TEXAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION and Materials TIPS

Texas Department of Transportation

Published Quarterly by the **Construction** and **Bridge Divisions**

Third Quarter

2007

The Disputes and Claims Analysis Process

Outline

I. ARTICLE ORGANIZATION

The subject discussed in this article is complex. To provide a guide to the content, detailed outlines have been incorporated into the article.

II. PURPOSE

This document is intended to provide guidance to the districts in resolving contractor disputes and analyzing claims prior to a claims meeting.

The timely review of disputes and claims consists of a four-step process. Begin this process after all the pertinent information and documentation has been collected and reviewed.

The four-step process involves:

1. identifying the cause of the problem
2. determining the responsibility for the problem
3. determining how the problem impacted the project, and
4. calculating the cost of the impact.

CAUTION: It is extremely important to follow these steps, in order, without bias. Skipping steps in the process can lead to unsubstantiated settlements, overpayments or underpayments to contractors, and wasted time and effort.

The department's claims process is codified in the Transportation Code under Title 43 Texas Administrative Code Part 1, Subchapter A, Section 9.2, "Contract Claim Procedure," and the *Construction Contract Administration Manual*.

Definition of Terms

Claim - A formal claim filed in accordance with the Title 43, Texas Administrative Code, Part 1, Subchapter A, Section 9.2, "Contract Claim Procedure," to be discussed at a meeting conducted by the Contract Claims Committee.

Dispute - An issue that requires negotiated resolution that is administered by the area office, district or by the district prior to the claims meeting.

Formal Dispute Request and Recommendation - A request by a district to the Construction Division to provide a recommendation for settlement. Contract request for dispute recommendations are to be forwarded through the district who will determine if a recommendation for settlement is necessary. The recommendation is provided to the district for their use only.

III. THE ANALYSIS PROCESS

Step 1: Identifying the Cause of the Problem. The Contractor and department share responsibility in identifying the cause of the disputed item.

Determine the cause that actually impacted the project and led to the dispute. There may be causes which have no effect at all or problems may arise from several separate causes. For example, delays can be attributed to weather, utilities or inefficiencies that are caused by the contractor.

When several causes are identified from the department, contractor, other entity or risk sources, cost can be developed as a total and apportioned.

Step 2: Determining the Responsibility for the Problem

A. Important Contract Provisions
- Article 4.2 – Changes in Work
- Article 4.3 – Differing Site Conditions
- Article 4.4 – Requests and Claims for Additonal Compensation
- Article 8.2 – Progress Schedule
- Article 8.4 – Temporary Suspension of Work or Working Day Charges

B. Implied Contract Responsibilities
- TxDOT's Implied Responsibilities
- The Contractor's Implied Responsibilities
- TxDOT's and the Contractor's Joint Responsibilities

C. Categorizing the Responsibility for the Problem
- Excusable Impacts
- Non-excusable Impacts
- Compensable Impacts
- Non-compensable Impacts
- Time and Dollar Impact

Step 2: Determining the Responsibility for the Problem. Determining the responsibility for an impact involves researching the contract (the plans, specifications, special provisions, plan notes, proposal, etc.).

Identify the areas of risk or responsibility assigned by the contract to one party or the other, understanding contractual responsibilities. Then, determine if the Contractor should be granted additional time or compensation for the problem.

A. Important Contract Provisions. Several items in the specifications and special provisions are valuable tools for assisting in the resolution of disputes. Some key provisions include:

- **Article 4.2 – Changes in the Work.** This Item allows the Engineer to order changes in the work as long as they are within the scope of the contract. If a significant change is made, then no anticipated profit may be paid on work that is eliminated.

  Significant changes are defined as: (a) when the character of the work differs materially, in kind or nature, from that in the contract or (b) when major items increase or decrease in excess of 25%.

- **Article 4.3 – Differing Site Conditions.** This Item accounts for the uncertainty primarily involved in underground construction. It applies when conditions differ materially from: (a) those shown in the contract and (b) those not shown in the contract but are generally encountered in that type of construction.

  This provision requires the Contractor to notify the Engineer of the differing site conditions before the conditions are disturbed. The purpose of this notice is not to avoid the responsibility for legitimate claims, but to notify the department when a problem exists. Notification allows the department to decide how to proceed with the work at the lowest cost.

  If payment is made under this provision, no anticipated profits will be paid on work that is eliminated.

- **Article 4.4 – Requests and Claims for Additional Compensation.** This provision requires the Contractor to provide notice when work is required that is not clearly provided for in the contract.

  If the Contractor does not provide the notice, TxDOT has the right to deny a claim. The purpose of this provision is not to avoid the responsibility for legitimate claims, but to provide the department timely notice when a problem exists.

  Timely notice provides the department with the opportunity to solve the problem early, document costs associated with the impact and to consider mitigation efforts to minimize cost.

- **Article 8.2 – Progress Schedules.** This provision requires the Contractor to submit a schedule to the Engineer before work begins.

  Under this Item, the schedule required may be in either the bar chart or Critical Path Method (CPM) format. The Contractor's schedule will be reviewed for acceptance by the Engineer.

  An acceptable schedule:
  - conforms to the requirements of the contract
  - follows the planned sequence of work and traffic control plan
  - includes all major work activities
  - is free from major scheduling blunders and
  - shows completion of the work in the allotted time.

  The Engineer cannot refuse to accept a schedule that shows an early completion.

  The Engineer should track the Contractor's actual progress against the planned schedule and notify the Contractor when the work falls behind schedule. A submitted and accepted baseline schedule, not the original contract time, is the basis for assessing delays, not the original contract time.

  The Contractor is required to submit updated schedules to the Engineer monthly. All monthly schedule updates should be reviewed by the department for accuracy in reflecting ongoing work, completed work, change orders, TCP changes, etc.

