How A Pile Driving Contractor Looks At Specifications

By Walter C. Ernest, Jr.

SPECIFICATIONS for pile driving are sometimes very brief, especially if originating from the owner without benefit of consultation with the architect or design engineer. In this case the contractor's know-how and familiarity with site conditions are essential to achieve a successful foundation with few problems, financial or technical.

More frequently the specifications have been developed by an engineer but without complete information on soil conditions or without mentioning required length of piles at all locations on the job site.

We are normally asked to quote a price based on a set of plans with the pile layout, *estimated* length, class of timber piles, the bearing required, and the kind of treatment necessary (according to AWPA Standards). Usually there is not much more to help us work up the estimate. It will be up to us to count the number of piles needed and figure in any necessary load tests and anything else conditions may require, put all of this in a "proposal" and submit a price for the work.

In regard to timing, we will carefully check pile delivery dates and availability. It is important that piles for the main structure should not be ordered, for example, until the test piles are driven and loaded. If the job, as a result of load testing, calls for very long piles, deliveries at the start may be slow. Time is of the essence on most jobs and we have found that a careful check of delivery dates for various kinds and sizes of piles can save us many delays.

To avoid confusion, in the absence of a proposal furnished by the owner, a careful check of the estimated number of longer or shorter piles is recommended. We will estimate a lump sum for the number of piles at the basic length or an aggregate length of "so many feet." The basic length of piles is determined by dividing the total number of piles into the total footage.

All pile footage is generally estimated. Some piles will have to be longer or shorter, depending upon the nature of the soil and the number of borings made to

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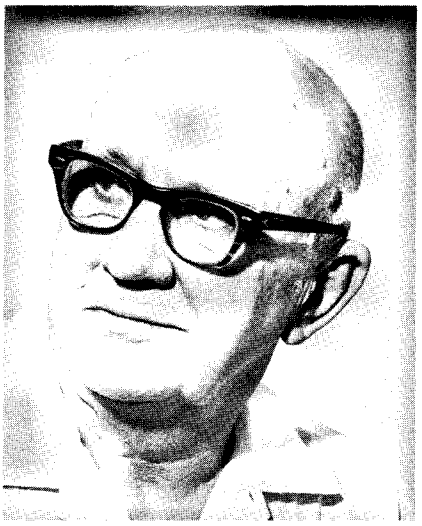
He studied civil engineering at Auburn University and Mississippi State College. He has supervised and directed the driving of many thousands of piles.

In addition to contracting pile foundation installations, Mr. Ernest has designed and constructed many pile driving rigs for both land and floating work.

During World War II he served as a Major with the Corps of Engineers, Engineer Section — 6th Army. He was responsible for all dock construction for the 6th Army in New Guinea and the Trobian Islands.

He is a member of the Associated General Contractors of America and past president of the Mobile branch; a fellow of the American Society of Civil Engineers, and a member and past president of the Mobile Post of the Society of American Military Engineers.



determine depths to a bearing stratum and the condition of the soil. For this reason an addition in the estimate is made per foot for longer piles and a deduction for shorter piles. In figuring for the longer lengths, payment for the full excess length is requested. From our experience we have found this will compensate for the increased price for the longer piles. On the longer piles the additional price is only paid for the excess length over the basic length.

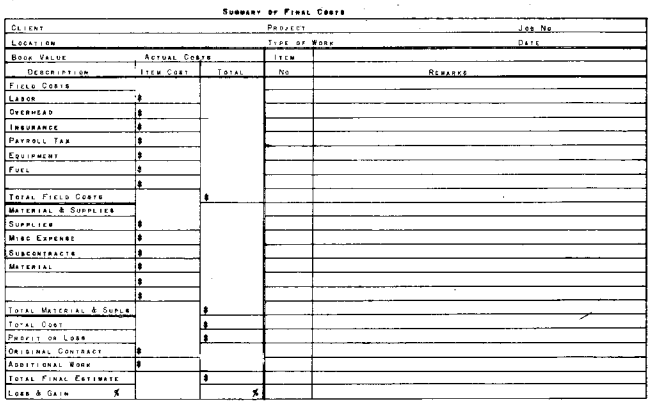
In the case of shorter piles, the lesser credit will take care of the cut-off.

