Time and Weather Provisions in Construction Contracts of State Highway Agencies

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A thorough examination was conducted of the provisions of the construction contract documents of all state highway agencies (SHAs). The study focused on the varying practices of these agencies concerning the inclusion of time and weather provisions in their construction contracts. Results show a wide variability between the various SHAs on most topic areas examined. Although regional differences can explain some of this variability, other provisions appear to be different for no apparent or obvious purpose. A greater degree of consistency between the various state construction contracts of these agencies is advised. Contractors must also be aware of these differences so that they are fully informed about the implications of entering into agreements with SHAs.

Whenever a construction contract is awarded, the owner has specific objectives that the contractor is expected to meet. These objectives can be roughly categorized as containing elements of cost, quality, and time. By awarding the contract to the lowest bidder, the owner has at least some assurance that the cost objective—of having a project delivered at an acceptable price—will be realized. Of course, this cost can be considerably altered by change orders resulting from design changes and also if site conditions differ from what was expected. These additional costs can be best minimized by insuring that designs are complete before the bidding phase and by conducting careful site investigations before completing the bid documents. The quality objective, of having a project delivered with the desired inherent quality, can also be best obtained by carefully preparing complete construction contract documents and by maintaining an effective quality assurance program. The time objective is generally defined as having a project delivered within stated time constraints. The time constraints stipulated in a construction contract may be unequivocal; however, this will not guarantee that the project will be delivered on time. Judicious planning of the construction activities on the part of the construction contractor is essential to the timely delivery of a project. However, even the best-made plans can be stifled when a highway or bridge project is subjected to severe or unanticipated weather conditions.

The issue of how time is dealt with in a construction contract is important, particularly in contracts in which weather can have such an extreme influence on a project that it actually halts or delays construction activities. Of course, an owner can contractually require the construction contractor to deliver the finished project on a firmly established date in spite of any delays caused by weather or other phenomena. A prudent owner, however, does not make these requirements since this type of provision would result in the inclusion of extremely high contingencies in the bids. Thus, the objective of having a project delivered at the lowest reasonable cost would be jeopardized. Therefore, it is important that an owner stipulate unequivocally the terms of the time constraints for the construction of a project but at the same time recognize that a reasonable allowance must be made to alter these terms when unanticipated conditions such as severe weather necessitates it.

Time is a crucial issue in many construction contracts. In fact, it is so important that it is a common contracting practice to include a liquidated damages provision if the contractor does not complete the contract within the time constraints stipulated. These liquidated damages are generally stated as being assessed on the basis of a specific sum of money for each day that the project delivery is delayed. Since the amount of the liquidated damages is often high, particularly on large projects, it is imperative that the contract language be clear where time provisions are concerned.

Although time is obviously an important aspect of virtually any construction contract, little is published about the means by which various owners treat this topic. The textbooks published on the subject of scheduling focus on the algorithms and manual methods of solving problems associated with arrow diagrams, precedence diagrams, and PERT charts. Additional topics usually included in these texts concern cash flow analysis, time-cost trade-offs, resource allocation, resource leveling, and computer applications. Unfortunately, little is included on the subject of how time is actually addressed in construction contracts. Perhaps this is a topic on which little is actually known in terms of general "real world" practice. This lack of information on actual construction contracts prompted the study reported here.

QUESTIONNAIRE SURVEY

To gather more information about the means by which various owners treat time in their construction contracts, a survey questionnaire was developed. This questionnaire was designed to be completed by an owner's representative who was familiar with the methods being used to contractually address such issues as contract time, liquidated damages, weather, lost workdays, seasonal conditions, and progress schedules (survey forms are available from authors). As part of the questionnaire, the respondents were also asked to provide copies of any related standard construction contract provisions that they used.

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The questionnaires were sent to all state highway agencies (SHAs). A total of 50 responses were received, representing a 100 percent response rate. In addition, copies of standard contract provisions were received from 13 of the respondents. With the high rate of response, the findings regarding time and weather provisions as summarized in this paper can be assumed to be a reasonable portrayal of the practices and policies generally implemented by all of the SHAs.