  Additionally, the schedule should be reviewed for any delay activities inserted in the contract. The inclusion of delay activities is an acceptable method for assessing impacts, provided both parties are aware of the activity and can concur on its duration and impacts to other activities.

Careful review of monthly schedule updates can reduce the time required to resolve disputes later in the project and avoid overcompensating the Contractor for impacts.

➨ **Article 8.4 – Temporary Suspension of Work or Working Day Charges.** This Item allows the Engineer to suspend all or part of the work.

If the work is suspended because of conditions beyond the control of the Contractor, the Engineer may suspend the time charges during the impact only when the conditions prohibit the performance of critical activities.

The Contractor may file a claim based on the suspension; however, the Contractor must notify the Engineer in writing before doing so. If the Contractor files a claim based on this provision, no profit will be paid.

Suspending time charges while work is ongoing should be avoided except in rare cases. This practice puts the department at risk for: delays beyond the impact, lengthy project completions and difficulty in determining true delay costs.

There are other important contract provisions that pertain to claims and disputes. These provisions and others may assist in the resolution of a problem before a dispute or claim arises.

NOTE: Although Article 5.1 provides the department with wide latitude in administering our contracts, we are also bound by the requirements of the contract and must assure that we are treating Contractors fairly.

B. Implied Contract Responsibilities. There are numerous responsibilities that are not written into our contracts. Several basic tenets of construction contract law are frequently applied by courts. We must consider these implied contract responsibilities as we administer our contracts as the court will.

➨ **The owner's (TxDOT's)** implied responsibilities are as follows:

- **Provide Complete, Clear, and Concise Plans, Specifications and Estimates for Bidding and Construction.**

  - The PS&E package must show all of the work anticipated by the department (must be complete).
  - The department and all bidders must have a common understanding of the PS&E contents (the intent must be clear).
  - Avoid repeating or restating contract provisions (must be concise).

  When changes are made with repeated contract language, it is easy to create ambiguity or conflict by failing to follow the changes all the way through the contract. The Contractor should be able to construct an acceptable project by following the PS&E without undue changes or corrections.

- **Provide Reasonable Access to the Work Site.** It is the department's responsibility to let projects with a minimum of interference from known utilities or right of way (ROW) conflicts. If ROW or utility problems are anticipated at the PS&E stage, it is imperative to show a reasonable date in the contract for resolution of these conflicts. The dates in the contract effectively distribute the risk of the conflicts between the department and the Contractor. Any conflicts before the dates shown in the plans are the Contractor's responsibility; after those dates, the risk and responsibility belong to the department.

- **Do Not Interfere with the Contractor's Work Plan, Schedule or Resources.** Contract law states the Contractor is singularly responsible for the means and methods of construction (see list of Contractor's implied responsibilities below). As a result, if the department interferes with the work, this violates one of the basic tenets of contract law.

  If the department forces changes on the Contractor's work plan or schedule, the department assumes responsibility for any increase in cost that can be attributed to the change. The department cannot direct the use of the Contractor's resources (labor, equipment, materials and subcontractors) without assuming the responsibility for costs when things go wrong.

The department's role in a construction project is to administer the contract. The department can, however, notify the Contractor of deficiencies regarding their means and methods.

It is the Contractor's role to manage the construction project.

- **Provide Accurate and Timely Test Results and Contract Administration Decisions, Including Time Extensions, Change Orders, etc.** During the daily administration of a contract, the department must often decide if the work is acceptable, if the materials pass tests, and if time should be charged. Often, the department must also decide if the work is part of the original scope of the contract or if the Contractor was delayed by factors beyond his control.

  These difficult decisions must be accurate to avoid claims. Although a decision is accurate, it may be involved in a claim if it is not timely delivered.

  Provide Accurate and Timely Payment for Work Performed. The essence of any contract is the exchange of goods or service in return for consideration.

  In department contracts, the Contractor performs the work in return for payment. Failing to pay for work performed that meets contract requirements can lead to supplemental estimates or claims for work performed but not paid.

  Payment must be timely or the Contractor's cash flow may be impacted. Since Contractors live on cash flow, delaying payment for work performed can severely harm the financial health of a Contractor, possibly to the point of ruin.

➨ **The Contractor's** implied responsibilities are as follows:

- **Provide Means and Methods of Construction.** When developing a bid for a project, the Contractor estimates how much labor, equipment, materials, subcontracts and supervision will be needed to complete the work.

  Once under contract, the Contractor decides if the project will require the same resources as assumed in the bid, if more resources are needed or if less can be used. The Contractor makes money on the project when the actual cost of completing the work on the contract is less than the estimated cost. However, failure to accurately estimate the work does not obligate the department to additional costs.

- **Provide Adequate Work Plan and Schedule.** Along with means and methods of construction, the Contractor is responsible for planning and scheduling the work.

  The Contractor develops the work plan and schedule assuming the resources that are allocated to the project. The Contractor also makes money by modifying the work plan to complete the work ahead of schedule.

  From the department's point of view, this practice is both acceptable and desirable. However, failure to adequately schedule the work or provide adequate resources does not obligate the department to provide additional contract time.

- **Provide Adequate Workers, Materials, Equipment and Supervision.** The Contractor is responsible for dedicating skilled workers, quality materials, operable equipment and effective supervision to complete the project.

- **Construct the Project According to the Plans and Specifications.** By signing the contract, the Contractor promises to construct the project in accordance with the plans and specifications.

- TxDOT and the Contractor are jointly responsible for the following:

  - Safety of the workforce and traveling public
  - Open and honest communications
  - Cooperation
  - Problem-solving
  - Establishing a good working relationship

When deciding which party is responsible for an impact, it is critical to review the pertinent contract provisions and the implied contractual responsibilities to see if either party failed to meet its commitments.

