BEFORE THE
MARYLAND STATE BOARD OF CONTRACT APPEALS

Appeal of PRINCE GEORGE'S CONSTRUCTION COMPANY	)	
	)	Docket No. MSBCA 1622
Under Contract No. P-895-501-329	)	

August 27, 1992

Critical Path Method - Differing Site Condition - The discovery of a differing site condition which alters the critical path of the project may support a damages for delay claim.

Damages - Eichleay Formula - The Board will consider factual modifiers on a case by case basis in determining the allowable day rate for field and home office G & A overhead.

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OPINION BY MR. MALONE

Appellant timely appeals the State Highway Administration (SHA) Procurement Officer's final decision[1] denying its claim for storm drain-caisson delay.

Findings of Fact

1. On May 2, 1989, SHA advertised for bid alterations and additions to the Southern Regional Laboratory and the District Three Offices under Contract No. P-895-501-329. Bids were opened on July 18, 1989 and Appellant was the successful bidder. Notice to Proceed (NTP) was issued on or about October 23, 1989 with an anticipated 20 months completion estimate. The project was completed 246 calendar days beyond the original completion date which included 131 days granted to Appellant by SHA under various Change Orders.

2. Appellant has filed over twenty claims with the Procurement Officer, and this Appeal is the first before this Board.

[1]SHA did not issue a final decision within 180 days from the time of the claim. This failure constitutes a "final decision" from which an appeal can be made. COMAR 21.10.04.04(E).

3. The contract documents require construction according to Critical Path Method (CPM)[2] of scheduling. The correct method of CPM analysis is described in a booklet "The Use of CPM in Construction" which is part of the contract documents. There are four main principles of CPM which must be considered to understand this method.

(1) Everything in the diagram has meaning.

(2) An activity has a single starting point and a single definite ending point.

(3) The arrow diagram does not describe time relationship but rather dependency relationships.

(4) All persons who have anything to do with the project must be consulted when creating the arrow diagram.

The CPM method is a valuable management technique when accepted and understood by all parties and their sub-contractors. CPM requires a detailed analysis of activities and events and an understanding of the dependent relationships between those activities and events. A critical path of work is developed from this planning which reveals a head to tail path of activities in an arrow diagram that requires the longest total amount of time for accomplishment. In this way the critical path contains no float.[3] Non-critical path work is also scheduled showing the amount of time estimated for work duration and any float related to that non-critical activity.

5. The contract required the contractor to prepare a Preliminary Schedule for SHA approval. The contractor in consultation with their sub-contractors prepared this schedule using "Instant Plan" software which was approved by SHA's CPM consultant Rummel, Klepper, & Kahl (RKK) following revisions on May 22, 1990. This original schedule had a start date of October

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[2]CPM is also described as Complete Project Management.

[3]Float - The amount of extra time available to an activity not on the critical path determined by the difference of the earliest start date over the latest start date.

23, 1989 and a completion date of June 23, 1991.

6. The logic dependency showed in the schedule, as it relates to this case, was for borrow excavation to be completed and then to start caissons and these activities were shown on the critical path. The schedule report for CPM planned borrow excavation for 10 days beginning 11/28/89 through 12/11/89 without float. Start caissons was for 5 days from 12/12/89 through 12/17/89. Completed caissons was planned for 10 days from 12/18/89 through 01/02/90 with 36 days of float. The excavation of caissons was planned for 15 days from 12/12/89 to 01/02/90 with no float. The schedule shows work for Grade Beams next on the critical path from the east side of the Col. Line H to the west.[4] Also shown on the original schedule was the non-critical storm drain (a/k/a Site Drainage System) planned for 25 days of work from 11/06/89 to 12/01/89 with 313 days of float. Under the schedule the new storm drain could be built at anytime within the 313 days of float. The contractor under this type of CPM was not required to build the storm drain between 11/06/89 and 12/13/89 since the drain was not on the critical path of the project. The project as planned was not dependent upon the drain being installed by 12/13/89. The contractors only obligation was to install the storm drain sometime within the schedule and float period. The contract required that a storm drain be in place during construction. The existing drain would be used until the new drain was finished and according to the drawings the new drain did not interfere with the project.

7. The contractor timely began borrow excavation. Borrow was placed on the east side of the building until 12/05/89 and approximately 77% of the bid quantity of borrow had been placed.

