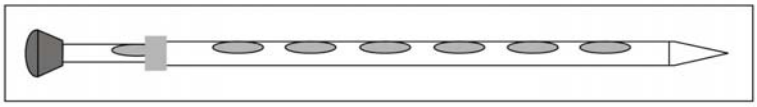

Figure 8.3: Grain probe

Pneumatic probe sampling unit (truck probe) – see chapter 9 for applicable certification

A pneumatic probe sampling unit (Figure 8.4) is a hydraulic powered sampling system that may be used to sample trucks, railcars, or barges. Through a series of hydraulic pistons, a sampling probe is inserted into a bulk lot of grain. On reaching maximum probe depth, a pneumatic recovery system is activated to retrieve the sample from the bulk grain lot and to deliver it to a sample container in the inspection area.

Note: Open-ended vacuum/constant suction probes (Figure 8.6) are not approved for CGC use.

Figure 8.4: Pneumatic probe sampling unit

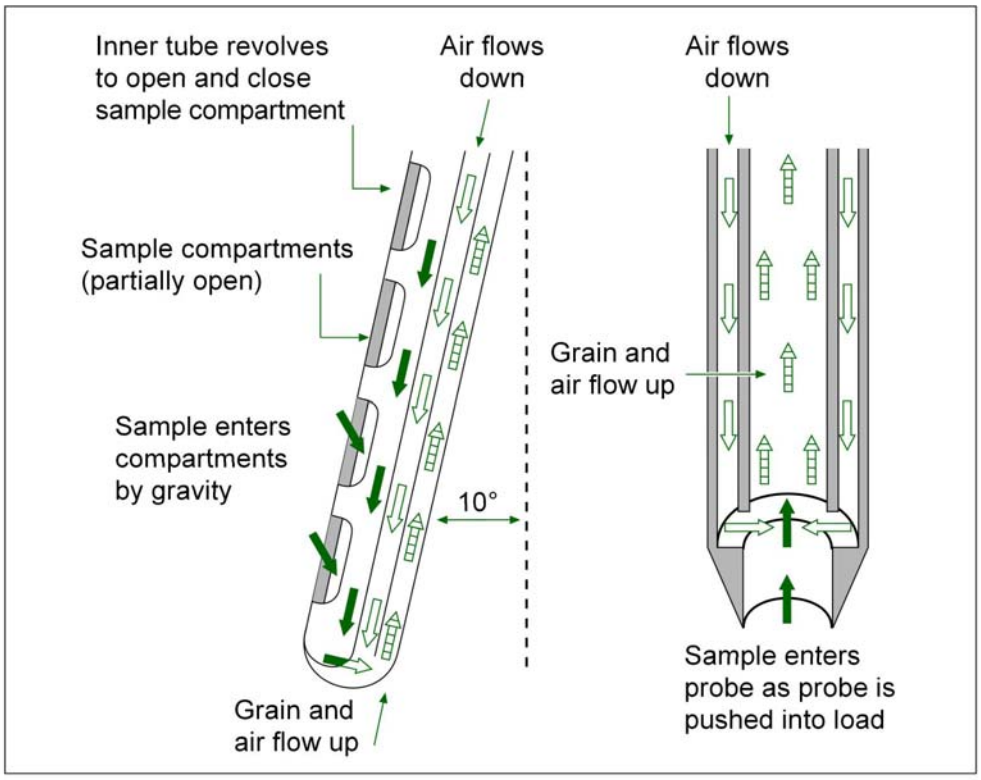

Figure 8.5: Compartmental and core tip probes

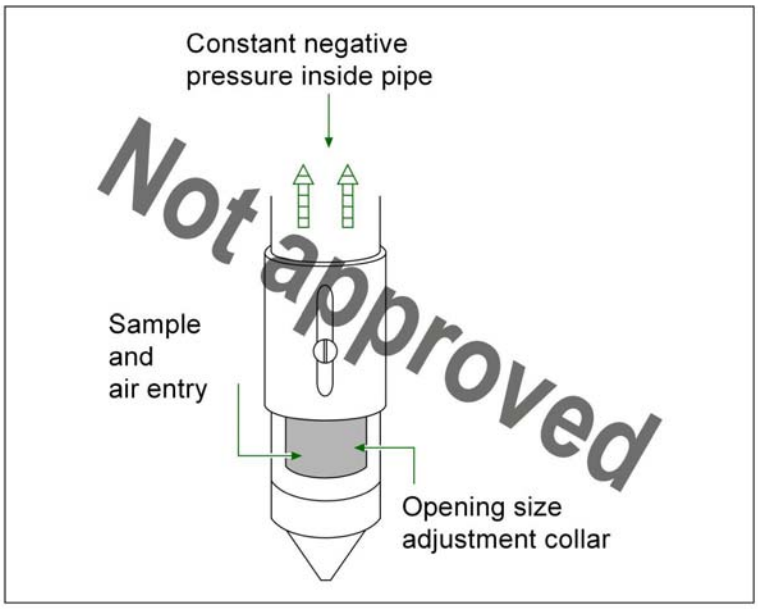

Figure 8.6: Open-ended vacuum/constant suction probes

Boerner-type divider

A Boerner-type divider (Figure 8.7) is a gravity-operated dividing apparatus that reduces a grain sample. The sample is placed in the upper hopper and released by opening the valve located in the hopper throat. The sample flows downward and is evenly dispersed over a cone with evenly spaced separations. The divided sample is rejoined in two grain streams which empty into two collecting pans at the bottom.

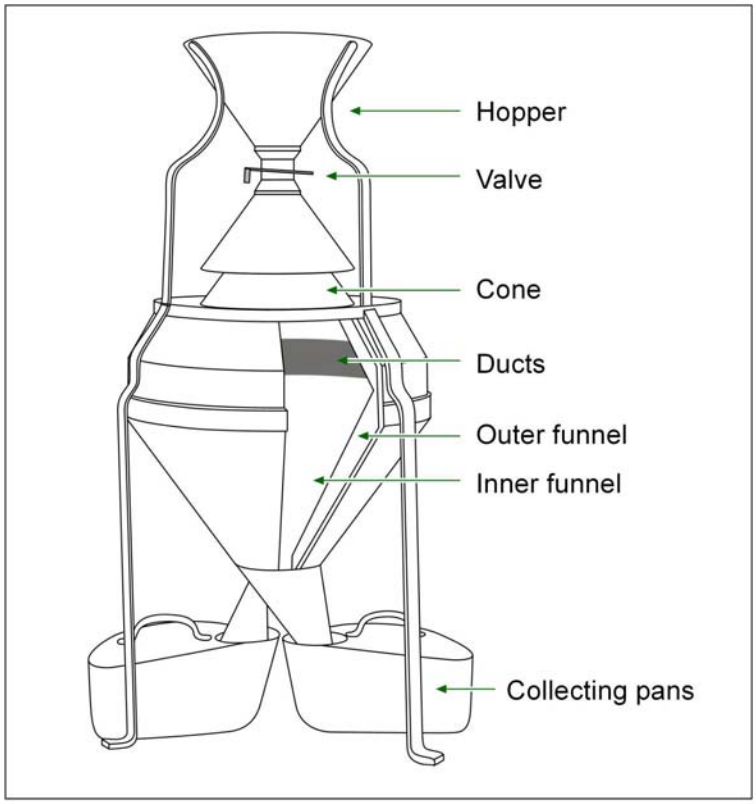

Figure 8.7: Boerner-type divider

8.2 Form I-120 – Sample Record and Information Slip

