

Auditing – A Tool to Ensure Safety Compliance in Public–Private Partnerships

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Abstract

A significant concern of Road Authorities when considering public-private partnership as an option for providing highway facilities is how can they ensure that the highway is constructed and it operates as safely as a highway delivered in the conventional manner?

The Ministry of Transportation of Ontario (MTO) had a similar concern when they were considering the sale of the Highway 407 corridor. Even though the agreement required that the facility be constructed and operated in accordance to MTO Standards, the question remained, how can it be ensured that the private operator was complying with this requirement? The answer to this question for the MTO has been Safety Auditing.

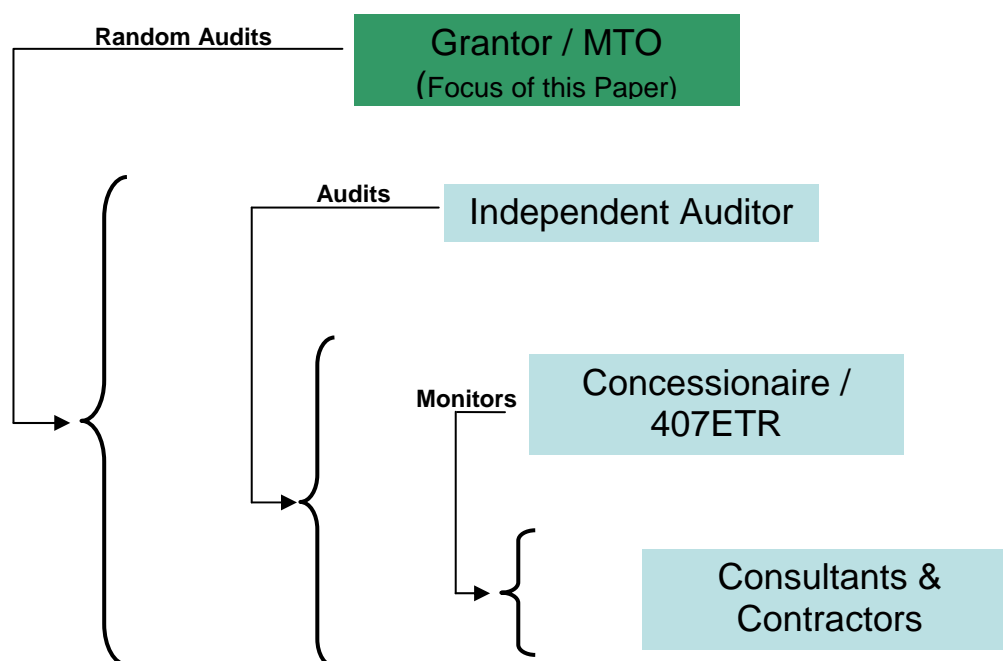
Highway 407 has been open and operating for more than 10 years and it is one of the safest highways in North America. Safety Auditing has played a role in this success.

The purpose of this paper is to present the Ministry of Transportation's experience in using Auditing as a tool to ensure 407ETR's safety compliance with the Concession and Ground Lease Agreement (CGLA).

Safety Obligations and the Concession and Ground Lease Agreement (CGLA)

On October 19, 1998, Bill 70, the Highway 407 Act, 1998 was introduced. The passing of this legislation allowed for the transfer of Highway 407 to a private sector purchaser. In April of 1999, the purchaser (Concessionaire) entered into a ground lease agreement with the Province of Ontario. This agreement, along with the Legislation, provided the mechanics for the establishment of the collection and enforcement of tolls on the highway and stipulated maintenance and safety obligations that the new owner would be required to undertake. The purpose of this paper is to document the Ministry of Transportation's experience in monitoring the Concessionaire's compliance with its contractual safety obligations, which is only one part of the requirements outlined in the CGLA. The CGLA also states that the Concessionaire and the Grantor shall hire and oversee the activity of an Independent Auditor and that the Concessionaire is responsible for all related costs. The scope of the Independent Auditor's work is defined in the CGLA. The Independent Auditor's role is to conduct audits on the Concessionaire activities and verify compliance with ministry standards. Audits are carried out in the areas of design, construction, maintenance and highway operations. As well, the Concessionaire is responsible for monitoring and checking their own activities, and ensuring conformance to ministry standards for design, construction, operations and maintenance. This is documented in the Concessionaire's Safety Control Plan, which is audited by the Independent Auditor and can also be audited by the Grantor.

