

PRODUCTS LIABILITY
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By



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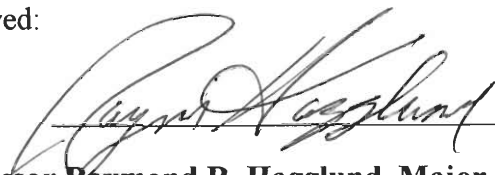
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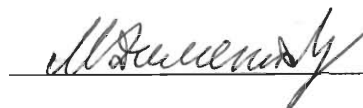
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Abstract:

This Interactive Qualifying Project studies the inter-workings of product liability law and its relationship with engineering. Throughout the project several product liability lawsuits were analyzed from both a lawyer and engineer's perspectives. The end of the project concludes with a mock trial based on the last case reviewed. A jury of peers is asked to make the final judgement on the presentation of case materials. As a result of the project, there is a greater understanding of the engineering world and its effect on society.

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Chapter 1: AN ENGINEER IN THE COURTROOM

1.1 Introduction:

This book was used to learn the basics of an engineer's role within litigation process. Helpful facts and tips that will give an engineer insight into the activities of a courtroom include knowing what types of accidents may lead to litigation and understanding how they are caused. Knowing what types of processes to expect in the courtroom, such as discovery, the deposition, the trial, and how to best conduct one-self in those situations are discussed throughout the book. The book's purpose, in general, is to teach the engineer how to be aware of how they can best assist the attorney during the entire process.

1.2 Nature of Accidents:

There are several different categories and types of accidents that an engineer can come in contact with while working in the courtroom, some of these are:

1. Collision: Two bodies trying to occupy the same space at the same time

- a. Two moving machines or vehicles
- b. A vehicle or machine hitting a fixed object
 - b.1. A vehicle or machine hitting a parked or stopped machine
 - b.2. Airplane crashes
- c. A vehicle hitting a person
 - c.1. A person running into a moving machine
- d. A person running into another person

2. Slip and Fall Accidents:

- a. A loss of traction between the foot and the surface it was in contact with
- b. Tripping
 - b.1. Scuffing
- c. Physical malfunction of the person

c.1. Dizziness

- d. An unexpected change in a level surface
- e. A loss of step support
- f. A loss of balance or support of the body
- g. A fall from a ladder or step

3. Loss of Control:

- a. Inadvertent motion

4. Hit By a Falling Object:

- a. Being hit by a rolling object

5. Suffocation:

- a. Drowning

6. Electrocuting:

7. Poisoning:

8. Shock & Vibration:

9. Entanglement:

10. Cuts and Abrasions:

11. Fire:

- a. Chemical burns
- b. Explosion
- c. Radiation
- d. Burns from contact with hot surfaces

12. Mechanical Failure:

13. Struck by a moving projectile:

- a. Firearms or other such devices
- b. War

14. Natural or Environmental Factors:

- a. Heat
- b. Cold
- c. Lack of water
- d. Animal attacks
- e. Wind
- f. Lightning

15. Homicide:

- a. Suicide
- b. Legal Intervention

16. Other Accidents:

1.3 Why Go To Court?:

There are many reasons why a person may feel the need to have their problems settled in the legal system. Every citizen has the right to seek redress if they feel they are entitled a remedy or damages in a court of law. The litigation system starts with one person-filing suit against someone else because they believe that their relationship with the opposite party has been unbalanced. Generally, in the area of product liability the unbalance is due to an accident. The next step in the process proceeds with naming claims or the specific complaints that one party may have with the another party's product. Finally, both parties can either arrive on a settlement out of court or the case will go to trial for a judge and jury to decide.

1.4 Avoiding Litigation:

There are six significant ways a company or group can avoid the litigation process altogether. These begin simply with manufacturer designing products with safety in mind, which will help to "avoid the accident." Another technique is "protection from the accident" by using

shields or guards it becomes difficult or impractical for any hazard to be reached. There are also ways to “make the accident safe” by designing a machine a product in such a way that even if the accident does happen, little or no injuries result. An example might be the addition of rollover bars to protect the operator from any accidental tipping of the machine. Also it may be necessary to “warn operators of any impending accidents” by adding warning systems such as a safety light that goes on or beeps to let the operator know that it may be dangerous to proceed. It is also important to “warn the operator of the possibility of an accident”. This is simply done by putting warning decals on the machine or specific instructions in the owner’s manual, helping to guaranteeing that a person is made aware of any conditions that may lead to accidents. At least an attempt is made to pre-condition the operator to take the right course of actions should an accident occur. Finally, it is necessary to “protect the operator or other personnel from the accident if it should happen.” A way this is accomplished is by the addition of seat belts, hard hats, or other safety devices.

In the design process an engineer should include considerations of all adverse affects of the product, and design it with safety as the major consideration. A good designer should foresee all possible uses, misuses, and environments through which a product will be operated and subjected to. An engineer must make reasonable choices during the design process, but perfection is not required or even possible. Proper documentation of such choices, decisions, their reasons, and the use of good professional judgement on the part of the designer is required. Finally, an engineer must warn future operators of hazards that are hidden and cannot be eliminated, and provide a way for the user to communicate all feedback while also providing good instructions for the possible use and maintenance of the product.

1.5 The Litigation Process:

The actual litigation process can be broken down into three major categories. The first one is the claims of the plaintiff, which consists of the summons of the defendant and the complaints against them and their product. The next category is the defendant's response to complaints, and they attempt to provide defense for their product. The last part of litigation is the discovery process, which consists of interrogatories, requests for production, requests for admissions, inspections, depositions, and the final trial.

1.6 Engineers and Engineering Information:

Engineering information consists of any blueprints and records available for the product in question. Other information is obtained from a fact witness, who may provide information about what they actually perceived happen, an eyewitness. Also there are the expert witnesses, who can provide opinions on what happened and who was at fault based on their expertise and the facts that have been documented.

1.7 How the Engineer Can Help the Attorney:

Since an engineer knows more about the technical aspects of a product and a lawyer knows more about the legal aspects, there must be a special relationship formed between the two that allows them to work together. An engineer is needed to explain technical concepts to an attorney that he may have a difficult time understanding what is going on in a given situation. Such as the uses and applications of a certain product, tests and analyses performed on a certain product. They can explain product system parts, machine operations, and the design and development processes involved. An engineer can help answer questions such as, why a product is successful, and how the product was developed, tested, and evaluated. An engineer can help the attorney by providing engineering literature pertinent to a case, listing all possibilities of use of a

product, and assisting with the actual examinations, interviews, and depositions. An engineer may help with translation of technical information into simpler terms for the jury and possible explanations of a complex technical process, as well as, evaluations of the risks involved with certain designs. Also the engineer must testify, listen, and react to testimony as both a technical person and layman to assist the jury in making an educated verdict should a case make it to trial.

1.8 The Discovery Process:

The discovery process is one of the most important parts of a trial because it is an attorney's first chance to interrogate witnesses to find out the extent of their knowledge. An important tool in abetting witnesses into following a path of questioning an attorney has pre-determined is to ask questions that he/she already knows the answers to, which can confirm to the jury what is believed to have happened. Also, it is extremely important to request evidence to prove a point to the jury, however a lawyer must be very deliberate in showing the jury all evidence to guarantee that they understand the significance of what is shown or explained. What the attorney is trying to do is trick witnesses into being caught with a "smoking gun," irrefutable proof or absolute information needed to win a case. This whole process consists of a general discovery process, where there are requests for the production of operator's manuals, parts books, service and technical manuals, warnings, etc. Then there is the admission section where the attorney will be trying to get witnesses to admit that certain statements are true. The next part, discussed in the next chapter of the book, is the deposition, the formal testimony taken before a trial used to gather information about a case.

1.9 The Deposition:

The deposition is used to establish the facts of a case and to determine the origins and basis for those facts. It is used to determine the opinions of an expert witness and can be used to

explore the basis for those opinions as well. One of the deposition's most important functions is to aid a lawyer in seeking out information needed to discredit or impeach any witness, by making it appear that a witness is not giving valid testimony. Also, it can be a means of learning the plans and strategies of the opposing side.

There are general rules that an engineer should abide by when giving a deposition. These rules will help an engineer give the best and most helpful deposition possible. Listen carefully to the questions being asked, and pause before you answer the question so you can gather your thoughts and say exactly what you mean. Also, answer only the questions asked, answer truthfully and completely to the best of your ability, do not volunteer information, and do not argue or advocate with the opposing side.

1.10 The Trial:

The whole trial process goes as follows:

Picking a jury

Opening statements

Plaintiff presents their case

Defendant presents their case

Final arguments

Charge is read to the jury

Jury Deliberation

Verdict is read

Appearance and conduct in the courtroom are important during a trial. An engineer should dress professionally and always address the judge as "your honor". Those present in the courtroom will include the judge, the court clerk, the court reporter, the marshal, the jury, and both parties involved.

1.11 Questions:

As an attorney, the types of questions asked take an integral role in the persuasion of the jury. An attorney is free to ask specific or general questions, open and closed questions, leading and non-leading questions, formal and casual questions, simple and complex questions, and probing and outlining questions. It is not only is it what questions are asked, but how they are asked. Inflection and voice pitch changes can allow any lawyer to lend certain meaning to questions. The careful wording of questions or answers can carry far greater meaning than the mere words used. As for engineers, it is most important of all to answer questions truthfully.

1.12 Accident Reconstruction:

Accident reconstruction has helped many attorneys throughout the course of history to prove their points or to disprove the facts and opinions of the opposition's. There are six main rules that an engineer should abide by in order to provide a valid and believable accident reconstruction. They are as follows. They must agree with the laws of physics, and with the majority of information and evidence available. The reconstruction must be able to be explained in layman's terms. An engineer should not be biased or produce big surprises. The reconstruction must be able to withstand attacks and scrutiny. If an engineer follows these suggestions his/her accident reconstruction should prove to be an important tool to help an attorney win a case.

1.13 Definitions and Techniques Employed by Attorneys:

Adverse Witness: A witness called to testify by the opposing attorney

Balance of Evidence: The comparative weights of the evidence used by both sides

BAR: a.) A location of legal activity

b.) "BAR Association", a grouping of attorneys

c.) Prevent or keep out

Charge: Instruct or a complaint brought up against you

Hearsay: Something other than what a witness experienced, saw, or heard first hand

Proximate cause: An action or event without which the accident would not have happened

Puffery: Exaggeration or overstatement of a product in order to sell it

Tort: A legal wrong committed

1.14 War Stories:

The following is another set of tips that can be used by engineers and lawyers to help in accomplishing their intended goals. Never ask too many similar questions and don't fight or argue with the witnesses. Cross-examination should be kept short and know the answers before any questions are asked. Always attempt to tell a story and paint a vivid picture for the court that is easy for the jury to understand. Remember to stop when the point has been made, don't assume anything, listen carefully, and plan ahead. Don't try to fool the judge and jury.

1.15 Tips for the Engineer Involved in Litigation:

Final tips for an engineer in the courtroom:

Don't try to run the game

Always be truthful

Don't become frightened or overcome

Be prepared to listen and follow directions

Follow instructions precisely and accurately

Tell the truth

Chapter 2: PRODUCTS LIABILITY: In a Nutshell

2.1 Definition and Scope:

2.1.1 Product:

A product is a tangible personal property or good; however, product liability law today has extended beyond personal-tangible goods. Several rules govern the process of deciding how product liability law is applied to a situation. The first rule states that product liability law is not restricted to cases involving products, and it can be applied to very specific situations. The situation is defined when the defendant is in the best position to spread the loss and prevent the injury. Tort/Product Liability can also apply to other public concerns such as freedom of speech and the difficulties of proof.

2.1.2 Defect:

A defect is defined as the reason for imposing liability, against a product supplier, due to the supply of a defective product.

Product Defects: There are three types of product defects, which are termed as actionable wrongs. The first is a manufacturing or production flaw. This is a random flaw, which is not typical of the product. The second is a design defect, which is an inadequacy in the design of the product. The last type is a defective warning or instruction. Misrepresentation is not technically a defect, however it fits under this category none the less. An important consideration when examining the topic of defects, is the difference between a production and a design defect. The reason for this consideration is that strict liability applies only to production defects. A second consideration is necessary when dealing with the topic of misrepresentation. Misrepresentation is not easily distinguishable, from other defects, for three reasons. The first is that the product may carry express representations. The second is that the products' appearance

may imply safety. The last reason is that inadequate warnings and misrepresentations are unable to be separated.