Some engineers will note on the plans that piles are to be driven to a bearing of so many tons and to a minimum penetration of so many feet. We have found it wise to carefully examine such notations. For example: if a 60-ft. pile is to be driven to a penetration of 60 feet, the bearing may be obtained at 40 ft. To get the other 20 feet, water jets may have to be used, which often causes considerable additional expense and increases the contractor's liabilities. Since driving, along with excavation, is generally the first part of the job, and water supply lines are normally not installed until later, the contractor might have to sink a well or provide tank trucks to haul water for the jetting operation. If this is discovered to be the case, after examining the plans, extra payment should be asked. This extra, unless it has been set out in the contractor's proposal for the work, is usually refused.

Here is another caution to beware of in looking at any specification: In some jobs, specifications call for the pile contractor to cut off piles to grade. The proposals should state that excavation for pile cut-offs to be done by others should be in such a manner that a continuous operation can be carried on after the piles are driven. Very often, before the footing is excavated and, if the general contractor is slow in excavating the footing, you will be held up cutting off the piles unless you jump in with a crew and dig them out yourself. This kind of oversight can cause a lot of dissention unless it is spelled out in the proposal.

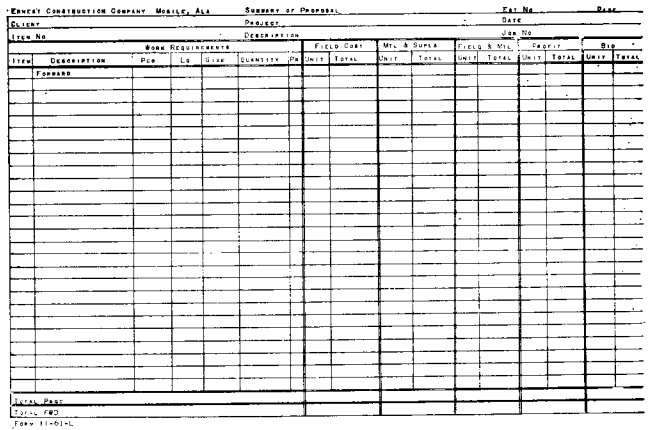
We also find that it is very wise for a contractor to check his job insurance policy at the same time he looks at the specifications for a job. For instance, on city work, with old buildings adjoining the site, XCU insurance (coverage for damage to underground, overhead or adjoining property) should be obtained. This is expensive insurance and can only be bought for a particular job. Before committing themselves, the insurance agency will make a survey of possible expected damage and, if written, will usually charge a high premium. But, in our experience, we can testify that it's worth the extra cost on some jobs requiring precarious operation.

Because of the risk involved, we had to abandon a job in Mobile, Alabama. It was near a central telegraph office, and, on account of endangering operation of the delicate instruments in the office and the possibility of putting the lines out of service for an indefinite period, the insurance company refused to write it at any price. On another job involving a site with an adjoining old building, an insurance company priced its coverage at $27,000. Piles were not driven; spread


Summary of Final Costs

Client | Project | Job No.
Location | Type of Work | Date
Book Value | Actual Costs | Item
Description | Item Cost | Total | No | Remarks
Field Costs
Labor $
Overhead $
Insurance $
Payroll Tax $
Equipment $
Fuel $
$
Total Field Costs $
Material & Supplies
Supplies $
Misc Expense $
Subcontracts $
Material $
$
$
Total Material & Supls $
Total Cost $
Profit or Loss $
Original Contract $
Additional Work $
Total Final Estimate $
Loss & Gain %

Ernest Construction Company
Mobile, Alabama
Form 12-61-L


Ernest Construction Company Mobile, Ala — Summary of Proposal — Est No — Page
Client — Project — Date
Item No — Description — Job No
Work Requirements: Pcs, Lg, Size, Quantity, Pa | Field Cost: Unit, Total | Mtl. & Supls: Unit, Total | Field & Mtl.: Unit, Total | Profit: Unit, Total | Bid: Unit, Total
Item | Description
Forward
Total Page
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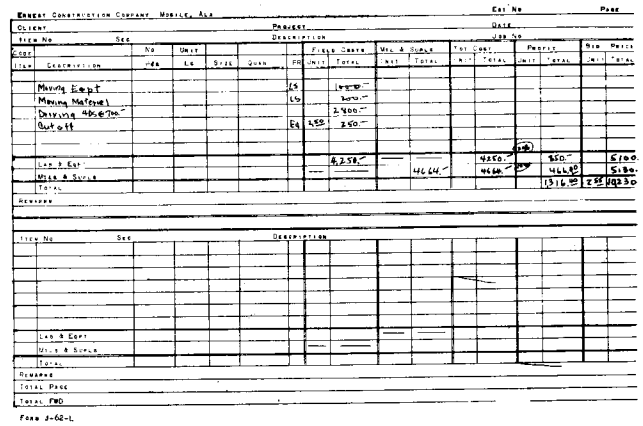
Form 11-61-L


