Interactive Qualifying Project

Product Liability

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1.0 Abstract

Each year thousands of product liability cases inundate the United States Court systems. The engineer is often used in these cases to provide his expertise to the court. This IQP analyzes three product liability cases that range from product design negligence to accident reconstruction. Furthermore, the relationship between product failure and its affect on society is analyzed.

2.0 Pre-Qualifying Project

Introduction

To successfully analyze and understand product liability cases, a basic understanding of trial law and product liability law must first be gained. To facilitate the learning of terms and procedures specific to litigation, two product liability books were analyzed and reviewed, along with a series of trial law videotapes. The first book read and summarized was *An Engineer in the Courtroom*, by William J. Lux. Lux's book provides a comprehensive summary of liability litigation, as it concerns the engineer. The second book analyzed and summarized was Jerry J. Phillips, *Products Liability*. Phillips book provides a succinct exposition of the law as in applies to the engineer and lawyer in a product liabilities case, the book has numerous case studies, and it's compact format proved to be a convenient reference guide. Finally, a series of videos were viewed to help further explain the general litigation process. Topics such as the opening statement, closing statement, direct examination, and cross-examination were examined, mock trials in the videos proved to be helpful in explaining the subject matter. The overall review of the Lux and Phillips book combined with the trial law videos were helpful in gaining a base knowledge of product liability law as well as trial law in general.

2.1 Book Review: An Engineer in the Courtroom

Introduction

William J. Lux's book "An Engineer in the Courtroom" helps to familiarize the engineering occupation with the litigation process. Many key aspects relevant to product liability cases are touched upon in the chapters of his book. The entire process from the accident to the trial, and every step in between is discussed.

Lux places special emphasis on the role of the engineer in helping decide these cases. The engineer in product liability cases is usually used as an expert witness. The expert witness is there to aid the court. As a result, Lux helps guide the novice engineer involved in litigation through the steps of how to be a good expert witness and what to expect, not only in the courtroom but also in every aspect of the litigation process leading up to trial.

The Nature of Accidents

Many of the legal actions concerning product liability cases deal with accidents. In an accident, a person or persons generally suffer an injury or a loss, and seek compensation through litigation. The word accident has multiple meanings, but for the purposes of product liability it can be defined with the following conditions: first, the occurrence is unexpected, second, the accident causes loss or injury, and third type of compensation can be made.

When an accident happens that involves a product, there is a good possibility that the injured party will seek compensation from the manufacturer and/or the seller. The engineer has a important role in these cases, as the designer and decision maker on the

product he/or she has the ability to defend their design and explain the reasoning for particular design decisions.

In the courtroom, the plaintiff's expert will argue how certain changes could have prevented the accident and made the product safer. The design engineer will reply noting reasons why these changes were not necessary, lead to other problems, or made the design unsafe.

Finally, in studying accidents it is helpful to be able to classify them accurately. The major types of accidents are the following:

1. Collision-Two bodies occupying the same space.
2. Slip and Fall- Victim is involved with only the surface, location, or conditions related to movement.
3. Loss of Control- There is a loss of control between the operator of a machine, process, or activity.
4. Hit by a Falling Object-Person or machine is hit by falling object.
5. Suffocation/Drowning-Person is deprived of oxygen.
6. Electrocution-Electricity or shock prevents normal body function.
7. Poisoning-Deadly or harmful substance is ingested.
8. Shock and Vibration-Sudden changes in forces acting on the body cause injury.
9. Entanglement-Person gets a limb, clothing, or equipment caught in a machine.
10. Cuts and Abrasions- Machine causes abrasions or cuts.
11. Chemical burns-Fire related injuries or ones that deal with combustion.
12. Mechanical Failure-Machine failure leads to an accident.
13. Struck by Moving Projectile-Being hit by any airborne object.

14. Natural/Environmental Factors-Natural disasters- floods, tornadoes, cyclones etc.

15. Homicide: Person takes another person's life.

Having an idea of how to classify an accident is helpful in studying product liability and understanding how engineers work in a courtroom.

Reasons for litigation

Living in a world where people have differing views, can make it difficult to come to an agreement. For that reason it is necessary to have a legal system that can fairly decide liability.

Similarly it is important to protect the inventors and designers from ridiculous claims of injury that are the result of misuse. The United States legal system seeks a middle ground to encourage the proper use of products and at the same time provide deterrents to the misuse of products. Finally, the legal system provides penalties to those who break the rules and use products for wrong purposes.

As future engineers, it is important to be mindful of the types of requirements a product design must meet. The following are a few of the summarized guidelines:

1. Product must meet the expectations of the buyer/user.
2. Product must not be unreasonably dangerous.
3. Product must not be defective.
4. Product must be manufactured to specifications.

Likewise the user must adhere to some common rules:

1. The party must use the product according to instructions/warnings.
2. The party must not misuse the product.

3. The party must maintain, repair, and inspect the product according to instructions.

The guidelines above are the usual points of argument when an accident or injury occurs.

The idea of "strict liability" is also important to note, the law states that if a defect was present in the product when it left the defendants hands, and if the defect caused injury/accident, then the plaintiff has grounds to recover. In strict liability cases, the cost of the accident is assessed to the party that most likely could have prevented it. Next the cost of the accident is assessed to the party who can pay the costs. Many lawyers and engineers believe strict liability laws have lead to safer products on the market.

Avoiding Litigation

The simplest way to avoid costly litigation is to avoid the accident. If there is no accident then there can no litigation. As a result, one of the major priorities that design engineers have is to design their product to prevent hazards. The next way to prevent litigation is that if an accident can't be avoided, the engineer must design safety features to protect from the accident. The engineer must use guards, shields, and safety features to prevent harm to the operator/user. Next the designer should plan to "make the accident safe", which means should an accident occur, steps should be taken to prevent major injury.

Engineers and designers can also warn of accidents and danger before they occur. Early warning devices can be helpful in preventing an accident. For example, airplanes have stall warning buzzers and lights, to alert the pilot to a dangerous condition. Informing the user of a potential hazard can also help prevent accidents. The use of warning decals on machines, availability of the operator's manual, and training sessions

can help avoid accidents. Finally, the operator can be physically protected from accidents; the use of hard hats and seat belts is a good start.

The quest for a good product often leaves safety behind. However, a successful product will take into account the following objectives: specifications, performance, life, reliability, serviceability, cost, and safety. If all of these objectives reach equilibrium, the product will be successful.

As engineers it can be a difficult task to determine where to start when designing. A good way to start off is to outline safety goals and criteria. Safety features and the overall design of the product must be integrated in order to have a successful product. The next step is to design to meet your outlined objectives and specifications. As is in any designing project objectives may need to be re-evaluated or restated during the course of the project.

Next, the engineer should run his working design through failure mode and effect analysis. FMEA as the name suggests will test to determine how the design performs under extreme conditions until it ultimately fails. This will help develop safety guidelines for it's safe use and operation. Along with FMEA, the engineer and safety team must assess three things, the statistical probability of an accident, the effect of an accident, and the severity of the accident. Using the data collected from the test the design can be audited and then re-evaluated. Finally, the product can be tested in conditions favorable to accidents this is often done with automobiles on test tracks under adverse weather and road conditions.

Lastly, a safety team should be used to review the findings of the engineering team. They should review the reasons for the design choices, the possible misuses of the

machine, clear documentation of design, proper maintenance instructions, warnings for hidden hazards, and overall safety

The Litigation Process

There are several steps in the litigation process, prior to entering the courtroom. The first is the claim, which is simply a complaint. In the claim some specific reasons for filing, as well as, why the defendant is responsible for the damages are documented. If the claim does not provide clear and logical evidence a judge can dismiss the claim and end the litigation process.

The second step is the response the defendant is given ample time to look over the claim and determine the next course of action, the defendant could agree to pay the damages or deny the claim and enter the litigation process. In the response, the defendant will list their reasons for denial of the claim.

The third step of litigation is the discovery process. At this point, the defendant and plaintiff have demonstrated a need to settle the matter in court. During this process, the plaintiff will attempt to learn about the design of the product and also errors or defects in its design. Similarly, the defendant will try to "discover" if the plaintiff misused the product or any other circumstances surrounding the product.

Part of the discovery process is the interrogatories. Here the parties involved are asked series of questions by opposing lawyers. The hope is that something will come up during questioning that will shed light on the matter, and help solve the problem.

Another part of the discovery process is request for production. Here each side is allowed to request physical documents. For example, machine prints, drawings, pictures,

machine records, and medical records. The documents will be used and examined in hopes of producing information to discredit the other side, or to provide evidence of guilt.

Yet another phase of discovery is the request of admission, here the lawyer will systematically try to establish some basic facts of the case. For example, "Admit that you are the designer of the model or product".

The next stage is inspections, here the physical material involved in the accident is examined. For instance the accident site, the injured party, materials samples, and any other relevant material maybe examined.

The deposition is the last part of the discovery process here, the statement of a witness or potential witness is taken. The statement is recorded by a court reporter and the statement is under oath. Here the lawyers of both sides ask the deponent questions.

Finally, the time for trial occurs, here defendant and plaintiff present their case. Trial procedures are a followed and ultimately the jury must decide the result of the case. Once a decision has be handed down, there maybe a time for settlement. Once all the appeals have been exhausted the judge may order payment. However, cases can drag on for months or years.

Engineers and Engineering Information

Engineering information is any material that deals with the design of a product, materials range from blueprints to information on a computer program. The design book or documentation recording the design process is important engineering information. Similarly, memos, service bulletins and policy statements are also engineering information.

The information to be used in product liability cases is likely to be available in some capacity. Some engineers keep better records than others, however all companies have some type of paper trail.

As far as the plaintiff is concerned the engineering information outlined above may be the key to prove a defect or an unsafe product. The plaintiff will likely hire their own expert to disprove the design, or provide points where the design was inadequate. The defense on the other hand will use the information to show the design was well laid out, thoroughly planned, and provide safety records. The defense will ask a series of questions to legitimize the design, they will ask, why a certain feature was added over another, or why a certain device was not used over another.

How the Engineer Can Help the Attorney

As an expert witness, the job of the engineer is to aid the attorney trying the case. The engineer's ability to view evidence in a rational scientific manner can greatly assist the attorney in numerous ways.

The first point is from the design aspect of the product. The engineer as a designer has the ability to understand the development process. He can explain why certain features were added or left out. Similarly, the engineer has a good grasp of systems, parts and the processes of engineering. He can help explain technical jargon in laymen's terms. The engineer can explain if the testing was done correctly and also explain any inadequacies or shortcomings of the testing process.

The engineer can also help by providing alternate reasons for the accident. The engineer can serve as a reconstructionist. He can explain the scenario surrounding the

accident by evaluating the evidence. He has the ability to list possibilities for scenarios, likewise as a person of science he can develop a probability of which scenario was most likely to occur under given conditions.

Finally, the engineer is used to help minimize the technical side of the case. His job is to provide summary reports and to explain the product and it's workings in simple terms. The expert witnesses main job is to help the court reach a verdict, by removing the technical barrier.

The Discovery Process

The discovery process is the phase of litigation where the opponent in a lawsuit attempts to find out as much information about the case. The use of interrogatories, requests for production, and requests of admission are the main paths of discovery. The main point of the discovery process is to "discover" and identify as much information as possible.

The first process of discovery is through interrogatories, where information is simply asked of a witness or expert. During an interrogatory it is important to ask important and pertinent questions, in order to extract the most useful information. The asking of the "right" questions can make or break a case in some instances.

The next method to obtain information is to simply request it, formally known as request for production, the plaintiff may request physical documents, materials, parts, design prints, and specification sheets. Likewise, the defendant will be interested in maintenance records, medical histories, and police reports. The list of course is endless,

however, the important point is that all of these types of documents are obtained in this single process of discovery.

The final stage of discovery is occurs in a request of admission. In a request for admission a person is asked a question. The person answers either "admit" or "deny". If the person admits to a statement, that statement can be considered as evidence, if a denial the statement is entered as denied, unless further evidence is provided. For example, a attorney may ask, "Admit that your company designed the machine" or "Admit that you know operators do not read the operator's manual or warning signs".

The Deposition

During a deposition the attorney for the opponent is allowed to ask witnesses, under oath, questions concerning the case. A court stenographer records the deposition and the questioning is more informal than in a courtroom. The deposition allows the witness to meet the opposing lawyer, as well as, the lawyer to see the reactions and mannerisms of the witness.

There are general rules one should remember during a deposition. First listen to the question carefully, make sure you understand what is being asked. Next take your time prior to answering the question, pause before you answer. This will give your attorney time to object if the questioning is inappropriate, and it will allow you time to collect your thoughts. Additionally, answer the question that is being asked, and don't volunteer other information, unless specifically asked, you are under no obligation to give the attorney more than what is asked. Finally, answer truthfully, and completely. The most important thing to remember is to be truthful and straightforward.