Conceptual Standards for determining defectiveness: The term “defect” is used to describe any actionably wrong with the product when it leaves the sellers’ hand. A distinction exists between a dangerously defective product and an unmerchantable product, especially when the only loss is an economic one.

1.) Consumer Expectations: There is a strict definition for the term “unreasonable danger.”

“The article sold must be dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its characteristics.” In design cases, expert evidence is necessary if defectiveness is to be established. “The foundation of a consumer expectation case is usually shaped by expert testimony, regardless of whether the case is brought in strict liability or in negligence.

2.) Presumed Seller Knowledge: Strict liability, when based on innocent misrepresentation, does not require a risk-benefit analysis.

3.) Risk-Benefit Balancing: Risk-Benefit analysis is used by the courts in the determination of design defects. There is a seven step standard used in risk-benefit analysis:

- a.) The usefulness and desirability of a product.
- b.) The likelihood and probable seriousness of injury from the product.
- c.) The availability of a substitute product that would meet the same need and not be as unsafe.
- d.) The manufactures ability to eliminate the danger without impairing the usefulness or making the product too expensive.
- e.) The users’ ability to avoid the danger.
- f.) The users’ anticipated awareness of the danger.
- g.) The feasibility on the part of the manufacturer, of spreading the risk of loss by pricing or insurance.

4.) State of the Art: The burden of eliminating a danger may be greater than the risk that the danger itself creates. It is possible for a product to be deemed unavoidably unsafe. This situation requires the absence of the knowledge or ability to eliminate a danger.

5.) Unavoidably Unsafe Products: Strict liability does not apply in the case of an unavoidably unsafe product.

6.) Defect and Unreasonable Danger: The Burden of proof of negligence, in a case of an unreasonably dangerous product, lies with the plaintiff.

2.1.3 Sale:

A sale is the passing of title from the seller to the buyer for a price.

2.2 The Cause of Actions and Damages:

2.2.1 Negligence:

Negligence arises in various ways. These ways all have to do with the inadequacies in: inspection, processing, packaging, warning, design, marketing, or in any manner in which the defendant fails to uphold a reasonable standard of care. The Plaintiff is responsible for demonstrating that the accident is not possible in the absence of negligence. In addition, the plaintiff must show that it was the defendants duty to eliminate the danger. Lastly, the plaintiff must, with evidence, remove responsibility for the accident from all parties except the defendant.

2.2.2 Statutory Violations:

This form of cause of action relies directly on the terms of the statute or the intent of a legislative or regulatory body.

2.2.3 Reckless Misconduct, Concealment, and Deceit:

Reckless misconduct justifies the recovery of damages for emotional distress. This form of distress is not otherwise unrecoverable.

2.2.4 Strict Liability:

Implied Obligations: a. The warranty of merchantability

- 1.) Unless excluded or modified, a warranty that the goods shall be merchantable is implied in a contract for their sale if the seller is a merchant with respect to goods of that kind.
- 2.) Merchantability is contingent upon the following:
 - a.) Must pass without objection in the trade under the contract description.
 - b.) In the case of fungible goods, must be of average quality within the description.
 - c.) Must be fit for the ordinary purposes for which such goods are used.
 - d.) Must run, within the variations permitted by the agreement, of even kind, quality and quantity within each unit and among all units involved.
 - e.) Must be adequately contained, packaged, and labeled as the agreement may require.
 - f.) Must conform to the promises or affirmations of fact made on the container or label if any exists.
- 3.) Implied warranties are permitted to arise during the course of dealing or usage of trade, unless otherwise permitted
 - a.) The warranty of fitness for a particular purpose: Strict liability applies in the case of particular purpose warranty. This is unusual and worth mention because strict liability does not normally apply in merchantability or strict tort.
 - b.) Strict Tort Products Liability

Tort Law states:

1.) One who sells a defective or unreasonably dangerous product to a consumer is liable for physical harm caused to the consumer or his property if:

- a.) The seller is engaged in the business of selling such a product, and
- b.) It is expected to and does reach the consumer without substantial change in the condition in which it was sold.

The above law applies regardless of whether the seller has exercised all possible care in preparation. This law also applies if there is no contractual agreement between the buyer and the seller.

c.) Abnormal danger

There is a list of standards, which determine whether a product is abnormally dangerous.

The existence of a high degree of risk

- 1.) The likelihood that the harm will be great
- 2.) The inability to eliminate the risk through the exercise of reasonable care.
- 3.) The extent to which the activity is not a common usage
- 4.) The inappropriateness of the activity to the place where it is carried on.
- 5.) The extent to which its value to the community is outweighed by its dangerous attributes.

d.) Misrepresentation: a. Express warranty

1.) Express warranty by the seller

- a.) Any statement or promise by the seller, which relates the goods, establishes an express warranty, which must be conformed to by the seller.
- b.) Any description, which is used, in the making of a bargain, must be accurate at the time of sale.
- c.) Any model used in the creation of a bargain must be accurate at the time of sale.
- 2.) The seller creates an express warranty, even without using the word “warranty”, if an affirmation of the value of the goods is given.

e.) Strict tort

Strict tort states that a seller is still liable for harm done by a product sold even if:

- 1.) It is not made negligently or fraudulently, and
- 2.) The consumer has not bought the product under any form of contract.

2.2.5 Damages:

General: The plaintiff is entitled to recover for any foreseeable damages, in tort or warranty.

Emotional Distress: There are differing opinions on whether recovery is an option for sufferers of emotional distress, assuming there are no accompanying physical damage. If physical damage exists, recovery can be made based on emotional distress.

Punitive Damages: Very few plaintiffs are awarded punitive damages in cases of personal injury.

Joint and Several Liabilities: Joint liability is imposed when the damages are practically indivisible.

2.3 The Parties:

2.3.1 Plaintiffs:

A person who sues any products defendant for the purpose of recovering personal injuries. This person could be a buyer, user, consumer, or any bystander who could be in harms' way.

2.3.2 Defendant Seller of New Products:

Manufacturers: In the case of a manufacturer, there are a variety of parties who may be sued. The final assembler may be sued as well as any manufacturer of any component part. These parties may be sued if the part is defective. However, even if the component meets the

specifications, the manufacturer is still at fault if there is a foreseeable risk involved with installing the component into the final product. The manufacturer is responsible for its product before and after it is assembled. It is responsible for the components, which go into the product and the assembly of the product, even if they don't actually produce the components or assemble the product themselves. If a manufacture's name is on the product, they are responsible for any problems, which occur.

Middlemen and Retailers: The retailers are not liable for any latent defects in a product, unless the defect could have been found under routine inspection. "The Sealed Container Doctrine is a term of art used to relieve non-manufacturing sellers of implied strict liability for latent defects not discoverable by reasonable inspection, whether or not the product is sold in a sealed container. This document, however does not apply to cases of misrepresentation. This also doesn't apply if there is any attempt at a repair or a re-build. In this case the retailer is considered the new manufacturer. A middleman may also be found guilty, on some level, if it receives a commission from the sale of a defective product. If the middleman doesn't receive any commission, then it most likely won't be held liable.

2.3.3 Defendant Used-Product Sellers:

A seller cannot be held responsible for a product after it has left the chain of distribution, assuming it is not a case of misrepresentation or a design defect. Also the seller cannot be found liable if it is "not equipped to pass on the quality of the goods and had no direct impact on the continuing relationship with the manufacturer." The only time that this does not hold true is in the case of a regular used product seller. They are still considered part of the chain of distribution, and thus are liable.

2.3.4 Defendant Successor Corporations of Product Sellers:

This section deals with the buying and selling of entire businesses, and how the responsibility for previously manufactured parts is distributed. There are two major rules in this area of product liability. First is the Turner Rule, which spells out how the buyer of business can be liable for the defective products of the previous owner. The Turner Rule states: “1.) continuity of management, personnel, physical location, assets, and general business of the predecessor; 2.) Dissolution of the predecessor as soon as legally and practically possible; assumption by the successor of all liabilities of the predecessor necessary for the continuation of normal business operations; and 4.) A holding out of itself to the public by the successor of the effective continuation of the predecessor.” The second product liability is the Ray Theory, which comes into play when the successor gains control of all or substantially all of the manufacturing assets of the predecessor. “It is based on policies based on virtual destruction of remedies against the predecessor through the acquisition, the ability of the successor to spread the risk, and the fairness requiring it to do so as burden reasonably attached to the benefit of acquiring the good will of the predecessor.”

2.3.5 Defendant Lessors, Bailors, and Licensors of Products:

Lessors are liable for any injury, which occurs to the customer when using the lessor’s defective product. This is true provided the defect occurs during the rental period. A long time lease is considered the same as the purchase of a product. In general, the lessor is held responsible if he either “marketed or placed the product in the stream of commerce.”

2.3.6 Defendant Employer-Suppliers of Products:

Employers are held liable for certain injuries, which occur to employees in the workplace. These instances include the cases where the employer knew about a potential problem area on a machine and did nothing about it.

2.3.7 Defendant Providers of Services:

Representational Conduct: In this category there are three types of people who can be held strictly liable. They are: product certifiers, trade associations, trademark licensors, franchisers, and advertisers. This would be due to misrepresentation of a defective product.

Professional Services: The providers of professional services are not held responsible under strict liability, whereas the providers of non-professional services are. Also, product related services are covered by strict liability.

Pure Service Transactions: Strict product liability does not apply when a pure service is provided and where no product is involved.

2.3.8 Defendant Real Estate Suppliers:

Builder-Vendors: Builders of dwellings or buildings are strictly liable for injury caused by defective construction. This applies whether the building is large or small. Liability is based on the assumption that the contractor should have superior knowledge and skill regarding the construction of the building.

Lessors: Lessors are required to upkeep the building which they are leasing out. The person leasing the property has the right to expect the dwelling to be well maintained, up to the level at the time that the lease was signed.

Occupiers of Premises: The landlord is strictly liable for injuries caused by a latent defect, if present at the time of the lease. A landlord is considered part of the production and

marketing enterprise. This rule holds true unless an occupier's actions can be considered abnormally dangerous. In that case, the occupier is liable.

2.3.9 Contribution and Indemnity:

One who is found intentionally liable is not entitled to contribution. The Indemnity Doctrine says that “one passively or secondarily at fault was permitted to recover in full against one who is actively or primarily at fault.” Some courts say that there is recovery relative to the amount of fault laid upon a person. This is called comparative fault.

2.4 Factors Affecting Choice of Remedies, Jurisdiction, and Procedure:

2.4.1 Reliance:

“Proof of reliance is expressively as a condition to recovery for conscious, negligent, and innocent misrepresentation resulting in personal injury.” However the express warranty provision says that “an affirmation merely of the value of the goods or a statement purporting to be merely the seller’s opinion or commendation of the goods does not create a warranty.” In order to recover for a breach of express warranty, one has to show that the consumer relied on the assurance of the advertisements when buying a product. If there happens to be an inadequate warning, and that is the basis for a case, there must be proof that the warning was relied on. Otherwise, misrepresentation cannot be claimed.

2.4.2 Disclaimers and limitations of Remedies:

In general: “A disclaimer arises when no remedy is given, while a limitation of remedies exists when the plaintiff is given some remedy which may be different from or less than that otherwise provided by law.” Contractual restrictions can not be used to avoid strict liability in the

situations of negligence or warranty. The only time when contractual restrictions are valid against liability is when product liability is not applicable.

General Requirements:

- (a.) **Conspicuousness and Clarity:** Lack of inconspicuousness and clarity will invalidate disclaimers. Writing a disclaimer in small print or hiding it on the back of a form is grounds for invalidation. The disclaimer must be written in “clear and unequivocal terms and contain language which is close enough to express negligence that doubt is removed as to the parties intent.”
- (b.) **Timeliness:** A disclaimer must be delivered before a sale takes place or a contract is signed.
- (c.) **Fulfillment of Essential Purpose:** “Where circumstances cause an exclusive or limited remedy to fail of its essential purpose, remedy may be had.” In most cases this statement comes into play when a seller fails to fix a defect in a reasonable amount of time.
- (d.) **Conscionability:** If a contract or a contract clause is found to be unconscionable, or leave a buyer with no options, it can be denied or accepted without the unconscionable clause.

As Affected by the Claims Asserted: Disclaimers of fraud, deceit or negligence are not valid. A complete disclaimer of liability is, in most cases, found invalid assuming personal injury is involved. This is a result of the idea that in a case of personal injury, at least a minimal remedy is written into any sales contract. In addition, disclaimers tend to be invalidated if their purpose or result is the relief of obligation imposed by a statute.

Scope and Effect of Disclaimers: Only a party who is directly or indirectly part of an agreement is bound by a disclaimer.