Ernest Construction Company Mobile, Ala — Est No — Page
Client — Project — Date
Item No — Description — Job No
Cost Item | Description | No Pcs | Unit Lg | Size | Quan | Pa | Field Costs: Unit, Total | Mtl. & Supls: Unit, Total | Tot Cost: Unit, Total | Profit: Unit, Total | Bid Price: Unit, Total
Moving Eqpt
Moving Material
Driving 48 @ 70
Cut off
Lab. & Eqpt
Mtls & Supls
Total
Remarks
Item No — Description
Lab & Eqpt
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Total
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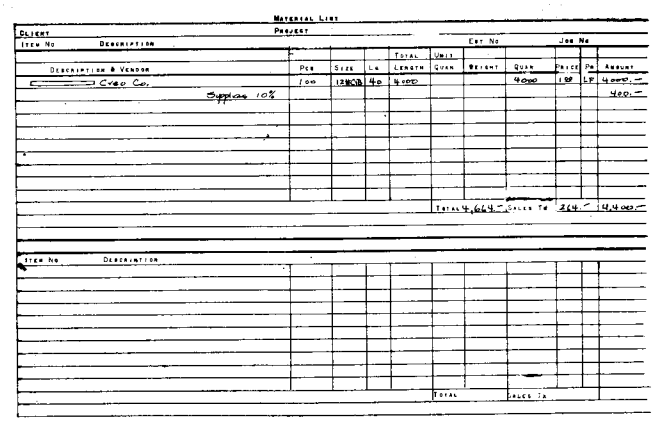
Material List
Client — Project — Est No — Job No
Item No — Description
Description & Vendor | Pcs | Size | Lg | Total Length | Unit Quan | Weight | Quan | Price | Pa | Amount
Crew Co. | 100 | 12WCB | 40 | 4000 | 4000 | 1.00 | LF | 4000.-
Supplies 10% | 400.-
Total 4,664.- Sales Tax 264.- 4,400.-
Item No — Description
Total — Sales Tax

footings had to be used and the structure was redesigned from a multi-story building to one story.

A very important consideration in viewing any specification for pile driving is the section (if any) entitled: "change orders." The pile driving contractor will often be called on to unload construction material or blade up areas on the site. Whatever work you may do for others, get a signed paper each day. We have learned regrettably that if this isn't handled in such a business-like manner, the contractor will do a lot of work for which he will not receive compensation to cover his outlay of time, manpower, and materials.

The writer has found that the following "proposal" covers most of the problems that can be expected to develop on a typical pile driving job. This proposal, with little change, if any, has been used successfully by our company for a number of years and has worked out favorably for both contractor and owner alike.

A simplified breakdown for pricing which we sometimes use can be as follows:

Labor-per 8-hr. day (includes estimated cost for operating of equipment and wear-and-tear) ..... $ _____
Job insurance fees ..... _____
All material ..... _____
Total $ _____

Add expected profit (in $ or percentage of above total) ..... $ _____
Total price $ _____

We will often take the total cost for labor, insurance, and material and divide it by the total pile footage to arrive at a per ft. price, if a unit cost is needed. All jobs vary and must be individually priced. It is important to consider all the variables or possibilities of cost in each job. ■

F-15-66 LET — DAILY WORK REPORT (FORCE ACCOUNT) — DATE
CLIENT — LOCA — JOB NO
PROJECT — CITY — EX WO
PERFORM THE FOLLOWING WORK AND CHARGE AS NOTED

AUTHORIZED BY

CRAFT	PD	NO	HR	RATE	AMT	TOTAL	#	EQUIPMENT	NO	HR	RATE	AMT
SUPT	OT											
	RG											
FOREMAN	OT											
	RG											
OPERATOR	OT											
	RG											
FIREMAN	OT											
	RG											
OILER	OT											
	RG											
OPERATOR	OT											
	RG											
PD MEN	OT											
	RG											
LABORERS	OT											
	RG											
TK DRIVER	OT											
	RG											
	OT											
	RG											
	OT											
	RG											