Every sample and every separate portion of a sample must be properly identified as to the sampling process and the grain it represents on the Canadian Grain Commission's Sample Record and Information Slip – Form I-120. Grade determining conditions such as insects, large stones, heated grain, moths or excreta that may be apparent in the lot during sampling but not in the sample must be included as comments on the sample ticket. Information from the Sample record may be referenced on CGC certification documents.

Canadian Grain Commission | Commission canadienne des grains

Canada

Sample record and information slip

CGC ☐ or company name:	
Sample taken by:	_____ *(name - please print)*

Sample submitted to the CGC for:
☐ Official CGC Analysis
☐ CGC Submitted Sample Type 1 Certification Analysis
☐ CGC Submitted Sample Type 2 Certification Analysis

Shipper:	
Commodity:	
Sampling location:	
Sample represents: (Lot ID / no. of bags)	
Sampling method and description:	
Remarks:	
Date:	

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I-120 2007-08

8.3 Probe sampling patterns – bulk grain

Vessels

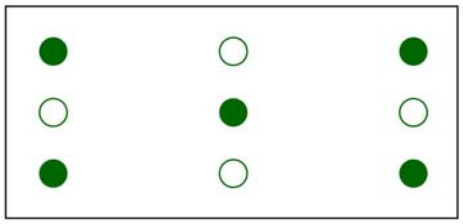
A vessel hold cannot be manually probe sampled to determine overall quality. Probe sampling of a vessel hold may only be done to determine the quality parameters of portions of a grain lot previously sampled by automatic means to confirm grain quality for discharge or to determine grain quality to conclude a discharge.