The major reason for a deposition is to first allow for discovery and obtain information. Next is to help establish the facts and determine the origins for those facts. Third, the deposition allows the attorney to determine the opinions of the expert witness, and understand the reasoning behind those opinions. Fourth, it allows the attorney the opportunity to discredit, a potentially damaging witness. Finally, the deposition is used to preserve testimony, so it cannot be altered at the time of trial.

If you are being deposed as an expert witness be aware of the claims being made by both sides and of the scenario surrounding the case. During the deposition also make sure your views or opinions are not being misstated or misrepresented.

The Trial

The trial is where the litigation process comes to a culmination. Here both parties present their cases in front of a jury. The courtroom is where all the work done in the discovery process will come into play.

The trial will began with the opening statements, this will be the first opportunity for the jurors to here about the case. Both the defendant and the plaintiff's attorney will have the opportunity to give an opening statement, the plaintiff's attorney will open first.

After the defendant's opening statement the plaintiff will present his case. The attorney for the plaintiff will do several things. He will present the accident as the plaintiff saw it, provide medical proof, provide witnesses or testimony, and likely have an expert witness. Finally, some type of cost will be attached to the loss or injury.

Next the defense will present their case, the defendant's attorney will follow a similar path to present. However, the attorney for the defense will stress such things as, the manufacturer's safety record, discrediting the plaintiffs scenario concerning the

accident, provide a expert witness, and provide suggestions as to the cause of the accident.

The final arguments will close out the presentation of the cases. The attorney for each side will conclude their cases, and summarize the evidence. The judge will then "charge" the jury, which means he will instruct them to reach a verdict and provide some legal guidance. The jury will deliberate, or attempt to reach a unanimous verdict in favor of one party of another. If the defendant wins there will be no damages awarded, if the plaintiff wins their will likely be some financial award along with the verdict.

During the course of a trial, a witness will come under both direct and cross-examination. A direct examination is done by the attorney who called you as a witness. As an expert witness under direct examination, you will know the questions that will be asked of you, and it will be almost rehearsed. Next the opposing attorney will examine you or ask you questions. This is known as cross-examination, he will likely try to discredit your testimony in any way possible. He will bring up your relationship to the party, whether you are being paid as an expert. Next he will attempt to find gaps in your deposition and your testimony in court.

A few rules to know when being questioned in court:

1. Use lay terms as much as possible
2. Watch out for loosely defined terms
3. Don't ramble on
4. Don't argue
5. Don't give wise or smart answers

Finally when you are done being questioned, the judge will dismiss you, however you could be called back later in the case to be asked more questions.

The Questions

The expert witness during the course of a trial will be asked questions almost constantly. There are several types of questions and it is important to recognize each type. The first is the open and closed question, the open question asks for detailed or narrative answers. Conversely, a closed question asks for brief answers or descriptions. The next type of questioning is leading and non-leading questions, leading questions tend to lead the person to a specific answer. Non-leading questions do not suggest an answer but instead leave the response up to the witness.

The third type of questioning is formal and casual questioning, here the term formal refers to any question pertaining to or asked in a deposition or other formal court document. A casual question as the name suggests are asked in a casual way. There is less pomp and circumstance, and it is asked in a more polite and friendly way.

The fourth type is the rhetorical and interrogating questions. The rhetorical question does not expect an answer, and likely does not have one. It is usually asked for effect or to show a point. The interrogating question simply asks for an answer.

Finally, we have the probing questions and the outlining questions. The probing question is focused upon finding the answer to a specific topic, it has aim. The outlining question is usually asked during direct examination, here the attorney will want you to hit upon certain points. To do this he will lead you through a series of questions and "outline" your testimony.

Accident Reconstruction

The heart of the litigation process often revolves around a dispute over how an accident happened. Accident reconstruction along with the testimony from witnesses can help the jury better understand the circumstances surrounding an accident or incident. The accident reconstructionist has the luxury of using science to determine the probable cause or circumstances surrounding and accident.

During the accident reconstruction process every piece of evidence should be taken under consideration. The reconstructionist must understand the conditions surrounding the accident, the machine, and the job or site environment. The use of eyewitnesses can be invaluable. However, a good reconstructionist will also utilize the physical evidence. Enormous physical evidence must be gathered including photographs, measurements, start-stop distances, and photographs. A good reconstructionist will take the data he has and develop a scenario, not develop a scenario and twist the data to fit it.

Accident reconstruction is done in a logical step-by-step process. The evidence is gathered, and it is the job of the reconstructionist to develop a timeline of events. In the beginning the information layout will create some problems. Their will be missing information, vague or contradictory information, or information that seems illogical.

The next step is to begin to assemble possible scenarios or occurrences of the accident. At this stage all possible scenarios should be considered. The possible scenarios will multiple. However, as evidence is refined and looked at more closely some will be eliminated, eventually a smaller list of possible scenarios will emerge. As the scientific evidence is looked at with even more scrutiny even more scenarios can be eliminated.

Finally in order to have an accurate accident reconstruction the scenario or theory as to how the accident happened must be believable. A few basic rules should apply to the reconstruction process and scenario. First the analysis of the accident should take into account the laws of physics and of moving objects. Second, the reconstruction should be backed with the evidence available and the information provided. Third, the reconstruction should be free of bias, and rooted in the physical and scientific evidence. Finally, an accident reconstruction will likely come under attack from the opposing side. A good accident reconstruction and reconstructionist will have to stand up to questioning concerning every aspect of the reconstruction analysis, therefore the final scenario must be believable and backed by the evidence.

Definitions and Techniques Employed by Attorneys

It is important for the expert witness to understand the basic techniques employed by attorneys in liability cases. The more he understands about the tactics that are employed by attorneys the better the overall testimony will go. Some definitions to know are listed below:

1. Adverse witness- a witness called by the opposing attorney to testify
2. Arbitration/Mediation- avoids the litigation process and uses a mediator to help bring about a resolution
3. Balance of Evidence- a term used to describe the information/data the jury will use when they deliberate
4. Best Evidence- calls for the evidence to be admitted to be in it's most recent or best form

5. Burden of Proof- in liability cases lies on both parties to prove their position or case
6. Due Process- proper legal procedure in all aspects of litigation
7. Expert Witness- has the ability to aid the court in technical matters, due to special education, training, knowledge or experience.
8. Foresee ability- the ability for a condition or action to have been seen in advance.
9. Good Faith- the court expects a good effort by a person who has a duty to the court. A effort in good faith should be up to good professional standards
10. Hearsay- a witness can only testify to the things they personally experience through their five physical senses.
11. Hostile Witness- by action or demeanor a witness who does not cooperate with the court
12. Judicial Discretion- the use of the judges discretion to allow or not allow certain evidence or testimony in a court of law
13. Liability- legal responsibility to provide financial remedy for as the court decides
14. Negligence- the failure to use a normal amount of care that would be expected under certain circumstances
15. Proximate Cause- the cause of an accident, further more if the incident could have been avoided had the action not occurred.
16. Prudent Person- person who meets the average standards for a person in their field or in society
17. Puffery- exaggeration surrounding a product or design

18. Punitive damages- damages over those intended to remedy the situation, used to punish gross negligence.
19. Red Herring- to divert a jury or the court in a case.
20. Tort- a legal wrong committed against a person or party.
21. Weight of Evidence- a term used to direct the jury to rule according to the evidence and to think of the evidence as being on a scale and tipping to one side or another

The definitions above can be helpful in understanding the basic procedures in the courtroom.

Next attorneys tend to adhere to a few rules or basic techniques. First they never ask too many questions. Eventually, asking too many questions can back fire or annoy the jury. The second rule of thumb attorney's follow is to never fight or argue with a witness. Often the jury sees the attorneys attacking and arguing, as badgering the witness, likewise they sympathize with the witness. Third attorneys, attempt to keep their cross examinations short. This will help provide a focus and also prevent the jury from becoming bored and annoyed. A good attorney will also know the answer to the question he is asking. If he is any good he will have researched the scenario and witness in the discovery process.

War Stories

Lux in his book also describes some of the "war stories" he has had over the past years as an expert witness. The stories range from seeming endless depositions to

exhibits that backfired. The important thing to note from these stories, is that at times things will not always go to as scheduled and surprises will almost undoubtedly arise. However, the best attorney's and expert witness are those who can take a bad break or event and turn it into a positive outcome in the end.

The fact is the litigation process and life for that matter is full of ups and downs. However, it is important to not loss sight of the big picture. It is most important and imperative to trust in your abilities, stay calm, and maintain your confidence.

Tips for the Engineer Involved in Litigation

There are a few good tips to remember when entering the litigation process. Listed below are some helpful ones to keep in mind:

1. Be truthful, you are involved in a legal matter
2. Don't be intimidated by the legal process, a good attorney will help you through the deposition, and prepare you for cross-examination
3. Follow legal instructions precisely and accurately
4. Maintain your high professional standards and ethics, do your best work
5. Think and then answer
6. Offer your skills to the attorney, your assisting him
7. Correct errors. The court is rooted in honesty
8. Listen to advice, and use it as it applies to you.

The hints or tips above will help the litigation process easier on that engineer that is found testifying in court. It will make the transition from the drawing table to the witness stand that much smoother.

2.2 Book Review: Products Liability in a Nutshell

Chapter 1: Definition and Scope

In order to fully understand product liability, several definitions must be discussed. The first being the word product, a product can be defined as any "tangible personal property". However, a service can also be considered a product, for example electricity. Similarly, the court has set precedents allowing for the term product to be defined in a number of different ways.

Similar to how the word "product" has been defined, it is important to define specifically what a 'sale' is. The term sale refers to the passing of title from seller to buyer for some compensation. The sale does not necessarily have to be directly to the plaintiff as long as it can be foreseen that the plaintiff would purchase such a product.

The next step is to determine a definition for "defect." This is often at the heart of many product liability cases. A defect in general is something that severely inhibits the functionality of a product, which could ultimately lead to harm or injury. Defects are generally categorized in one of four ways. The first is a manufacturing or production defect, this could occur on the assembly line for instance. The second, is a design defect, meaning the product was so poorly designed in created a hazard for the user. The third, is defective warnings or instructions, this simply means instructions were vague or failed to warn of hazards. Finally, the fourth, is misrepresentation, meaning a product is advertised to do something it is not capable of doing safely.

The most difficult part of a liability case often comes when it's time to prove that a product is indeed defective. To help prove a product is defective or not, several

methods can be used. The first is something known as, "consumer expectations," which asks the question of whether the product demonstrated an "unreasonable danger" beyond the expectations of the average user. The next test is the "presumed seller knowledge", which simply asks if the seller of the product knew of the defect prior to placing it on the market, and kept it on the market. This test helps to prove negligence on the part of the seller. The next test is the "risk-utility balancing" test. This test basically establishes whether the risk of danger is greater than the cost of eliminating the hazard. If it is then the product can be considered defective. Similarly a number of other tests are used, to establish whether a product is defective or not.

Chapter 2: Causes of Action & Damages

In product liability, a defect in a product must be shown in order to obtain a judgment. There are numerous reasons defects occur. For example, defects can be the result of negligence, similarly negligence can occur for dozens of reasons such as poor inspection, inadequate design, or faulty manufacturing to name a few. Negligence can also occur on the part of the user or buyer, in this case nothing is wrong with the product. However, the user has not used the product in accordance to its intended use.

One form of negligence, is known as reckless misconduct. In these cases a company markets a defective product. These cases are categorized under reckless misconduct because the company either new of the hazard or showed extreme negligence in design or testing. These cases usual involve huge settlements, for instance when Ford Motor Co. was charged with reckless misconduct for the design and placement of the gas

tanks in its early Pinto models. The tanks exploded into fire during common rear end collisions. The punitive damage award was in the $ 125 million dollar range.

Product liability cases are sometimes governed under the principle of strict liability. Strict liability usually applies to cases in both tort and warranty against business persons for misrepresentation. Strict liability simply means that regardless of whether the defendant new of the defect or not they are responsible, as long as the defect was present when it left the hands of the defendants company. Previous to this, a plaintiff would have to show negligence or extreme carelessness on the part of the defendant.

When a company sells it's goods, it must follow some implied obligations. The first is warranty of merchantability, it basically says that the product being sold is not spoiled and is fit for its intended ordinary use. The next is warranty of fitness, this statute basically says that the item being sold must be well crafted and free of defects, it must be fit for sale. Finally there is express warranty. This statute says that there is an applied warranty upon the sale of a product. An express warranty can be a claim made by the defendant.

Finally, in a liability case damages are usually sought. Damages can be recovered for several different reasons. A plaintiff can recover damages for emotional distress. Emotional distress is occurs when a person or persons experience of extreme pain or extreme emotional trauma. The next is punitive damage which occurs when the jury or judge seek to punish a company. One way to do this is a large settlement in favor of the plaintiff. The hope being the large settlement will prevent other companies from making similar mistakes.