2.4.3 Recovery of Solely Economic Loss:

The Rule and its Rationale: A plaintiff cannot recover if he or she has suffered a solely economic loss, as a result of a defective product. This applies in the case of negligence or strict

liability. The rationale behind this rule has multiple parts. The first is that “product recovery, whether in tort or warranty, is limited to foreseeable damages.” The second rationale is that negligence and personal injury are not disclaimable. The rule is valid regardless of privity between the plaintiff and the defendant. Solely economic loss is not insurable under product liability because a proof of an “occurrence” is necessary for indemnity to be received.

Definitions of Solely Economic Loss: “Economic loss is typically defined as loss in value, loss of use, cost of replacement, lost profits, and damage to a business’ reputation, where no physical accident is involved.”

2.4.4 Notice of Breach:

“Where a tender has been accepted...” “...the buyer must, within a reasonable amount of time after he discovers or should have discovered any breach, notify the seller of the breach or be barred from any remedy.” This is a protection for the seller. It allows them to prepare for a possible claim against them.

2.4.5 Wrongful Death:

A breach of warranty or negligence may be considered a wrongful act, thus may be subject to a wrongful death action. This is due to the fact that culpability exists “in the consciousness and understanding of all right thinking persons.”

2.4.6 Procedural Considerations:

Jurisdiction: a. Statutory Causes of Action: In the case where an express warranty is breached by a defendant, state consumer protection statutes give the plaintiff the right to treble damages and also to collect for attorney’s fees. There is a private right of action, established by

Congress, for damages where someone is injured due to a violation of a Consumer-Product-Safety-Rule. These are both examples of causes of action brought on by statutes.

(a.) Minimum Contacts of the Defendant: A defendant cannot be found liable for a defect, which occurs outside of his former state. If a retailer does not avail himself “ of the privilege of conducting business in the former state” or “to serve directly or indirectly” in the market, then they cannot be held liable. However, if the manufacturer intends to make a profit from a national market, then the specific state does not exclude the manufacturer from liability.

(b.) Class-Actions and Multi-District Litigation: There are four types of class actions: “1. Where there is a risk of inconsistent or varying adjudication; 2. Where adjudication of some claims will, as a practical matter, be disposed of the claims of others not a party to the litigation; 3. Where the defendant has acted or refused to act on grounds generally applicable to a class, making final injunctive or declaratory reliefs appropriate; 4. Where questions of fact or law common to the members of the class predominate over the questions affecting only individual members.” The first three types are mandatory for all members of the class to follow. The fourth type gives an option. The multi-district litigation statute states that similar pending litigation from one district can be used in pre-trial matters in other districts.

(c.) Inconsistent Verdicts and Erroneous Instructions: Every court treats these issues differently. Some say that a defective product does not necessarily breach warranty and vice-versa. Some however disagree and say “If any counts in a declaration are good, a verdict for entire damages shall be applied to such good counts.”

(d.) Res. Judicata: Collateral estoppel is a term which, “precludes relitigation of an issue that has been finally determined in a prior litigation between the same parties or their privies or relitigation of an issue by one party where that issue has been finally determined against that same party in a previous litigation.” Non-mutual defense collateral-estoppel is used when a plaintiff tries to sue a defendant on an issue dealt with in a prior suit. Non-mutual offensive collateral estoppel is used when a defendant tries to relitigate a prior issue.

(e.) **Choice of Law:** If a federal law decides that its own rule is procedural, federal law is applied over the forum states' law. In the case of change of venue, the transferor court sets the conflict rules for the transferee court. A state must have a significant number of contacts involved in the case in order to apply its own law.

2.4.7 Statutory Compliance:

Compliance with applicable statutes means that the product is inherently not defective.

2.4.8 Defense Contract Specifications:

Non Government Specifications: If the specifications are conformed to, the manufacturer is not liable. Unless the products “are so defective and dangerous that a reasonably competent contractor ‘would realize that there was a grave chance that his product would be dangerously unsafe’.”

Government Specifications: A manufacturer is not liable for a defective product it is in accordance with government contract specifications. There are four elements to this statement: 1. “The approval of the design by the United States must involve a discretionary function”; 2. The United States must have “approved reasonably safe specifications”; 3. “The product must have conformed to those specifications” and ; the supplier must have “warned the United States about the dangers in the use of the equipment that were known to the supplier but not to the United States.”

2.4.9 Statutes of Limitation:

The Applicable Statute: Two or more statute could apply to a case. Either a warranty statute or a personal injury statute or both could be applied. A statute of repose is a limitation whose period runs between two fixed dates, regardless of the situation.

Date of Accrual: An accrual date is the date at which the statute of limitations takes effect. Three common types of these dates are: “1.) Date of the injury, 2.) Date when the plaintiff had reason to know about the claim, 3.) Date when the plaintiff, in the exercise of reasonable care, should have known of the claim.”

Tolling Exceptions: A statutory period has the ability to be tolled, or stayed. A reason for this would be the happening of an event, which prevents the period “from beginning or continuing to run as it would otherwise do in the absence of the events occurrence.”

2.4.10 Statutory Retrenchments:

Some issues covered by these retrenchments, or limitations are: “limitations on the amount of chargeable contingent fees; elimination of the collateral source rule; provision for the periodic payment of judgements; elimination of strict liability and the adoption of the product state of the art defense; elimination or restriction of recovery for punitive damages.

2.5 Production and Design Defects:

2.5.1 Production defects:

In a manufacturing defect case, the plaintiff proves that the product is defective by showing that it does not agree with the manufacturer’s specifications. However if a manufacturer determined that a 20% failure rate was acceptable, none of the products falling within this range of failure should be considered defective. Random defectiveness is probably what is taken into account by the concept of production defect. It is not always a useful means of distinguishing production from design defects, if the idea is intended to refer to the rate of failure.

2.5.2 Design Defects:

The Theory of Liability: There are many different views as to what constitutes as liability. The most widely exercised standard of liability is some form of risk-utility analysis. Risk-utility analysis is where the liability of the manufacturer depends upon a departure from certain standards of care. This is basically a matter of negligence on the part of the manufacturer, but many courts would have us believe that their focus is on the product rather than the manufacturer's conduct. Although a jury will take into account the judgement or decision, in other words "conduct" of the manufacturer. However, in strict liability cases, industry custom or usage is irrelevant to the issue of the defect. Instead, the factors of the degree of danger posed by the challenged design, the probability that such a danger could occur, the mechanical feasibility of a safer alternate design, and the adverse consequences to the product and to the consumer that would result from an alternate design. One view as to what design defectiveness is in strict liability is whether the product did not perform under normal conditions as an ordinary consumer would expect, also if the plaintiff proves that the product's design caused his injury and the defendant fails to show that the benefits of the challenged design outweighs the risk of danger inherent in such a design. However a product that fills a requires/critical need and can be designed in only one way should be viewed differently.

Polycentricity: Sometimes conscious design decisions are described as "polycentric" or "many centered problems", in which each point of a decision is related to all of the others. This describes how some flaws in design may result from concisely inputting one design, which is safe under most conditions, but flawed under lower percentage conditions. Thus trade-offs in the design of a product involve safety, utility, and cost. It is the manufacturers judgment as to whether the trade-off are acceptable, if the trade-offs are known to the public, but still accepted by it. This concept of "trade-off" makes deciding product liability a more complex process. In the Bowman court, it was thought that the jury should be instructed to consider the probability and seriousness of potential injury, and the ability of the manufacturer to design a safer product

without jeopardizing any of the functions and the effectiveness of the product. Opponents of polycentricity say that when a manufacturer places market considerations before the design of a safe product, that is when a design is thought to be liable and unreasonably dangerous.

The Relation of Design and Warning Defects: The failure to warn of an obvious danger in the product is a case of liability, but to warn of an obvious danger that can be avoided through a feasible alternate design can also be seen as liable. Thus placement of written warning labels and notices, does not release the manufacturer of all of their responsibility in the safety of a product. Lack of mechanically engineered warning may also be a case of design defect, as in the case of *Simms vs. Thiede* (1990). Depending on the situation at hand, the degree of liability due to warning or lack thereof is dependant on the view as to whether the warning is adequate and/or the manufacturer neglected to warn the consumer of the dangers.

Obviousness of Danger: Is a manufacturer liable for a product that has obvious dangers, and is misused by the consumer in such a way that he injures himself? That depends on the product and whether adequate safe guards can be implemented and if the dangers were unreasonable. However the obvious danger defense conflicts with the defense of assumption of the risk. To establish assumption of the risk, it must be shown that the plaintiff discovered the defect, fully understood the danger that it presented, and disregarded this known danger and exposed himself to it anyway. In a case of truly obvious danger, the failure to adequately warn of such a danger or hazard that is apparent to the ordinary user is not unreasonably dangerous, as stated by the Tennessee Product Liability Act, Tenn. Code Ann. 29-28-105(d).

Crashworthiness: Crashworthiness is a term used to describe the capability of a product to protect against increased injury from an accident caused by something or someone other than the product. This is mostly used in connection with automobile collisions, as in fuel tank crashworthiness, but may also include such events as when a fire extinguisher fails to work, or a burglar alarm malfunction. Most courts find that most products must be reasonably designed

against foreseeable accidents. Injuries resulting from unforeseeable accidents, however, are not the responsibility of the manufacturer.

2.6 Inadequate Warnings and Instructions, and Misrepresentations:

2.6.1 Warnings and Instructions:

In General: A plaintiff is not required to make an election between pursuing a case on a strict products liability theory of either design defect or failure to warn. A plaintiff may proceed with both theories if both are viable. A warning is distinguished from an instruction, in that instructions are calculated primarily to secure the efficient use of a product, while warnings are design to insure safe use. A warning must describe the nature and the extent of the danger involved. For example, a jury could find that a warning on dishwasher soap was inadequate. The warning stated that the soap was corrosive, but it did not warn that the product could cause blindness. Warning may need to detail not only the toxic qualities of the product, but also a safe means of disposal. A manufacturer may be required to warn of the absence of an antidote in the case of a dangerous poison. In addition, it should take into account the environment in which its product will be used when fashioning warnings. In most cases a warning is required in order to enable the plaintiff to use the product in such a way as to avoid a concealed danger. The plaintiff could not complain that a warning with clearer or stronger content would have made a difference if the plaintiff had failed to read the warning that was given. On the other hand, the plaintiff has the burden of showing that, had a warning been given, it would have cause him/her to avoid the accident. If a danger is obvious, it is not required for a warning to be given, but determining cases of defective design is complicated. Sometimes expert testimony is required to determine the adequacy of warnings to a specialized group, such as doctors.

The Standard of Liability: There is a substantial division of authority regarding whether negligence or a strict liability is to be used in failure to warn cases. With today's world

consumers, it is hard from them to protect themselves from risk of serious dangers caused by the products they purchase. The manufacturer is better equipped with the knowledge of the product and can handle with more ease. Therefore, the consumer must rely on the integrity and competency of the business community. In addition, by imposing on the manufacturers the cost of failures to discover hazards, we create an incentive for them to invest more actively in safety research. Liability can also be judged by scientific knowability. If a known defect or hazard could be deemed knowable at the time of production through applying research or performing tests that were available at the time, then the manufacturer is liable and negligent in producing the dangerous product. However, it's hard for juries to understand this "scientific knowability" and judge upon these given complex issues. The effort, time, and money applied to safety research is also analyzed to see if the manufacture put up a decent effort in discovering flaws and defects in their products. The state-of-the-art is usually determined in terms of the scientific or technological knowledge available at a given time, while the negligence standard of due care is defined in terms of what a person knew, had reason to know, or should have known regarding a danger and the means of avoiding it. These two standards are not necessarily the same, even for a manufacturer with assumed expert knowledge in the field, since the reasonable person cannot always be expected to know that which is knowable.

Persons to be Reached: A warning is mandatory only on specific dangers that an expert is unaware. Commonly experts need not be warned if products they are using are in their field of knowledge. However, there may be specific dangers of which the expert is unaware, and thus needs to be forewarned. An intermediary is required to give warning to the consumers if they have knowledge of the defects, dangers, and/or past accidents. However, some intermediaries have no knowledge of defects. In most cases of doctors prescribing drugs, the warning can be issued to only the doctor, this is called the "learned intermediary rule" for prescription drugs. In some cases, however, the warning has to be given directly to the consumer via package insert or

warning, such as in the case where it is foreseeable that a drug will be used or administered without the intervention of a doctor or learned intermediary.