Audit Relationship with Independent Auditor and 407ETR



In general terms, the Concession and Ground Lease Agreement identifies the following rights and obligations with respect to safety.

The Concessionaire is obligated to:

- Comply with Ministry Safety Standards during Design, Construction, Maintenance and Operation of the highway
- Retain qualified Key Personnel
- Set up and maintain Safety Control Plans and Processes
- Retain the services of an Independent Safety Auditor
- Implement Audit Requirements
- Provide Annual Safety Inspection and Rehabilitation Plans and Reports

The Grantor is obligated to:

- Set the safety standards by which the Concessionaire is obligated to comply
- Conduct random audits of safety plans/process/products for design, construction and maintenance operations
- Conduct pre-opening safety audits
- Review selection and qualifications of Independent Auditors
- Monitor Independent Auditor's activity and respond to non-compliances
- Establish an Operations and Safety System to monitor the Concessionaire

The following discussion will focus on the use of Safety Auditing as a tool to ensure that there is contractual compliance in Public Private Partnership.

Safety Audit Practices

When the Ministry of Transportation (MTO) included the right to audit in the Concession and Ground Lease Agreement (CGLA), it was understood that this process may be controversial. The practice of audit to ensure contract compliance was a new concept for MTO. In order to limit any procedural challenges that could undermine audit legitimacy, MTO decided to hire a consultant to provide expertise in developing an audit program. KPMG, a respected consulting firm for providing audit, tax and advisory services, was hired to provide oversight in developing audit teams and practices.

Once all potential audit team members were identified, training was arranged. All audit team members had to successfully complete ISO 9001 Internal Auditor Training. This training, in MTO's experience was very important in developing investigative questioning techniques, evidence collection protocols and compliance/non compliance reporting, as well as the overall auditing process.

Establishing appropriate auditing processes and protocols from the very beginning has been fundamental to the success of our auditing program.

Audit Randomness

Randomness is a fundamental principle of the Ministry of Transportation's audit program. The purpose of safety auditing is to carry out the Grantor's due diligence in ensuring that the Concessionaire is complying with the contract requirements specifically with respect to traffic safety.

The contract clearly states that it is the responsibility of the Concessionaire to ensure that the highway is constructed and operated in accordance with MTO's standards. If the standards change, it is the responsibility of the Concessionaire to be aware of the changes and incorporate the new standards in any planned improvements. However, because the Province of Ontario owns the land that Highway 407 is built on and is the primary road authority, it is accepted that the Province still has responsibility to ensure that the Concessionaire is fulfilling its contractual responsibilities.

There is a fine line between auditing enough to demonstrate that you are exercising due diligence in ensuring contract compliance, and reviewing it in such detail as to suggest that the Province has accepted or approved that the highway, in its entirety, is to standard. Finding the balance point is extremely important when establishing an audit program. Tipping the scale too far in either direction can increase the Grantors' liability significantly, should they be named in lawsuits.

MTO's audit program is therefore designed to be random in type of audit conducted, random in the elements that are audited, and random in the location at which the elements are audited.

Frequency of Audit

There are a number of factors that can impact the decision as to how frequent auditing should occur. If random auditing is the only tool that is being used to demonstrate due diligence on the part of the Grantor, then more frequent audits may be required.

In the case of Highway 407, the Concession and Ground Lease Agreement requires that an Independent Auditor (IA) be hired by the Concessionaire. The IA is responsible for undertaking a very extensive auditing program and reporting its findings to both 407ETR and MTO. Therefore because of the existence of this additional level of scrutiny, MTO's auditing may be less frequent than might otherwise be required.