RESULTS: CONTRACT TIME

Generally, the contract time is the time allowed for the construction of a project. More specifically, it may be regarded as the time allowed for construction from the notice to proceed to the point in time when the project is substantially complete. Although the definitions for these occurrences may be regarded as being relatively specific, a considerable portion of these definitions is open to wide interpretation. This is exemplified by some of the practices noted by some of the SHAs. In any case, the timely delivery of the project is important, and it is common to state this in the contract documents with such statements as "Time is an essential element of the contract," and "It is important that the work be completed within the time specified."

The SHAs vary considerably on the definition used for the contract time. The construction contract time is primarily defined in terms of calendar days, working days, completion dates, or some combination of these, as shown in Table 1. The least ambiguous terms for the definition of the contract time is the stipulation of a specific completion date. Fourteen percent of the SHAs use a completion date as the exclusive means of defining contract time, whereas another 26 percent use this when calendar days or working days are not considered appropriate. Specific projects on which completion dates were justified by the respondents were those that were to coincide with other events such as the opening of the World's Fair in the state or region.

Although they may appear to be the least ambiguous, completion dates are clear only on the issue of when the project is to be complete. On the other hand, it is not at all clear how much time is actually allotted for the construction phase. For example, the bid date will be stipulated as a specific date, but the date on which the notice to proceed will be issued is not specified. The starting date may be defined as coinciding with the "date of the engineer's order to commence work . . ." or, as provided in another document, "the latest date specified for the beginning of construction operations . . . or the eighth day after the date of notice of contract approval, whichever is later." Another provision stipulated that the notice to proceed could occur as much as 45 days after the bid opening. Thus, the starting date is not accurately defined. Therefore, although the completion date method may accurately define the completion date for a project, it gives only a general indication of the time allotted for construction.

The definition of contract time that gives the best indication of the amount of time allotted for construction is the use of calendar days. The use of calendar days, as used exclusively by 12 percent of the respondents, leaves the least chance of making an error in interpreting its meaning. This is in contrast to the use of working days. Working days, as used by 34 percent of the respondents, are not as clearly understood. In general, working days are defined as consisting of all days exclusive of Saturdays, Sundays, and legal holidays.

The most common means of defining the contract time is by working days. This information is based on 34 percent of the respondents who use this method exclusively and an additional 30 percent who use this method along with other methods. Although the general definition of working days may be clear, additional factors may confound the definition. For example, over one-third (38 percent) of the SHAs using working days in their contracts will define Saturdays, Sundays, and holidays as working days if work is performed on those days. A typical example of such provisions states "Saturdays, Sundays, and holidays will be counted as working days when the contractor utilizes such days for construction work." Note that contractors working in states with such provisions could not hope to "catch up" on a faltering schedule by simply deciding to work additional hours on weekends.

TABLE 1 DEFINITION OF CONTRACT TIME

Response	Number of responses	
by calendar day only	6	(12%)
by working day only	17	(34%)*
by completion date only	7	(14%)
by calendar day, working day, or completion date	8	(16%)*
by calendar day or working day	7	(14%)*
by calendar day or completion date	5	(10%)
TOTAL	50	

*Of these respondents, 3 counted Saturdays if they were worked and 9 counted Saturdays, Sundays or holidays if they were worked.

WEATHER CONSIDERATIONS

By the very nature of the projects constructed for most SHAs, weather plays a crucial role in the construction time. A question was asked to determine if delays for normally anticipated weather were included in the contract time. A majority of the respondents (30 respondents or 60 percent) stated that normally anticipated weather delays are included in the contract time.

Of the 20 respondents (40 percent) who did not include delays caused by normally anticipated weather in the contract time, 14 (70 percent) stated that extensions were granted because of such delays. One typical provision stated that "No working days will be charged for work performed on subsidiary items when weather or other conditions beyond the contractor's control are such that work cannot proceed on the controlling operations." The six SHAs that do not include normally anticipated weather delays in the contract time and that do not grant extensions for such delays clearly place considerable risk on the contractor. A typical provision from one of these six SHAs provides that "the contractor shall take into consideration normal conditions considered unfavorable for the prosecution of the work and place sufficient men and equipment on the project to complete the work in accordance with the time limit." This added risk borne by the contractor will undoubtedly be reflected in the bids if the contract time is not commensurate with the conditions to be anticipated.