Chapter 3: The Parties

In this Chapter, the author Jerry Phillips discusses the different people that may sue or be sued in a product liability case. The first party discussed is the plaintiffs. A plaintiff can range from the buyer or user of a product to an innocent bystander. The buyer or user as plaintiff is obvious, but a bystander suing is not as obvious. A case in which to see how a bystander could sue would be in a second hand smoke suit. In a case like this, the smoker can not sue, because he or she knows the risks of smoking and accepts them, but a bystander to the situation that suffers from second hand smoke has a case because the product harmed that person against there will.

The rest of this chapter investigates different categories of defendants in product liability cases, and if they can be held accountable. The first category is that of new product sellers. This is the most common category and is where most defendants are grouped. The next category is that of used product sellers. The question here is whether or not the reseller of a product can be held responsible for a defect in the originally manufactured product. According to Phillips, various courts have ruled differently on whether or not used-product sellers should be held responsible.

The next category of defendants is that of successor corporations of product sellers. The question here is, if Company A sells a bad product, than gets bought out by Company B, should Company B be responsible. The answer is, that except for certain exceptions, Company B will not be liable. This of course can change if Company B was clearly aware of a problem and did not fix it. The next category is that of lessors of products. That is, the courts have established that a person or company that leases a product, new or used, is responsible in the event of a defect.

Another case that is discussed is the responsibility of the employer in the event that an employee is injured. In most cases, if an employer clearly failed to act when they could of to avoid an incident, they can be held responsible. The last group of defendants, includes those who are sued because of a defect in the construction of a house. In the landmark case on this matter, Schipper vs. Levitt & Sons, the court saw no difference between holding car manufacturers responsible and holding house builders responsible.

The last topic discussed in the chapter is what to do when more than one party is found responsible. There are different approaches taken in different courts. Some courts take the equal parts approach. With this method, the settlement amount is split equally among all parties. The other method is the degree of fault approach. With this method, the settlement amount is split between the parties according to who was more at fault. In some cases, if one party was proven to have been intentionally at fault, that party will assume payment of the entire settlement.

Chapter 4: Factors Affecting Choice of Remedies, Jurisdiction and Procedure

The first factor discussed in the chapter is reliance. What reliance means is that a consumer saw an advertisement for a product that made them believe the product would perform a certain way, and because it didn't, an injury occurred. The important point to consider here is the difference between "puffing" a product, and an expressed warranty that they are bound to. To prove reliance, the plaintiff must demonstrate that the advertisement of the product caused the consumer to buy the product and expect it to perform differently than if they had not seen the advertisement.

The next section discusses disclaimers, and when they are not valid. There are many reasons a disclaimer can be seen as inadequate, and therefore unable to protect the defendant. For example, if a disclaimer is not obvious enough to notice, or hard to understand, it can be proven invalid. Also, and more obvious, if a disclaimer is given after the fact, it is invalid.

Another factor when considering choice of remedy is notice of breach. What this means is that if a buyer of a product or service notices a breach of warranty, he or she must notify the seller within a reasonable amount of time of this breach. If the seller is not notified in a reasonable amount of time, and something happens, the seller is not responsible. The phrase "reasonable amount of time" is used rather loosely and varies from case to case.

Another factor to consider is statutory compliance. What this means, is that if a defendant has followed all government regulations with regards to the product, the defendant exercised due care. There are conflicting opinions on whether statutory compliance frees a defendant from responsibility. Some courts ruled that it does not because government regulations are merely established as a minimum standard. Other courts have concluded that statutory compliance does in fact establish that the defendant exercised due care. In this case, the plaintiff would have to go about proving that the regulations were insufficient.

What happens if a company hires a manufacturer to build a product for them to their exact specifications? If there is a defect in the *design* of the product, should the manufacturer be held responsible? The general answer is no. It is not the responsibility of the manufacturer to conduct its own safety investigation into every product it builds.

The only exception to this is if the design flaw is very obvious, and the manufacturer chose to ignore the problem.

That last factors to consider are statutes of limitation. First, you must consider what statute, if any, applies to the case. Many times statutes overlap, making it unclear which one applies. Next, the date of accrual needs to be identified. The date of accrual is the day the clock starts ticking to the end of period covered by the statute. Of course, different statutes start at different times. Some begin the day the product was delivered, others begin the day a service was completed. Also, some statutes having tolling exceptions that need to be considered. A tolling exception is used to toll, or pause the statutory period in the event of certain occurrences.

Chapter 5: Production and Design Defects

In this chapter, the author discusses exactly what constitutes a production or a design defect. The difference between the two is also discussed, along with how to prove one or the other.

A production defect is defined as a defect in the product that was caused by the making of the product. For example, if a welder fails to take the necessary care when welding a part, the product will be defective. A characteristic of a production defect is that the majority of products made were not flawed, but a few or one was manufactured poorly or incorrectly, creating the defect. Most companies expect a certain percentage of their products to be manufactured with defects. To combat this, they perform quality assurance checks of their products before they are sold to weed out the defective products.

A design defect is defined as a defect that was flawed from the outset of production. In other words, regardless of how much care was taken in the production process, the original design followed was flawed, and therefore the product will be defective. A characteristic of a design flaw, is that all or most of the products manufactured with a design defect will be flawed.

Proving that a product has a design defect can be difficult. Some courts require that an alternate design solution must be offered, before a design is deemed faulty. Sometimes, what one party sees as a design flaw, another party may have seen as a design trade-off. For example, consider a small lightweight fuel-efficient car. One party may say that the car is not heavy and strong enough to protect its passengers. Another party could say that the car was made small and lightweight for fuel efficiency as a tradeoff.

Many design defects are related to the lack of safety precautions in the design of the product. If an injury could have been prevented by the use of a guardrail or safety shield, for example, the design can be deemed flawed.

Obviousness is a factor when considering if a design is flawed. If it is obvious that a product is dangerous, and this is necessary for its use, the product can be deemed not defective. The example given by Phillips is that a chainsaw is obviously dangerous, and if a person is injured while using a chainsaw, the manufacturer is not liable.

Chapter 6: Inadequate Warnings and Instructions and Misrepresentations

If a product has a foreseeable danger associated with it, the manufacturer is required to supply adequate warnings to the consumer to avoid possible problems. These

warnings are different than the instructions that accompany a product. Legally, the difference is that an instruction is used to insure efficient use of the product, while a warning is used to insure safe use of the product. Many times, instructions are written so that if they are followed correctly, injury will not occur. But if the danger of not following the instructions is not explicitly stated, the manufacturer can be found liable. Moreover, the warning must state the exact nature and extent of the danger involved. For example, it is not adequate to merely to state that a product is corrosive. The warning must state that the corrosiveness can cause blindness.

A gray area when it comes to warnings on products, it the issue of warning professionals. Sometimes it is not necessary to provide a warning for a product, when that product is going to be used by a skilled professional with knowledge of the product and its dangers. This is a gray area because in many cases it is difficult to prove that the injured professional should of, or did have the knowledge of the dangers of the product.

With regards to prescription drugs, it is widely though not universally held, that no warning to the consumer is needed. This is because the warnings are given to the doctor prescribing the drugs, and it is the doctor's responsibility to pass on the warnings to the consumer.

The providing of adequate warnings with a product may not always clear a defendant from liability. If through advertisement or packaging, a company downplays the dangerousness of a product, it may still be responsible. An example of this can be seen in the packaging of a dangerous pesticide. The pesticide had clear and adequate warnings on the bottle. The problem was the clear pesticide was packaged in a clear plastic bottle, so it was mistaken for water. Also, a warning for a motor bike, that

expressly stated that it should be rode by one person at a time, was cancelled out by a design showing a place for a passenger.

One more responsibility that a seller has when warning consumers, is to warn of possible allergic reactions. In most cases, a seller is not required to warn if the danger is obvious, for example, a package of peanuts does not need a warning. But if it is not obvious for example that a muffin has nuts in it, it is the sellers responsibility to warn of the inclusion of nuts in the product, and the dangers for people with this allergy.

Chapter 7: Problems in Proof

The last chapter of this book discusses the different situations where it is difficult to provide sufficient proof to support your claim. The first situation discussed is cause-in-fact. When claiming that a product purchased was defective because of a design or production flaw, one must prove that the reason the product failed was because of something the seller did or failed to do, and not something that happened since the product was purchased. For example, if a car is having electrical problems, one must prove that at not time was water spilled into the dashboard. For this type of case, it is clearly easier to prove a case, if the product is newer, but a new product doesn't guarantee anything.

Another example of this type of case took place in nearby Woburn, Massachusetts some years ago. The plaintiff attempted to prove that contaminated water was the reason that children in the area were getting cancer. The plaintiff had to prove that the amount of leukemia cases in the contaminated area were far exceeding normal areas and that there were no other rational explanations for this spike in leukemia cases.

In a liability case, there are three things that a plaintiff can have done that will limit his settlement or bar him from one altogether. These three things are contributory negligence, assumption of risk, and misuse.

Contributory negligence is the name for when a plaintiff does not take reasonable steps to protect themselves. For contributory negligence to be used as defense, the defendant must prove that it took place.

Assumption of risk is when it is clear that the plaintiff was aware of the risks at hand, weighed them, and voluntarily decided to continue regardless of risk. For assumption of risk, the court must consider the individual's knowledge regarding the situation to determine how aware of the risks the plaintiff was. Many times in workplace environments, the assumption of risk defense is not effective. This is because it can be claimed by the plaintiff that although they were aware of the risk, they felt pressured to complete the work anyway, fearing that it was assume the risk, or be fired.

Another issue to consider in liability cases is the idea of comparative fault. The idea is that even is the plaintiff is at fault, if the defendant is at fault as well, the plaintiff may recover. There are a couple of different methods of comparison used by different courts. The first is that the plaintiff can recover if they are less at fault than the defendant. The other is that the plaintiff can recover if the defendant is at fault at all, regardless of whether the plaintiff was at fault at all. For these cases, the percentage of fault is usually used to determine the amount of recovery. For example, if it is found that the plaintiff is 25% at fault, then they are entitled to recover 75% of the damages.

In some cases, a company will discover that a product they make could be made safer by adding a feature or warning to the product after the original release of the

product. This is called a remedial measure. If this product injures a person, and their injury could have been prevented by the remedial measure. They will try to use the remedial measure as proof that the company knew their product was flawed, thus requiring the remedial measure. The problem with this type of evidence is that it discourages companies from releasing further remedial measures for fear of the measure being used against them. That is why most courts do not allow existence of remedial measures as proof of a defect.

There are some final factors that may be considered in product liability cases. When considering the validity of an expert witness, one cannot assume that such a witness must have academic credentials to be considered an expert on the subject. Such a witness must only display that their knowledge of the subject at hand is greater than that of the average person. The final factor discussed was the admissibility of industry standards and codes as evidence of misconduct. In most cases, proof that a defendant did not meet widely accepted codes could be used to prove that a company was negligent.

Product liability is a very far-reaching area of law. It covers so many different aspects of law, and is always changing. In this book Phillips attempts to give the reader the widest base of knowledge possible while attempting to avoid confusing the reader. "Product Liability in a Nutshell" was a very informative book that helped give an insight in the law of product liability.

2.3 Trial Law Video Summaries

Trial Law Video Summaries

In this series of instructional videos, the narrator gives a very informative course on the important points of trial law. The narrator takes us through each main part of a trial step by step, explaining the importance of each part, and outlining how a lawyer can utilize each part of a trial to the fullest, in order help the jury reach a favorable verdict. The viewer is taught not to look any part of the trial as a formality. Whether it is the way you sit in your seat while your counterpart is addressing the court, or how you handle a witness, every thing a lawyer does in a courtroom can be seen as an opportunity to influence the jury.

The first video in the series, examines the lawyer's first opportunity to influence the jury, the opening statement. The opening statement is a important opportunity that the lawyer only gets twice in the case. That opportunity is to be able to address the jury directly. The narrator of the series gave a very interesting statistic pertaining the opening statement. He said that eighty percent of jurors have the same opinion of the case after the opening statement, as they do at the end of the case. This tells us that what is said in the opening statement is extremely important in establishing first impressions with the jury. The narrator made a statement that far to many lawyers view the opening state as a formality, and not as an opportunity. This can be detrimental establishing your case.

The way the narrator put it, the lawyer has the chance to tell a story. Like any good story, there are certain elements that must be included. These are, a protagonist, where the story takes place, when it takes place, and a meaningful theme. The

protagonist, for the most part will be the person you are representing, when and where are usually pretty factual, and the theme you emphasize will be that your client could not have avoided the accident that occurred.

In order for the lawyer to be successful in any case, it is crucial for that lawyer to establish credibility very early on. The opening statement provides a good opportunity to establish this credibility. There are several things you could do as a lawyer to this. First of all, express to the jury that in no way will you ever attempt to mislead them. Also, explaining any shortcomings in your case can help to create trust, and can act to preempt the opposition.

