In 2010, there were approximately 16,000 accidents occurring at intersections that resulted in fatalities. Given that many of these intersections rely upon signals to govern the flow of traffic, it is surprising that the analysis of these signals is often omitted or inadequate when an accident reconstruction is performed.

Are the Signals at Fault?
Traffic Signal Analysis is a tool that can serve a variety of purposes. The most obvious is the identification of deficiencies within a traffic control system that may have caused or contributed to an accident. For any accident occurring at a signalized intersection, it is important to identify whether or not the traffic control signals are appropriately designed, installed and programmed. Making this determination is not as straightforward as it may seem. An improperly programmed or poorly maintained traffic signal may operate in a safe manner 99 percent of the time, with unsafe or inappropriate operation occurring only during very specific situations.

The solution is to analyze the underlying programming of the signals in order to identify deficiencies, as opposed to simply witnessing the signal operation in the hope that circumstances will once again make these deficiencies apparent.

Spot the Issues Early
Efforts should be taken to spot and isolate the traffic signal issues involved in a particular occurrence on an expedited basis. The intersection/occurrence scene should be inspected on a prompt, post-occurrence basis with appropriate preservation of videography and photography of the signal light operation. A timely evaluation of the occurrence scene will allow the crucial detection of any potentially liable parties or other pertinent or unique aspects of the occurrence scene. Contemporaneous interviewing of occurrence witnesses is useful for determining their recollection of the occurrence facts. The occurrence witnesses’ recollections regarding the traffic light sequence should particularly be ascertained and, if any railroad crossing is in the vicinity of the occurrence scene, detailed questions should be posed regarding observations of a train’s approach, and the timing aspects involved.

Once the witness accounts are obtained, and the occurrence scene has been surveyed and inspected, the pertinent issues can be isolated and refined. Some of these issues are as follows: Was the signal light sequence appropriate? Did any aspect of the signal light sequence or operation appear to play a causal role in the particular accident?

Obtain Public Data
Additional data is readily available
through requests for public records. Some of the most useful information that can be obtained through such a request includes:

**Traffic Signal Programming**
The traffic cabinet wiring and the settings programmed into the signal controller determine how the traffic signals will operate in a given situation, and can be used to reconstruct how the signals would have operated during a given accident.

**Traffic Signal Logs**
Maintenance logs can be valuable evidence in determining whether a traffic signal system has had recurring issues or has not been properly maintained. Additionally, the traffic controller retains logs tracking events related to equipment faults, train or emergency vehicle pre-emption, and programming changes.

**Red Light Camera Video**
Intersections equipped with red light cameras automatically record traffic traversing an intersection and determine if a red light violation has occurred. Municipalities often retain the full video recorded by these cameras regardless of whether a red light violation occurred at the time of an accident.

Once all of the data from a traffic signal system has been obtained, an analysis can determine what sequences of operation are or are not possible. This information can be used to support or refute the validity of witness statements or reports, or correlate witness statements with traffic signal operation to establish time periods between when a witness saw something occur with when other movements not visible to the witness may have occurred.

**Research Appropriate Authorities**
After the determination of the potential causative factors, research and isolate those authorities governing the duty issues at hand. Depending on the particular factual scenario, those authorities may include the particular state’s manual on uniform traffic control devices for streets and highways, state statutes, and, if a railroad crossing is implicated, pertinent provisions of the Code of Federal Regulations. Proper discernment and evaluation of the pertinent authorities beforehand will help with the investigation and analysis of the fact pattern at hand and lead to more focused results.

**Identify the Parties**
During the process of accumulating the data, determining the signal operation, and conducting inspections and testing, the necessary parties that need to be identified for fault apportionment can be confirmed. Pertinent parties may include local or state governments or authorities, railroads, and traffic control equipment manufacturers and installers, all of whom should be considered to limit a client’s exposure.

This process can only be adequately achieved after the requisite data has been obtained and analyzed.

A more focused analysis from the outset can lead to more meaningful written and deposition discovery should a lawsuit be initiated. After the proper data has been accumulated via traffic signal programming details, existing maintenance records, videography and photography products, in conjunction with inspections and testing, case specific interrogatories and requests for production of documents can be appropriately tailored to achieve the requisite information before the deposition phase of the case begins.

**CASE STUDY: Yellow Trap**
A T-Bone collision occurs within a signalized intersection. The driver of vehicle A reports that he had a green light and was entering the intersection when vehicle B turned in front of him. The driver of vehicle B has no recollection of the collision.

After an inspection of the intersection and an analysis of the traffic controller programming, it is determined that the traffic signals were improperly programmed, resulting in the possibility of a “Yellow Trap” situation. In other words, if Vehicle B was waiting to turn left during a solid green indication, it would be possible for him to receive a yellow and then a red indication while vehicle A continued to receive a green indication. The red indication received by vehicle B would induce him to complete his left turn, as it would be reasonable for him to assume that he needed to clear the intersection prior to the side streets receiving a green light.

The traffic signal programming is therefore considered to have potentially contributed to the collision.

**OTHER COMMON TRAFFIC SIGNAL ISSUES:**
- Railroad Issues: Collisions and/or Improper Timing
- Pedestrian Issues: Improper Timings/Programming
- Vehicle Detection Issues: Improper Programming or Installation

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