Because weather plays such an important role in highway construction contracts, a question was asked if normally anticipated weather was defined in the contract. It is interesting to note that 36 (72 percent) of the respondents indicated that such definitions do not exist in their contracts, whereas 11 (22 percent) indicated that they do exist. The definition of normally anticipated weather is frequently based on information of past records of weather for the region in question. Such information is available for most regions of the country from the National Oceanic Atmospheric Administration. From this information, the number of anticipated adverse weather days can be determined for each month. Most agencies using this type of data base their judgments of adverse days on temperature and precipitation. Because of cold conditions, particularly in northern states, winter months have the greatest number of adverse weather days.

Although adverse weather conditions are universally accepted as a primary deterrent to making progress on highway or bridge construction projects, other factors can also delay a project. These factors are often included in the construction contracts as constituting just cause for claiming excusable delays. Examples of valid reasons for delay include those resulting from late deliveries or shortages of materials stemming from "some unusual market condition caused by industry-wide strike, national disaster, area-wide shortage, or other reasons beyond the control of the contractor." Other causes for excusable delays include owner-caused delays or work suspensions, earthquakes, floods, cyclones, tornados, embargoes, government acts, and lockouts. Contracts will frequently include factors that do not constitute valid reasons for delay, such as "slow delivery of materials or of fabrication scheduling for reasons of late ordering, financial considerations or other causes which could have been foreseen or prevented."

Of course, to contractors on projects measuring time in terms of working days or calendar days the more important issue is the definition of lost workdays. From the definitions provided, it is noted that workdays are considered lost when either some percentage of the work force cannot be put to work or only some percentage of the workday can be worked (see Table 2). One provision defined lost workdays as those "on which the contractor is prevented by inclement weather or conditions resulting immediately therefrom adverse to the current controlling operation or operations, as determined by the engineer, from proceeding with at least 75 percent of the normal labor and equipment force engaged on such operation or operations for at least 60 percent of the total daily time being currently spent on the controlling operation or operations . . ." Another provision clearly defined workdays as those "on which the work can be effectively prosecuted during 6 hours or more of the contractor's daily working schedule. One-half day will be assessed for each working day on which the work can be effectively prosecuted for at least 2 hours but not more than 6 hours of the day."

TABLE 2 DEFINITION OF LOST WORKDAYS BECAUSE OF UNUSUALLY SEVERE WEATHER

Response	Number of responses	
by % of work force present/absent	1	(2%)
by % of day worked	16	(32%)
50% or less of day worked (4 responses)		
60% or less of day worked (1 response)		
70% or less of day worked (1 response)		
5 hrs or less of day worked (5 responses)		
6 hrs or less of day worked (1 response)		
Not specified (4 responses)		
by combination of % work force present/absent and % of day worked	7	(14%)
not defined	24	(48%)
not applicable	2	(4%)
TOTAL	50	

Whenever a lost workday is assessed, the completion time will be altered. Thus, an agreement must be reached between the contractor and the owner concerning the claim for a lost workday. Most contracts will stipulate the time during which unusually severe weather is to be reported. According to the responses to a question on this topic, the most common reporting interval for lost workdays is at each occurrence. A significant number of SHAs require this reporting to take place within a week of the occurrence (see Table 3). Note that eight SHAs do not require such reporting until the end of the contract. This late reporting may be a disadvantage to a contractor who may rely on the acceptance of certain lost workdays. Such a contractor may incur heavy liquidated damages in the event that the contract time has run out and the owner refuses to accept the contractor's request for an extension as a result of the lost workdays.

Some SHAs appear to make a subjective determination of when lost workdays are to be assessed. Several respondents indicated that they were "flexible" when deciding what constitutes lost workdays. These respondents stated that they would evaluate the impact of occurrences on each specific job. In general, lost workdays are assessed when the work progress is impaired to a significant degree and when the cause is not under the control of the contractor.

When the contract time is established in terms of working days, it is often convenient to have a systematic approach of converting to calendar days. One of the methods of converting from workdays to calendar days is by using a conversion factor, such as 1.40. This conversion constant treats all days equally, regardless of season. A conversion method that reflects seasonal differences is the seasonal weighting of days. When asked about this method, 30 percent (15) of the respondents stated that they used it, whereas 70 percent (35) said they did not. One good example of the seasonal weighting of days is shown in Table 4. From the table, one can quickly assess the equivalence established between working days and calendar days. For example, two working days during February are equivalent to 28 calendar days, whereas two working days in April are equivalent to 5 calendar days. These "weights" obviously reflect the fact that less performance can be expected during the winter months. The information presented in Table 4 was provided by an SHA that does not grant extensions for weather delays, but the SHA uses the weighting of days to extend the performance period for change orders that affect project duration. One SHA contract provision stipulated that extensions "will be given for loss of time due to weather conditions for the number of days lost . . . in excess of 5 calendar days." Thus, this provision includes five "weather days" per month that are considered part of the contract time.