C. Categorizing the Responsibility for the Problem. It is rare for impacts on a project to be singularly assigned to only one of the parties. In some cases, it may not be possible to wholly assign the responsibility for an impact to one party. In these cases, it may be necessary to divide the responsibility proportionate to accountability.

Once the impact has been assigned, the next step is to categorize the impact. This step involves two key decisions, the time decision and the dollar decision. The following definitions must be understood before the time and dollar decisions can be correctly made.

- **Excusable Impacts.** An excusable impact is one that justifies an extension of time. It excuses the Contractor from meeting a contractually imposed deadline. The most common excusable impacts include unusual weather and acts of God.

- **Non-excusable Impacts.** A non-excusable impact is one that does not justify an extension of time. Non-excusable impacts are those that are generally within the control of the Contractor or have been contractually assigned to the Contractor. Common non-excusable impacts include subcontractor delays, lack of sufficient resources to complete the project on time, rework caused by Contractor workmanship errors, and usual weather impacts on calendar day projects.

- **Compensable Impacts.** A compensable impact is an excusable impact and entitles one or more parties to additional funds for extra costs and possibly additional project time.

  In general, the impact must be due to actions or inactions of the department for an excusable impact to be compensable. Examples of excusable and compensable impacts are design errors, right of way conflicts, utility interferences, and department-initiated changes.

- **Non-compensable Impacts.** There are two forms of non-compensable impacts:

  1. An excusable impact may be non-compensable if the impact is beyond the control of both parties. Weather impacts on working day projects, acts of God, and widespread materials shortages may entitle the Contractor to a time extension but not monetary compensation.

  2. An impact is non-compensable if the conditions could have been avoided by the Contractor. For example, if the project was delayed by the Contractor's actions or inactions, the Contractor would not be entitled to time or money for the impact.

- **Time and Dollar Impact.** See *Figure 1, Decision Tree for Categorizing Impacts*. An impact must be excusable in order to grant additional contract time.

  An impact must be both excusable and compensable in order to provide for additional compensation.

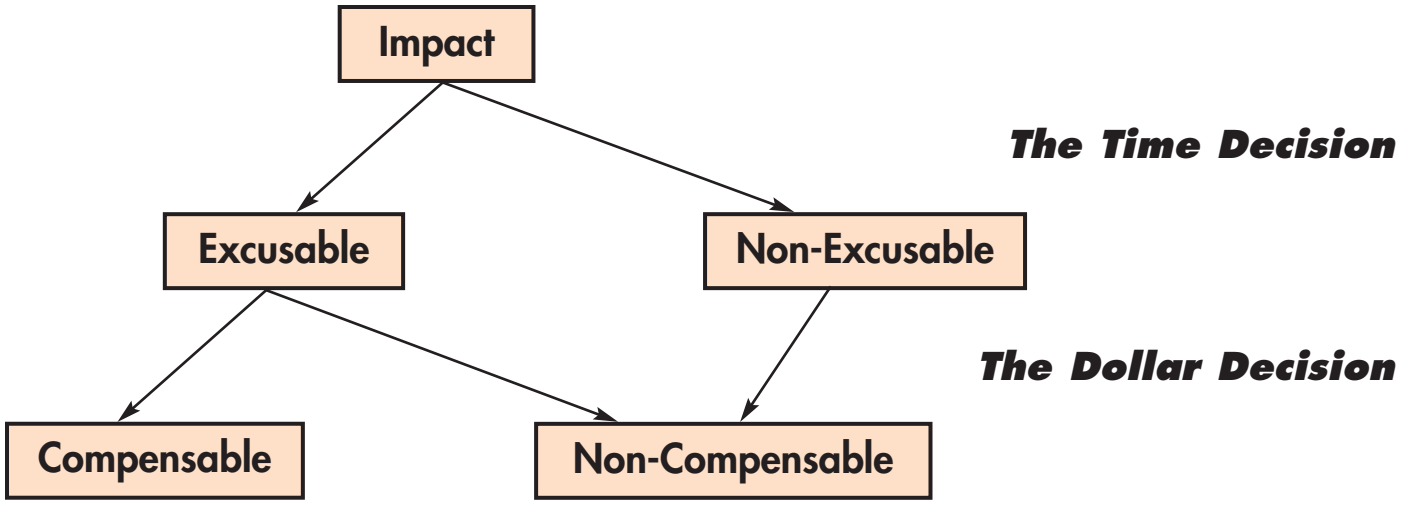

Figure 1. Decision Tree for Categorizing Impacts

Step 3: Determining How the Impact Affected the Project

A. Types of Impacts

1. Disruptions
2. Inefficiencies
   - Compare Actual Efficiency to Planned Efficiency
   - Compare Actual Efficiency to Theoretical Efficiency
   - Compare Actual Efficiency to Actual Efficiency on Comparable Project
   - Compare Actual Efficiency in Impacted Area to Actual Efficiency in Non-Impacted Area (recommended approach)
3. Delays
   - The As-Planned Impacted Schedule Analysis
   - The As-Built But For Schedule Analyis
   - The Comtemporaneous Schedule Analysis (recommended approach)
4. Accelerations
5. Specification Interpretations

B. Determining the Actual Impact to the Project

Step 3: Determining How the Impact Affected the Project. One of the most critical decisions in the four-step process involves determining how the project was impacted. This decision is critical because each type of impact may cause only certain monetary damages. Therefore, determining how the project was affected will greatly influence the amount of monetary compensation the Contractor may receive.