Countervailing Representations: Misrepresentation of a warning can occur when the warning is downplayed or misleading. Counteractive words that describe the products safety, when in fact it was misleading can make the warning more inadequate. In some cases, salespersons, or manufacturer's detail men, emphasize it's products effectiveness, while downplaying or not warning of the defects can also count as misrepresentation. Pictures, and/or appearance of safety can also be a misrepresentation of safety if the pictures or appearance show how safe a product is, when actually it isn't. A variety of circumstances surrounding the packaging, marketing, and appearance of a product may serve to counteract any warnings that are given. Adequacy of a warning depends upon the environment in which the product is marketed.

Post-Sale Duties to Warn: In some cases, a warning is necessary post-sale if a dangerous defect is discovered or known in the product sold. A negligent failure to warn can also exist at the time of sale. The post-sale duty may be greater than one of just warning, as in cases where the product needed to be recalled or repaired. However, in cases where corporation A buys out corporation B, corporation A is not liable for products sold by it's predecessor. On the other hand, corporation A, has the obligation to warn of dangers associated with products sold by it's predecessor if they discover a defect in the product sold by it's predecessor.

Allergic Users: Warnings are subjected based on a substantial or appreciable number of persons contingent to the allergy. This is where the defendant should have known of the risk. The definition for substantial or appreciable number is not easy to define. There has been one case where 373 complaints out of 82 million sales were considered sufficient. Common allergies such as eggs or strawberries need not be warned by the seller, but may be requires to warn that products contain ingredients that are known allergens.

2.6.2 Misrepresentations:

Misrepresentation can be based on deceit, negligence, strict tort, or strict warranty. There is no need for a defect on a product to be shown other than the plaintiff's injury is caused by misrepresentation of the supplier. Sometimes misrepresentations arise from the appearance of the product itself. A number of product defenses and liability limitations can be avoided if strict liability for misrepresentation is imposed.

2.7 Problems of Proof:

2.7.1 Cause-in-Fact:

A plaintiff must show that the defect existed when the product left the defendant's control. He must reasonably eliminate alternative causes not attributed to the defendant.

The plaintiff in a strict liability action is not required to disprove every possible alternative explanation of the injury in order to have the case submitted to the jury. The plaintiff need only show that the material fact to be proved may be logically and reasonably be inferred from the circumstantial evidence.

Some courts have rejected the market share basis of liability for similar products that have varying degrees of harmfulness, on the ground that the market proportion rationale is inapplicable since the proportion of the market sold does not necessarily reflect the proportion of injuries likely caused by a defendant.

Often the concept of foreseeability is used to describe occurrences that can reasonably be anticipated, while proximate cause is used to describe occurrences that are the "direct", "natural", or "probable" result of another event.

2.7.2 Proximate Cause and Foreseeability:

In “strict liability the knowledge of the article’s propensity to inflict harm as it did is assumed regardless of whether the manufacturer or seller foresaw or reasonably should have foreseen the danger.” But before a manufacturer or other seller is strictly liable for injury inflicted by a product, the product must be foreseeable, while only foreseeability of use is required in strict liability.

Misuse: Affirmation defense by some courts. Misuse is not treated as a bar to recovery unless it is considered unforeseeable. Unforeseeable misuse is considered a bar. Misuse, when attributable to the plaintiff rather than a third person is closely related to contributory negligence and assumption of the risk. The fact that the plaintiff himself is guilty of criminal conduct in his acquisition or use of a product will not necessarily bar his recovery on the grounds of unforeseeable contributory negligence or assumption of the risk(Rest 2d of Torts 889).

Alteration: A special problem of misuse concerns the alteration of a product. A substantial alteration that causes the accident may be unforeseeable, barring recovery, unless the alteration should have been anticipated because of the characteristics of the product that invite or encourage the change. Where a defendant furnishes a defectively constructed product, it is foreseeable that the product may be defectively modified in an attempt to correct the original defect.

Damages: Sec. 435 of the Rest. 2d of Torts states, 1. If the actor’s conduct is a substantial factor in bringing about harm to another, the fact that the actor neither foresaw nor should have foreseen the extent of the harm or the manner in which it occurred does not prevent him from being liable. 2. The actor’s conduct may be held not to be a legal cause of harm to another where after the event and looking back from the harm to the actor’s negligent conduct, it appears to the court highly extraordinary that it should have brought about the harm.

2.7.3 Plaintiff Misconduct, and Comparative Fault:

Three types of plaintiff misconduct that can bar or limit the plaintiff's right to recovery are:

1. **Contributory negligence:** the failure of the plaintiff to take reasonable actions for his own safety.
2. **Assumption of the risk:** a knowing and voluntary confrontation of an appreciated risk.
3. **Misuse including alteration of the product:** the use of a product in a foreseeable or unforeseeable manner.

Contributory negligence and assumption of the risk are usually treated as defenses, with the burden of proof on the defendant. Contributory negligence is determined by a reasonable person standard, based on the knowledge of the plaintiff. The danger can be latent, but discovered by the plaintiff. A plaintiff may be aware of one risk without appreciating another.

The effect of plaintiff misconduct in strict liability: Some courts hold that contributory negligence is no defense in a strict products liability action, but that assumption of the risk is a defense. Contributory negligence of the plaintiff is not a defense when such negligence consists merely of a failure to discover the defect in the product, or to guard against the possibility of its existence.

Comparative Fault: Comparative fault has been widely adopted, either by statute or judicial decision. Three principle patterns of comparison: 1. Her fault is less than that of the defendant. 2. If it is not more than that of the defendant. 3. If the defendant is at fault to any degree.

Pure comparative fault is preferred by commentators and is the method usually chosen by judicial adoption. If the plaintiff is permitted to recover, their recovery will be proportionally reduced by the percentage of the fault, if any, attributable to themselves. Thus a plaintiff found 30% at fault can recover 70% of the damage.

Where there is more than one defendant, the general rule is to retain joint and several liability in comparative fault.

The reasons for retaining joint liability in a comparative fault, even where the plaintiff is also at fault: 1. The feasibility of apportioning fault on a comparative basis does not render an indivisible injury “divisible” for purposes of the joint and several liability rule. 2. In those instances where the plaintiff is not guilty of negligence, he would be forced to bear a portion of the loss should one of the tortfeasors prove financially unable to satisfy his share of the damages. 3. Even in cases that share a plaintiff is partially at fault, his culpability is not equivalent to that of the defendant. The plaintiff’s negligence relates only to a lack of due care for his own safety, while the defendant’s negligence relates to a lack of due care for the safety of others; the latter is tortious, but the former is not. 4. Elimination of joint and several liability would work a serious and unwarranted deleterious effect on the ability of an injured plaintiff to obtain adequate compensation for his injuries.

Comparative fault is widely applied to unreasonable assumption of the risk. Some courts apply comparative fault to conduct based on plaintiff misuse of the product. Some courts compare relative fault, others relative causation, and still others a combination of these factors in determining comparative fault or comparative responsibility. Some states by statute apply comparative fault to strict liability action.

2.7.4 Subsequent Remedial Measures:

Evidence of the subsequent measures is not admissible to prove negligence or culpable conduct in connection with the event. This rule does not require the exclusion of evidence of subsequent measures when offered for another purpose, such as proving ownership, control, or feasibility of precautionary measures, if controverted, or impeachment. The rule is generally held to exclude evidence of remedial measures only if taken by the defendant after the plaintiff’s injury, and it does not exclude evidence of such measures taken before the injury.

The rule does not exclude:

Evidence of remedial measures taken by one other than the defendant.

Evidence of remedial measures taken a defendant after the plaintiff's accident when these measures are involuntarily undertaken. The rule does not apply unless the evidence concerns conduct that can fairly be described as a remedial measure.

Evidence of subsequent remedial measures may be admitted, even in a negligence case, if offered for some purpose other than that of showing negligence or culpable conduct.

R.407 states that evidence of subsequent remedial measures is admissible when offered to prove "feasibility of precautionary measure, if controverted, or impeachment." The feasibility of providing a safer design or warning is often a principle issue in product litigation.

2.7.5 Miscellaneous Problems of Proof:

History of unsafe and safe use: Evidence of unsafe use and of prior accidents with similar products is admissible for a variety of purposes, which include proof of notice of the alleged defect by the defendant, the magnitude of the danger, the foreseeability of user conduct, the defendant's ability to correct the defect, and causation.

Spoliation: It occurs when a person willfully or negligently disposes of product evidence vital to a litigant's case. The person who disposes of the evidence may be held liable to the litigant for the damages they likely could have recovered. The disposer may be the product supplier or another owing a duty to preserve the evidence.

Expert Testimony: Expert testimony may be essential in a products liability lawsuit to establish a prima facie case of defectiveness, causation, damage, and other issues in the suit. Expert testimony is admissible if it will aid the fact finder in its determination of an issue in the suit. Experts may be lay persons, in the sense of lacking academic credentials, provided they have acquired specialized knowledge through experience with a product.

State of the Art and Industry Custom: Courts have difficulty distinguishing between state of the art and the industry custom, and a number of courts permit evidence of industry custom to show state of the art. State of the art is defined as the scientific or technological knowledge available or existing when a product is marketed.

Codes, Reports, and Technical Literature: Safety codes drawn up by industry sponsors associations are admissible on the issue of defectiveness, due care, and other disputed issues in a case.

Discovery: The use and abuse of discovery have become controversial issues in civil litigation, including product liability.

Chapter 3: Santino Della v Automar New England

3.1 Introduction:

On September 22, 1992 Santino Authur Della, owner of Stockbridge Motors in Stockbridge Mass, was injured while working with a newly installed, TP-9 single-post hydraulic lift which was installed by Northeast Lift Installers. The lift was purchased from Automar Northeast INC. from New York. The plaintiff had ordered a brand new lift from Automar (Mohawk LMF12) but was given a reconditioned Arkanous 4-post lift and a TP-9 2-post lift. The plaintiff was injured when the lift arms, which were positioned under the car, released out from under the car and struck the client in the left forearm and hand. The lift arms had kicked out because there were no safety arms provided by the installer to place on the lift. The plaintiff received sustainable injuries and was later cleared by a physician. There was also adequate damage to the car. This case is a representation of a breach of contract (agreement) between the three parties.

3.2 Summary of Depositions:

3.2.1 Deposition of Santino Authur Della, Owner Stockbridge Motors:

Santino Della is the owner of Stockbridge Motors in Stockbridge Massachusetts. At the time of the incident he lived in Stockbridge. He is a high school graduate (class of '68) and had been the owner of Stockbridge for 5 years. He had also owned a cellular business for 4 years. Santino stated that he ordered a Mohawk LMF12 automobile lift from Automar INC. Upon ordering the lift Santino was assured that the lift was to be a brand new Mohawk and nothing else. Dennis Roberts of Northeast Lift Installers d/b/a installed the lift in early September. When installed the plaintiff was informed that the lift was not a Mohawk and rather a reconditioned TP-9 2-post lift. Automar told him that the lift was completely 100% reconditioned and warranted. He received no written material on the model and was also told that this lift was just as good as

the Mohawk that he ordered. Santino did sign documents stating that he purchased the reconditioned lift.

Once installed Santino noticed that there were no safety arms supplied with the lift. He immediately contacted the Automar about the used lift and the safety arms. The lift was required to be equipped with safety arms and not to be operated without them by law. The safety arms lock into the mounting bracket on the lift arms under the car, on the frame or lifting points, and stabilize the automobile. This prevents it from moving or rolling off the lift. Automar informed Santino that the lifts were ordered and will be there in a few days. They also told the plaintiff that the safety arms were not going to be used and that they would just be thrown out anyway. Automar made it clear to the plaintiff that the arms were of no use and not necessary to operate the lift. Santino was told that he could use the lift without the arms and that would be safe enough. There was also no demonstration given by the Installer himself when he was done installing the lift. Each mechanic was given a chance to use the lift once installed but never shown properly from the installer. The installer told the plaintiff that the arms would be thrown out and not used at all.

On the day of the accident Santino Della was at one of the 3 bays of the garage where he was using the newly installed lift. Santino had brought a car to the lift and had begun to raise the car. He stopped raising the car to go and answer the phone. When he returned Santino began to lift the automobile again. As soon as the lift started to move again the front end of the car fell off the lift and smashed into the ground. The lifting arms that were positioned under the car on the frame had swung out from the car and struck the plaintiff in the left forearm and hand. Santino had stated that he immediately took photographs of the incident and called the installer to inform them of what had just happened.