The last thing discussed that it is important to do in an opening statement is to make the jury aware of the tasks they will have to perform. In a product liability case for example, this would involve preparing the jury for the duty of assigning a monetary value to the damages received.

All of these things mentioned go a long way to having an effective opening statement. And in the in, an effective opening statement can have a lot to do with the outcome of the case.

The next part of a trial discussed in the video series is direct examination. This is when a lawyer asks questions to his or her own witness for the jury. Many lawyers consider this the easiest part of trial law. For the lawyer, there are no surprises, because it is there witness, and there is no chance of the witness becoming hostile or unresponsive. According to the narrator, direct examination should be viewed as the hardest part of the trial. This is because as the lawyer, the owe ness is on you to make all the points that you

intend to. If you don't make your case to the jury during direct examination, you have almost no chance of winning the case.

During direct examination, there are many important things that a lawyer must keep in mind. First, pace is of primary importance. The speed at which you ask questions, and carry yourself is very apparent to the jury. Your pace should reflect the mood and them you are try to create. If you go fast, it may appear to the jury, that you are hiding something, or trying to slip something by them. If you go to slow, you will encounter a whole host of problems. First, you may come off as melodramatic to the jury, which is not good. Secondly, jurors may interpret your slow pace as a lack of preparedness and organization. They make think your coming up with questions as you go along, and a jury that thinks your not organized is not likely to be confident that you know what you're talking about either. And lastly, the attention span of the average person is not very long, which means that if your to slow paced, most of what you say will be missed by the jurors spacing out.

The issue of jury attention span is one you must consider regardless of your pace. Some techniques to combat this were highlighted in the videos. First, make sure to be direct. In other words, don't waste words blabbering on, try to get to the point as quickly as possible. Also, change in tone of voice and demeanor alerts the jury that what you are about to say may be important. And lastly, make sure to save any dramatic things for the end of the questioning.

Another thing the narrator touched on was the way in which you present visual aids. Regardless of whether you use a blackboard or an overhead projector or something else, there are a few rules to follow. First, make sure not to block the aid. Regardless of

how well it portraits your point, it is useless if the jury cannot see it. Secondly, and along these same lines, make sure your visual aid is angled towards the jury. It is important for the judge to see it as well, but it was created for the jury. If a lawyer can attempt to abide by some of the guidelines laid out by the narrator, they would be a long way towards presenting their case in the most effective way possible.

The third video in the series revisits the opening statement. In it, the narrator reemphasizes some of the most important components to an opening statement. He also uses effective courtroom excerpts as examples to help make his point. An aspect of the opening statement that is concentrated on in the third video is the lawyer's relationship with the jury. It is imperative to have the jury believing in you. Using the phrase "we" with the jury, gives them a sense that they are all in it together, doing there best as one to carry out justice. Another technique is to try to give them answers to questions that you think they would want answers to. As important as it is to build an identity for yourself, with the jury, it is also important to do the same for your witnesses. Many times both the plaintiff and the defense will have expert witnesses brought that will say opposite things about the same subject. The credibility of your witness will be crucial in whether the jury believes your witness, or the opposition's witness. Furthermore, establishing the credibility of your witnesses will give there testimony more meaning, and the opening statement is an opportunity to do that.

The last thing that was discussed as a possible technique to be used in an opening statement is to go farther in the telling of the story than will be proved in testimony. Although it is not officially allowed, many times you can get away with suggesting what really happened regarding the case, even if you won't be able to concretely prove it later

on. A lawyer must be very delicate with this however, because if it is taken to far, the opposition will object, and it will look to the jury as if your attempting to pull a fancy lawyer trick, and you may lose their trust.

In the next section, we are given our first example of a cross-examination. In this section, the examination is of a non-medical expert witness. There are a few techniques that can be employed when cross-examining an expert witness. First, one good technique is to answer only simple questions. That is, answer only questions that need only a yes or no response. This way the witness does not have a chance to simply repeat the evidence he has already presented. Also, a prepared lawyer might come to court with a list of things that might have been done to avoid the accident.

In a cross examination, it is important to develop your point slowly. Using repetition is a way to make sure your point gets across to everyone. Above all, it is very important for the lawyer to maintain control over the situation. At all times, it is imperative that you as the lawyer dictate where the testimony will lead. Regardless of what happens, a lawyer in control will reassure the jury that things are still going as planned.

In the fifth video of the series, the narrator goes into more detail about cross-examination. He suggests that is can be the most stressful, risky, and exciting part of the trial for a lawyer. Because the witness is not "friendly," you can never be sure what they are going to say, creating an atmosphere where it is imperative to stay cool, and think on your feet.

A common pitfall for some lawyers, is that they are two defensive during cross-examination. It is true, if you become too aggressive you will come across as badgering the witness, but if you are too defensive, it will be very hard to make any points for your case, and to get any thing beneficial out of cross-examination. This is why it is very important for a lawyer to be very well disciplined during cross-examination. Being well disciplined, also involves being dominant in front of witness. Be sure to ask questions in a manner that forces the witness to answer as you expect. This involves asking leading questions such as, "Is that correct?" Try not to allow the witness to elaborate on any points he or she previously made, but to merely confirm the points you are making.

When presenting information that is contradictory to the testimony of the witness you are cross-examining, there are three methods that can be used. The information can be read by the lawyer, the lawyer can ask the witness to read it, or a visual aid can be employed to display the information. The choice of which method comes down to what the lawyer feels is the most effective way to display the message.

Another issue that arises is what to do when a witness doesn't answer a question. This is a very delicate situation. The lawyer doesn't want to lose their composure with the witness, but then again, they still need to have the answer to the question. The narrator suggests three methods to get your question answered. You, of course, can ask the question again, you could have the court reporter read the question, or you could have the judge admonish the witness. Again, it is the lawyer's discretion for what to do in this situation.

Now, when we were discussing the opening statement, we talked about how important it was to establish the credibility of your witnesses. Now on the other side of

the situation, it is a good idea to undermine the witness you are cross-examining if you see an opening for such a strategy. If a lawyer can undermine a witness, he or she has effectively cast a shadow of doubt over their entire testimony in the eyes of the jury.

The last point that was made was in regards to the treatment of the witness you are cross-examining. The narrator made the point, that it is not always wise to be harse and unfriendly with these witnesses. Many times, your poor attitude towards the witness will only hinder your progress. In this video, we saw a good example of how being friendly with a witness can lead to obtaining more information from them they would have been obtained by being unfriendly.

In the next tape of the series, the narrator offers tips for someone that is preparing for a deposition. The difference here is that we are given tips useful when you are the witness being deposed. One of the main points made was to never volunteer information. Answer each question asked with as short an answer as possible. There is no reason to give the questioner a gift of answer, or something that helps him or her, and that they weren't expecting. Also, only answer questions addressed directly to you. Again, the responsibility is on the questioner to ask the right questions, not on you to guess what he or she is getting at. Along these same lines, be especially careful with sensitive issues or confidential info. Try to only address these issues if they are explicitly asked for.

Another tip that is given is to make sure to pause and think before answering any question. Take the opportunity to consider what is being asked, and carefully decide what to say. Make sure to go slowly, there is no time limit on how fast you have to answer questions, and a well thought out answer is worth waiting for. Also, don't

hesitate to make use of your legal representation for help. They are there for that specific reason and can be very helpful and instructive.

An important thing to watch out for, are tricky or misleading questions. The person being questioned has every right to object to the question or to ask for a rephrasing to ensure a total understanding of what is being asked. If you aren't completely clear of what is being asked, ask for a clarification. Because if you just answer what you think was the question, things may come out very wrong, possibly damaging your testimony or worse, your credibility. Another important point, don't let the opposition put words in your mouth. Do not let them manipulate what you said to mean something else. Be sure to clarify if there is ambiguity.

The most important point of all would be to make sure to stick as close to the truth as possible. There is no gain in bending or stretching the truth to favor your side. This will only create discrepancies in the story, which the opposition will be sure to point out. If this happens, your side will have an enormous setback, and a case that is much harder to prove than if you had stuck to the truth. Along these lines, make sure not to fill in details that you don't remember but you think you should know. A simple answer of "I don't know," or "I'm not sure" is much better and much safer than making even an guess.

The seventh video talks about the conclusion, or the last words a lawyer speaks to a jury. The conclusion is an opportunity for the lawyer to reinforce and drive home the essential parts of the case. Although every lawyer has a different style, there are some things to focus on when giving your conclusion. First, attempt to tell the story one last time for the jury in a way that will create sympathy for your client. Also, it is important

to help the jury realize the weight of their decision and the importance of their verdict. Make the jury feel that there decision will have to lived with for the rest of their lives, and for the rest of the victim's life.

Try to remember that the last words you speak to a jury will most likely have a profound impact on them and will be the easiest words for them to recall. A lawyers' conclusion may very well make or break a case.

The last video in the series gives us a classic example of what a product liability case is all about, and who the opposition can be. When Ford created the Mustang in the mid-60's, their prime intentions were to make an inexpensive sports car, not a safe to drive automobile. The product liability revolves around the gas tank of the vehicle. Ford designed the gas tank to be dropped in through the trunk. This makes it easier and cheaper to build and service. The problem was that in rear end collisions, these gas tanks were spraying gas into the rear of the car, often creating horrifying fires that injured and killed people. Although it was proven that this design was unsafe in the mid sixties, it was not changed until 1971. This was because, Ford was still more concerned with price than with consumer's lives.

Ford has been sued over seventy times for product liability involving these gas tanks, and each case has been settled with relatively little publicity. Thankfully, safety regulation in automobiles has vastly improved over the last 4 years, and these accidents aren't nearly as prevalent as they used to be. But the scary thing is that even though thier car was unsafe, Ford refused to do anything about it, and risk losing money.

In conclusion, for people who are not very familiar with the workings of trial law, watching these videos was a very informative look at how things work in a court room.

These videos will provide a solid base to work from, when we begin to look at specific cases. All in all, this video series was an eye opener into the differences between what we perceive as a trial and what actually goes on.

3.0 Interactive Qualifying Project: Products Liability

Each year thousands of new products are granted patents, similarly each year the United States legal system in inundated with thousands of lawsuits concerning product failure, the idea of product safety and liability is a very real and costly issue in industry. In order to better understand the impact product failure on society, three separate and unique product liability cases were examined. The cases ranged from machine failure to accident reconstruction, however all of the cases had one common denominator, in each case every party suffered some type of loss, whether monetary or personal.

The first case concerned a screen crushing machine manufactured by Extec Screen Crushers Ltd, Kenneth Bartow claims negligence on the part of Extec in their design which he alleges led to a fall from a Extec machine, causing him pain and suffering. This particular case dealt with negligent design and failure to design for safety.

The second case examined dealt with a vehicular accident between a motorcycle and a car. Bruce Perkins a motorcyclist collided with Eric J. Rodgers the driver of a Mercury Sable, Perkins is suing Rodgers, for negligence concerning vehicle operation. This case deals with product liability in the sense of accident reconstruction, to determine the facts and conditions under which the accident occurred.

The third and final case involves the failure of a sluice gate manufactured by Rodney Hunt Co, installed by Cianbro Inc. The sluice gate was purchased by Vermont Yankee Nuclear, the sluice gates failed within a year of installation well short of their expected life. Rodney Hunt is being sued for breach of warranty and Cianbro for negligent installation since they were the chief contractor. This case is unique in it relied heavily on science to determine the actual outcome of the failure.

All three cases represent an aspect of product liabilities in the courtroom. The cases also demonstrated the role that science and engineering play in determining the actual conditions of the failure. More importantly in demonstrates the role an engineer can play in revealing the truth.

3.1: Case 1 – Kenneth Bartow vs. Extec Screen Crushers Ltd.

Introduction:

This product liability case involves a screen machine manufactured by Extec Screen Crushers Ltd. This machine was owned and operated by O'Connor Brothers Inc. of Sheffield, Massachusetts. The basic use of this particular screen machine is to sift and separate various sized rocks and gravel. The machine is portable in the sense that is can be relocated if necessary.

Kenneth Bartow, an employee of O'Connor Brothers alleges that he fell from a platform at the rear of the machine while making adjustments to a screen box approximately 13 feet in the air (see Figure 7). Pictures of the screen machine can be seen in Appendix A. Bartow claims that falling from the platform he hit his head, hurt his back, and also injured his shoulder. Bartow is suing Extec Screen Crushers Ltd, on the basis that they were negligent in all aspects of safety and design, failed to warn of dangers/hazards, and for breach of warranty. The warranty provided by Extec simply states that the machine is safe to operate. Breach of warranty simply means that the machine was in fact not safe, but dangerous for use and lacked any safety measures. In response to the complaint, Extec denied all allegations.