Obviously, the frequency of design and construction audits will depend on how much of these activities are occurring. During the initial stages of a new facility these would be the predominant types of audits and several design and construction audits may be required annually. But once the highway moves into more of a maintenance operations mode, the need for design and construction audits will be determined by how aggressive the expansion and rehabilitation programs are.

There are significantly different maintenance operations in the summer and winter and therefore, different maintenance audits are required in different seasons. At MTO, we have found that 1-2 warm weather and 1-2 cold weather maintenance audits annually are adequate to determine compliance with MTO standards.

In addition to the above noted audits types, MTO also endeavours to conduct an audit annually on an Asset Management System such as Bridge, Pavement or Collision Management System.

Another factor that could impact the frequency of auditing is the audit findings themselves. If there is a trend indicating an increase in the number of non-compliant findings in a particular area, it may indicate the need to increase the frequency of that type of audit until the trend is reversed.

Consideration must also be given to the return on investment. The goal is to ensure that the auditing program adds value and is not just a burden on the resources of both the Concessionaire and the Grantor.

After ten years of a random auditing program, our experience indicates that approximately 8-10 random audits annually are an appropriate number to demonstrate due diligence.

Types of Audit

The Concession and Ground Lease Agreement (CGLA) between the Grantor (Province of Ontario) and the Concessionaire (407ETR) gives the right to the Grantor to perform random safety audits. These audits are conducted to determine if the Concessionaire's efforts meet ministry safety standards and ensure road safety to the public. They are not limited to work carried out exclusively by the Concessionaire. Any work by third parties, for which the Concessionaire is responsible, can be audited.

The types of random safety audits conducted to date include: Design; Construction; Maintenance; Asset Management; and Safety Control Plans Audits. The following further describes each type of audit.

Design audits are conducted on the Concessionaire's design activities when the Concessionaire is in the process of designing infrastructure expansion or major rehabilitation. Items audited include geometrics, cross sectional elements such as lane widths, crossfalls and sideslopes, roadside safety, pavement marking and signage, structural and electrical design and human factors.

Construction audits concentrate on how staging and construction activities interface with the traveling public. These can include temporary protection of roadside hazards, construction site access and egress for construction vehicles entering and exiting the

construction area, offsets to hazards during the staged construction, signing and human factors (driver's perception and expectations) are some of the items that are audited.

Maintenance audits verify that the Concessionaire has met all of the appropriate ministry standards for their summer and winter maintenance activities. These audits include checking that the Concessionaire has met all of the MTO performance standards during winter storm events and that equipment such as blocker trucks, ploughs, salt and sand spreaders and emergency response units are properly maintained and equipped. In addition, maintenance audits can include checking the physical condition of roadside barriers, energy attenuators, highway fencing, pavement, shoulders, highway illumination, pavement markings, signage and other highway features that might impact safety.

Asset management audits may be conducted to ensure that the Concessionaire has appropriate asset management systems in place monitor the condition of safety-related elements such as bridges, culverts, pavement condition, highway illumination and collision experience. The CGLA requires that the Concessionaire maintain Asset Management Systems similar to the MTO's and these audits verify that the Concessionaire is complying with their contractual obligations.

Audits on the Concessionaire's Design, Construction and Maintenance Safety Control Plans may be conducted to verify if the Concessionaire has implemented an effective review process that ensures that they have proper systems in place for checking their consultant and contractor activities. These processes help to ensure that design and construction products are free from errors and are in compliance with the latest ministry safety standards.