A. Types of Impacts. Projects are typically impacted in one of five ways. These types of impacts are discussed below.

1. Disruptions. Disruptions are impacts which delay specific activities, but not the project completion date. The following figure illustrates a project disruption:

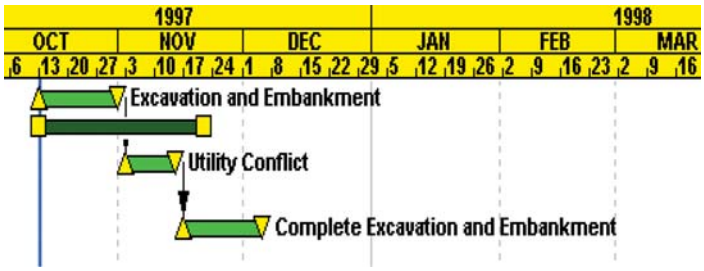

Figure 2. Example of Disruption

In the example, assume the excavation and embankment were not the controlling or critical path items of work.

The Contractor planned to construct the excavation and embankment in one continuous operation (shown by the bar with square end points). However, due to a utility conflict, the embankment crew started work, waited for the utility conflict to be cleared, then resumed and completed the work. This individual activity was delayed, but the overall project completion remains unchanged because other activities controlled the critical path.

The impact is not defined as both a disruption and a project delay. However, a disruption may result in a delay of the activity with such a significant impact that it becomes the critical path.

A disruption in itself does not result in additional time to the Contractor. It is often necessary to perform a comprehensive schedule analysis to distinguish a disruption from a project delay.

2. **Inefficiencies.** Inefficiencies are impacts which cause losses in production rates. Inefficiencies are also called losses of productivity or underutilization of resources.

Before efficiency impacts can be discussed, it is important to define efficiency. The classic definition of efficiency is the ratio of input to output. Another definition of efficiency that we typically use in highway construction is the amount of work produced divided by the amount of time (sometimes listed as man-hours) required to produce the output.

Work output is commonly measured in units of work performed (cubic yards of excavation, feet of storm sewer line, etc.). Work input is commonly measured in units of resource utilization (man-hours of labor or equipment hours required) or periods of time (day, week, month). This results in efficiencies in work units per time unit (CY/man-hour, Ft/Day, etc.). The following figure is one example of inefficiency.

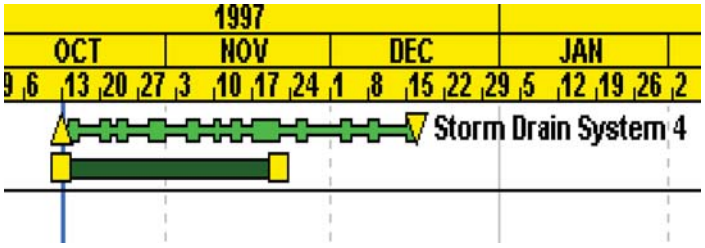

Figure 3. Example of Inefficiency

In the example, the Contractor planned to construct the storm sewer line in one continuous operation (shown by the bar with square end points). Because of some unidentified conflict, storm drain work spanned two months. The actual work in this example is shown by the bar with the triangular end points. The bar is expanded when work actually occurred. The bar is necked down where no work was underway.

Each small period of time the Contractor worked included start-up and take-down time. Therefore, more labor and equipment time was needed to perform the work than planned. The related impacts did not necessarily delay the project's completion, but the Contractor may be due additional compensation because the work cost more to construct than they could have reasonably anticipated.

There are several ways to calculate losses of efficiency. Each of these methods requires assumptions that must be validated before the approach is used as the basis for additional compensation.

- **Compare Actual Efficiency to Planned Efficiency.** This method assumes the Contractor's original plan and budget were realistic and achievable. In this case, one must also assume the Contractor assigned the crews and equipment on which the bid was based to the project.

- **Compare Actual Efficiency to Theoretical Efficiency.** This method compares the actual efficiency to the efficiency an expert states could have been expected. This method assumes the conditions used by the expert to calculate the theoretical efficiency rates are identical to the conditions encountered on the project, except for the impact. One must assume the Contractor's crews and equipment could operate at theoretical efficiency without the impact.

- **Compare Actual Efficiency to Actual Efficiency on Comparable Project.** This method assumes the conditions on the other project are identical to the conditions encountered on the project, except for the impact. One must assume the Contractor's crews and equipment could operate at the same efficiency on both projects without the impact.

- **Compare Actual Efficiency in Impacted Area to Actual Efficiency in Non-impacted Area (recommended approach).** This method is commonly referred to as the "measured mile" analysis. This method assumes the conditions on the impacted portion or time frame of the project are identical to the non-impacted portion or time frame, except for the impact.

Of these four methods, the measured mile analysis is recommended for use when data permits. Often within a project, the data for a measured mile analysis does not exist.

A measured mile analysis using the main lanes is not a reasonable approach if ramp construction is impacted as the work is not identical. In such a case, one of the other methods is recommended.

When calculating efficiencies, it is important to measure the actual and baseline efficiency using the same units. It is also important to note that inefficiencies may cause project delays resulting in additional costs beyond the inefficiency.

3. **Delays.** Delays are impacts that extend the project duration beyond the expected completion date. The following figure illustrates a project delay.

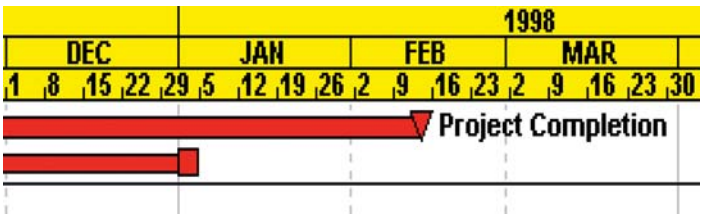

Figure 4. Example of Project Delay

In the example, the Contractor planned to complete the project in early January 1998. However, due to unspecified reasons, the project will now be completed in mid-February. As a result, the project was delayed by approximately one and a half months. Note, it is not relevant that the contract time or barricades would have resulted in the project ending in mid-February. (In the previous case, no assignment for responsibility for the delay had been made.)