In this deposition there was evidence that many laws and regulations that were not met. To begin with there were no warning labels or safety instructions posted on the lift, nor was there any material provided to instruct the operator how to use the lift. Second, there are laws that state

that safety arms are required while operating the lift and should not be used unless properly in place. Third, by own judgement, there was no shake test done on the car, which could have detected if the car was stable enough on the lift. This lift was used negligently and against regulations.

3.2.2 Deposition of Mark Sutton, Employee Stockbridge Motors.

Mark Sutton is the nephew of Santino Della and was a mechanic at Stockbridge Motors. He had been employed for a couple of years at the time of the incident and had lots of experience with the lifts in the garage. Mark states in his deposition that his uncle (Santino) doesn't do much hands on work at the garage. He said that he mostly sits around, pumps gas, and had a couple cups of coffee a day. He implied that Santino doesn't use much of the tools nor does he do many of the repairs to the cars. Mark testifies that the old lift in the garage had been equipped with safety arms and was properly used at all times and that the arms were positioned the same way as the new lift. The lifting arms were to be placed on the frame or the lifting points of the automobile. In the beginning of the deposition, Mark describes the newly installed lift and how to operate it. He does the same for the old lift as well. Mark was present the day the lift was installed and recalls Santino inquiring about the lift's safety arms to the installer. He noticed that the safety arms were not supplied and also stated that Santino had asked about the arms and requested that they be installed as well. When the lift was installed, Mark was given instructions from the installer on how to use the lift and how it works for about ten minutes. Mark also stated that the installer never used the lift himself, but instead just observed as the mechanics operated it. Mark had picked up a car and a truck with the lift while the installer was present. While testing out the lift, Mark noticed that there were empty holes and spaces where the safety arms would be placed. He asked the installer about the arms and where they were. The installer had informed him that the arms are usually just taken off because they were a nuisance and not to worry about them. The lift could be operated without them and that to use the arms is simply a waste of time.

Mark had used the lift on a number of occasions prior to the accident with his uncle. He stated that he picked up approximately 8 to 10 cars with the lift and never had a problem with it. He never mentioned a shake test or any special safety procedures while operating the lift. Mark was present the day of the accident. However, he did not see the accident because he was in the back washing his hands. He heard the crash of the car hit the ground and came out to the bays to see what had happened. He stated that the car was lifted about 4.5 feet off the ground and that the nose of the car was on the ground. He said that he took Polaroid's of the accident.

3.2.3 Deposition of Carol Sutton, Employee Stockbridge Motors:

Caren Sutton was an employee of Stockbridge Motors for 14 years. She is the sister of Santino Della and the mother of Mark Sutton. She primarily does all the paperwork and officework for the company. She does not work on cars and does not use any of the equipment nor is she trained to do so.

Caren recalls hearing about the new lift and how it was the wrong one. She stated in her deposition that she remembers her brother talking about the wrong lift and not being equipped with safety arms for that lift. She also recalls that the installer of the lift was there on more than one occasion to finish the job. She stated that the installer took two days to complete putting the lift in and later heard the installer talk to her brother about the safety arms. She said that she heard the installer tell Santino that he didn't have use the safety arms but he would install them when they were shipped to the garage. Caren was also present when the other mechanics were using the lift for the first time, but recalls not ever seeing her brother use the lift at any time.

Ms. Sutton was present the day of the accident but did not see the car fall or the arm strike her brother. She said that she was in the office and not at the bays at the time the car fell. She stated that she heard the crash and came out to see if everything was fine. She also noticed that when the arms shot out from the car, one of the arms had crashed into the sidewall and made an indentation. Soon after the accident, Caren called Automar to report the accident.

3.2.4 Deposition of Nancy Minkler, Employee of Berkshire Orthopedics:

Nancy Minkler is another sister of Santino Della. She had been employed at Berkshire Orthopedics as a x-ray technician for 14 years. Nancy states in her deposition that she was present the day of the accident but not at the installation of the lift. Nancy said that she was standing between bay 2 and 3 at the time when the car fell. She saw the car fall to the ground and the lift arm strike Santino. She recalls Santino yelling to watch out and get out of the way. After the accident Nancy noticed that Santino's arm was swollen to about twice the size and that he was in a lot of pain. She had gone to take x-rays with her brother and helped him get medical attention. Nancy's depositions states nothing about the safety arms or the installation of the lift.

3.3 Conclusion:

In our opinion there are three parties at fault in this case. We believe that Automar Northeast INC, Dennis Roberts d/b/a Northeast Lift Installers, and Santino Aurthur Della are all at fault in certain percentages for this case. There are many scenarios' here that contribute from the result of the accident. There were many laws broken and many procedures neglected.

Automar Northeast INC is primarily at fault in this case for selling a defective lift. The company had not provided the proper equipment necessary to keep this incident from taking place. Initially the company told the buyer that they were receiving a brand new and different model lift than the one that was installed. We believe that Automar had breached their agreement with Stockbridge Motors and is primarily at fault for the accident. Had there been safety arms installed with the lift, the chances of this accident still occurring would be greatly minimized. Automar broke the laws by not providing the proper safety equipment with their product. They had also violated the Massachusetts consumer protection law which again would have been prevented had their been the required safety equipment provided. Also, we feel that if there had been a better design to the lift where the safety arms were unable to be removed then accidents

like this would not happen again. We do however understand that there were grandfather laws in this case. At the time this lift was produced, there were no laws pertaining to safety arms and requiring them to be on the lift at all times. These grandfather laws complicate the situation and the legalities of the case. This has been taken into consideration.

Second we feel that Dennis Roberts d/b/a Northeast Lift Installers is also at fault for installing the lift without the necessary required safety equipment. The lift was potentially dangerous without these safety arms and by law should have been supplied. We feel that the installer negligently and carelessly installed the lift in a manner under dangerous and defective conditions. The installer was well aware that the safety arms had to be supplied and used at all times, and by not supplying them and condoning the use of the lift without them, he is putting those who operate the lift at great risk.

Finally we feel that Santino Authur Della is also at fault in this accident. The owner of the company should be well aware of the terms and safety conditions of the equipment in his garage. If the safety equipment wasn't provided upon installation and is required by law to be used, then the user is equally at fault for breaking the laws and also using poor judgement. We feel that Santino Dellas negligence and lack of thought had caused him to get injured. He should not have used the lift if the safety arms were not in place, and having known this, he put himself at risk.

Chapter 4: NAPCO v Brunswick Golf

4.1 Introduction:

Brunswick Golf is the manufacturer of shafts that are used in golf clubs. The plant is located in Torrington, Connecticut. Brunswick Golf is a division of Brunswick Corporation located in Delaware.

NAPCO Inc. is the manufacturer of plating system machinery. NAPCO is a Connecticut corporation located in the Plymouth Industries Park in Terryville, Connecticut.

4.2 Background:

4.2.1 The Contract:

On March 23, 1992 the Brunswick Corporation entered into a contract with NAPCO Inc to purchase an automatic return type plating system and its related equipment, as well as the installation at the plant. This particular plater was to meet these specifications:

- Plate nickel/chrome on steel golf clubs
- Produce 2880 plated shafts per hour.
- The plate thickness of nickel should be .0005 inches fully uniform over the entire shaft.
- The plate thickness of chrome should be .00001 inches fully uniform over the entire shaft.
- Each shaft should pass a 48-hour salt spray test, with a maximum of 15 spots after the test.
- Plating should be consistent with the sample shafts that Brunswick provided them with.
- NAPCO would repair or replace the plater or equipment in the event of failure.

Brunswick was to pay NAPCO a total of 1,561,605.00 dollars when the above specifications were met. Below is a picture of the actual machine in operation at the Brunswick plant.

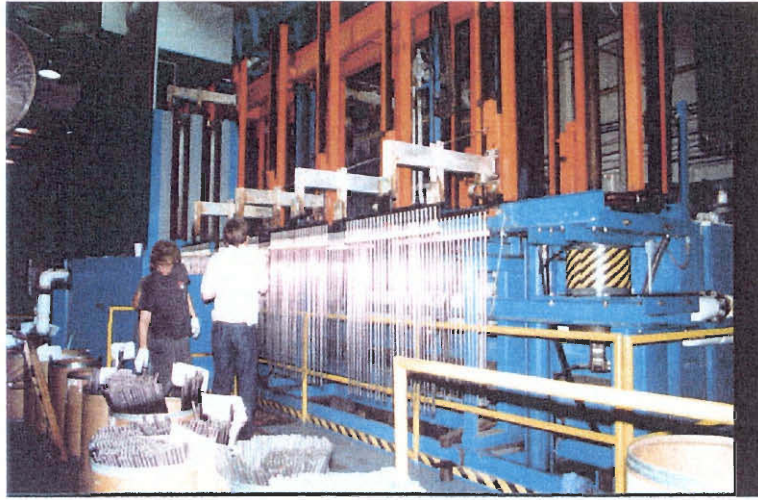


Figure 1: Return Type Plating System

4.2.2 Complaint:

NAPCO Inc is suing Brunswick Corporation because of breach of contract. According to NAPCO they installed the plater and the related equipment in the Brunswick plant in 1993, and after installation a representative of Brunswick Corporation inspected and accepted the plater. They claim that the total cost of the plater was \$1,561,605.00 and Brunswick only paid \$1,399,220.00 leaving a balance of \$162,385.00. They are suing for compensatory damages, interest at a statutory rate, and any further relief the court sees just.

4.2.3 Answer to the Complaint:

Brunswick accepts that on March 23, 1992 they entered into a contract with NAPCO Inc. The contract (see Section 2.1.1) was to meet specific specification determined by Brunswick Corporation, the major part being a return type plating system. Brunswick also agrees that the said plater was installed in 1993 and that one of its representatives did inspect the machine for "discoverable defects," and that they retained the machine with the "assurance that any nonconformity would be seasonable cured." The aforementioned price of \$1,561,605.00 and payment of \$1,399,220.00 from Brunswick is also agreed upon, however, Brunswick Corporation

denies that they owe anything. This belief that they owe nothing is based upon their interpretation of the contract. They claim that full payment was only if NAPCO Inc. fully performed its obligations under the contract and Uniform Commercial Code of Connecticut.

Brunswick states the NAPCO Inc. failed after several attempts to deliver a properly working machine. The unit that they delivered was deemed unfit for its intended use causing loss of wages because of the down time caused by this machine. They claim that they legally withheld the amount of \$162,385.00, a portion of its damages, pursuant to the Connecticut General Statute 42a-2-717 (See Appendix 2A) because of the NAPCO Inc.'s breach of contract.

Brunswick also claims that while in talks with NAPCO, before the contract, they received express warranties from the plaintiff. These warranties were made in an effort to persuade Brunswick to enter into the contract. NAPCO said, "This particular Return Type Machine design is one that is superior in design feature, durability, structural integrity, low maintenance and operating up-time." They went on to say, "The plater was free from defects both workmanship and materials." Because NAPCO has failed to deliver a machine as expressly warranted Brunswick is legally withholding the amount of \$162,385.00, a portion of its damages, pursuant to the Connecticut General Statute 42a-2-313 (see Appendix 2B).

Furthermore, Brunswick claims that NAPCO Inc. should have selected the proper Return Type Plating System due to its knowledge of the desired purpose by the defendant. By not doing so NAPCO has breached its implied warranties of fitness and of merchantability. Brunswick is legally withholding the amount of \$162,385.00, a portion of its damages, pursuant to the Connecticut General Statutes 42a-2-315 (see Appendix 2C) and 42a-2-314 (See Appendix 2D).

They also claim that NAPCO misrepresented themselves and their product while entering into a contract.

4.3 Accident Description/Discussion:

4.3.1 Time line of events:

The Return Type Plating System Machine that NAPCO was producing had a history of various breakdowns, starting from the very first time they were testing it. On November, 24, 1992 while NAPCO was displaying Brunswick the machine they produced the triple sheave shaft walked to the left completely out of the bearings and the elevator fell 18 inches. The three chains were, a sheave, and two pins were replaced and split-locking collars were installed on all the shafts. The second time the machine broke was after the installation at Brunswick. After a couple of months of operation the triple sheave was replaced due to severe wear on the flange, and the shaft was re-centered twice. In August there were repeated adjustments. In September the bearings failed and the shaft was still walking. On October 2 the chains were shortened and a drum sheave was installed along with upgraded bearings and a new shaft. The sets crews were coming lose so they lock tightened them and double set screwed the sheave. Finally on November 24th the chains broke and the machine failed.