8. As noted above, the contract required that a storm drain system be in place during construction. There was an existing storm drain which ran underground through the east side of the

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[4] The path of work depended on work in the east section proceeding first then the west section according to the approved schedule.

construction site. According to the contract drawings the existing drain did not interfere with the locations of caissons which were to be dug to a depth of approximately 25' to bearing then filled with concrete to support the Grade Beams. The original plan anticipated use of the existing storm drain pending completion of the new storm drain which ran around two sides of the construction site as shown on the drawings.

9. On 12/06/89 Appellant discovered that the existing storm drain was directly beneath caisson K99. The storm drain was located 5 1/2 feet from where the contract drawings indicate it should be found. The parties stipulated this was a Differing Site Condition.

10. In light of the caisson - storm drain conflict, construction of the K99 caisson could not proceed until either the new storm drain was completed or a temporary set of elbows was installed on the existing drain system to allow the water to flow around the K99 caisson. SHA's Resident Engineer believed a compensable 30 day delay would result to the critical path if this problem was not solved.

11. On 12/07/89 the parties discussed this problem at a progress meeting. Appellant suggested installing two elbows around K99 to divert the existing drain for $16,000.00. Appellant was also working on the new storm drain as a non-critical activity in accord with the original plan. SHA did not immediately respond to Appellant's suggestion and by the time SHA gave oral approval to the proposed elbow solution, Appellant had substantially completed the new drain which was finished January 16, 1990.[3]

12. Appellant determined the critical path changed on 12/06/89 due to the Differing Site Condition. Borrow work could not have reasonably been expected to proceed. Appellant needed uninterrupted access through the field area. There was only one approved project access to reach the new storm drain location which made borrow work impracticable.

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[3] The new storm drainage system was operational on January 9, 1990.

SHA contemporaneously with the discovery of the K99 caisson - storm drain conflict held Kiddie Consultants Inc. (Kiddie) liable and directed them to furnish an alternate solution. On 12/21/89 SHA provided Appellant with a sketch for temporary bypasses around K99. Since Appellant substantially completed the new drain on January 9, 1990 the alternate solution was no longer useful. The Board agrees that under the original plan the drain work became critical since K99 could not be built without a resolution of the storm drain conflict. Delay in approving Appellant's elbow resolution effectively placed construction of the new storm drain system on the critical path.

13. The record suggests that the Appellant was having difficulty obtaining suitable borrow and drying borrow. However, the problem did not impact the critical path. The critical path changed on 12/06/89 with the discovery of the caisson - storm drain conflict.

14. The new storm drain work was originally scheduled for 25 days and when placed on the critical path during the severe winter of 1989 took 35 days. Upon completion of the drain, borrow activity resumed and caissons were installed.

15. The Board issued a Proof of Costs as to the damages for delay which was audited by SHA's cost consultant.

16. The parties have used various accounting methods and theories to attempt to quantify the actual damages encountered by Appellant on a per diem basis for any delay.

17. The parties have stipulated that the day rate for Home Office G&A is $506.00.[1] The parties differ over the extended field costs. SHA claims a day rate of $475.00; Appellant claims a day rate of

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[1] The Board notes that the Home Office day rate was derived by the Eichleay Formula. This was accepted by SHA after audit of Appellant's books and records. (See Sch. 8 Rubino & McGeehan Report)

$612.18.[1] SHA further contends that in light of the Change Orders associated with this project[3] the Appellant has already been compensated for actual Home Office and extended field expenses that are time related and should deduct $393.00 from the day rate to correctly reflect actual delay costs. The parties stipulated that whatever the day rate found by the Board to be appropriate a 10% mark up for profit should be allowed.

18. The parties are in substantial agreement on the method of calculation of extended field overhead. The question is what items should be included that are time-delay sensitive.

19. The Board finds that several of the items claimed by Appellant are not time sensitive and were improperly included. Those items are, payroll taxes $742.00 , trash removal $17,440.00, dismantle clean-up $27,503.00, punch out $547.00, payroll taxes $8,182.00, loader $218.00, Gradall Freight $180.00, Crane Freight $1,228.00, payroll taxes $56.00, payroll taxes $21.00. None of these items relative to the delay encountered in this Appeal are time sensitive and would have occurred regardless of delay. Any payroll taxes allowable were included under Management and Supervision.

20. Appellant also includes idle equipment at $96.03 per day for three pieces of equipment; Loader/Backhoe, Air Compressor and Gradall. Appellant kept no separate record of these items but relied upon SHA IDR's and Daily Logs for idle time. No explanation as to any weather or other types of delays was offered to explain the SHA records, which may reflect idle time causation.