There are three common methods for calculating project delay.

- **The As-Planned Impacted Schedule Analysis.** This method assumes the Contractor followed the original schedule exactly and exactly met anticipated production rates, except for the impacts.

This analysis method takes the Contractor's original schedule and ties owner-responsible impacts into the network. The ending date is calculated and compared to the original date. The delay period is the difference between the planned completion date and the impacted completion date.

NOTE: This method fails to consider changes in sequences and mitigation efforts.

- **The As-Built But-For Schedule Analysis.** This method is used to determine the earliest date the Contractor could have completed the project without the owner-caused impacts. This method is difficult to perform and easy to manipulate.

  Because this method uses the as-built schedule, the delay duration cannot be calculated until the project is complete or a major phase or milestone is met.

  This method is performed by taking the as-built project schedule and removing owner-responsible delays. The ending date is then recalculated and compared to the actual completion date.

- **The Contemporaneous Schedule Analysis (recommended approach).** The Contemporaneous Schedule Analysis method is the fairest method for both parties in a delay analysis. However, the Contractor may fail to notice or be unable to determine the effects of an impact to perform a Contemporaneous Schedule Analysis.

  This method involves: 1) determining the status of the project before an impact occurs, 2) predicting the effect of the impact on the schedule, 3) tracking the actual effects of the impact, and 4) calculating the actual effect of the impact.

  The following table provides a more detailed description of each step:

Contemporaneous Schedule Analysis Method

Step	Action
1	Establish the status of the project before the impact using the most recent project schedule update prior to the impact occurrence.
2	➡ Predict the effect of the impact on the most recent project schedule update prior to the impact occurrence. • This requires estimating the duration of the impact and inserting the impact into the schedule update. o The Contractor must demonstrate how the impact was inserted into the schedule using a fragment. This is the presentation of a fragmentary portion of the schedule network showing the added or modified activities and the added or modified relationships. ➡ Any other changes made to the schedule, including modifications to the calendars or constraints, shall be noted.
3	➡ Track the effects of the impact on the schedule during its occurrence. ➡ Note any changes in sequencing and mitigation efforts.
4	➡ Compare the status of the work prior to the impact (Step 1) to the prediction of the effect of the impact (Step 2), and to the status of the work during and after the effects of the impact are over (Step 3). ➡ Note, if an impact causes a lack of access to a portion of the project, the effects of the impact may extend to include a reasonable period for remobilization.

The two types of raw data used to perform this type of analysis are: monthly updates and CPM schedules.

If no monthly updates are available, create them from project diaries, letters and other correspondence. It is important to note that the objectivity of the updates that are not created contemporaneously may be questionable.

If no CPM schedule is available, determining the effects of an impact may require converting the as-planned bar chart schedule into CPM format.

For these reasons, accurately reporting monthly updates and thoroughly reviewing schedule updates is beneficial to both parties. The conversion of an as-planned bar chart to a CPM schedule or the creation of schedule updates is labor intensive and time-consuming for the Contractor and the department.

4. **Accelerations (Successful or Unsuccessful).** Acceleration impacts are impacts that would delay the project, but, are not recognized by the department for time extensions. The Contractor incurs additional costs by attempting to perform the work in the original time.

   Acceleration may be further divided by the Contractor's success or failure in overcoming the delay. A successful acceleration attempt is when the Contractor adds labor, equipment, subcontractor or other resources and is able to complete the project on time.

   Whether the Contractor is successful or not, they may be due additional compensation because the work cost more to construct than they could have reasonably anticipated.

   Analysis of an acceleration impact is similar to that for inefficiency.

   NOTE: When the department directs an acceleration to achieve an earlier project completion, the contractor is entitled to earn a profit from this effort.

5. **Specification Interpretations.** These disputes center around the interpretation of specifications by the department that affect how payment will be made or how work will be performed. In either case, the Contractor may incur additional costs. These disputes arise out of a multitude of disagreements including:
   - Work performed but not paid
   - Possible ambiguity of contract provision
   - Acceptability of work
   - Scope of work
   - Differing site conditions
   - Design errors

   When these disagreements arise, they are often difficult to resolve. It may be beneficial to have a neutral third party review the Contractor's and the department's positions and offer advice.

B. Determining the Actual Impact to the Project. Often, a project may be affected by several impacts. The more impacts there are, the more difficult it is to determine the true cause of a dispute.

When a Contractor requests compensation for a dispute, it is to the Contractor's advantage to cite as many impacts as possible in order to recover the maximum damages.

Some of these impacts may be excusable and some may be non-excusable. Some may be compensable and others non-compensable. For these reasons, it is critical to determine which of the recognized impacts are the true causes of the dispute.

The following steps are beneficial in making this decision:

Determining the Actual Impact to the Project

Step	Action
1	Understand the pre-bid conditions. The Contractor usually bases the bid on the: ➡ quantities of work ➡ difficulty of work ➡ location of the site ➡ availability of materials, labor, equipment, subcontractors ➡ risks that are transferred or assigned by the contract.
2	Understand the Contractor's original plan and schedule. The Contractor usually plans to complete the work in accordance with the sequence of work and traffic control plan shown in the contract. • The Contractor will base the original schedule on this plan and resources assumed in the bid.
3	Recognize changes from the original conditions. • As the project progresses, the Contractor may increase or decrease resources, or change the plan and schedule to take advantage of favorable changes in conditions that have no negative impact on the department or the traveling public. The Contractor is entitled to earn a profit from these favorable changes. • When unfavorable conditions force a negative change on the Contractor's plan and resources, the Contractor may be entitled to additional compensation if these unfavorable conditions were caused by the department.