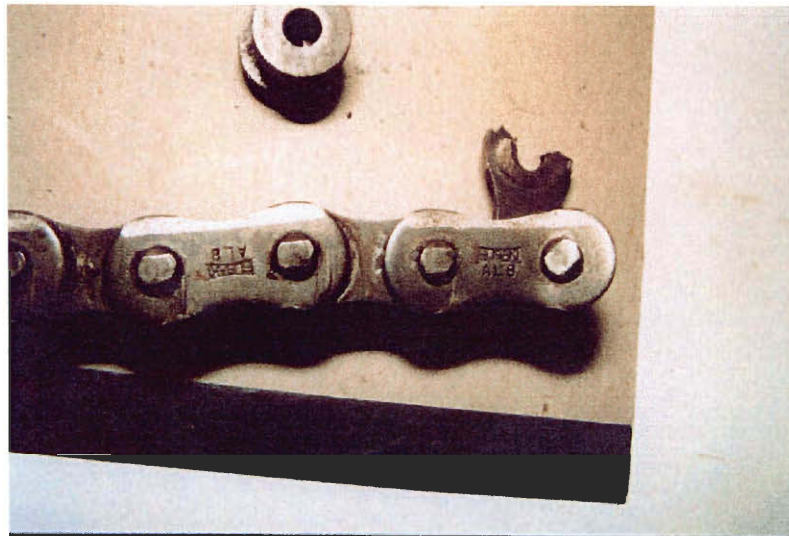


Figure 2: Broken Chain that was the cause of machine failure

The cause of this failure is in question. Brunswick claims that it was because of poor machine design. NAPCO claims that employees at Brunswick Golf had observed a broken leaf on

one of the chains and decided to keep the machine running and because they did the elevator failed. The machine, the triple sheave in particular, is pictured below.



Figure 3: Return Type Plating System produced by NAPCO Inc.

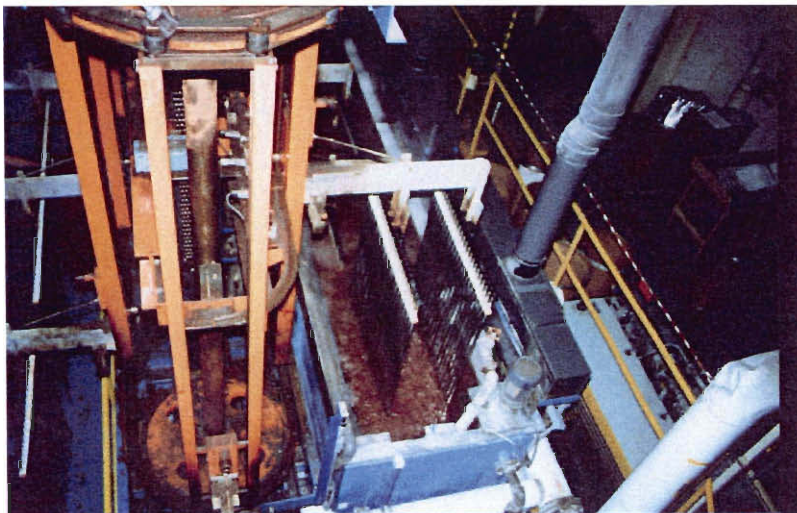


Figure 4: The loaded elevator being lowered into a bath

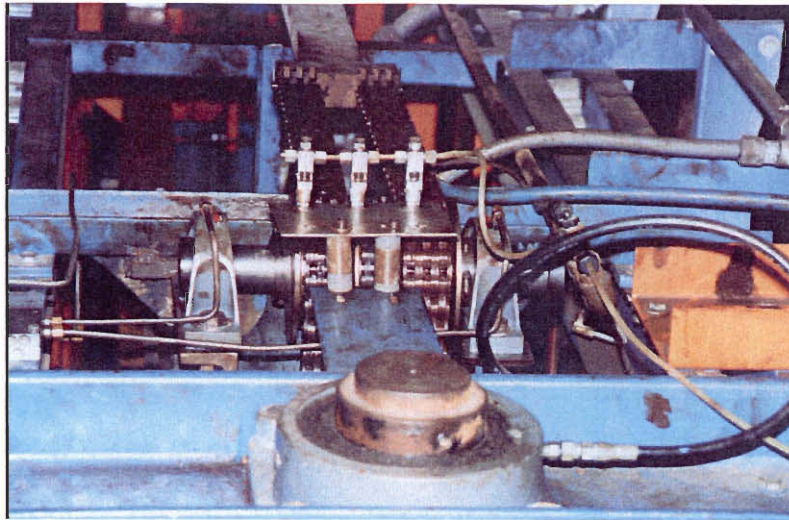


Figure 5: The triple sheave after a redesign. Area of machine in question in this case

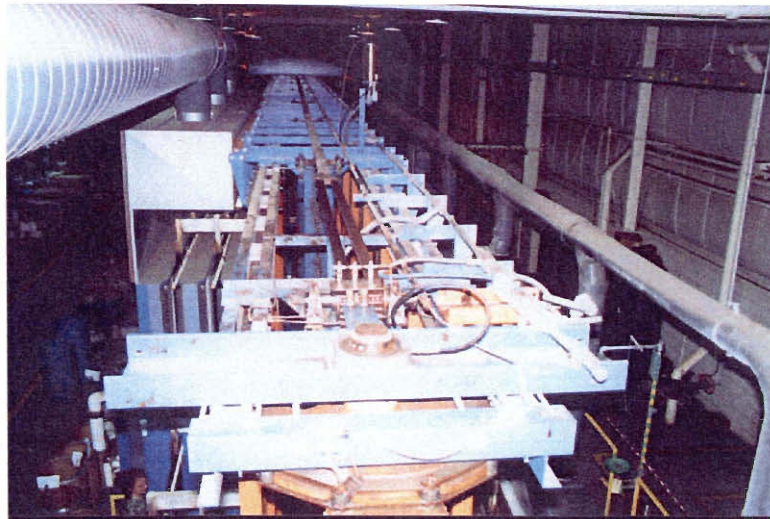


Figure 6: Large view of the Return Type Plating System and the triple sheave part in particular

4.3.2 Other various problems:

Other than the ultimate failure of the chain and shaft, there were several other problems that Brunswick encountered with the machine produced by NAPCO. Several of which are:

- Steam solenoid valve
- Fuses on the temperature control
- Leaking solenoid on the hydraulic controllers
- Leaking fittings on the semi-brittle nickel filter

- Broken liquid level control in the chrome tank
- Leaking ball valves for the chiller system
- Cracked flange on chrome heating coil
- Hardware loosening on the by-pass flipper and on a hot exit rail

All of the above problems were fixed, but a significant amount of production was lost due to the time required to fix all of these problems at the various times.

4.4 Analysis:

After reading all the depositions and looking at all the evidence I have concluded that the cause of the failure of this machine can be attributed to poor machine design. In particular, I believe that the design procedure that Michael LaPlante described in his deposition was incorrect leading to the failure of this machine. The poor design can be broken down into two components, the choice of the chain, and the design of the triple sheave and shaft.

4.4.1 Mr. LaPlante's Poor Choice of Chain Size:

Michael LaPlante is an engineer who is employed by NAPCO Inc, and was the lead engineer on the design of this Return Type Plating System. Mr. LaPlante's deposition lead me to believe that he made the wrong decision in regards to the chains that was to be on this machine. Mr. LaPlante stated that the particular chain he chose the AL 844 had a minimum tensile strength of 32,000-lbs. and yield strength of 22,400 lbs.

Mr. LaPlante states that he did a static analysis of the chain and determined that there is a force of 4,000-lbs. acting on each chain. This being the case he went on to say that the safety factor was around 7 or 8 because $32,000 \text{ lbs.} / 4,000 \text{ lbs.} = 8$. However, this is not the accepted way to determine the safety factor of a chain and also not the proper procedure in selecting the correct chain as illustrated in the picture below:

SELECTION**Step 1**

From the Application Table below, determine the type of chain and service factor

Application Table

Type of Chain	Shock	Applications	Service Factor	Chain Speed ft./min
AL series	Moderate	Suspension of counterweights	1.0	Less than 100
AL and BL series		Fork lift	1.3	
BL series	Heavy	Mining machinery Construction equipment	1.5	

Step 2

Multiply the required working load by the service factor and safety factor below to obtain the design tensile strength.

Safety Factor

Type of Chain	Safety Factor	Chain Speed ft./min	No. of Reciprocating Motions
AL series	12	Less than 100	Less than 100 per day
BL series	9	Less than 100	Less than 1,000 per day

Step 3

From the chain list, select a chain having a tensile strength not less than that obtained in Step 2.

Working Load *	x	Service Factor	x	Safety Factor	=	Minimum Tensile Strength
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* Working Load including weights of attachments, inertia force and impact force

Figure 7: Accepted procedure for selecting a chain

Correctly calculated should have been:

$$4,000 \text{ lbs.} \times 1.0 \times 12 = 48,000 \text{ lbs.}$$

The chain should have been selected that had a minimum tensile strength of 48,000 lbs. a number that is exactly 50% greater than the actual chain that Mr. LaPlante selected based upon his calculation of static loads. Also, Mr. LaPlante displays a lack of knowledge of machine design in the following dialogue taken from his deposition:

Q. As an engineer, I just want to make sure I understand that you've got a load that has to be lifted, and you're trying to design something, a chain, to lift that load. Is there a different force that acts upon that chain when you initially lift that load?

A. There is a dynamic component

Q. And that's inertia force; is that correct?

A. Yes

Q. And I think you told me at the last session of your deposition that you didn't do any calculation of dynamic forces when you originally designed or when you made the original decision to use the AL-844 chain; is that correct?

A. That's correct.

Q. Is the also an impact force which acts upon the chain?

A. Yes, I'm not sure "impact" is the right word, and I would say that there is-- that would really be a dynamic component. There is nothing striking the chain. It would be a function of the acceleration.

Q. Do you know how to calculate inertia forces?

A. Yes

Q. And if you wanted to do that, how would you go about doing that?

A. $F=MA$

Q. And with respect to the Brunswick plater, do you have any reason to believe that your original assessment as to the load was incorrect?

A. The load that I calculated was a static load. The safety factor of the original safety factor was approximately eight.

Q. I guess what I'm asking you now is do you have any reason to believe that your calculation as to the static load was incorrect?

A. Not to my knowledge

This excerpt from Mr. LaPlante's deposition proves that the analysis of the forces action on the chain were very much incorrect. If you look closely on the bottom of the Selection of a Chain figure it says, "Working force includes weight of attachments, inertia force, and impact force.

A test was done on the machine to determine the forces acting on the chains using the operating pressures. The following are the results:

	Pressure (psi)	Load (lbs)
Ascending	860	14,177
Descending	630	10,386

Table 1 : Load calculations from a operating pressure test

The weight of the elevator is 7,080 lbs., and the weight of the shafts is 510 lbs. making the static load 7,590 lbs. This calculation varies greatly to that of the maximum dynamic load of 14,177 calculated in the operating pressure test. The dynamic forces are almost twice that of the static forces. It is because the failure of Mr. LaPlante to do these calculations that led to the chain failure. The correct minimum tensile strength should have been calculated as follows:

$$(14,177\text{lbs.})/2 \times 12 \times 1 = 85,062 \text{ lbs.}$$

The correct minimum tensile strength should have been 85,062 lbs., which is much greater than the chain selected by Mr. LaPlante, which was 32,000-lbs. minimum tensile strength. Following the failure of the Brunswick plater NAPCO switched to BL as the standard chain strength.

4.4.2 Mr. LaPlante's Poor Shaft Design:

As we have already determined Mr. LaPlante failed to do any dynamic analysis on the machine whatsoever. Concurrent with our conclusions about the poor selection of chain type we have determined that the failure of the shaft is the result of Mr. LaPlante's bad analysis. We have determined the cause of the failure in the shaft was a fatigue failure that was introduced to the beam by a 3/8-inch diameter bore hole for a setscrew that held the triple sheave on the shaft. "It is critical that dynamically loaded parts be designed to minimize stress concentrations." (Machine Design - An Integrated Approach, 2000) This being the case, it should be noted that in his deposition Mr. LaPlante demonstrates that he has limited knowledge of stress concentrations. If

Mr. LaPlante was to design this machine, and it is critical to the design that stress concentrations are minimized, yet he doesn't demonstrate knowledge of this topic, I find it difficult to imagine the machine he produced was to quote the representative of NAPCO, "superior in design feature, durability, and structural integrity."