Open top containers – approximately 20 tonnes

Probe size: 1.6 metre min.

No. of probe samples: 5

Probe where indicated by ●



Note: If the indicated probes do not provide an adequate sample size, additional probes should be taken where indicated by ○

Hopper car – approximately 85 tonnes

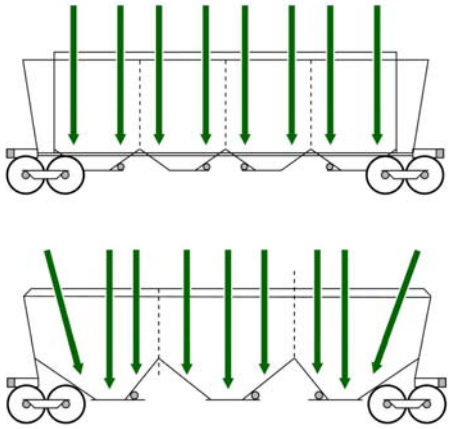
Probe size: 1.6 metre min.

No. of probe samples:

8 per 4-compartment car

9 per 3-compartment car

Probe as indicated by arrows.

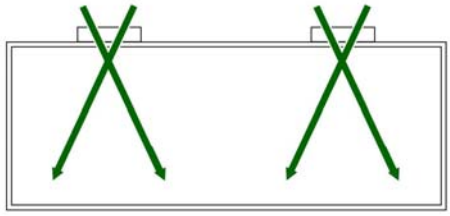


Hatch top container – approximately 20 tonnes

Probe size: 1.6 metre min.

No. of probe samples: 4 minimum

Probe as shown for a two-hatch container.



Note: Take as many probes as possible and record any limitations on Form I-120 – Sample Record and Information Slip.

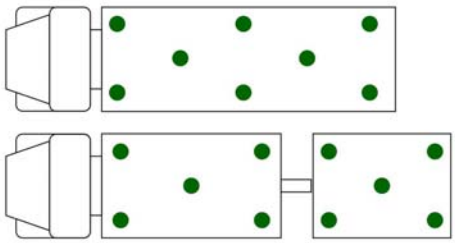
Flat Bottom Trucks

Probe size: 1.6 metre min.

No. of probe samples:

8 minimum/single trailer

10 minimum/truck and trailer



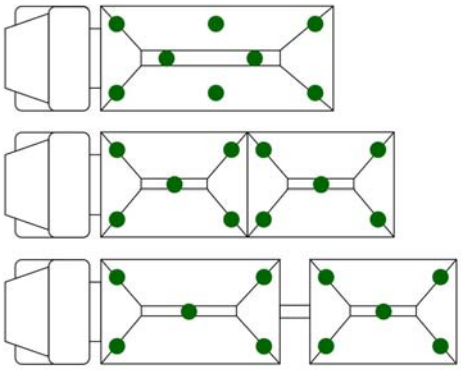
Hopper Bottom Trucks

Probe size: 1.6 metre min.

No. of probe samples:

8 minimum/single truck

10 minimum/partitioned truck or truck and trailer



Probe where indicated by ●

8.4 Hand scoop sampling procedure (Figure 8.1)

Caution: Sampling must be done in an area where the entire grain stream is accessible. All safety precautions must be adhered to in attempting to sample from a grain stream or near a moving conveyor.

- The minimum amount of sample required to be taken prior to any dividing down must be at least 4 times the amount of sample outlined in Chapter 1 – Sections 1.4 and 1.5.

Procedure:

1. The sampling frequency must be at least one sample selection per minute taken systematically throughout the transfer.
2. On commencement, insert the hand scoop into the grain stream at alternating points across the stream (left, middle, right). The scoop should be placed into the grain flow ‘upstream’ and matching the belt speed, moved ‘downstream’ as the scoop is turned to fill with grain. Moving the scoop with the grain flow allows sampling of the appropriate location on the belt without splashing grain or overflowing the scoop.
3. Examine the increments for uniformity while sampling.
4. Combine the increment scoop samples in a sample container.
5. Reduce the sample to the appropriate size.

    * *If a moisture test is required, place the sample or a 300-gram portion of the sample in an airtight container with proper identification.*

    ** *A Boerner-type divider must be used to reduce “official samples”.*
6. Complete a Sample Record and Information Slip (Form I-120) and include it with the sample.

8.5 Probe sampling procedure for sacked grain (Figures 8.2 & 8.3)

Caution: Safety precautions must be adhered to while sampling stacked grain sacks.