Often, the project is affected by a series of related negative changes.

For example, assume that a project was affected by late right of way delivery. The late right of way prevents the utility relocation from being completed in a timely manner. The Contractor's schedule is delayed by these events, pushing work into a period of extended poor weather.

A strong case could be made that none of the secondary impacts would have occurred had the right of way been acquired in a timely manner. It is beneficial to find the "first domino" that fell to determine the true cause of project impacts.

Step 4: Calculating the Costs

A. The Basics of Damages Calculations
1. Non-Compensable Cost Items
2. Profit
3. Force Account Markups
4. Equipment Issues

B. Types of Damages
1. Direct Costs
2. Indirect Costs
3. Other Costs

C. Establishing a Cause-And-Effect Relationship

D. Relating Types of Damages to Types of Impacts

E. Calculating a Dispute Resolution Proposal
1. Disruptions
2. Inefficiencies
3. Delays

4a. Successful Acceleration

4b. Unsuccessful Acceleration

5. Specification Interpretations

Step 4: Calculating the Costs. Once the impacts have been identified, categorized and evaluated, they must be quantified. Pricing a dispute is a complex process with many factors to consider. While providing guidance for every facet of damages calculations would be quite difficult, the following are typical examples:

A. The Basics of Damages Calculations. In the previous section, five types of impacts were presented. Each of these impacts is associated with specific types of damages. Before getting to the specifics, it is important to discuss several aspects of damages calculations that apply.

1. Non-Compensable Cost Items. Research of claims reference materials, such as the Federal Acquisition Regulation, past claims and court cases, indicates that several categories of costs are generally considered as non-compensable. These include, but are not limited to, the following:

- Interest as a cost of business
- Public relations and advertising costs unrelated to recruiting of personnel
- Bad debts
- Entertainment costs
- Fines and penalties
- Lobbying costs
- Losses on other projects

The list presented above is not comprehensive. Carefully review all costs associated with a dispute or claim settlement before final payment is made.

2. Profit. One of the basic tenets of operating a successful business is earning a return on capital. The businesses of construction and maintenance contracting are no different. The Contractor is entitled to earn a profit on the work.

For impacts (damages), the intent of paying monetary damages is to pay the Contractor for actual compensable, quantifiable and verifiable damages. This generally does not include payment for profit. A Contractor is only entitled to earn a profit for constructing the project through producing quantities of work.

For example, if extra embankment, pavement or culvert is constructed, the Contractor should profit from this work. However, if the Contractor experiences additional costs to perform the work because of delay, inefficiency, disruption or acceleration, compensation for the impact should not include payment for profit.

3. **Force Account Markups.** Article 9.5 sets forth the procedures for compensating the Contractor for extra work performed on the "Force Account" basis only. This provision allows the Contractor to itemize labor, equipment and materials costs, then apply markups of 25%, 15% and 25%, respectively, as compensation.

   In this context, the term "compensation" includes payment for overhead and profit. With the exception of labor burden, force account mark-ups are not applicable for damages. Further, for added work, the Contractor is not entitled to the levels of mark-up shown for developing unit prices for extra work.

   For disputes, force account mark-ups are the most often misused in department contracts. Contractors often itemize costs for project overhead (office trailers, portable toilets, ice machines, superintendents' salaries, etc.) then apply the force account markups.

   When the force account markups are applied to overhead costs, the Contractor is effectively marking up overhead costs to pay for overhead costs. The result of this misapplication of the force account markups is called "double-dipping" or requesting payment for the same cost twice. It also results in the Contractor requesting compensation for profit.

   As discussed in the previous section, the Contractor should earn compensation for profit only when producing extra work, not for damages.

4. **Equipment Issues.** Equipment costs frequently represent the largest single cost category in a dispute. Due to the dollars involved, it is imperative that equipment costs are handled appropriately.

   Average daily cost. Frequently, the Contractor will itemize all equipment on the project for the duration of the project, determine the average daily cost of equipment (at 100% of *Blue Book* rates), then include this daily cost as a delay damage. Across the board application of average daily cost is improper in most cases.

   Project overhead. Some equipment may be classified as project overhead (office trailers, superintendents' vehicles, project-wide crane used on all items, etc.) because they are assigned to the project for the duration of the project.

   Overhead equipment. Overhead equipment may be considered in delay damages. It is important to note that *Blue Book* rental rates include the costs of fuel, lubricants, service vehicles, etc. (maintenance of equipment). Therefore, it may not be appropriate to pay both ownership and operating costs in addition to fuel, lubricants, and service vehicles.

   Production equipment. Production equipment should be considered only when calculating increased direct costs. Production equipment (dozers, scrapers, loaders, dump trucks, etc.) may be moved to another project when they are no longer needed for construction.

   Production equipment is typically affected in one of four ways. Note, equipment will be affected by only one way at a time.

   a. The equipment can be idled so that only 50% of the *Blue Book* ownership costs are incurred.

   b. Equipment can be demobilized and remobilized. When the delay is long in duration, it may be cost effective to demobilize the equipment and move it to another project. If the equipment is demobilized, it

can no longer be included in the claimed costs. The recoverable costs in this situation are the demobilization costs and standby costs for the amount of idle equipment time before it was demobilized.

c. The equipment can work inefficiently. The costs recoverable in this situation would be full rental rates plus operating costs during the inefficient period, multiplied by the percentage efficiency loss as calculated and agreed upon.

d. Equipment can be impacted by pacing the delay. Pacing involves timing the completion of unrelated activities to correspond with the resolution of the impact. This type of impact is often referred to as the "ripple effect." The compensability of ripple effect damages is questionable at best.