Opinions and Evidence:

The first piece of evidence to examine is the environmental conditions surrounding the accident. The day the accident occurred the weather was cold, with temperatures in the 10°F area. In fact, the temperatures were so cold and so much frost

was on the machine that Bartow waited until 10am to attempt to adjust the screen box. In addition to this, Harold Green testified that there was a significant amount of frost on the machine. Finally, the report filed with the Department of Labor cites, "significant contributing factor was the accumulation of excessive frost on the platform."

Another piece of evidence to consider is the large number of retro-fittings made to the machine. Bartow testified that he and his co-worker Dick Bassett, had constructed and added a cover to the main conveyor to prevent snow built up. In addition to the cover, a ladder was also constructed to make it easier to get to the work platform where the screens are adjusted (see Figure 4). Finally, grease tubes were placed in certain areas to decrease the need for maintenance.

The addition of the cover and the ladder lead to some interesting scenarios in this case. The ladder was constructed, but was not very useful since the worker had to stand on the top rung to ascend the belt and finally the platform. In addition to this, Bassett and Bartow testified the ladder was not very useful when the cover was on since it was almost impossible to get over the top of the cover to the platform. With that said the ladder was not usually used and instead it was the preferred method to use a bucket to get hoisted to the platform.

Another issue to address, is the amount of safety mechanisms in place to prevent injury at the workplace, and in particular, with regards to the screen machine. One such safety measure was the use of safety harnesses on the job site. As can be seen in Figure 6, there were safety harnesses available to the work staff of O'Conner Brothers. This harness was found on site, in plain view. If Kenneth Bartow felt unsafe, he had the option of using a safety harness.

The use of guardrails around the platform is another safety issue that needs to be addressed. When examining manuals and other documentation regarding similar screen machines manufactured by Extec, it can be seen that the platform that Bartow fell from has a safety guardrail around it to prevent falls (Figure 7). It is curious that the machine purchased by the O'Connor brothers does not have such a guardrail. Also, according to depositions of Bartow and other workers, the only safe way to gain access to the platform was by using a bucket truck to lift the worker to it. The picture in Figure 7 clearly shows the use of a ladder as an acceptable means of reaching the platform.

The next piece of evidence to examine is Kenneth Bartow's claim he fell from a platform at the rear of the machine. Bartow claims that when he fell he struck his head on a steel beam that supported the side conveyor, in doing so he was spun around injuring his left shoulder on the machine, before finally coming to rest on the ground were he was discovered by Harold Green. When Green arrived he found Bartow face down 15 feet away from the machine to the outside edge of a sand pile, his ratchet was found by his feet.

However, after looking at several pictures of the machine as well as the point were Bartow landed (Figures 7-9), it seems unlikely he fell from the platform at all. The cone in Figures 8 and 9 are at the point where Bartow hit his head. The distance horizontally from the platform to the point of impact is approximately 12 feet. It seems unlikely that Bartow could have traveled 12 feet horizontally in a fall of approximately 12 feet (see Figure 7). A simple analysis of motion confirms this speculation.

Falling From Platform

$$y = y_0 + v_{0_y} t - \frac{1}{2} g t^2$$

$$12.4 = -\frac{1}{2}(32.2)t^2$$

$$t = .88 \sec$$

$$x = x_0 + v_{0_x} t$$

$$6 = v_{0_x}(.88)$$

$$v_{0_x} = 6.82 ft / \sec$$

* *X direction distance took into account a six foot tall man.*

As you can see, for Bartow to hit his head on the side conveyor, he would have had to have had an initial velocity of 6.8 ft/sec in the x direction, meaning he would have had to jump, eliminating this possibility.

There are two other scenarios that seem more likely, first that Bartow was climbing the main conveyor belt, one hand on this ratchet and one hand on the railing, as he neared the top he fell or slipped off the belt to the side, this could have occurred while trying to get over the top of the conveyor to the platform on the other side. In doing so Bartow lost his balance and fell hitting his head on the side conveyor support beam. The distance from the upper part of the main conveyor to the point of Bartow's impact is approximately 7 feet (Figure 9). The next scenario is that Bartow was climbing the ladder that was retro-fitted for the machine, again climbing up the ladder one hand on the rung and another on the ratchet as he neared the top to climb over the cover he fell backwards hitting his head on the beam. Again this would lead to a fall of only 7 feet horizontally (Figure 9) to the right and would be likely considering his height and weight. Again, we will use calculations to back up our claim.

Falling from top of ladder or conveyor belt.

$$y = y_0 + v_{0_y} t - \frac{1}{2} g t^2$$

$$13.33 = -\frac{1}{2}(32.2)t^2$$

$$t = .91 \text{sec}$$

$$x = x_0 + v_{0_x} t$$

$$1 = v_{0_x}(.91)$$

$$v_{0_x} = 1.1 ft/\text{sec}$$

In this scenario, Bartow would have needed an initial velocity of only 1.1 ft/sec to have reached the side conveyor with his head. A simple off balance slip could have easily enabled him to reach it.

Conclusion:

In the case of Bartow Vs. Extec Screen Crushers Ltd we have proven that Bartow could not have fell in a manner consistent with his deposition. Instead, it seems for likely the fall was a result of his own carelessness. It is likely that one of the scenarios above occurred that day, if he was climbing the ladder and fell, Extec is not liable since the ladder and snow cover were both retro-fits. Similarly, if Bartow slipped walking up the main belt, he broke both company policy and also the guidelines in the Extec Screen Machine manual. Bartow should not be awarded any type of compensation.

3.2: Case 2 –Bruce S Perkins vs. Eric J. Rodgers

Introduction:

This case involves a vehicular accident between Bruce S Perkins and Eric J. Rodgers. Perkins was riding a 1996 model Harley Davidson motorcycle when he struck the back end of Eric J. Rodgers 1999 Mercury Sable. The accident occurred when Perkins struck Rodgers as Rodgers attempted to make a left hand turn out of the parking lot of a local restaurant. Perkins struck Rodgers in the rear end driver's side of the car causing it to spin 180° degrees (Figure 1a and Figure 5-Appendix B).As a result of the collision Perkins suffered head injuries, crushed foot, and a swollen left knee. Bruce Perkins is suing Eric Rodgers for pain and suffering compensation as a result of the accident

Opinions and Evidence:

The first piece of evidence to note in this case is the prior accidents each vehicle operator had incurred. Perkins the motorcycle operator had been in five prior accidents, not including this one. Rodgers had also been in accidents before, he had been in two prior accidents, this one being his third. Both operators had a history of accidents and collisions on their driving record.

The second piece of evidence that should be considered is the operators mental state and physical condition. Both Perkins and Rodgers had been drinking alcohol prior to the accidents. Perkins claimed he had only two beers at the Milford Veterans of Foreign War hall. Similarly, Rodgers had been drinking as well, he had between four and

five beers at the restaurant from the hours of 5:30 pm to 7:00 pm, at which time he left and consequently was involved in the accident. When the police questioned Perkins after the accident, he refused a Breathalyzer test and was charged with DUI, which was later lessened to speeding. Detective Chovanec, reported a heavy smell of alcohol on Rodgers breath. Rodgers was not charged with any type of misconduct.

The third point to note is that weather was not a factor in this accident. The weather was clear, though the time of the accident was around dusk. Similarly, the road on which the accident occurred was slightly winding and the restaurant driveway from which Rodgers pulled out of had an obstructed view of the road looking left, two large staggered telephone poles obstructed the view (Figure 2, 3, and4). This could be a cause of the accident, although Rodgers was familiar with the area.

As for how the accident happened, Perkins claims he was riding east on the road, driving between 30 and 40 miles per hour while the posted limit is 25 mph. As he reached the restaurant he notice Rodgers on the right side, waiting to make a left turn. Perkins claimed he looked down for a moment and then back up, and Rodgers had moved into the road, however instead of completing the left turn, Rodgers hesitated causing Perkins to hit his brakes and ultimately strike the back end of Rodgers Sable, spinning the car 180° degrees around.

Rodgers description of the accident is slightly different. Rodgers claims he pulled up to the end of the driveway of the restaurant to make a left hand turn. He claims he looked right up the road, then to the left, and then back to the right up the road, he then pulled out into the road. Furthermore, Rodgers stated he only heard the motorcycle a

'split-second' before it struck his car. He did state that the telephone poles obstructed his view and he had to inch out into the road a little further to get a clear view of the road.

The truth behind how the accident occurred lies somewhere in the middle of the two accident descriptions. First of all, a determination of how fast Perkins was going must be determined. Using the skid mark of 103.5 feet, we can find a minimum speed of travel.

$$Velocity = \sqrt{2 * \mu * g * skidlength}$$
$$V = \sqrt{2 * .7 * 32.2 * 103.5}$$
$$V = 68.3\, ft / \sec$$
$$V = 46.5 mph$$

If Perkins had come to a rest at the end of the skid mark, the calculation would give us his speed. Considering that at the end of the skid mark, his motorcycle still had enough inertia to spin Rogers' car 180^{o} , an actual speed of more that 60 mph is probably more likely. Instantly, it can be proved that Perkins was lying about his actual speed. More confirmation is given by an eyewitness who guessed that Perkins was going approximately 65 mph. The next piece of evidence to dissect is how Rodgers car ended up in the middle of the road. A likely scenario could be as follows, the two telephone poles obstructed Rodgers view of the street, so he slowly inched out to get a better view. As he inched out he looked right, then left, and then right again, he then pulled out. As he pulled out he saw Perkins riding his Harley Davidson and froze, he hesitated, as a result Perkins slammed into the back of his Mercury Sable. Had Rodgers not hesitated or looked left one more time prior to pulling out, the accident may have been prevented, on the same note, had Perkins not been traveling 10 to 20 mph over the speed limit, as opposed to as much as 40, it is possible the accident may have never occurred.

Conclusions:

Upon reconstruction of the evidence available, it seems the accident involving Bruce Perkins and Eric Rodgers was the result of negligence on both parties. Perkins was clearly speeding in excess of twice the speed limit in the posted area. Not to mention the possibility that he may have been intoxicated over the legal limit to operate a motor vehicle. Similarly, Rodgers was negligent in the fact that he did not check the left side of the road for traffic one last time prior to pulling out. Though the telephone poles and the curving of the road did not help his visibility. Similar to Perkins, Rodgers' four to five beers may have put him above the legal limit to operate a motor vehicle.

Ultimately, Bruce Perkins walked away from the collision with minor injuries. Bruce Perkins should not receive any type of compensation. Each party should seek monetary recovery from their respective insurance company.

3.3: Case 3 –Vermont Yankee Vs Rodney Hunt Co. & Cianbro Inc.

Introduction:

Vermont Yankee, a nuclear power facility is suing Cianbro, a water controls system installation company and Rodney Hunt Company, a leading manufacturer of sluice gates for breach of warranty with regards to the installation and manufacturing of two sluice gates. At some point in late 1997, VY accepted a bid from Cianbro to replace two damaged sluice gates, with two new cast-iron sluice gates, which were to be manufactured by Rodney Hunt Company. An example of a sluice gate can be seen in Appendix C, Figure 2.

The sluice gates were to be installed during a 30-day outage period in April of 1998. By April 18, 1998 the gates were tested and deemed to be in working condition. However, by May of that same year problems began to arise with the South gate first and then the North gate. However, shortly their after with some corrections to the hydraulic control system both gates were noted to be operable by May 28, 1998. Finally, by April 5, 1999 the South Gate was deemed inoperable, a few weeks later on May 17, 1999 the North Gate was down graded to emergency use only. Vermont Yankee is suing both Cianbro and Rodney Hunt for breach of warranty and poor design. Cianbro and Rodney Hunt Company have answered the complaint with a denial of all allegations brought against them.

Opinions and Evidence:

There is no doubt that some type of catastrophic failure occurred to those gates within a one-year span. By May of 1999 the gates tongue covers could be seen hanging

off the sluice gates and severe warping of the cast-iron gates had occurred. Tongue covers are metal channels that attached to the gate itself (Figure 1). These tongue covers are a part of the sliding mechanism of the gates that allow it to go up and down. The reasons why these tongue covers, and the gate itself failed in such a fashion, is a complex series of events.

Vermont Yankee hired an expert to analyze the gate failure. Ken Willens, VY's expert, testified in his deposition that the gates failed due to over torqueing of the screws fastening the tongue covers, hydrogen embrittlement of the same screws, and the incorrect size/type of screw being used. In order to fully understand the failure of the gates and more specifically the tongue covers, each issue must be addressed separately.