TOTAL LABOR	$	WORK PERFORMED	TOT EQPT $
INS & TAXES ON LABOR %	$		
TOTAL LABOR & INS	$		
EQUIPMENT RENT	$		
MATERIAL & SUPPLIES	$		
TOTAL	$		
ADM % PROFIT %	$		
TOTAL CHARGE TODAY	$	APPROVED	

ERNEST CONSTRUCTION CO MOBILE, ALA — CLIENTS REPRESENTATIVE

ERNEST CONSTRUCTION COMPANY — MOBILE, ALABAMA — PAGE
GENERAL CONDITIONS — PILE DRIVING PROPOSAL CONTRACT — (CONTD)

PAR 1 - PROGRESS:
WORK SHALL BE PUSHED TO COMPLETION AS SPEEDILY AS IS CONSISTENT WITH GOOD WORKMANSHIP, BUT SUBJECT TO ALL DELAYS FROM MATERIAL DELIVERIES, STRIKES, BREAKDOWNS, DIFFERENCES WITH WORKMEN OR ANY OTHER CAUSES BEYOND OUR CONTROL. IT IS UNDERSTOOD THAT WE OPERATE UNDER ACCEPTED UNION CONDITIONS.

PAR 2 - EXCAVATION:
UNLESS OTHERWISE NOTED, THE ABOVE PRICES ARE BASED ON THE UNDERSTANDING THAT YOU WILL PERFORM ALL EXCAVATION, DEWATERING, SHEETING AND SHORING AS REQUIRED, TOGETHER WITH BANK PROTECTION, LEAVING THE AREA IN SUCH A MANNER AS TO AFFORD FREE MOVEMENT OF OUR PILE DRIVERS. YOU WILL CONSTRUCT AND MAINTAIN ROADS AND RAMPS IN THE CONSTRUCTION AREA FOR THE MOVING OF OUR EQUIPMENT AND MATERIAL IF REQUIRED.

PAR 3 - OBSTRUCTIONS:
YOU WILL REMOVE ALL OVERHEAD WIRES, PIPES, BUILDING PROJECTIONS, SURFACE AND UNDERGROUND OBSTRUCTIONS WHICH MIGHT INTERFERE WITH DRIVING PILES AND EXCAVATION OR AUTHORIZE US TO REMOVE SAME AS EXTRA WORK.

PAR 4 - JETTING OR BOREING FOR PILES:
SHOULD JETTING OR BOREING FOR PILES BE REQUIRED WE WILL FURNISH LABOR, EQUIPMENT AND MATERIAL FOR THIS WORK. PAYMENTS FOR THIS WORK TO BE MADE ON A UNIT OR NEGOTIATED PRICE. YOU WILL FURNISH WATER FOR THIS WORK AT JOB SITE AND MAKE PROVISIONS TO AND DISPOSE OF RUN OFF WATER AND MATERIAL BROUGHT UP BY JETTING OR BOREING AT YOUR EXPENSE.

PAR 5 - ENGINEERING:
UNLESS OTHERWISE NOTED, YOU WILL SET PILE STAKES AND GIVE ALL LINES, LEVELS AND CUT OFF GRADES AND KEEP ALL DRIVING RECORDS AS REQUIRED.

PAR 6 - INSURANCE:
WE WILL FURNISH INSURANCE AS COVERED BY OUR POLICIES AS FOLLOWS:

WORKMAN'S COMPENSATION - AS REQUIRED BY LAW.		
MANUFACTURERS' OR CONTRACTORS'	$	100,000.00 EACH PERSON
(BODILY INJURY)	$	300,000.00 EACH ACCIDENT
MANUFACTURERS' OR CONTRACTORS'	$	100,000.00 EACH ACCIDENT
(PROPERTY DAMAGE)	$	100,000.00 AGGREGATE
AUTOMOBILE COMPREHENSIVE		
(BODILY INJURY)	$	100,000.00 EACH PERSON
	$	300,000.00 EACH ACCIDENT
(PROPERTY DAMAGE)	$	50,000.00 EACH ACCIDENT

CERTIFICATES OF INSURANCE TO BE FURNISHED IF REQUESTED.

DAMAGE CAUSED BY DRIVING PILES OR EXCAVATION, TO UNDERGROUND OR OVERHEAD LINES OR PIPES OR TO EXISTING OR ADJACENT PROPERTY OR STRUCTURES OF THE OWNERS OR OTHERS ARE EXCLUDED FROM OUR POLICIES AND YOU WILL HOLD HARMLESS ERNEST CONSTRUCTION COMPANY FOR ANY AND ALL CLAIMS OR DAMAGES ARISING THEREFROM.