There are three stages of fatigue failure. The first is crack initiation stage. The perfect scenario for crack initiation occurs at a notch such as the setscrew hole in this particular shaft. As the shaft rotates the stress oscillate at the notch. Because of stress concentrations at the notch local yielding will occur. This yielding causes distortion and creates regions of intense deformation due to shear motion called slip bands. These slip bands develop into microscopic cracks. The second stage is crack propagation stage. Crack growth is due to tensile stress. As the stresses fluctuate and when there is shear stress the crack closes, then it will fluctuate back to tensile stress and the crack will grow. This is why the cross-section of the shaft has a smooth section below the borehole. The smooth area is where the fluctuating stresses were cracking the shaft and then closing them creating a process that would smooth the shaft edges of the crack. The final stage is fracture. This is when the crack grows to a size where the crack tip has a stress intensity factor greater than the materials fracture toughness, which results in sudden failure.

(Machine Design - An Integrated Approach, 2000)

This is exactly what happened to the shaft on this machine. And it is due to Mr. LaPlante's lack of knowledge about stress concentrations and failure fracture.

4.5 Final Assessment:

We have decided that Brunswick Corporation is innocent of the charge of breach of contract for reasons of, breach of contract, breach of express warranties, breach of implied warranties of fitness and merchantability, as well as misrepresentation by NAPCO Inc.

NAPCO has failed to produced an automatic return type plating system that is free from defects of handiwork and materials, because of poor design by Mr. LaPlante in conjunction with all of the other minor defects (see Section 4.2.2).

Brunswick has had significant amount of lost production because of the poorly designed machine. We believe that the amount of profits lost by Brunswick is significant enough to warrant the withholding \$162,385.00, the balance NAPCO claimed they owed them, pursuant to the Uniform Commercial Code of Connecticut.

Chapter 5: Ankenman v. Web Press Corporation

5.1 Introduction:

The plaintiff, Barton Ankenman, suffered severe injuries to his left hand after being pulled into part of a web printing press while attempting required maintenance. In this case, he is suing the manufacturer of the press, Web Press Corp, in order to obtain some remedy for his injuries on the grounds of negligence. Web Press Corp, in turn, is suing a third party, Clevenson Corporation, Ankenman's employer, also on the grounds of negligence. The purpose of the following information is to help set the stage for an accident involving a web style printing press. After the stage is set there will be an attempt to reconstruct and analyze the incident using testimony from both plaintiff and defendant, expert testimony from several qualified professionals, and information from technical and procedural sources. The reconstruction and analysis will help to determine which parties involved are at fault and to what degree each party is responsible.

5.2 Background:

5.2.1 Background of Barton Ankenman:

Barton Ankenman, the plaintiff, is, by testimony, an experienced pressman. His employment history has kept the plaintiff in the printing industry for ten years, and in that time Ankenman has gained experience performing several tasks associated with a press shop floor. His experience began, after a stint in the army, with a position at Treasure Chest Advertising. His first position at the shop was that of a jogger, which charged him with the responsibility of stacking product materials and helping to maintain an orderly operation. The plaintiff kept this position for about one year before becoming a roll tender. A roll tender is required to load all of the paper rolls onto a press's rolling stand so it can be feed into the operation. Again, Barton worked at this position for about one year till a promotion placed him as second pressman of the press operation. A second pressman must set up the ink and registration for each job, as well as, maintain product

quality. While performing that job, Ankenman received on the job training on how to work as head and second pressman in a press shop.

Barton Ankenman remained in that position till he left Treasure Chest to work for Hoffine Printing with a past supervisor, Wilbur Smith. While at Hoffine, Barton held the position of Head Pressman, which, according to the plaintiff, entails the duties of the second pressman but with added responsibilities, such as scheduling jobs and paper work. For two years the plaintiff held that position until he changed companies and began to work for Winn Press, as a second pressman. Only a few months past and he returned to work at Treasure Chest to work on a heat press. The plaintiff, up until this time, was used to and trained to operate cold-web presses. A heat press requires the use of heat to activate the inks used in the production process, and since the plaintiff did not have the experience using the machines he received some training in heat press operation. Following his time at Treasure Chest, he worked as a second pressman for KTB Company for the next two years operating a cold press.

Other than a small period working for Ballston Spa Printing as a second pressman and finishing a commitment to the National Guard as a turret mechanic, the plaintiff became and remained an employee of World Printing, part of the Clevenson Corporation. Mike Addesso, who interviewed the plaintiff, hired Ankenman as a second pressman. Over time, the plaintiff became head pressman making ten dollars an hour, but, unfortunately, World Printing became the site of an incident, which resulted in a severe hand injury. The details of the accident will be discussed in later sections as more information is discussed.

5.2.2 Background of Sam Clevenson and World Printing:

Sam Clevenson, President of Clevenson Corporation, which operated World Printing, was Ankenman's employer at the time of the incident. Clevenson Corporation was founded in 1986 as a newspaper and a print shop under the name of World Printing. The major operations of the company were handled by Sam and his family, especially his son James. James Clevenson acted as the company's Vice president, Sam Clevenson's wife Pearl was the company's treasurer,

and their daughter Laurie was the secretary. In the late eighties, the company looked to expand their current operation by acquiring a new press for World Printing. Clevenson contacted a few press manufacturers including the manufacturers of a current press in operation from the Goss Company. Goss referred Clevenson to Web Press Corporation knowing that Web would be able to handle Clevenson's desire to purchase a larger press. Clevenson contacted Web to begin negotiations regarding the purchase of a new web press, and he remained the primary person responsible for its purchase. There were several communications between Web Press and Clevenson before the final sales agreement was signed. There were two quotes on different press configurations, one on September 18, 1989 and another on October 6, 1989. The final sale was made on December 28, 1989, and the new machine was bought for \$689,500.00. The machine purchased was a Web Leader press with seven units, six-black units and one Quadra-Color. The press included six perfecting roll positions, three stop/safe/inch pushbutton stations mounted on the folder and Quadra-Color, two stop/safe/slow pushbutton stations mounted on roller stands, six stop/safe pushbutton stations mounted on each unit, and 4 hand wheels.

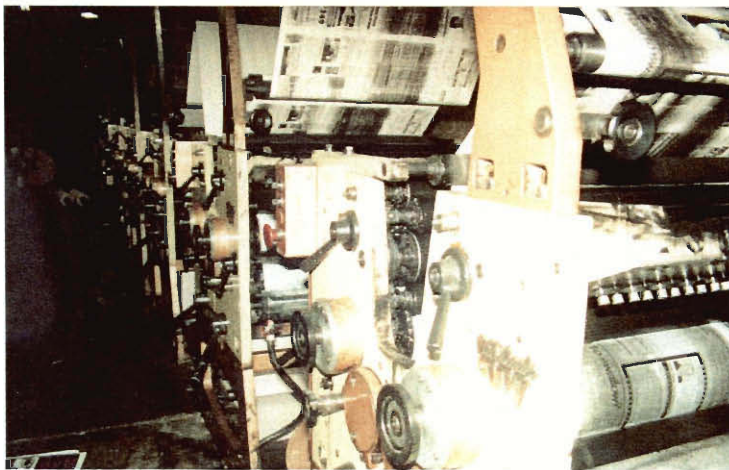


Figure 8: Web Leader Press



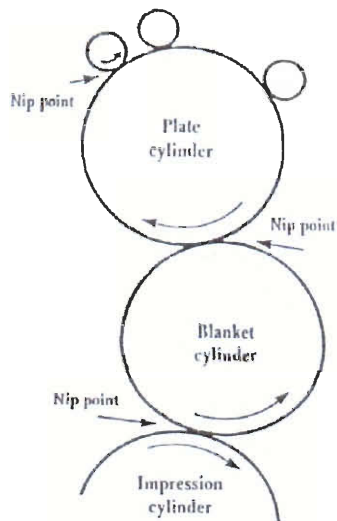
Figure 9: Another Part of the Press

There are several more options and features related to the sale, but they refer to features that are not significant to the outcome of the incident or this case. The roller and controls set up will become extremely important in this case. The other significant component of the press purchase was the option given to Clevenson by Web to purchase aisle guards for each unit of the machine. Each guard would have cost Clevenson \$315.00 per unit, so, in the end, he decided against purchasing the guards.

Within a year of operation, there was an accident involving the newly installed press. A pressman, Richard Jones, who was press shop foreman at the time, was injured when he slipped and his hand was caught in a nip point between two of the rollers on the Quadra-Color unit. A nip point, in this case, is the contact point between two revolving cylinders.



When running the press in reverse,
be aware that all out-going nip
points become *in-going* nip points.



Nip points when the press
is running in the forward
direction.

Figure 10: Nip Points Diagram

Richard's right hand was injured as a result of the accident. This incident sparked a lawsuit against Web Press, and, in turn, World Printing was brought into the suit as a third party defendant, just as in this case.

A few years after the incident with Richard Jones, Clevenson and his son looked into purchasing guards for the press. The two hired Rand Manufacturing Corporation to custom make guards for each unit of the press. In all, sixteen guards were ordered at twenty-five dollars a piece. The guards produced were manufactured from steel and were designed to be removable, but while attached to the press, they would cover-up dangerous nip points.

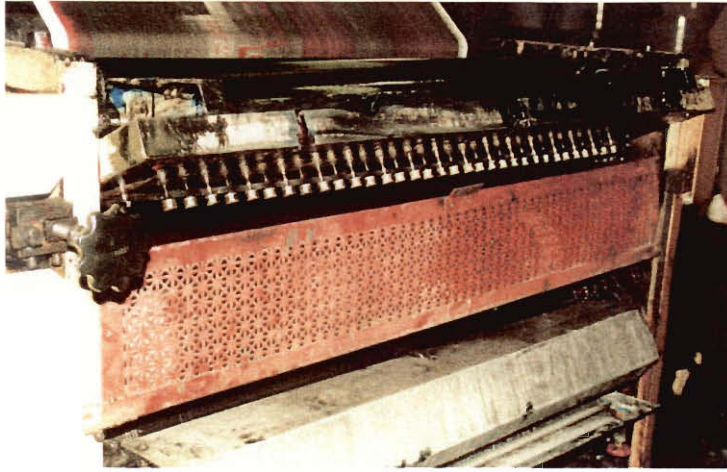


Figure 11: Guard on the Press

The above facts have aided in setting the stage for the accident Barton Ankenman was involved in. From this point, the accident itself will be discussed, followed by an analysis of the legal and technical aspects of the case. Once the case has been thoroughly scrutinized, there will be a final assessment summing all thoughts and opinions related to this matter.

5.3 Accident Description/Discussion:

Barton Ankenman's accident occurred about 4:50PM on March 24, 1993. It was near the end of the plaintiff's shift. He was helping the second pressman on duty start up another job before he left for the day. While setting up the machine Ankenman noticed what is called a 'hickey.' A 'hickey' is a build up of lint, dust, and ink on one of the rollers, in this case the plate cylinder, which leaves a blotch on the final product.



Figure 12: A 'hickey' on the End of the Roller

To remove this 'hickey,' Ankenman used a .001-inch piece of Mylar, which is very similar to the size and shape of a credit card, to scrape the 'hickey' from the cylinder while the cylinder was in motion. For the plaintiff to be able to come within close proximity of the cylinder, the guards would have been removed from their intended positions. According to the plaintiff, there was a loud crashing noise while he was in the process of removing the 'hickey.' At this point his left hand entered the machine.

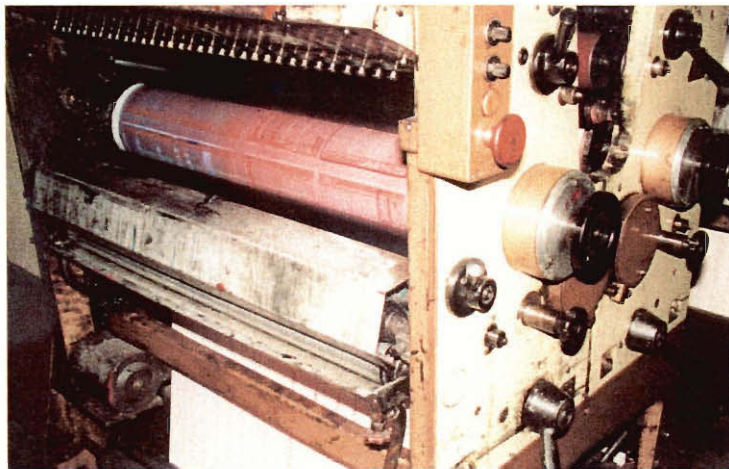


Figure 13: Plate Cylinder

Once Ankenman's hand entered the machine, he was able to stop the machine by pressing one of the stop buttons stationed on every unit. Once the machine had come to rest, he

proceeded an attempt to retrieve his appendage by placing the machine in safe and turning the hand wheel on the end of the roller to back his hand out of the machine.