Contractor notification responsibility. It is the Contractor's responsibility to notify the department of impacts in a timely fashion so a determination can be made whether it is more cost-effective to pay re-mobilization costs rather than pay stand-by costs for extended periods. Failure to notify the department may result in rejection of delay costs.

B. Types of Damages. There are three categories of claims damages:

1. Direct Costs. Direct costs are costs directly related to the performance of the contract. Examples of direct costs are labor, equipment and materials. Subcontract costs are sometimes included in this list as well. These costs are directly related to the amount of work to be performed under the contract.

2. Indirect Costs. Indirect costs are costs that cannot be attributed directly to specific items of work. For example, the Contractor is required to have a project superintendent on the site at all times. The Contractor must furnish temporary office space, utilities, sanitary provisions, and safety supplies for the duration of the contract as well. Most Contractors charge these costs to project overhead. These costs are incurred regardless of how much work is underway on the project and are therefore time-related.

Home Office Overhead. Another form of indirect costs is home office overhead. The Contractor may rent or own an off-site office building with an equipment maintenance shop.

The Contractor may employ secretaries, accountants, receptionists and attorneys. The Contractor will pay a salary to corporate officers. Once the Contractor has hired the employees and rented the office space, the Contractor will pay these costs regardless of how much work is under contract or how an individual project is impacted. Thus, these costs are time-related as well.

Other items such as cost for marketing, insurance, and advertising may also be included in home office overhead.

Review of case law finds three criteria for establishing compensation for home office overhead:

(1) An impact is compensable.

(2) The workers on the project were essentially unable to work (extended duration and unable to bring any income to the Contractor).

(3) The contractor had no other place to work, the project in question or other projects.

In accordance with the 2004 Standard Specifications, home office overhead is not compensable. As a result, in accordance with the 2004 Standard Specifications, payment of damages for home office overhead is not allowed.

3. Other Costs. Other costs represent the final category of costs. This catch-all category includes interest, lost anticipated profits, lost bonding or bidding capacity, loss of goodwill, claim preparation costs, legal and professional fees and others. Generally, these costs are non-compensable.

C. Establishing a Cause-and-Effect Relationship. One of the most difficult tasks of pricing a claim or dispute is to show how impacts resulted in increased costs. This is where complete and accurate project documentation is of the utmost importance.

Many Contractors keep detailed equipment usage logs that can be used to calculate increased costs during an impacted period. Many of our contracts require the Contractor to submit certified payrolls that show periods of increased labor forces or usage of overtime to accelerate the project. Most Contractors can provide invoices showing the actual cost of material incorporated into the project.

None of this information precludes the Contractor's responsibility to demonstrate that the cause of the cost increase was the department's responsibility.

Many Contractors use a CPM schedule to demonstrate this cause-and-effect relationship. These schedules should be reviewed carefully. CPM schedules are easily manipulated and many significant changes are not readily apparent in the schedule printout.

D. Relating Types of Damages to Types of Impacts. Five types of impacts (disruption, inefficiencies, delays, acceleration, specification interpretation) and three types of damages (direct costs, indirect costs, other costs) have been presented, so far. Each type of impact can be associated with specific damages. These relationships are presented below:

Type of Impact Associated with Specific Damages

Impact	Definition	Result	Possible Specific	Notes
Disruption	Delays to specific activities or series of activities, but not the project as a whole.	➡ Idle equipment and crews ➡ Or demobilization and remobilization of crews and equipment ➡ Or rework costs	Compensation for direct costs: labor, equipment, subcontracts, and material only	Since the project duration cannot be extended, there is no effect to the Contractor's indirect costs of project overhead.
Inefficiencies	An impact that causes an increase in the direct cost to perform the work.	Labor, equipment, materials and subcontracts costs may increase	➡ If this impact reflects a change in the Contractor's planned usage of resources, the contractor may be entitled to compensation for direct costs. ➡ If the inefficiency delayed the project as a whole: 1. calculate the inefficiency damages and delay damages separately. 2. Add these to arrive at a total settlement.	None.
Delays	Impacts that extend the project completion date.	Extended fixed costs	Extensions of the project completion date result in extended fixed costs represented by project overhead	Home office overhead is not compensable.
Acceleration	Results when the project was delayed by an excusable impact, yet the owner (TxDOT) fails to recognize the delay and refuses to relieve the Contractor from time charges	Contractor may perceive the need to complete the project by the original completion date. As a result: ➡ Contractor brings in additional crews, equipment, subcontractors, or work overtime. ➡ Or Contractor may elect to use high early strength concrete to expedite pavement.	➡ If this impact reflects a change in the Contractor's planned usage of resources, the contractor may be entitled to compensation for direct costs. ➡ In a successful acceleration attempt the only costs the Contractor may be entitled are the direct costs of the acceleration. ➡ In an unsuccessful acceleration attempt, the Contractor may be entitled to the direct costs of the acceleration attempt and the indirect costs of delay.	None.
Specification Interpretation	Disputes center around the interpretation of specifications by the department that affect how payment will be made or how work will be performed.	A variety of impacts may fall under this category	➡ Direct costs ➡ Indirect costs ➡ Other costs	Establish cause and effect relationship before determining damages.

E. Calculating a Dispute Resolution Proposal. The following content provides guidance on how to calculate the damages that are typically the result of the five types of impacts.

Since there are numerous variations and combinations of these impacts, the recommended methods should be adjusted to fit the exact situations of each project.