Weather in certain months often is so severe that it is not reasonable to expect any appreciable amount of work from the contractor performing outdoor activities. In this type of case, the winter months are often defined as "free days," meaning that no contract time is consumed during these months. The survey asked if a winter exception period was included in the construction contracts. The results showed that 70 percent of the SHAs use the winter exception periods. Information in Table 5 shows the varying winter exception periods used by various states.

Contractors should be aware of the practice noted by six (12 percent) of the SHAs whereby adjustments will be made to the contract time if work is actually performed during the exception period. As seen in Table 5, the SHAs not incorporating a winter exception period in their contracts tend to be those in the southwest region of the country, the Atlantic states, the Gulf Coast states, and those states bordering the Pacific Ocean. Although a few states do not use winter exception periods in their contracts, states such as Arizona include winter exception period provisions on contracts for work in only those portions of the state that are adversely affected during the winter. Still others may use one winter exception period for asphalt paving work and a different winter exception period for other work such as surfacing.

TABLE 3 FREQUENCY WITH WHICH LOST WORKDAYS CAUSED BY UNUSUALLY SEVERE WEATHER SHOULD BE REPORTED

Response	Number of responses	
each occurrence	15	(30%)
weekly intervals	12	(24%)
monthly intervals	8	(16%)
at end of contract	8	(16%)
no response	4	(8%)
not applicable	3	(6%)
TOTAL	50	

LIQUIDATED DAMAGES

Failure of a contractor to deliver a project within the time constraints stated in the contract might constitute a material

TABLE 4 EXAMPLE OF SEASONAL WEIGHTING OF DAYS

Month	Work Days	Cumulative Work Days	Conversion Factor	Cumulative Calendar Days
Jan	2	2	15.500	31
Feb	2	4	14.000	59
Mar	7	11	4.429	90
Apr	12	23	2.500	120
May	18	41	1.722	151
Jun	18	59	1.667	181
Jul	18	77	1.722	212
Aug	18	95	1.722	243
Sep	18	113	1.667	273
Oct	15	128	2.067	304
Nov	5	133	6.000	334
Dec	2	135	15.500	365

breach of the contract in the absence of other provisions. To avoid lengthy litigation concerning the damages to be paid for such a breach of the contract, it is now a common practice to establish this cost sufficiently early so that the amount is included in the bid documents. The owners can increase the enforceability of the damages clauses with such statements as, "Time being an essential element of the contract, it is hereby agreed that the department will be entitled to damages for failure on the part of the contractor to complete the work within the prescribed time." It is common to also add that the liquidated damages amount is to be construed "not as a penalty but as liquidated damages to compensate for the additional costs incurred." By establishing the liquidated damages provision, all parties to the contract will know the costs to be incurred for delivering the project later than is stipulated by the terms of the contract. The amount of these damages, referred to as liquidated damages, are generally applied to each day that the project completion exceeds the agreed completion date. The rights of the owner are further protected by such provisions, stating that "permitting the contractor to continue and finish the work or any part thereof after elapse of contract time will not operate as a waiver on the part of the division of any of its rights under the contract."

TABLE 5 WINTER EXCEPTION PERIODS BY SHA

Exception Period[a]	State
Nov. 1 to April 30	Alaska
Dec. 1 to March 31	Colo., Conn., Ky., Mich., S. Dak., W. Va., Wyo., Va., N.H.
Dec. 16 to March 15	Del.
Dec. 1 to Feb. 28	Idaho, Nebr., Nev., Oreg., Utah
Nov. 15 to March 31	Iowa, Wisc.
Nov. 15 to May 15	Maine
Nov. 30 to April 1	Tenn.
Nov. 1 to March 31	Mass.
Nov. 15 to April 15	Minn., Mont., N. Dak.
Dec. 15 to March 15	Mo., N.C.
Dec. 1 to April 30	Ohio, Vt.
Dec. 15 to April 15	R.I.

[a]Of the 35 SHAs using winter exception periods, six (12 percent) adjust the contract time if work is performed during this period. Fifteen SHAs do not use winter exception periods.