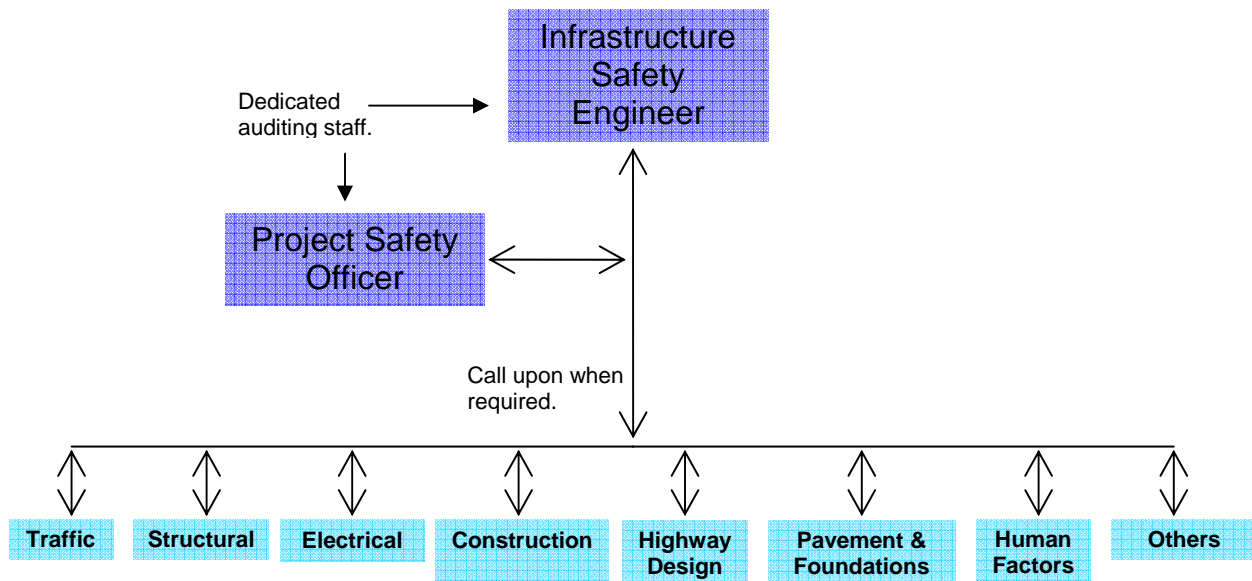
Building an Audit Team

Building an appropriate auditing team is another fundamental factor to determining the success of your auditing program. The knowledge, demeanour and experience of your audit team members are paramount in ensuring that the audits are conducted in a professional and productive manor.

Very early on, the Ministry of Transportation decided to take the approach of building an audit team comprising of people that were indisputably experts in their fields. This often included the individuals that were responsible for developing or maintaining the provincial standards against which compliance was to be measured.

MTO, like most organizations, must maximize the use of these valuable expert resources and therefore it would be impossible to keep a full time expert audit team staffed. The model that has worked very successfully for MTO has been the Safety Auditing Program for Highway 407, administered by only two fully dedicated staff: the Infrastructure Safety Engineer and the Project Safety Officer. The other designated safety audit team members remain working full time in their specialty offices and are brought in to conduct the audits only.

The Lead Auditor (Infrastructure Safety Engineer) and Project Safety Officer prepare and participate in every audit and depending on the type of audit, the rest of the audit team could comprise of experts in the following specialties: highway engineering; traffic; construction; maintenance; structural; electrical; fleet services; and human factors.



In addition to the audit training and professional experience already described, there are a number of personal attributes that audit team members must possess. These include the ability to communicate effectively both verbally and in writing, be personable and professional, work effectively in stressful situations, assess evidence in a fair and objective manner, and remain true to your conclusions despite possible pressure to change.

If any of the audit team members lack either the professional expertise or the personal attributes described above, it has the potential to undermine the legitimacy of the entire audit process.

Random Audit Process

The random safety audit process is designed with the intention of completing the audit itself within one business day. There are three separate phases to every audit: preparation; conducting the audit; and closing the audit, which includes dealing with any non-compliances.