1. Disruptions. Disruptions cause increases in direct costs only. Crews and equipment may be idled while the problems are resolved. Crews and equipment may be demobilized and moved to another site or part of the project while the problem is being resolved, then remobilized afterwards. Disruptions may also cause rework.

Use the following procedure to calculate the cost of a typical disruption impact:

Calculating the Cost of a Typical Disruption Impact

Step	Action
1	Identify the specific activity or series of activities affected. Determine what resources (crews, equipment and subcontracts) were affected.
2	Determine how long the resources were idled. Determine a daily total cost of the idled resources remembering to pay 50% of *Blue Book* rates for idle equipment. The total cost is the daily cost times the duration of the impact.
3	➡ Determine if the resources were moved to another project or to a non-impacted part of the project. ➡ Calculate the cost of de-mobilizing and remobilizing the resources.
4	Calculate the cost of rework, if applicable.
5	Eliminate force account markups and payment for profit as only labor burden is compensable as a damage.
6	Calculate total impact cost.

2. **Inefficiencies.** Use this information as a guide for calculating inefficiency damages assuming the project is not delayed by the inefficiencies. If the project has been delayed, calculate delay damages separately.

   Inefficiencies primarily cause increases in the direct costs of labor, equipment and subcontractors. Materials are typically not affected by inefficiencies.

   Use the following procedure to calculate efficiency damages:

Calculating Efficiency Damages

Step	Action
1	➨ Identify the specific activity or activities that were affected. ➨ Identify the resources (crews, equipment and subcontracts) that were affected.
2	➨ Determine what data is available for analysis. • The best units to calculate efficiency losses are units of work (feet of storm sewer pipe, cubic yards of excavation, etc.) divided by man-hour of labor (or equipment hour) used. • If this data is not available, units of work divided by time period (days, weeks or months) will provide a rough estimate of efficiency loss. ➨ Avoid measuring efficiency by dividing the value of work performed by the cost of the work.
3	➨ Locate an equivalent area or time period that was not affected by TxDOT impacts. ➨ Calculate the non-impacted productivity to be used as a baseline.
4	➨ Calculate the productivity of the impacted area or time period using the same units of measure as the baseline. ➨ Calculate the percentage loss of productivity using the following formula: $\text{Loss of Efficiency (\%)} = \frac{\text{(Impacted Productivity - Baseline Productivity)} * 100\%}{\text{Baseline Productivity}}$
5	Calculate the total cost of resources affected by the inefficiency.
6	Multiply total resource cost by loss of efficiency percentage to arrive at total.
7	Eliminate force account markups and payment for profit as only labor burden is compensable as a damage.

3. **Delays.** Delays extend the project duration. As a result, the Contractor incurs additional indirect costs like project overhead. Use the following procedure to calculate delay damages:

Calculating Delay Damages

Step	Action
1	Using acceptable schedule analysis techniques, determine the duration of excusable compensable delays.
2	Analyze the Contractor's indirect costs and eliminate non-compensable cost items and items paid under other damages and direct cost.
3	Determine an average cost of project overhead using the same units as used in the schedule analysis (i.e., working days, calendar days, months).
4	Eliminate force account markups and payment for profit as only labor burden is compensable as a damage.

4a. Successful Acceleration. Successful acceleration occurs when the Contractor successfully increases effort in order to overcome an excusable delay for which no time extension is granted. In these cases, the only damages incurred are the direct costs associated with the acceleration effort.

Use the following procedure to calculate successful acceleration damages:

Calculating Successful Acceleration Damages

Step	Action
1	➡ Verify the Contractor accelerated to overcome an excusable delay. ➡ Verify the Contractor accelerated the project schedule by adding resources and not by simply revising the project schedule.
2	Identify the period of time the acceleration attempt occurred.
3	Identify the accelerated activity or activities.
4	➡ Determine the level of resources used during the normal pace of work. ➡ Determine the number of overtime hours the Contractor worked during the normal workweek.
5	Determine the level of resources used during the acceleration attempt.
6	Calculate the acceleration effort. The acceleration effort is the difference between the normal pace of work and the accelerated pace of work.
7	Eliminate force account markups and payment for profit. Only labor burden is compensable as a damage.

4b. Unsuccessful Acceleration. Unsuccessful acceleration represents the worst of both worlds. The Contractor increases resource usage in order to overcome an excusable delay and fails. As a result, the Contractor incurs increased direct costs and delay costs. The steps to calculate unsuccessful efficiency damages are a combination of successful acceleration and delay.

5. Specification Interpretations. This type of impact typically arises out of differing interpretations of the contract. The Contractor may allege that work performed should be paid while the Engineer disagrees. The calculation of the damages in these cases is often easier than reaching an agreement over the disputed provision.

Use the following procedure to calculate specification interpretation damages:

Calculating Specification Interpretation Damages

Step	Action
1	Approach all discussions and communication in an objective and professional manner. Do not take things personally.
2	Obtain a review on the disputed contract provision from a neutral third party.
3	If the Contractor is correct, calculate the costs according to the contract.

IV. DOCUMENTATION

It is important to properly support and document the time and costs of any impact.

In the documentation, follow the four step process described above. As each step is completed, record the events, findings and conclusions that may be used in the steps shown.

Refer to letters, diary entries and documented phone conversations that establish the project impacts. Refer to contract provisions that support the allocation of responsibility. Refer to project schedules that show how the Contractor was impacted. Refer to invoices, labor payrolls and lists of project overhead costs that establish the damages.

V. CONTACT INFORMATION

Contact the Construction Division's Field Engineering Branch (CST-FEB) representative for your district or the Maintenance Division, Maintenance Section for assistance.

Coordinate with CST-FEB or the Maintenance Section prior to negotiations with the Contractor.