First, Willens testifies that over torque on the 410 stainless steel screws during manufacturing lead to the subsequent stress on the screws and ultimately the failure of the tongue liners. Willens further claims that the over torqueing of the screws lead to stress on the shafts and caused the heads to snap, once the gates were in service. However, Willens never put his theory to work, he never actually tested the 410 screws under over torqueing conditions to see how they would hold up. However, Rodney Hunt ran their own tests on over torqueing. Rodney Hunt over-torqued an entire bronze tongue cover gate assembly. The 410 screws were used and cast-iron was the material that was drilled into. Upon lab examination, the screws became stripped before any structural damage could be done to the screws. The idea that over torqueing lead to the failure of the bronze tongue covers had no basis.

Next Willens testified that a condition known as hydrogen embrittlement damaged the structure of the screw, thus weakening them and leading to the failure of the

bronze tongue liners. Hydrogen embrittlement occurs when a atom of hydrogen from the water enters a microscopic crack in a piece of metal. The atom then bonds with other atoms to create a bigger molecule. This bigger molecule forces the crack in the metal to widen. Over time, these cracks weaken the metal to the point that it is no longer able to support its load. Willens claims that hydrogen embrittlement played a factor in the weakening of the 410 stainless steel screws. However, this scenario seems unlikely because in order for hydrogen embrittlement to occur, those gates would have had to been exposed to hydrogen atoms (i.e. water) for dozens of years. The tongue covers were falling off within 8-10 months of the installation. It is extremely unlikely hydrogen embrittlment caused the screws to fail.

The final point of controversy was the use of the 410 stainless steel self-tapping screws to fasten the tongue covers. The original RHC print for the VY sluice gates called for 304 stainless steel screws. The 304 screws are not self-tapping and were chosen because the RHC design engineer felt that VY would like the option of replacing the bronze tongue covers as needed. The use of the 304 would allow maintenance mechanics to easily take off the bronze torque covers and put new ones on without out boring out the hole.

However, in the final stages of manufacturing the 410 was substituted, because there were not 304 screws in stock. The switching of the screws was not discovered until the VY outage period when the sluice gates could be inspected by mechanics. Willens testified that the switch from the 304 to the 410 stainless steel screws led to the failure of the tongue covers. After examining the published standards, namely AWWA and EBASCO, it was found that 304 screws were listed but 410 screws were not. Also

written into these standards was that you had to use the listed screws, or equal or better screws. According to the testimony of Paul Gallo, the 304 screws were tested for 30,000 psi and the 410 screws were tested for 120,000 psi, making them in that regard a more worthy screw. Aside from the tongue covers and screw controversy, Rodney Hunt did manufacture the entire gate. Vermont Yankee's gates were to be designed and manufactured following the EBASCO and AWWS standards. Upon review of their design and manufacturing practices it can be noted that they meet and exceeded the EBASCO and AWWS standards for manufacturing of the sluice gates. RHC exceed their standards and even left extra room for error above the standards specified by EBASCO and AWWS. In this sense RHC was no negligent in the design or manufacturing of the gates.

With the screws ruled out as the main reason for failure of the gates, the focus now shifted to the wall thimbles that the gates were installed on. Cianbro was contracted to install the RHC gates, their contract called for them to install the gates on the original ARMCO wall thimbles from the previous gates. The wall thimble is a piece of concrete that protrudes from the face of the dam, it is lined with steal and the sluice gates are fastened to the wall thimble. When the gates were installed Cianbro inspected the wall thimbles for pitting, and major wear and tear. They were contracted to fix any major damage prior to installation of the sluice gates. However Cianbro never checked the wall thimbles for flatness. The issue of the flatness was not discovered until the new Whipps gates had been installed after 1999. However, Cianbro contended that according to the contract they were only responsible for checking for pitting, major cracks, and damage. Nowhere in the contract were they instructed to check for flatness of the wall thimble.

It turned out that the wall was severely out of flat. According to the people from Whipps, it was approximately 3/8 of an inch out of flat. . According to VY engineers, the gates didn't work correctly from the very first time they operated them under a full head of water. They said is would bind up, and needed more pressure to be raised. This kind of warp in the wall thimble, is precisely what would case this kind of problem and the failures seen in the gates. The binding in the gates would create an extreme amount of friction between the tongue covers and the gate frame, creating the shearing that happened.

Now that the cause of the problem has been determined, we can examine who was to blame for it. To do this, we have to examine what steps were taken to remedy the problem that arose when the gates were first operated. When the problem arose, the actions taken by Vermont Yankee were as follows. First, they turned up the hydraulic pressure sent to the gates to get them to raise. When this didn't completely work, they modified the operating procedure so that one gate at a time could be raised which would allow them to use more pressure with just one gate. This was the procedure followed until 11 months later when a Rodney Hunt representative came to perform maintenance and discovered the problems. At no time did Vermont Yankee contact Cianbro or Rodney Hunt to inform them of a problem.

Conclusions:

The failure of the Vermont Yankee Nuclear sluice gates can be attributed to a multitude of factors. The first being the failure of the wall thimble system, more specifically the fact that they were severally out of flat. However, other decisions exacerbated the conditions of the gates. Vermont Yankee made a fatal error by not

contacting Rodney Hunt or Cianbro once the problem with the gates first arised, in fact it was 11 months before RHC received a call. Had the problem been caught early, it is likely it may have been avoided. A notification of the problem after that first failed run would have fixed the problem with no damage to the gates. Rodney Hunt is in no way at fault in this case, the gates were manufactured under the EBASCO specification and the gates met that spec. The guilty party in this case is primarily Vermont Yankee, who failed to move swiftly in calling Cianbro and RHC to alert them to the problem. In addition Cianbro should not be held accountable, the wording of the purchase contract called for Cianbro, to only repair major pitting, and damage, not check the wall thimbles for flatness. In conclusion, Vermont Yankee, should not receive a settlement in their favor.

Appendix A

Case 1- Bartow vs. Extec Screen Crushers Ltd.