The liquidated damages provisions are generally defended on the grounds that the public is denied use of the facility, that public safety is jeopardized by the delayed completion, and that the SHA will incur additional administrative costs as a result of late delivery of the project. It is understandable that these costs would be difficult to quantify on a project-by-project basis.

The SHAs were asked about the assessment of liquidated damages. Forty percent (20) of the SHAs assess liquidated damages on the basis of calendar days, 32 percent (16) of the SHAs assess them on the basis of working days, and the remaining 26 percent (13) use either calendar days or working days. When a contract stipulates the completion time in terms of working days and the liquidated damages are also assessed on the basis of working days, the contractor should fully understand the contractual implications. For example, such a contractor should determine whether the added expenditure of working on weekends would be an advantage or if these weekend days would then be counted as working days, thereby further reducing the available days allotted for completion of the project.

Although no question was asked about the amount of liquidated damages to be charged for each day of late project delivery, some of the respondents provided copies of their standard specifications. From an examination of these specifications it is clear that some SHAs establish the amount of liquidated damages on a project-by-project basis. Some of the SHAs, however, have standard schedules by which the amounts of liquidated damages can be easily determined. In all cases, these amounts were dependent on the size of the project (see Table 6). Although the amounts to be charged may be set by

TABLE 6 SCHEDULE OF LIQUIDATED DAMAGES BY SHA

	Daily Charge of Liquidated Damages in Dollars					
Range of Contract Value (1000's of Dollars)	Colorado	Minnesota	N.Dakota	S.Dakota[a]	Virginia	Wyoming[a]
0-25	85	150	50	50	50	63
25-50	140	150	100	100	75	105
50-100	205	250	150	200	100	154
100-500	280	400	225	300	150	210
500-1,000	420	500	300	400	200	315
1,000-2,000	560	600	400	500	300	420
2,000-4,000	840	900	500	600	400	630[b]
4,000-8,000	1120	900	500	600	500[c]	--
8,000-10,000	1400	900	500	600	500	--

[a] The daily charge is per working day, not per calendar day.
[b] A charge of $630 applies to contracts up to $5 million, $840 is assessed per day for contracts from $5 million to $10 million, and $980 is assessed per day on contracts over $10 million.
[c] Liquidated damages in this range and larger may be otherwise specified in the contract.

a schedule, the contract may also state that all parties to the contract agree that the stipulated daily charge is presumed to be reasonable.

PROGRESS SCHEDULES

Although the assessment of liquidated damages occurs after a project should have been completed, the assessment of such damages provides little consolation to the owner who is denied the use of the facility. Many owners would prefer to have an ongoing understanding of the progress being made on a project. Many owners even include provisions in the contract that empower them to terminate the contract if satisfactory progress is not being made on the project. To have an enforceable contract provision of this type, the owner must have an effective means by which to monitor progress.

A variety of monitoring methods are available to owners, including the use of milestone dates, narrative descriptions, Gantt charts, and critical path method (CPM) schedules. These methods vary considerably in their ability to accurately portray construction progress and to accurately predict project completion. The various SHAs were asked which types of progress schedules they required on their construction contracts. The responses indicate that all of the monitoring methods are used (see Table 7). Note that only 8 percent of the SHAs make exclusive use of the more sophisticated CPM schedules, 38 percent of the SHAs use only Gantt charts, and 14 percent have no contractual requirement concerning a progress schedule. Note that the owner's right of termination for failure to make adequate progress is considerably weakened when no effective means of monitoring construction progress is in use.

Several respondents indicated that they generally gave the contractor the choice of using bar charts or CPM schedules. In most cases, the bar charts are chosen by the contractors. Some respondents indicated that, although the bar charts were required on most projects, on the larger and more complex projects CPM schedules will be required and, in some cases, may need to be managed by a consultant.

A total of 43 SHAs were noted as requiring some form of progress schedule from the contractor. These SHAs were asked how weather was reflected in the schedule. Earlier it was noted that 20 SHAs do not include normally anticipated weather in the contract time. Conversely, 30 SHAs do include normally anticipated weather in the contract time. Only nine respondents indicated that weather is reflected by some means in the schedule (see Table 8). Taking into account the information provided earlier and in Tables 7 and 8, one might conclude that an anomaly exists in the information provided. It appears that several SHAs include normally anticipated weather in the contract time and require that the contractor provide some type of progress schedule, but do not have weather reflected in the schedule. However, several respondents indicated that the severe weather need not be reflected in the schedule if a winter exception period exists in the contract.

