

C.1 The Role of a Bridge Inspector - General

The Contractor is responsible for constructing the bridge in full accordance with the Plans and Specifications. The Bridge Inspector's role is that of ensuring that the bridge is constructed in total compliance with the plans and specifications.

- The Bridge Inspector's careless, indifference or neglect may lead to faulty and possibly even dangerous construction.
- The Bridge Inspector is responsible for a thorough knowledge of the Contract and to exercise good judgement accordingly.
- The Bridge Inspector's efforts will be reflected in the quality of construction.

C.2 Construction Documents

In order to meet the requirements of bridge construction inspection, and to gain the confidence of the Contractor, the Bridge Inspector must be thoroughly familiar with the contract documents.

- The Contract and the Specifications must be thoroughly understood by the Bridge Inspector.
- The Specifications have been developed over many years, and are intended to be precise in their meaning.
- The Contract Tender Forms, General Specifications and Supplementary Specifications details the contract between the Contractor and the Department, sets the framework for the relationships between the two parties, and delineates where each has responsibility.
- The Special Provisions and the Bridge Construction Specifications deal more specifically with the particular bridge, which is to be built.
- Any Specifications that are not understood should be clarified through discussion with the Bridge Project Engineer and/or the Project Sponsor who rely on technical expertise and knowledge from the Edmonton Office.

C.2.1 Bridge Drawings

The Bridge Inspector must study and carefully check the following:

- All dimensions and elevations

- Reinforcing steel lists and bar mass
- All material quantities required
- All other pay quantities shown, such as:
 - Concrete, to 0.01 m³
 - Earth quantities (excavation and backfill), approximately
 - Pile quantities

C.2.2 Drawing Discrepancies

Any discrepancies noted, or clarification required of details shown on the drawings must be discussed with the Bridge Project Engineer. Familiarization with the drawings may be time consuming but it is essential for following reasons:

- The Bridge Inspector will become completely knowledgeable with the project.
- The Bridge Inspector will become sufficiently familiar with all details on the drawings to be able to discuss with the Contractor his methods, procedures and schedules.
- The Bridge Inspector will be “on top of” or “ahead” of situations that develop and will have time to check with the Bridge Project Engineer if necessary before problems arise.
- Quantity items necessary for monthly progress estimates will be calculated.
- The possibility of errors on the drawings (designers are human too!) will be reduced.

C.3 Authority

The Bridge Inspector is usually the only representative of the Department (referred to in the specifications as the “Consultant” or “Consultant’s Representative” retained by the Department to administer this Contract) at the site of the bridge project. In recognition of this responsibility, the Bridge Inspector has been given certain authority in the General Specifications. Such authority include the right to inspect all aspects of the work done and materials furnished, rejection of defective material, suspension of any work method or procedure not meeting the requirements of the specifications, and other authority as may be explicitly given by the Bridge Project Engineer or Project Sponsor.

- Rejection or suspension will usually be met with strong disagreement from the Contractor, but must be done when necessary, after consultation with the Bridge Project Engineer and/or the Project Sponsor.

- The Bridge Inspector is not authorized to alter or waive the provisions of, or to issue instructions contrary to the specifications and drawings.
- The Bridge Inspector is not authorized to give final acceptance or approval of the work.
- The Bridge Inspector is advised to contact the Bridge Project Engineer, the Project Sponsor, or Department Technical Specialists for help with a problem.
- In general, it is beneficial to ask lots of questions rather than to hope things will work themselves out.

C.3.1 Work Stoppage

The Bridge Project Engineer or the Project Sponsor is to be consulted before shutting down any project, except in an emergency when the Project Sponsor must be notified as quickly as possible. The following are some of the valid reasons for shutting down or suspending the work of a Contractor:

- Inadequate signing for the protection of the travelling public.
- The failure of the Contractor to carry out instructions given.
- The failure of the Contractor to carry out the work in accordance with the Plans and Specifications.
- Non-compliance with Occupational Health and Safety regulations.

C.4 Requirements of the Bridge Inspector's Job

Prior to the commencement of construction, the Bridge Inspector should review the project with the Contractor to become acquainted with the Contractor's plan of action and to discuss anticipated difficulties. Particular attention should be given to ensure that aggregate samples and concrete mix designs have been submitted and approved by the Bridge Project Engineer. The Inspector should also confirm with the Contractor that storage for concrete test cylinders is acceptable. The equipment to be used, methods for storing and handling materials, and the general sequence of the Contractor's operation should be discussed. This will enable the Bridge Inspector to arrange his inspection accordingly.