21. SHA argues for a per diem credit for overhead previously paid due to the Change Orders. No analysis was made on a Change Order by Change Order basis. An analysis of the overall impact of the

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[1] Idle equipment claim $96.03 is included in the day rate of extended field overhead of $612.18.

[3] The Change Order work of $423,855.00 was 11.6% of the original contract price of $3,636,521.00. The G&A home office overhead rate from revenue under the Eichleay method was 10.4%.

Change Orders is based upon factual assumptions by SHA and its consultant as to what the Change Orders represented as to overhead.[3] An amount of $60,983 was assumed mark up for Change Orders 1-10,12,13 and 15-22. 50% of this mark up or $30,442 was estimated to be overhead. SHA further assumed as to Change Orders 11 and 14 100% overhead for a total of $79,458.00 overhead payment by Change Order. Using project extended duration of 246 calendar days SHA claims a $323.00 adjustment (This was later amended to $393.00 at the hearing.)

22. The Board is persuaded that Appellant was in a better position as a result of the Change Order work which absorbed some of its overhead. However, under SHA's analysis the affect is overstated. The Board finds Appellant's extended overhead was absorbed to some extent, by payment under the Change Order work, however the record does not permit exact quantification. To avoid a windfall to Appellant we will reduce the combined day rate for field overhead and Home Office G&A by $60.00.

DECISION

The Board finds that on 12/06/89 the critical path changed to drain pipe work from the originally planned borrow excavation. This change was the result of a Type I Differing Site Condition. The CPM could not proceed as scheduled since the caisson could not be built until after the new storm drain was installed. On 12/07/89 a corrective action to divert existing storm drain water using elbows was proposed by Appellant. This corrective action was offered and could have shortened the delay to the critical path. However, SHA failed to act promptly in consenting to this action which could have mitigated the delay. In any event, the Appellant prosecuted the work by taking the non-critical new drain construction out of sequence. The new drain work became the critical path

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[3] The Board notes Appellant would have received the overhead from Change Orders without reduction if there had been no days of delay.

and was done in 35 days.[1] This was 10 days more than originally planned but the Board finds the work was completed expeditiously in view of being taken out of sequence during the severe winter of 1989. The Board finds Appellant is entitled to 35 days of compensable delay.

The Board has accepted the concept of day rates for Home Office G&A using the Eichleay Formula where reasonably applied following audit (See J. Roland Dashiell and Sons, Inc., MSBCA 1324, 1360, 1369, 3 MSBCA ¶ 268 (1991.) and will adopt the $506.00/per day stipulation of the parties. The Board further will adopt the 10% markup for profit as stipulated by the parties.

Appellant's claim for $612.18/per day for field overhead is inflated by non-time sensitive items and is reduced to $475.00 per day. The Board further finds that the Appellant did absorb some home office and field overhead related to the delay in its Change Orders.[2] The reasoning of the SHA cost consultant has merit in light of the facts of this particular appeal but is overstated. A credit of $60.00[3] to delay damages per day (field and home office overhead) is granted.

The Board allows quantum of $475.00 extended field overhead together with $506.00[4] Home Office G&A less the credit to reflect overhead payment by Change Order of $60.00 per day or a compensable day rate of $921.00[5] x 35 days of delay for a sub-total of

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[1] The differing site condition was discovered 12/6/89 and the new drain was operational 1/9/90; 35 days.

[2] The record reflects the parties fully negotiated these Change Orders.

[3] SHA has overstated the effect of the Change Orders on unabsorbed overhead. The Board has adopted a jury verdict approach in determination of the value to place on this modifier.

[4] The Board notes under Eichleay total billing are used which include profit. However, the Board will not disturb the stipulation of the parties even though some profit may be duplicative.

[5] $506.00 + $475.00 = $981.00. $981.00 - $60.00 = 921.00.

$32,235.00 plus 10% profit $3,224.00 or total of $35,459.00.

The Board declines to award pre-decision interest. Interest will run from the date of decision until paid at the rate of interest on judgements.

Dated: 8/27/92

Neal E. Malone
Board Member

I concur:

Sheldon H. Press
Board Member

Robert B. Harrison III
Chairman

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I certify that the foregoing is a true copy of the Maryland State Board of Contract Appeals decision in MSBCA 1622, appeal of Prince George's Construction Company, under Contract No. P-895-501-329.

Dated: August 28, 1992

Mary E. Priscilla
Recorder