Preparation:

The first step in the process is determining the type, scope, and timing of the audit. There are a number of factors that play a role in this determination, including, but not limited to, the type of design or construction work that is being undertaken by the Concessionaire, the time of year, and the results and timing of previous audits. Frequent liaison with the Concessionaire and knowledgeable and experienced Lead Auditors are also required to ensure that the appropriate audits are being conducted at the appropriate time. When preparing for audits, in order to avoid any bias and to remain objective, the audit leads should not have anything more than a general overview of the undertaking being audited.

Once the scope is determined, the appropriate audit team members are organized and scheduled for the audit. Team members are comprised of experts from various technical disciplines from within the Ministry of Transportation (e.g. traffic, electrical, highway design, etc) and are selected based on the scope of the audit.

At this stage, the audit questions are developed. While the number of questions varies with each audit, usually between 20 and 40 questions are prepared. The questions are very simple and straightforward and designed so that they can be answered by one of two statements; compliant with ministry safety standards or non-compliant ministry safety standards. The only other possible answer to an audit question is *Not Applicable*. The audits are prepared without comprehensive knowledge of the activity being audited and therefore occasionally a question is asked that does not apply.

In addition to developing the audit questions, all of the references to the safety standards that the evidence collected will be measured against, to determine compliancy, must also be compiled.

When the preparation phase is complete notice of the intention to audit is faxed to the Concessionaire with 24 hours notice. The notice provides a general description of what will be audited and in accordance with the CGLA, the Concessionaire is required to make available all of the documents requested and staff required to complete the audit.

Conducting the Audit:

The audit begins with an opening meeting at the Concessionaire's or Consultant's office. All of the people participating in the audit are introduced and an overview of the audit is presented. A detailed list of all of the documents that will be required to complete the audit is given to the Concessionaire. Once the audit team has all of the documentation, they are left on their own to begin the review.

The audit team begins the review or field inspection depending on the type of audit being conducted and evaluate the findings against the pre-determined audit questions. Observations of potential non-compliances that are not related to the pre-determined

questions may be noted and provided to the Concessionaire on a “for your information basis” only. These observations do not play a role in the audit evaluation.

When all of the audit questions that can be answered with the information provided are completed, the Concessionaire is invited back into the audit and interviewed to provide clarification or additional information that would assist the audit team in answering any outstanding questions. When this additional information has been evaluated, the audit is considered complete.

Closing the Audit:

Prior to closing the audit, all of the findings are recorded including information that justifies the compliant or non-compliant rating. Often audit questions relating to specific disciplines are answered independently by the expert in that area, however it is very important that all of the audit findings be discussed and agreed upon by the entire audit team, prior to the closing meeting. This discussion and agreement is important as it ensures consistency in evaluation across all disciplines. If the entire audit team does not agree, the Lead Auditor has the final decision regarding the findings.

Following the internal discussion, a closing meeting is held and the audit findings are presented to the Concessionaire. If there is a non-compliant item that the Concessionaire insists is compliant, they may request additional time to provide supporting evidence. On occasion, this additional time is granted and that item only remains open for a brief period of time while awaiting the additional evidence.

The audit team returns all documents that were provided to the Concessionaire and leaves the audit with only the completed audit questionnaire. This is important to demonstrate that the documentation provided is not further scrutinized at a later date and is not utilized in the development of future audits. This would undermine the legitimacy of the randomness of the audit process.

The audit is officially closed with correspondence sent to the Concessionaire reporting on the findings of the audit. In accordance with the CGLA, the Concessionaire must address all the non-compliances to the satisfaction of the ministry. It is the responsibility of the Lead Auditor to ensure that all non-compliances are addressed.

Commissioning Audit Process

The CGLA stipulates that all new or expanded infrastructure in the Highway 407 corridor cannot open to the public until the Minister of Transportation gives permission to do so. The Commissioning process is the process that is required to allow the Minister to grant the permission to open.

The purpose of a commissioning process is to verify that there are no obvious safety deficiencies and non-compliances with ministry safety standards. It also provides one

last opportunity to review the new construction to verify that the combination of standard elements hasn't created a safety concern.