Figure 1: Screen Machine Side Conveyor View

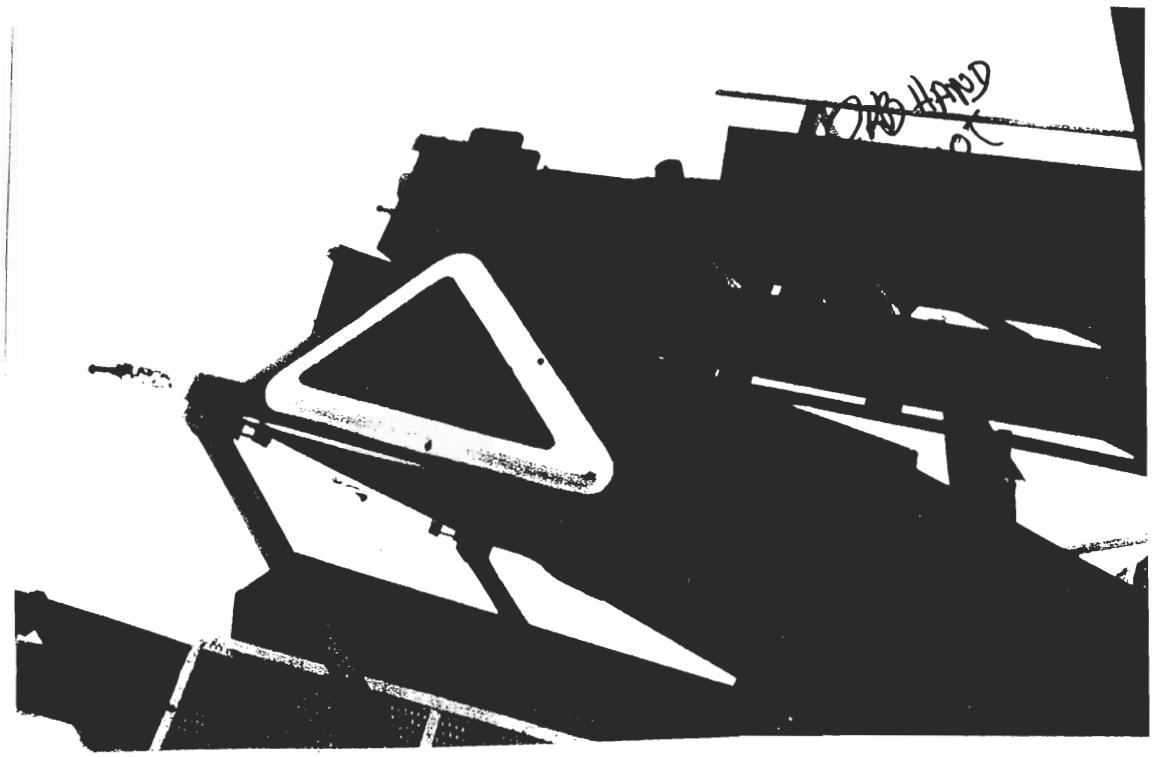


Figure 2: Screen Machine Top of Main Conveyor

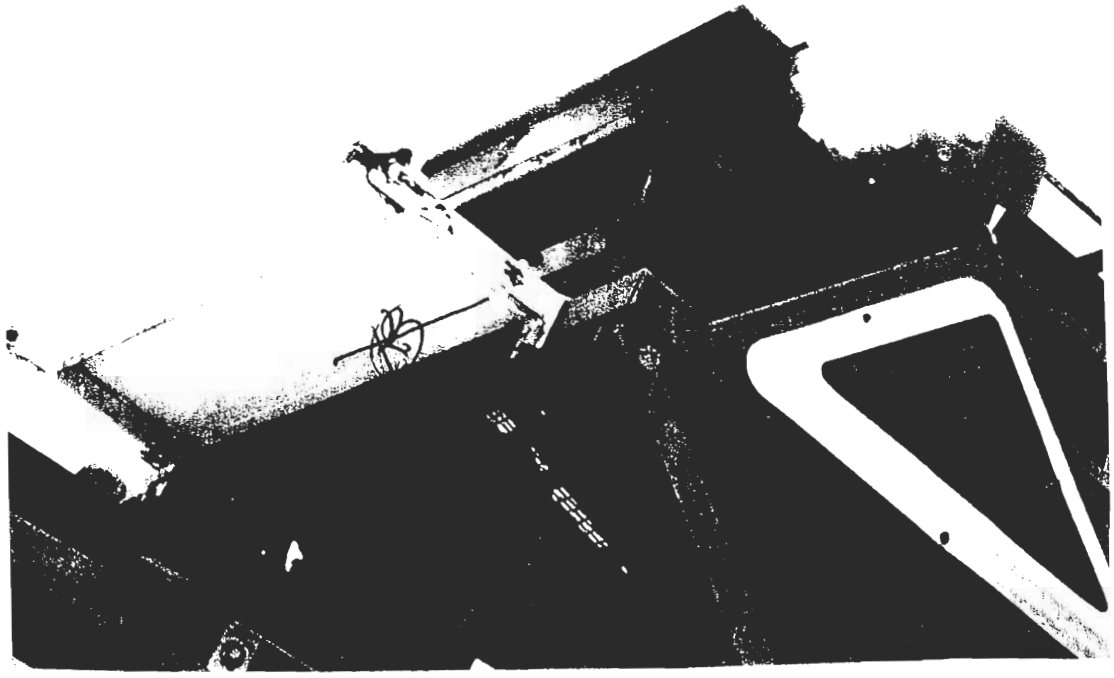


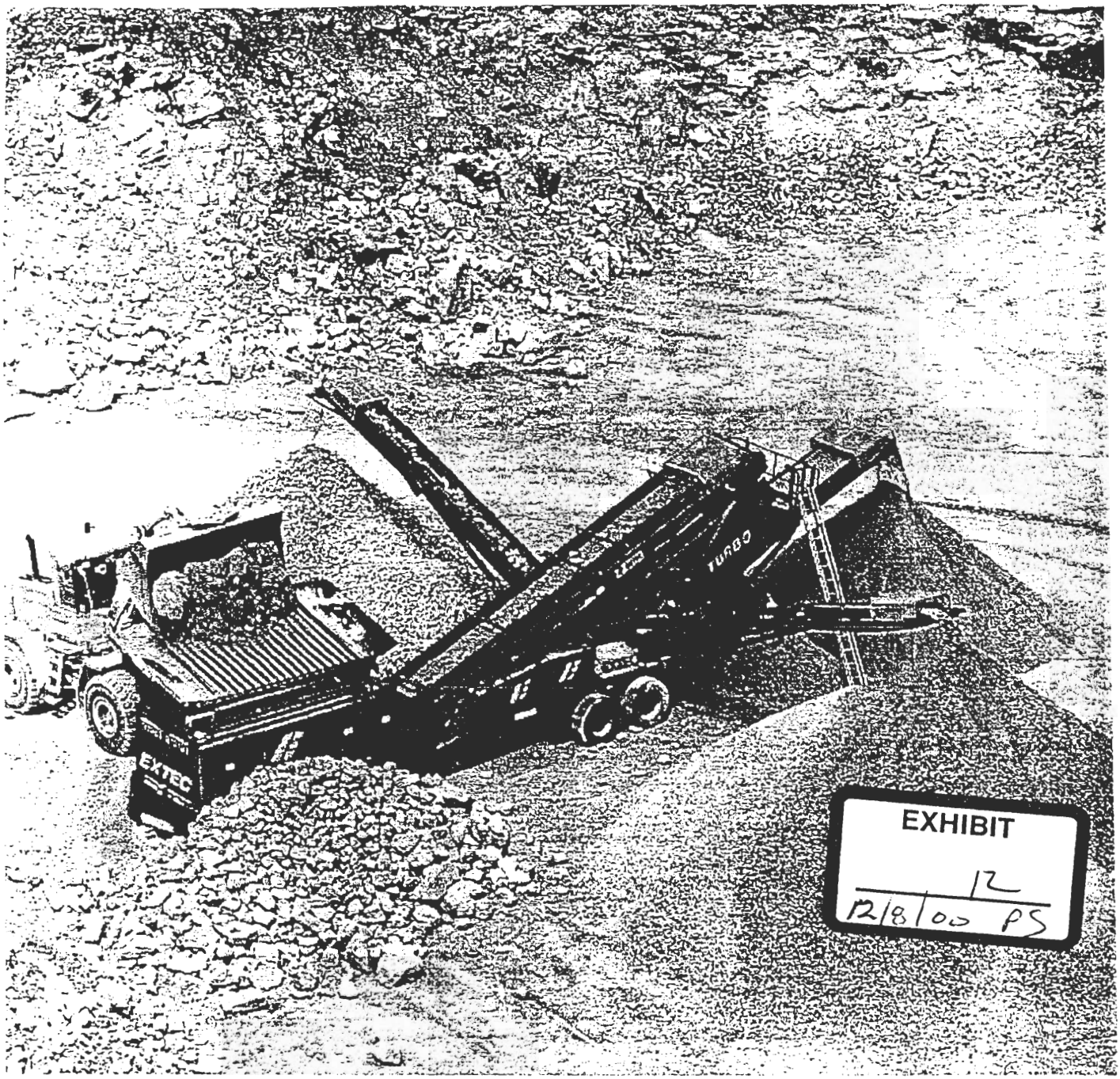
Figure 3: Screen Machine- Work Platform –Rear of Main Belt

Figure 4: Screen Machine- Retrofitted Ladder

TURBO

EXTEC

PARTS MANUAL



EXTEC SCREENS AND CRUSHERS LTD

Figure 6: Extec Screen Machine in Operation

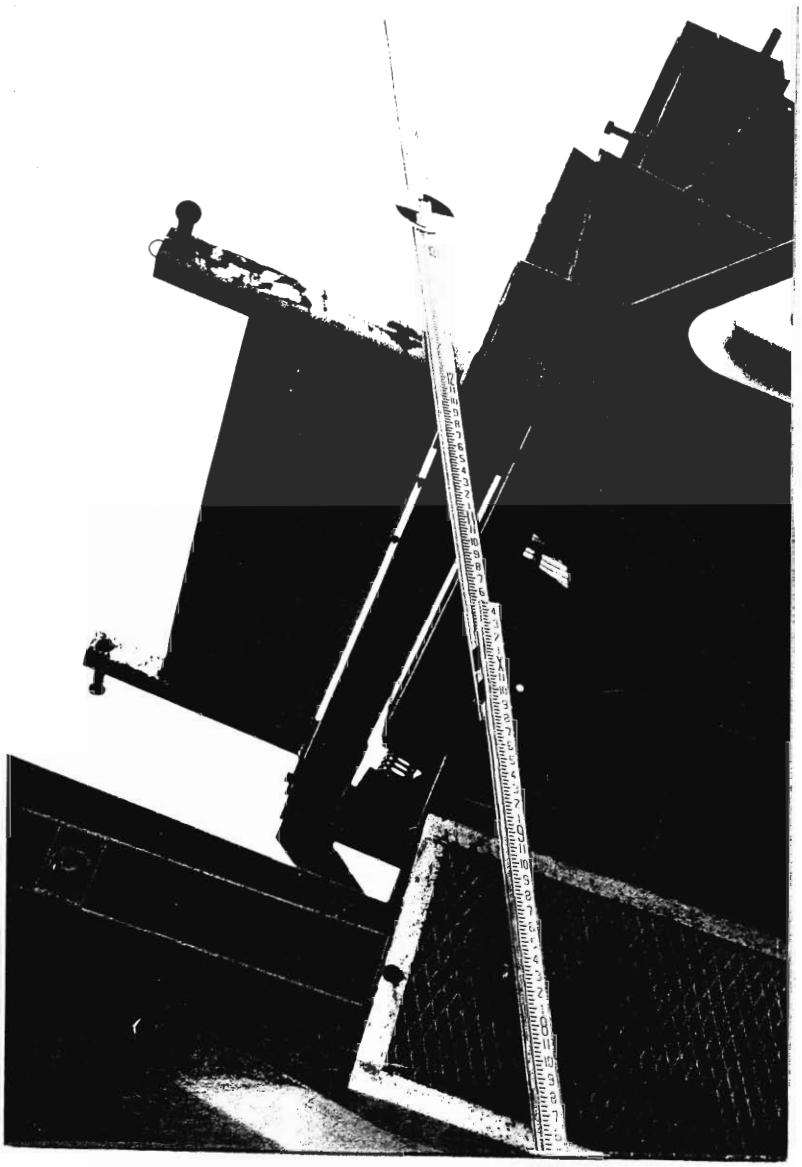


Figure 7: Height Measurement of Work Platform (Approx. 13 ft)

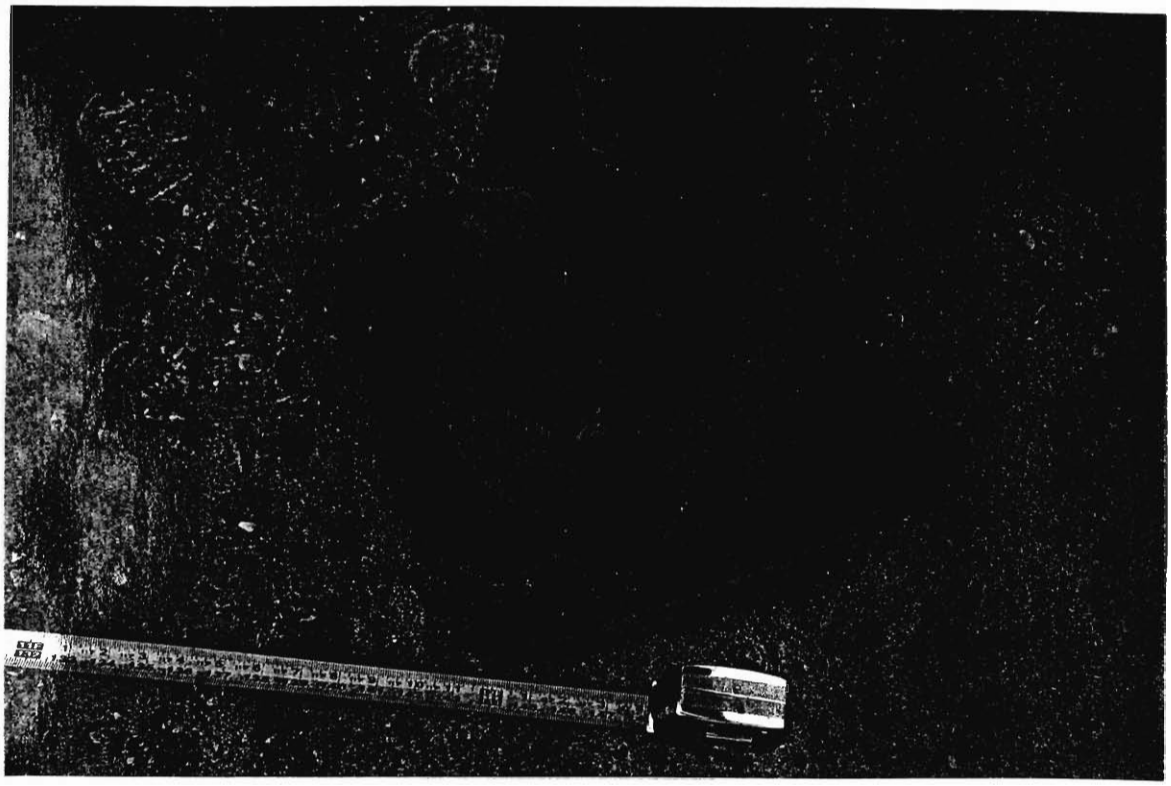


Figure 8: Measurement from Work Platform to Point of Impact (12 ft)

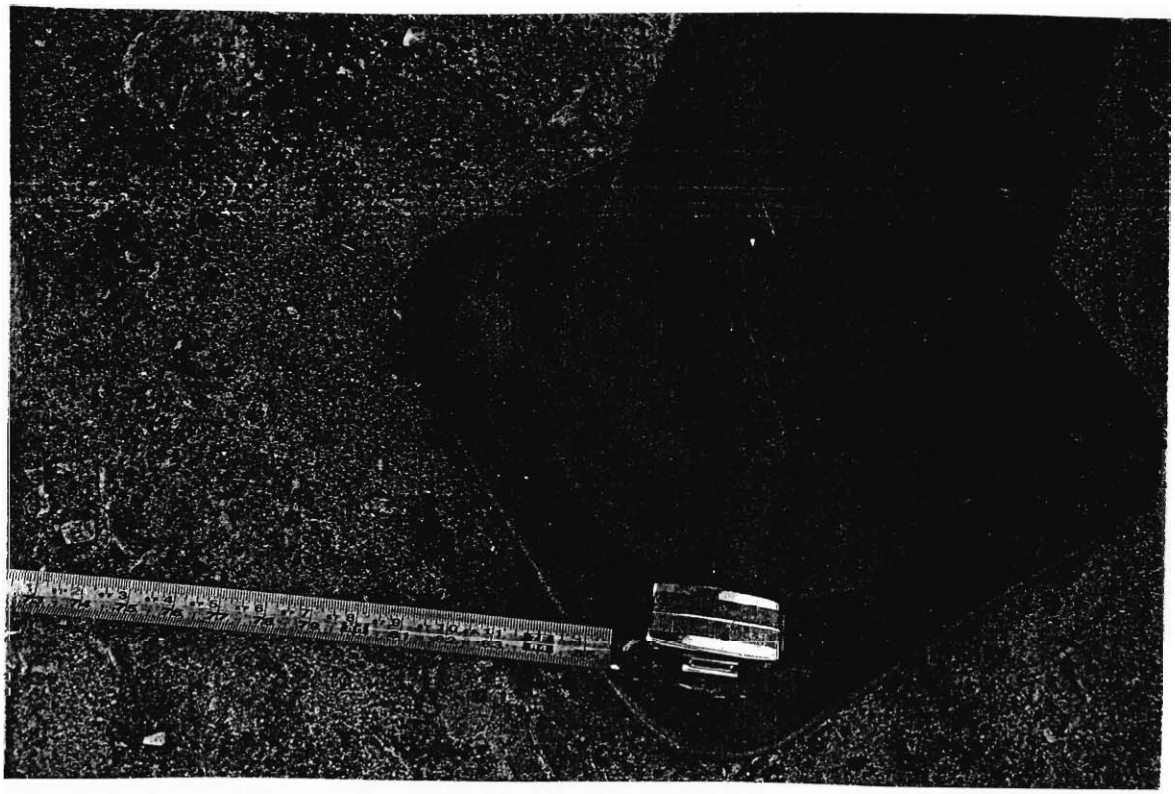


Figure 9: Measurement from Ladder to Point of Impact (7 ft)