SHOULD WE BE DIRECTED TO FURNISH BOND ON SPECIAL INSURANCE FOR THIS COVERAGE OR FOR AMOUNTS IN EXCESS OF OUR POLICIES OR SURETY BOND, WE WILL FURNISH SAME, COST TO BE FOR YOUR ACCOUNT.

FORM 66-11 REV

ERNEST CONSTRUCTION COMPANY — MOBILE, ALABAMA — PAGE
GENERAL CONDITIONS — PILE DRIVING PROPOSAL CONTRACT — (CONTD)

PAR 7 - PERMITS AND MISCELLANEOUS:
YOU WILL SECURE ALL MUNICIPAL AND OTHER PERMITS FURNISH WITHIN REASONABLE DISTANCE SUFFICIENT WATER SUITABLE FOR THE CONDUCT OF THIS WORK.

PAR 8 - EXTRA WORK:
IF DESIRED, WE WILL PERFORM ADDITIONAL OR EXTRA WORK AS AGREED OR ON A COST PLUS BASIS OF LABOR, (PLUS % FOR INSURANCE ON SHORE WORK AND % ON FLOATING WORK), MATERIAL AND EQUIPMENT RENTALS, PLUS % FOR OVERHEAD AND % FOR PROFIT. DAILY TIME SHEETS TO BE SIGNED EACH DAY.

PAR 9 - BACKCHARGE:
WE SHALL NOT BE RESPONSIBLE FOR ANY CHARGE FOR WORK PERFORMED OR MATERIALS FURNISHED UNLESS WE HAVE ORDERED THEM IN WRITING.

PAR 10 - DELAYS AND EXTRA MOVES:
IF SPECIAL WORK IS REQUIRED SUCH AS EXTRA MOVES, RETAPPING, SPUDDING OR CRIBBING DUE TO IMPROPERLY SHEETED AND BRACED EXCAVATIONS, DISASSEMBLING EQUIPMENT TO PASS UNDER OVER HEAD OBSTRUCTIONS, OR WE ARE DELAYED BY YOU AND ARE UNABLE TO EXECUTE THE WORK WITHOUT INTERRUPTION AND IN A MANNER REQUIRING THE LEAST MOVEMENT OF OUR EQUIPMENT, WE SHALL BE PAID AT THE RATE OF $_____ PER DRIVEN HOUR FOR SUCH DELAYS OR EXTRA MOVES.

PAR 11 - PAYMENT:
PAYMENTS SHALL BE MADE WITHIN TEN (10) DAYS OF THE DATES ON WHICH PROGRESS ESTIMATES ARE RENDERED ON OUR INVOICES, AND SHALL BE FOR 90% OF THE PROPORTION OF THE CONTRACT PRICE REPRESENTED BY WORK PERFORMED AND MATERIEL DELIVERED DURING THE PRECEDING MONTH FULL AND FINAL PAYMENT, (INCLUDING RETAINAGE) SHALL BE MADE WITHIN THIRTY (30) DAYS AFTER OUR WORK UNDER THIS AGREEMENT IS COMPLETED.

WE RESERVE THE RIGHT TO DISCONTINUE ALL WORK UNLESS PAYMENT IS MADE IN ACCORDANCE WITH THE ABOVE, AND YOU SHALL REIMBURSE US IN FULL FOR ALL COSTS WHICH WE MAY INCUR BECAUSE OF OUR CESSATION OF THE WORK ARISING FROM FAILURE TO RECEIVE PAYMENTS AS HEREIN PROVIDED.

PAR 12 - ACCEPTANCE:
THIS PROPOSAL IS MADE ON THE BASIS THAT IF ACCEPTED IT SHALL BECOME A CONTRACT INCORPORATING ALL OF THE TERMS PRINTED ON THE REVERSE SIDE HEREOF. IF BUYER ACCEPTS THIS PROPOSAL, BUT PREFERS TO USE HIS OWN CONTRACT FORM, IT IS UNDERSTOOD THAT THIS PROPOSAL AND ALL OF ITS TERMS SHALL AUTOMATICALLY BECOME A PART OF SAID CONTRACT.

THE FOREGOING OFFER IS ACCEPTED THIS

_____ DAY OF _____ 196___ — RESPECTFULLY SUBMITTED,

CLIENT _____ — ERNEST CONSTRUCTION COMPANY

BY _____ AUTHORIZED SIGNATURE — BY _____ AUTHORIZED SIGNATURE

FORM 66-10 REV