The commissioning process is initiated when the Concessionaire gives notice to the ministry that construction is complete and a piece of new infrastructure is ready to open to the public. The ministry will then set a date for a pre-opening audit and select audit team members, ensuring that all disciplines are represented.

Unlike the other safety audits, such as design, construction and maintenance audits, there are no pre-determined questions in a commissioning audit. An experienced team of technical auditors tour the newly constructed site, each noting any obvious safety deficiencies in their respective fields of expertise. If no obvious deficiencies found, or if the safety deficiencies are found and addressed by the Concessionaire, the auditors will sign the Audit Sign-Off Sheet indicating that they have completed the pre-opening audit.

The next step involves the Ministry's Safety Steering Committee (SSC) review. The Safety Steering Committee is a designated group of senior ministry executives that will provide the Minister with the recommendation to open, when they are satisfied that it is safe to do so. The SSC are briefed on all safety related issues relating to the new infrastructure and are taken on a tour of the site. If they identify any concerns, they must be addressed by the Concessionaire. Once the Safety Steering Committee is satisfied that work is in compliance with ministry safety standards, a recommendation is made to the Minister of Transportation to permit the opening of the new infrastructure. The Minister will then send a letter to the Concessionaire allowing them to open. The Concessionaire cannot open the new facility to the public until they are in receipt of the letter.

Relationship Building

In the beginning when the Ministry of Transportation began exercising its right to conduct random safety audits, there was a very adversarial relationship. It is likely that 407ETR's view was that, at best, the auditing process would serve to embarrass them and, at worst, it was an attempt to find them in breach of contract.

On the other hand, the Ministry's objective was at a minimum to fulfill its contractual obligation and demonstrate due diligence and, at best, to add value through the auditing process to ensure that Highway 407 would meet or exceed expectations with respect to safety.

It is obvious that if these two perspectives are more closely aligned, there is the greatest potential benefit. This is easily stated but not achieved overnight. It is the responsibility of the auditing agency to demonstrate that the process can be beneficial not punitive. Only then will the party being audited start to embrace the process. It has taken many years of demonstrating professional, value-added auditing for the Concessionaire to adopt the view that the audit process can add value.

Auditing provides, at no cost to Concessionaire, a team of experts to review their work from a safety perspective. If the need for safety improvements is identified through the auditing process, it can only serve to improve the product that is being provided to the public. When the auditing program reaches this point of understanding, maximum benefit can be achieved to all parties, including 407ETR, the ministry and ultimately the traveling public.

Audit Results

Is Safety Auditing an effective tool in improving safety compliance? The experts on the safety audit team have always believed that the audits are making a difference and recent analysis of the data from almost 9 years of MTO's safety auditing programs provides evidence that it is effective in improving safety conformance.

It would be reasonable to assume that if a Safety Auditing Program was successful the rate of non-compliant findings would decrease annually. There is little doubt that if the same types of audits and questions were asked time after time, this would be the case and an argument could be made that this would constitute an effective program.