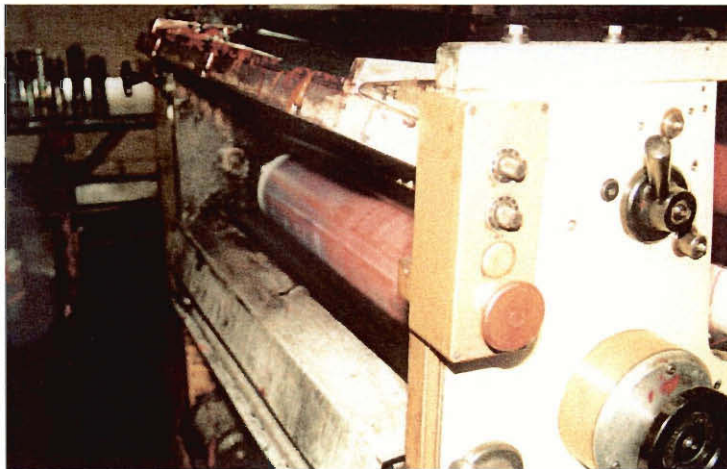


Figure 14: Stop Button and Hand Wheel at the end of the Cylinder

He was unable to set his hand free manually, so, with supervisor Mike Addesso, he unbolted the roller and removed the cylinder from the machine to free his hand.

Upon freeing himself, Ankenman waited for paramedics to arrive. Once there, the paramedics took Ankenman to the hospital. He was in the hospital for five days, and underwent several surgeries, including an amputation of his middle finger. After physical therapy and pain management, he medically suffers from a lack of motion in his left hand and chronic pain.

Knowing the facts of the accident, it is now possible to fall upon pertinent resources and accident related documentation in order to explore whom is possibly at fault. The next section will attempt to look at company records, expert testimony, and national standards to determine which, if any, parties contributed to the accident.

5.4 Analysis:

5.4.1 Introduction:

This section will continue to explore the events surrounding the accident while adding legal and technical information from various resources that will aid in proving or disproving the claims made by the plaintiff against the defendant.

As a result of the accident Barton Ankenman found it within his best interest to file a complaint against the press manufacturer, Web Press. Ankenman's lawyers feel that he deserves a settlement on several grounds of negligence, and it is these grounds that the final outcome of the case will be judged. Web Press Corporation was negligent as follows:

- a.) in negligently designing, manufacturing and selling a printing press with an inadequate guarding system;
- b.) in failing to provide a proper guarding system as standard equipment on the printing press to prevent the user's fingers from being drawn in between the ink roll and plate cylinder;
- c.) in failing to prevent, by mechanical means or otherwise, the plaintiff's hand from entering the area between the ink roller and plate cylinder;
- d.) in failing to provide proper warnings, communicating the danger, the nature of the hazard, the risk of serious personal injury or death and the means to avoid the hazard;
- e.) in failing to provide instruction and warning in the use of the product and method and manner of operation;
- f.) in negligently failing to provide a proper guarding system as standard equipment upon the subject press

5.4.2 The Plaintiff's Argument:

The plaintiff brought in several extremely qualified expert witnesses into the litigation process. These experts were hired to review the situation and come up with testimony to aid the plaintiff in his case. One of these experts was Richard E. Harkness, Ph. D., P. E. His qualifications as an experienced engineer gives him the opportunity to take a unique look at the situation. Harkness testifies about the design of the web press, machinery safeguarding in general, the need for safeguarding, and the most appropriate types of safeguarding. It is Harkness's opinion that 'hickeys' are a foreseeable occurrence during production, and so the defendant failed to provide adequate guarding against such behavior as Ankenman's. Harkness testifies that Web

Press should have designed their machines to come equipped with electronically interlocked guards, which are, in his opinion, economically practical. He testifies that Web should have provided inch buttons on every unit, so ‘hickeys’ can be removed safely.

An inch button allows the operator to move the machine at a slow-safe rate while holding down the button. This is an important feature, since it allows for the safe removal of ‘hickeys’ as well as other safe forms of maintenance.

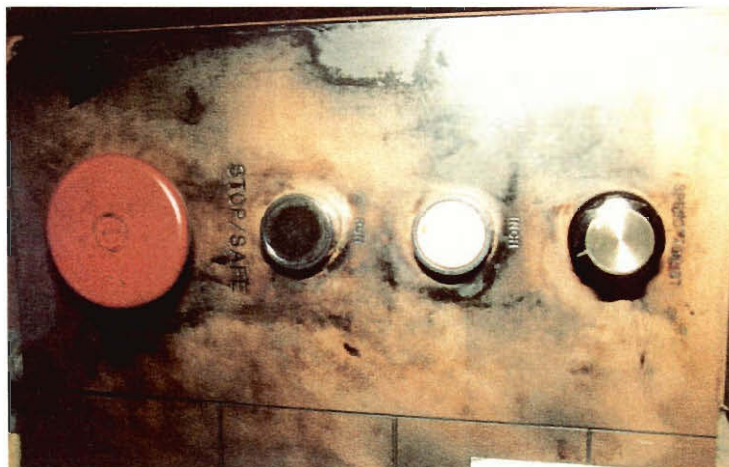


Figure 15: Stop Button in Red, Inch Button in White

Since the entire system was only equipped with two of these units, it would have required two personnel to safely remove the ‘hickey.’ This fact relates to another opinion of Harkness’s. He accuses employers of allowing these dangerous conditions to continue in order to keep production moving.

Ankenman himself claims that ‘hickeys’ are always removed with the press moving near top speed, and it is his opinion, as an experienced press operator, that it is impossible to see ‘hickeys’ unless the press is running.

To decide whether a design is considered defective, the current industrial and safety standards should be reviewed, so an educated decision can be made. One standard that would apply here is the 1980 OSHA *Concepts and Techniques of Machine Safeguarding*. This manual is dedicated to aiding employers and employees with the knowledge of how to prevent possible

accidents from occurring. The manual describes what mechanical hazards are and what are the proper ways to safeguard against them. The requirements for safeguards are that they must:

- Prevent contact with the machine
- Be secure to the machine
- Protect from falling object that might enter the machine
- Create no new hazards
- Create no interference
- Allow safe lubrication

The manual also focuses on training and gives several methods on how to safeguard mechanical hazards. Some of them include fixed or interlocking guards, presence sensing devices, and restraints.

5.4.3 Arguments against Ankenman's Claims:

The first argument against Ankenman's claims is the possibility of him exercising reckless misconduct in this situation. On every unit of the machine there are several warning and caution labels geared towards communicating the possibilities of danger when an inappropriate action is taken, such as cleaning off a 'hickey' while the press is running.



Figure 16: Safety Instructions



Figure 17: Caution Warning

The safety instruction clearly read:

- Stand clear when warning bell sounds
- Do not operate or assist unless you are trained and authorized
- All guards must be kept in proper position
- Put controls on “SAFE” to clean, lubricate, or adjust
- Cut main power before doing any electrical maintenance

Not only are these warnings visible everyday, Ankenman, as a World Printing employee, was expected to go through some safety training. On February 10, 1993 the plaintiff signed a form signifying that he had read and understand company policy. One of these policies was pressroom safety, which read “Press operators must wear ear protection while the press is running. Guards the cover press rollers must be in place before starting the press.”

In Web Press’s defense, they did provide World Printing with adequate communications about the dangers involved with their machine. They sent copies of both their *Web Leader: Pressman’s Manual* and a copy of the *Pressmen’s Safety Manual*. The later warns against unsafe situations and unsafe acts around the workplace. The former indicates the safest way to clean the machine, by placing the machine in “SFAE” and using the inch button.

After taking into consideration the ideas expressed in all of these arguments for and against the plaintiff, an educated assessment of what should come of this case is sure to follow.

5.5 Final Assessment:

Finally, looking at the 1985 ANSI standards for printing presses, it is clear that guards anywhere on the machine are not even mentioned. Therefore, it is not required by Web to provide the guards, on the other hand, it is the responsibility of the employer to adhere to OSHA regulations. It is also the duty of the employer to supervise his employees to make sure that they are following company policies.

After examining all of the ideas presented in this case, it is clear that Web did not manufacture a defective press and was not negligent towards World Printing. It would appear that the blame should fall to either the plaintiff or to his employer, for contributory negligence on their parts.

Chapter 6: Trial Summary and Conclusions

6.1 Trial Summary:

During the trial we discussed the basic outline of our project. The entire group went over what we learned during the course of the year. We covered the two books from the beginning of the project; Engineer In the Courtroom and Product Liability, In a Nutshell. The group explained what the purpose of a trial is and the effects that the law can have on a court case, particularly a product liability case. We talked about the importance of an expert witness in the courtroom, specifically an engineer. The members of the group explained how we get our information about the case, as witnesses and what to do with the information to prepare it for trial. We further discussed the steps involved in the courtroom and a trial when a case is examined.

Second the group explained to each other and the jury the information from our third case of the project, the Web press case. Individual groups took turns and discussed different aspects of the case. We began by giving a brief summary of what happened in this case, what parties were involved, and how the incident occurred. We also discussed the mechanical parts to the press and the safety devices to the machine. We found that there were many flaws with the design and the safety laws of the press. The group talked about ANSI and OSHA standards and how they played a role in this case. We tried to give all the necessary information to the jury that we took from depositions, pictures, manuals as well as a video of the press when it was running.

Once the group had presented all of the information to the jury, we awaited a verdict. While we were waiting we tried to answer a series of questions pertaining to the case. We viewed each group's opinions of the case and what they felt the outcome should be. Our decisions were made by the fact of who was at fault and if the press and the equipment was defective.

The jurors were split into two juries. Both juries meet in separate rooms and talked about the outcome of the case. When they returned the foremen read the juries decision. Both juries

were in agreement that Barton Ankenman was totally responsible for the accident and should be awarded zero dollars. After we received the verdict from the jury we made a few closing statements and then wrapped up our trial.

6.2 Conclusion:

The purpose of this project is to give the student a general exposure to the relationship between law and technology. Our goal, as students at Worcester Polytechnic Institute, is to someday become engineers. By studying actual court cases we are exposed to issue that a engineer faces every day. This exposure to everyday engineering challenges will, hopefully, make us better engineers.

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Appendix 2A

Sec. 42a-2-717. Deduction of damages from the price.

The buyer on notifying the seller of his intention to do so may deduct all or any part of the damages resulting from any breach of the contract from any part of the price still due under the same contract.

Appendix 2B

Sec. 42a-2-313. Express warranties by affirmation, promise, description, sample.

(1) Express warranties by the seller are created as follows: (a) Any affirmation of fact or promise made by the seller to the buyer which relates to the goods and becomes part of the basis of the bargain creates an express warranty that the goods shall conform to the affirmation or promise. (b) Any description of the goods which is made part of the basis of the bargain creates an express warranty that the goods shall conform to the description. (c) Any sample or model which is made part of the basis of the bargain creates an express warranty that the whole of the goods shall conform to the sample or model. (2) It is not necessary to the creation of an express warranty that the seller use formal words such as "warrant" or "guarantee" or that he have a specific intention to make a warranty, but an affirmation merely of the value of the goods or a statement purporting to be merely the seller's opinion or commendation of the goods does not create a warranty.

Appendix 2 C

Sec. 42a-2-314. Implied warranty: merchantability; usage of trade.

(1) Unless excluded or modified as provided by section 42a-2-316, a warranty that the goods shall be merchantable is implied in a contract for their sale if the seller is a merchant with respect to goods of that kind. Under this section the serving for value of food or drink to be consumed either on the premises or elsewhere is a sale. (2) Goods to be merchantable must be at least such as (a) pass without objection in the trade under the contract description; and (b) in the case of fungible goods, are of fair average quality within the description; and (c) are fit for the ordinary purposes for which such goods are used; and (d) run, within the variations permitted by the agreement, of even kind, quality and quantity within each unit and among all units involved; and (e) are adequately contained, packaged, and labeled as the agreement may require; and (f) conform to the promises or affirmations of fact made on the container or label if any. (3) Unless excluded or modified as provided by section 42a-2-316 other implied warranties may arise from course of dealing or usage of trade.

Appendix 2D

Sec. 42a-2-315. Implied warranty: fitness for particular purpose.

Where the seller at the time of contracting has reason to know any particular purpose for which the goods are required and that the buyer is relying on the seller's skill or judgment to select or furnish suitable goods, there is unless excluded or modified under section 42a-2-316 an implied warranty that the goods shall be fit for such purpose.