Appendix B

Case 2- Perkins vs. Rodgers

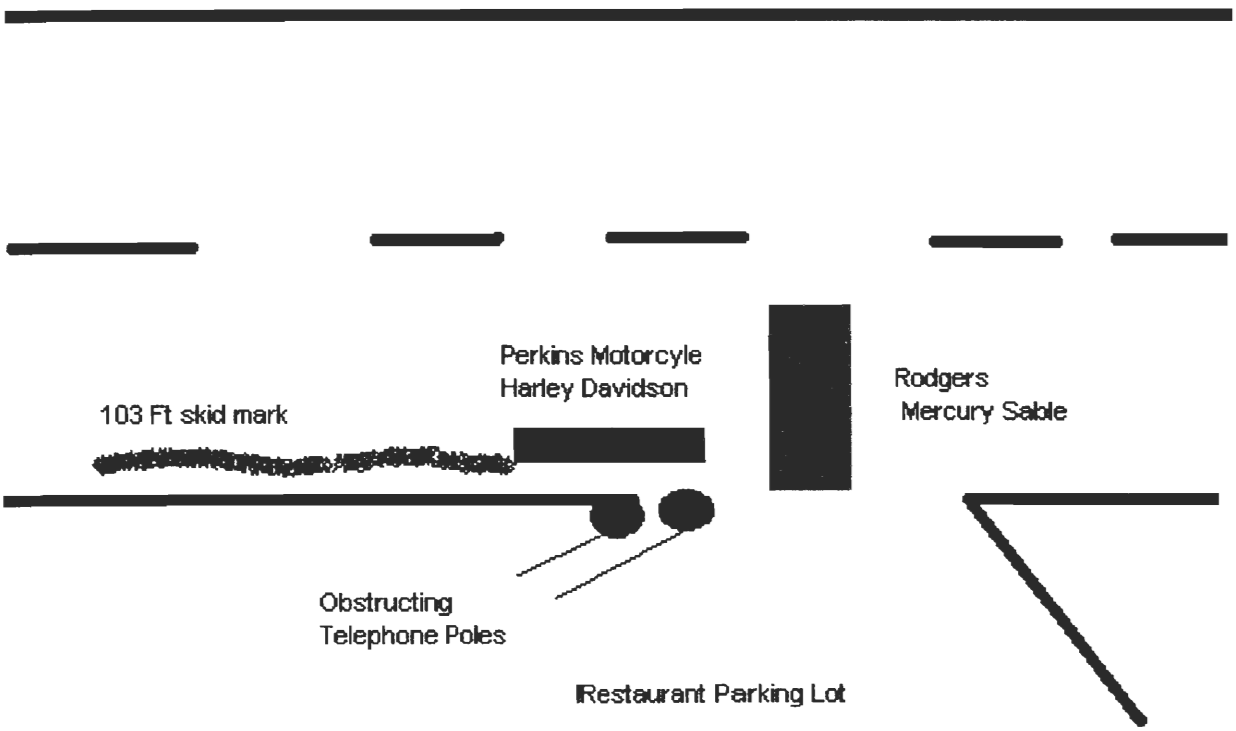


Figure 1a: Accident Overview Scene

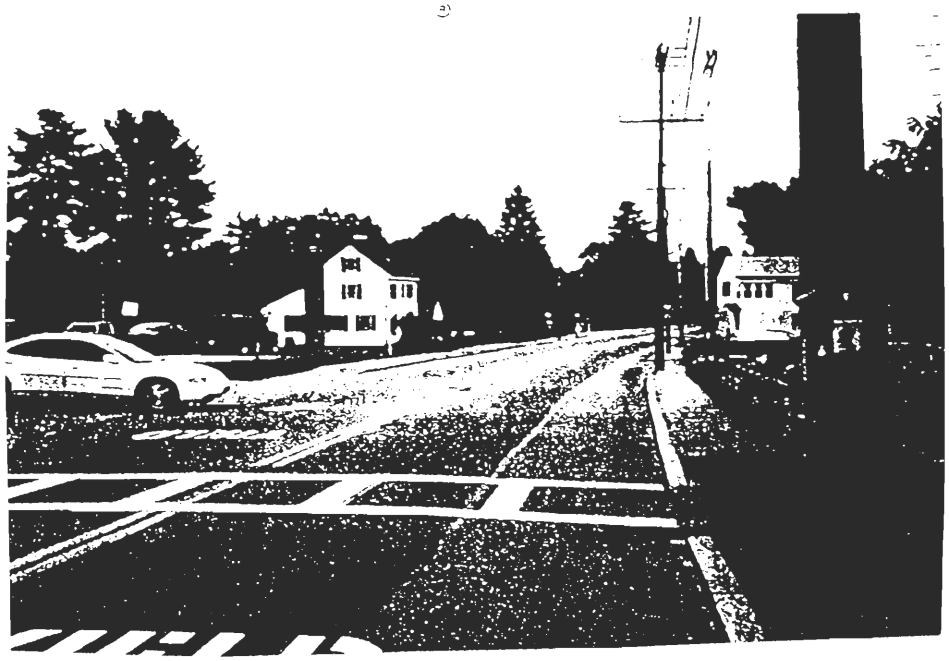


Figure 1: Street View (Car in Restaurant Driveway)

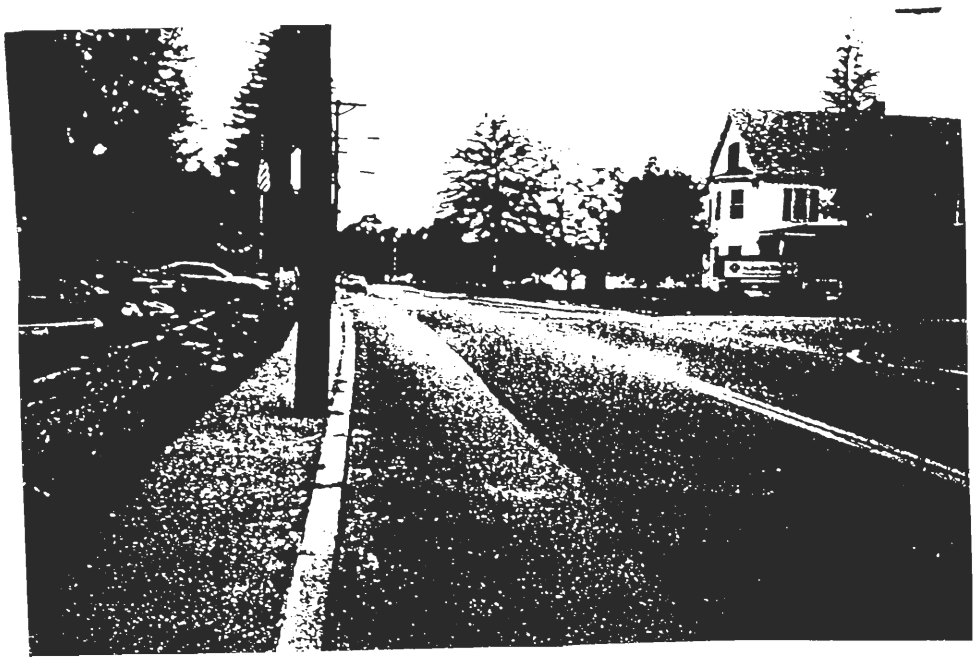


Figure 2: Street View-Pulling Out of Restaurant

Figure 3: Street View-Pole Obstruction From Restaurant Driveway

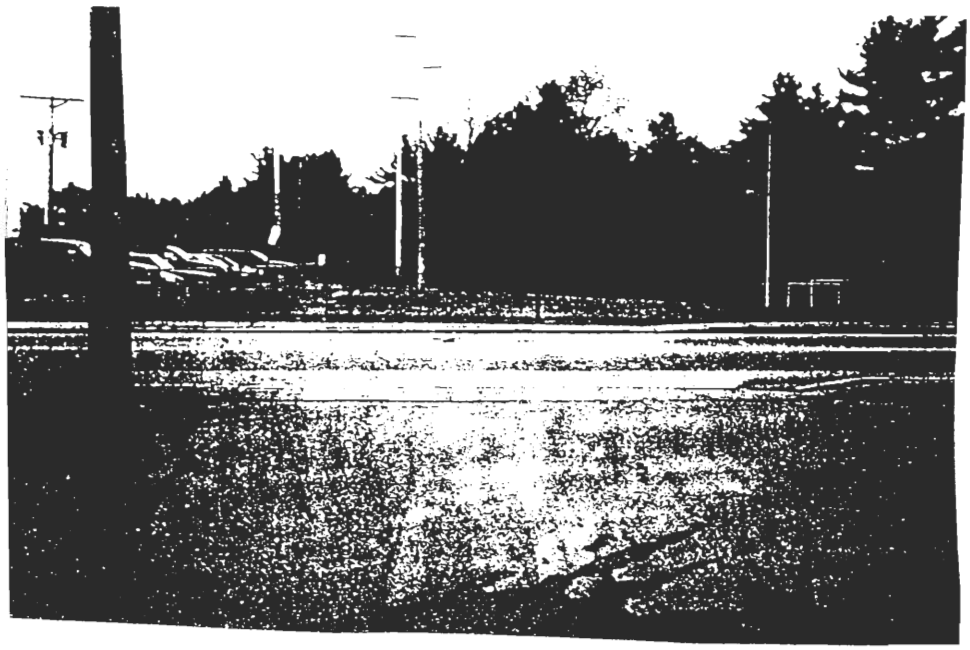


Figure 4: Street View- Restaurant Driveway

Figure 5: Accident Scene

Appendix C

Case 3 – Vermont Yankee Vs Cianbro & Rodney Hunt Co.

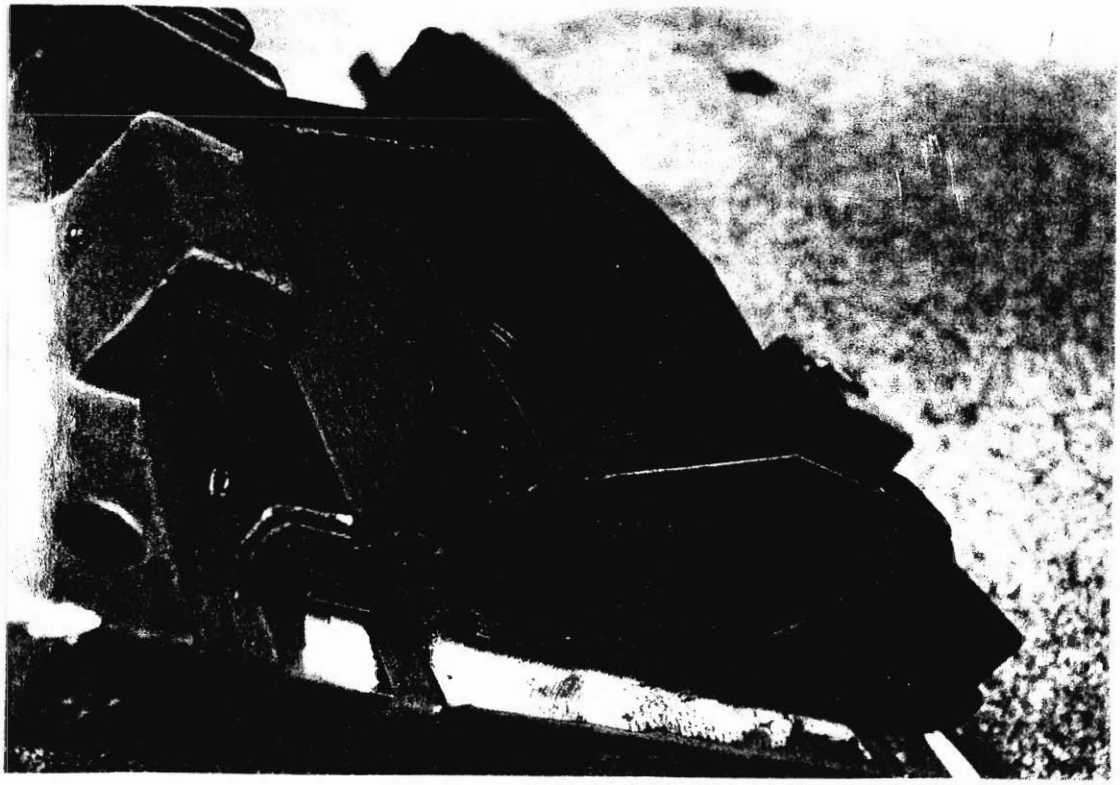


Figure 1: Sluice Gate Tongue Cover

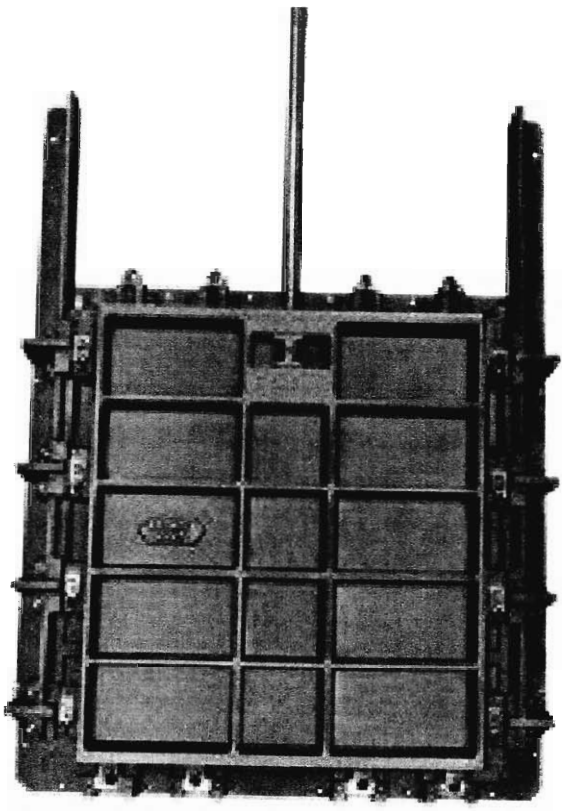


Figure 2: Sluice Gate Assembly