- **A good start is important: firmness at the beginning of the job will tend to avoid bickering throughout the preceding work.**

- **An incorrect method or procedure must be corrected the first time it is practised rather than after it has been in use.**
- The Contractor is entitled to complete the work at the lowest possible cost as long as the requirements of the plans and specifications are fulfilled.
- If the Plans and Specifications permit a choice of methods, the Bridge Inspector may offer suggestions if requested, but should not arbitrarily demand that a given method be employed.
- If non-conformance from the Plans and Specifications are proposed by the Contractor and appear to be reasonable, the Bridge Inspector may accept the proposal tentatively, making it understood that the matter must be referred to the Bridge Project Engineer and the Project Sponsor for final decision.
- Cooperating with the Contractor is in the Department's best interests and requirements. The Bridge Inspector gains the Contractor's respect and cooperation when inspections are made promptly and thoroughly.
- Conditions that may lead to unsatisfactory work should be **anticipated** whenever possible, and in any event should be pointed out (preferably in writing) to the Contractor at the earliest opportunity, to avoid waste of materials, labor, and strained relations.
- The Bridge Inspector should not delay the Contractor unnecessary, nor interfere with the Contractor's methods **unless it is evident that unacceptable work will result.**
- No demands should be made on the Contractor that are not in accordance with the Plans and Specifications.
- The Bridge Inspector should form no habits of procedure that might be anticipated by the workmen. Inspection of the various details and operations should be at irregular intervals.
- The Bridge Inspector must be on the job at all times while critical operations such as excavation, piling, or pouring concrete are in progress.
- The Bridge Inspector should be at the actual site of construction at all possible times.
- Inspection is an important job and requires constant vigilance, diplomacy, firmness and patience.

C.5 Relations with the Contractor

The Bridge Inspector should carry out inspection in a friendly, business-like and ethical manner and ensure that all dealings with the Contractor are in a professional nature.

- The Bridge Inspector should be confident that the best interests of both the Contractor and the Department are being met under the terms of the Contract.
- Enforcement of instructions will not be difficult if judgement is **fair and impartial** and knowledge of the work is thorough. This will have been accomplished by detailed reviewing of the Plans and Specifications.
- Disputed instructions must always be referred to the Bridge Project Engineer, and until a decision is received, the best judgement to the instruction should be applied.
- The Bridge Inspector is cautioned to **accept no personal favors from the Contractor.**
- By dealing fairly and by recognizing and commending good work, the Bridge Inspector can usually secure the friendly **cooperation and respect** of the workmen, an important asset.
- The Bridge Inspector should take the attitude that any changes he suggests are for the benefit of the work, and not merely to show the authority of the Bridge Inspector.
- The Bridge Inspector must avoid “criticizing” the Contractor’s organization or discussing mistakes discovered.

C.6 Instructions

The work specified under the terms of the Plans and Specifications must be complete, uniform, of good quality, and aesthetically pleasing. When sub-standard or unacceptable work is being performed, the Contractor must immediately be instructed in writing to correct the condition.

- Before issuing instructions, the Bridge Inspector should be confident that his decision is correct and reasonable.
- **Important verbal instructions given to a Contractor must be followed up in writing.**
- Instructions should be given only to the authorized representatives of the Contractor, usually the superintendent or foreman.

- **Instructions concerning work done by a subcontractor should be given through the General Contractor's Superintendent.**
- When the Superintendent is not present, instructions may be given to the subcontractor, considering he is to be the Contractor's representative at the time. **Orders of any significance should be confirmed in writing to the General Contractor.**
- When instructions involve strictly routine matters, they may be given verbally to a responsible representative of the Contractor.
- Items such as Extra Work, corrective action for faulty construction, finishing, signing, etc., must **always** be dealt with in writing.
- Instructions are to be direct and courteous at all times. Copies of all instructions must be given to the Bridge Project Engineer and the Project Sponsor.
- Arguments should be avoided, and disputes referred promptly to the Bridge Project Engineer and the Project Sponsor.
- Criticism should be in the form of a caution that the work might not be acceptable if the Specifications requirements are not met.
- **Actually ordering the Contractor to perform his work in a certain way must be avoided since liability for that portion of construction may then claim to be assigned to the Bridge Inspector.**

C.7 Relations with the Public

The Bridge Inspector's relationship with the public must also be cordial and discreet.

- As seen to be the representative of the Department at the project location, the Bridge Inspector may be subject to public scrutiny.
- The Bridge Inspector is also the representative of the organization that is providing "the new bridge" and as such will be subjected to local curiosity.
- The Bridge Inspector must also consider the travelling public and attempt to ensure that the Contractor's operations are not hazardous and cause as little inconvenience to them as possible.

C.8 Records

The importance of keeping complete, current and accurate records for each project cannot be overstressed.

- Accurate records, along with regular progress photographs, not only provide a means of proper completion of required reports, but may prove invaluable in settling disputes concerning delays or improper methods used on the project.

C.9 Conclusion

Inspection is a positive exercise, and **the attitude of the Bridge Inspector should be that prevention is better than cure**. If things are being done incorrectly, firmness and positive action directed towards corrective measures by the Contractor is in order. Corrective work can never be considered as equivalency.

- With the understanding that their respective authorities and responsibilities should never be compromised, the Contractor/Bridge Inspector relationship on a project should be approached as having the common objective of ensuring the work fully satisfies the requirements of the Contract documents.
- The Contractor has the obligation to conform to the standards required by the Plans and Specifications however as long as these standards are being met, the Contractor is reasonably free to choose his own methods for so doing.
- The Bridge Inspector will have to observe and learn from others in many cases, but he should not hesitate to speak out if he thinks things are wrong.
- It is better to delay a concrete pour for half an hour while seeking advice, decision or guidance from the Bridge Project Engineer, than trying to sort out mistakes when there are subsequent pours completed.
- The Bridge Inspector should not hesitate to take a firm stand on something he thinks or knows is wrong.