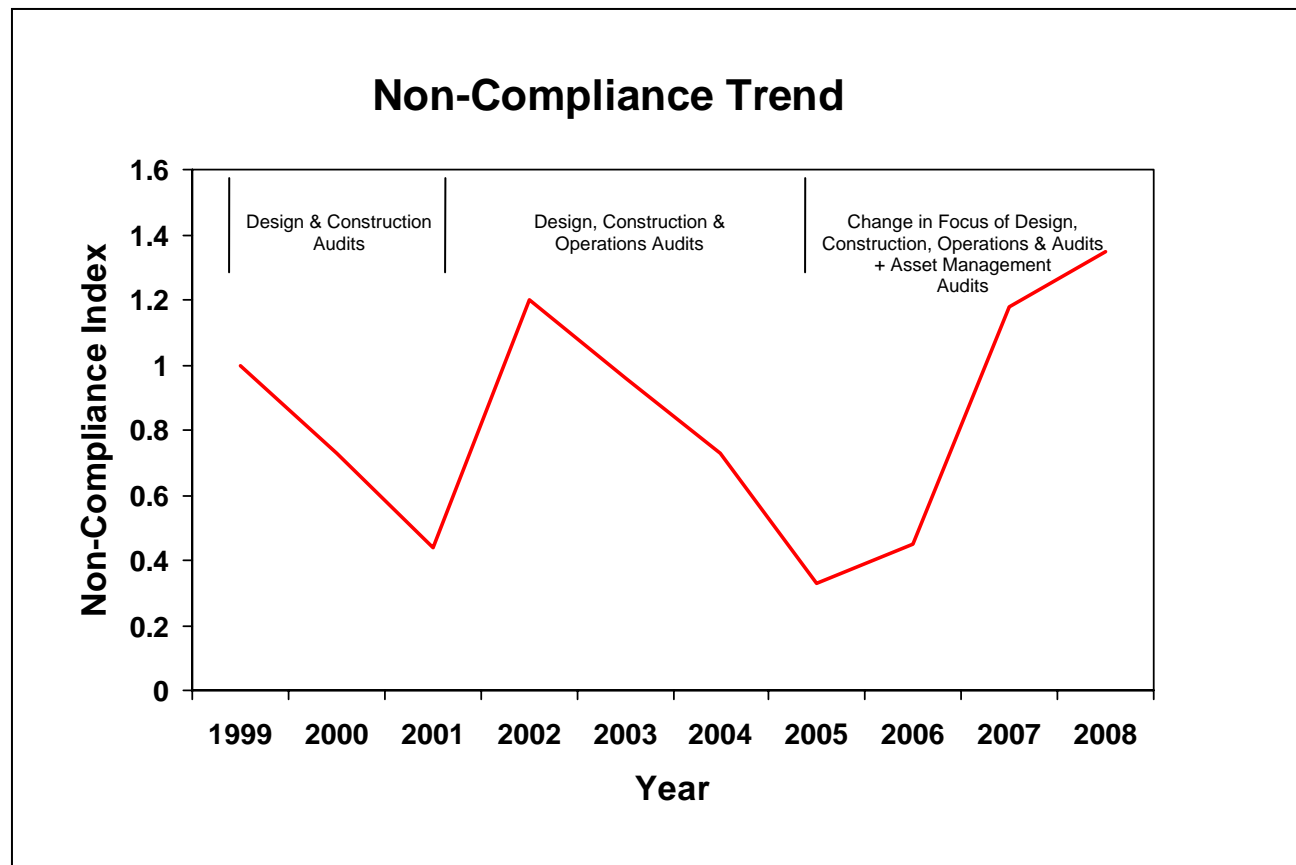


Figure 2

When analyzing the results of the more than 40 safety audits by tracking the rate of non-compliances annually, there is anything but a consistent downward trend in MTO's case. At first glance the findings shown in Figure 2, one might conclude that the presence of the safety auditing program has had little impact in reducing the rate of non-compliances because the rate of non-compliances has fluctuated significantly over the years. But further analysis demonstrates that this is could not be further from the truth.

The obvious peaks and valleys in the non-compliance graph identify the different phases of the auditing process. Between 1999 and 2001, all audits conducted were either Design or Construction related. It is obvious that over these first couple of years, that rate of non-compliance dropped significantly. Starting in 2002, Maintenance and Operations audits were introduced and the rate of non-compliance rose significantly. However, over the next 4 years, that rate of non-compliance once again declined significantly. From 2006 to date, there has been a change in the focus of the safety audits to go into more depth on some contractual safety obligations and to eliminate some questioning in areas where compliance has never been an issue. In addition, Asset Management audits have been introduced and the result has been another significant increase in the rate of non-compliant findings. There is little doubt that the downward trend in the non-compliance rate will repeat itself in the near future until another variable is introduced to the auditing process.

The review of the data from almost 9 years of safety auditing has confirmed the belief of the auditing team members that auditing has been, and continues to be, an effective tool for ensuring safety compliance in Public Private Partnerships.