- Sacked grain refers to grain in any type of bag or tote.
- The facility/requestor must provide personnel to move sacks as necessary.
- All sacks in the lot must be accessible.
- All sacks in the lot must be of the same product, weight value and identification.
- All sacks must be tagged or stencilled with lot number/identification.
- Lot information must be identified on the Sample Record and Information Slip (Form I-120).
- The minimum amount of sample required to be taken prior to any dividing down must be at least 4 times the amount of sample outlined in Chapter 1 – Sections 1.4 and 1.5.

Table 1 – Lot/sub-lot unit requirement

Item	Number of bags	Bags to be sampled	Totes
1	1 - 30	All	All totes must be sampled. (maximum 300 totes per lot)
2	31 - 150	30	
3	151 - 300	60	
4	301 - 450	90	
5	451 - 1200	120	
6	1201 - 2000	200	
7	2001 - 3000	300	
8	3001 - 4000	400	
9	4001 - 5000	500	

Procedure A: Grain in bags

Bags are grain sacks generally weighing 50 kg or less.

1. Examine the lot and determine the number of bags (frequency) to be sampled and the quantity of sample required from each bag. (*i.e. 4000-gram sample/120 bags sampled = 33.3grams/bag*)
2. Select the required bags to be probed in a well distributed pattern.
   * It is recommended that lower stacked bags be struck with the large end of the trier to relieve the pressure on the bag and prevent it from bursting.
3. With the slot opening of the bag trier facing down, insert the trier in between the fibres of the bag using a push-and-turn motion. Rotate the trier 180 degrees and tilt the trier handle downwards to allow some of the product to flow out of the bag. Retract the trier and readjust the bag fibres to close the gap. For official samples, a CGC bag patch must be applied over the probing site. Examine each increment for uniformity and ensure a suitable amount of sample is taken from each bag.
4. Reduce the sample to the appropriate size.
   * *If a moisture test is required, place the sample or a 300-gram portion of the sample in an airtight container with proper identification.*
   ** *A Boerner-type divider must be used to reduce "official samples".*
5. Complete a Sample Record and Information Slip (Form I-120) and include it with the sample.

Procedure B: Grain in totes

Totes are grain sacks generally weighing 250 kg or more.

1. All totes in the lot must be accessible and must be sampled.
2. The maximum number of totes in a lot or sub-lot is limited to 300.
3. After reaching maximum depth, open the probe.
4. Close the probe.
5. Extract the probe and release the sample onto a cloth, trough or into a sample container and examine it for uniformity. Based on the quality and quantity of sample taken by the probe, determine if multiple probes are required.
6. A minimum of 2 probes per tote is required.
7. Reduce the sample to the appropriate size.

    * *If a moisture test is required, place the sample or a 300-gram portion of the sample in an airtight container with proper identification.*

    ** *A Boerner-type divider must be used to reduce "official samples".*
8. Complete a Sample Record and Information Slip (Form I-120) and include it with the sample.

Tote

Bags

8.6 Probe sampling procedure for railcars or trucks (Figure 8.3)

- Sample drop cloths or troughs must be of adequate length and free from holes or damage to allow for the visual inspection and the retention of the sample.
- The minimum amount of sample required to be taken prior to any dividing down must be at least 4 times the amount of sample outlined in Chapter 1 – Sections 1.4 and 1.5.

Procedure:

1. Complete the Sample Record and Information Slip (Form I-120) as much as possible prior to ascending any conveyance.
2. With the slots closed, insert the probe into the grain.
3. On reaching maximum depth, open the probe.
4. Close the probe.
5. Extract the probe and release the sample.
6. Repeat steps 2 through 5 until an appropriate number of samples have been collected. (Section 8.3 – probe patterns). Based on the quality and quantity of sample taken by each probe, determine if additional probes are required.
7. Check the sample for uniformity and note irregularities.
8. Combine the sample into a sample container.
9. Reduce the sample to the appropriate size.

    * *If a moisture test is required, place the sample or a 300-gram portion of the sample in an airtight container with proper identification.*

    ** *A Boerner-type divider must be used to reduce "official samples".*

10. Complete a Sample Record and Information Slip (Form I-120) and include it with the sample.

Note: Probe sampling of a vessel hold is to be conducted only to reaffirm or conclude specific quality parameters of grain previously sampled by an automatic sampling system during or for a discharge.

8.7 Pneumatic truck probe sampling (Figure 8. 4)

Caution: Pneumatic probe samplers must be operated by facility staff trained in the operation and use of the device.