Obviously, the issue of weather is considered to be important by most SHAs, but it is not considered sufficiently important to address the subject in the progress schedules. The few SHAs that do address weather in the progress schedules use either a separate weather activity or an appropriate weighting of activities in their schedules. These SHAs tend to be those that use CPM schedules for project monitoring.

TABLE 7 TYPE OF PROGRESS SCHEDULE REQUIRED

Response	Number of responses	
Gantt chart only	19	(38%)
critical path method only	4	(8%)
Gantt chart or critical path method	18	(36%)
narrative/milestone	2	(4%)
no schedule required	7	(14%)
TOTAL	50	

TABLE 8 HOW WEATHER IS REFLECTED IN THE SCHEDULE

Response	Number of responses	
not reflected	28	(65%)
by separate weather activity	2	(5%)
by weighting activities	7	(16%)
no response	2	(5%)
not applicable	4	(9%)
TOTAL	43	

CONCLUSIONS

A basic conclusion from the analysis of the responses of the various SHAs is that there is little uniformity among SHAs in their construction contracts in regard to their practices concerning time. Some SHAs are relatively sophisticated in their practices, whereas a few use practices that weaken their contractual position. Obviously, some projects are sufficiently small in scope that rigorous adherence to all policies might not be productive or meaningful. The responses to the questions indicate, however, that in some states informal adherence to policies may be a practice on projects of all sizes.

The findings also provide a clear warning to contractors who plan to work for various SHAs. That warning is that the provisions in the construction contracts on issues such as time are not consistently addressed; often they are different in adjacent states. Topics to scrutinize in the contract documents include the definition of contract time, the impact that normally anticipated weather delays have on the contract time, the definition of lost workdays, the reporting interval for requesting the assessment of lost workdays, the existence of a winter exception period, the amount of liquidated damages to be assessed for late completion, the type of progress schedule required, and any other time-related issues that are addressed.

RECOMMENDATIONS

In light of the findings of this study, construction managers at every SHA are encouraged to conduct a thorough internal evaluation of how time is addressed in their contracts. The standard procedures as outlined in the standard specifications of the SHAs may not be closely followed in actual practice. In such instances the standard specifications should be changed or, if supported by an internal review, the practices should be changed.

In general, SHAs should make a strong attempt to enter into only those construction contracts that are clear and fair. A clear and fair contract will guarantee that a good working relationship will exist between the contracting parties. In addition, the issue of risk should be fairly addressed. It may be desirable for an owner to contractually require the contractor to assume all the risks associated with a project, but this is counterproductive. Contractors who are asked to assume greater risks simply adjust their bids in accordance with the perceived risks, thereby increasing the overall costs of construction. Construction work has significant inherent risks without shifting added risks onto the contractor.

From this research several specific recommendations can be made to SHAs with regard to time and weather provisions in their construction contracts. For each project to be constructed, a careful decision should be made regarding the appropriate means of defining the contract time. The contract time should either include delays for normally anticipated weather or provide a means for granting extensions when such delays occur. If delays for normally anticipated weather are included in the contract time, a clear definition for such weather conditions should be provided. In addition, a clear measure must exist for defining lost workdays. The assessment of lost workdays should be made on a timely basis, preferably within a month of their occurrence. If winter exception periods are to be used, they should be clearly defined. In general, it is advisable that work performed during the winter exception period or on weekends (for contracts defined in terms of working days) not be assessed against the contract time. The liquidated damages provisions should be unambiguous; in most cases, the assessment on the basis of calendar days is preferred. Greater attention should be given to the contractor's obligation to provide a progress schedule. An owner should require the type of schedule that provides the level of monitoring that is warranted by the project. It should also be made clear how the contractor is to reflect the weather factor in the schedule.

Finally, it would appear to be appropriate to establish greater collaboration among the various SHAs so that information can be shared more effectively. In the litigious environment that currently exists, true benefits might be realized by communicating to a greater extent with the construction divisions of other SHAs. Research might also reveal interesting findings as to the relative effectiveness of specific policies and practices. With the high cost of construction and the high cost of some claims, it behooves every owner to prudently examine the value of every provision included in the construction contract documents.

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