- The minimum amount of sample required to be taken prior to any dividing down must be at least 4 times the amount of sample outlined in Chapter 1 – Sections 1.4 and 1.5.
- Sampling patterns outlined in Section 8.3 – Probe sampling patterns – must be followed for probe sampling of railcars and trucks.

Procedure:

1. The probe is inserted into the grain to the bottom of the carrier.
2. After the probe has reached its maximum depth:
    - Compartmentalized probe – after the compartments are opened and closed, the pneumatic recovery system is activated to transfer the sample to the collection box.
    - Core tip – the pneumatic recovery system is activated to transfer the sample to the collection box.
3. Repeat steps 1 and 2 until an appropriate number of samples has been collected. (Section 8.3 – Probe sampling patterns).
4. While drawing the sample, each increment should be checked for uniformity. Based on the quality and quantity of the samples taken, determine if additional probes are required.
5. Reduce the sample to the appropriate size.

    * *If a moisture test is required, place the sample or a 300-gram portion of the sample in an airtight container with proper identification.*

    ***`A Boerner-type divider must be used to reduce "official samples".*
6. Complete a Sample Record and Information Slip (Form I-120) and include it with the sample.

8.8 Point type and strip type automated sampling

Samples taken by either point type (Figure 8.8) or strip type (Figure 8.9) sampling systems are only eligible for a CGC Submitted Sample Certificate Type 2 regardless of the overseeing authority.

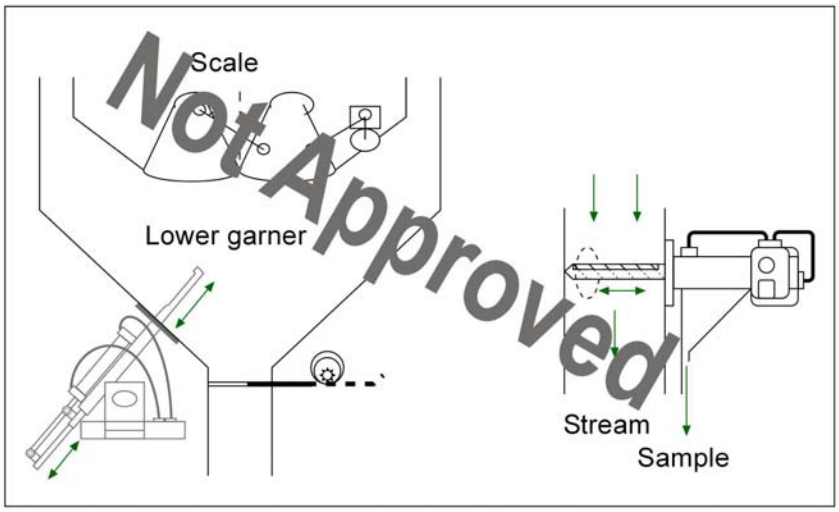


Figure 8.8: Point type

Figure 8.9: Strip type

Chapter 9 CGC analysis and certification

	Sample taken by diverter sampler as per CGC guidelines	**Sample taken by hand scoop as per CGC guidelines**	**Sample taken by bag trier, hand probe, or pneumatic probe as per CGC guidelines**	**Sample taken by any sampling method not approved or not conforming to CGC guidelines**
Vessel shipment by CGC	**CERTIFICATE FINAL**	Not applicable	Not applicable	Not applicable
Vessel shipment by other than CGC	Submitted Sample Type 1 or Type 2	Submitted Sample Type 1 or Type 2	Submitted Sample Type 2	Submitted Sample Type 2
Hopper railcar by CGC	**OFFICIAL CERTIFICATE**	Not applicable	Not applicable	Not applicable
Hopper railcar by other than CGC	Submitted Sample Type 1 or 2	Submitted Sample Type 1 or 2	Submitted Sample Type 2	Submitted Sample Type 2
Truck or container by CGC	**OFFICIAL CERTIFICATE**	**OFFICIAL CERTIFICATE**	**OFFICIAL CERTIFICATE**	Not applicable
Truck or container by accredited third party	**OFFICIAL CERTIFICATE**	**OFFICIAL CERTIFICATE**	**OFFICIAL CERTIFICATE**	Submitted Sample Type 2
Truck or container by other than CGC	Submitted Sample Type 1 or Type 2	Submitted Sample Type 1 or Type 2	Submitted Sample Type 1 or Type 2	Submitted Sample Type 2

Type 1 – Submitted sample certificate is based on the facility having a quality management system in place and following CGC guidelines

Type 2 – Submitted sample certificate is based on the facility not having a quality management system in place.