



PDHonline Course P165 (2 PDH)

Creating Successful Bid Proposals

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2020

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Creating Successful Bid Proposals

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COURSE CONTENT

1. Specifications and Methods of Measurement

Typically the specification for a particular item of work includes sections on general information, materials, method of installation, method of measurement and finally method of payment. There are various guides by associations and organizations devoted to development of specifications, but for this course the focus will be on choices made by the engineer when assigning a method of measurement as well as the method of payment.

Execution of the Measurement

The method of measurement should be executable in the field. This is the primary factor in the selection of the method since how staff makes the measurement will influence the success of that operation. Laying a pipeline with alignment changes and corresponding fittings can easily be measured by the linear foot. The plans, especially in electronic format, can easily establish the proposed running length of the system, where in this case the system is all the pipes and fittings. If a change is required in the field, a simple tape along the top of the pipe will still yield a quick and reliable answer.

Consider that this pipe has obvious overlaps where one section is inserted into fittings or bell joints. The specifications have to be clear what linear footage is being considered for payment. Without specifically calling out that “measurement shall be based on the linear footage as installed in the field and shall not include overlap” a contractor may contest that each section of pipe and each fitting had been measured prior to installation resulting in a significant variation from the quantity on the Bid Proposal Form. A similar situation will arise with the use of area-wide applications, such as filter fabric. Typically fabric is overlapped with adjacent pieces, and if used in channel construction, may include trenching at mid-length, at the ends and along the fabric sides. The difference between the original fabric

size and the area covered may be as high as 20 percent. Contractors will argue that they had purchased and installed 1,000 square yards yet the area covered may only be 800 square yards.

Consider the ease by which the fabric example could be measured in the field. For a relatively flat area, a tape or wheel could be used to verify adherence to the contract. I would always recommend stating at least one method of direct measurement even if the likelihood that the owner's staff may have difficulty performing the operation. If you have a difficult contractor, then the method has been stated and would still need to be carried out.

Verification of the Measurement

If there is little likelihood that there is a significant deviation from the contract quantities, and the method of measurement may be difficult, a method to "verify" the measurement could be placed in the specifications and could serve as the method of measurement. An example would be placement of stone. As stone is delivered, placed and perhaps compacted, the quantity could be based on volume and verified by weight. Volume would match with dimensions from the plans, and could have been checked for consistency throughout placement. Actually measuring the volume after placement could be performed, but would probably involve some expense. In this case, if the final configuration of the rock meets the required dimensions, and the tonnage of stone matches what was expected, payment might be based on performance and the measure of the performance could still be the volume of stone shown on the plans, as verified by weight tickets.

A word of caution is needed regarding delivery tickets. When the stone is being delivered to the site, the trucking company should have delivery tickets that would show the weight of the stone being delivered. If measurement is based on tonnage, care must be taken to insure that the owner is actually paying for the stone. Examples would be a fine road base material, if delivered wet and compacted would result in a higher cost than dry material that is wetted prior to compaction. The weight would have included water weight. Truckers may also want to prevent damage to the beds of their trucks and quarries would gladly dump some "bank run" type material in first to cushion the impact from the larger, correctly sized materials. The truck weight ticket would not typically account for this. The material delivered for placement would also be less "correct" than the proposed required gradation.

There is also the obvious concern that materials delivered may not actually have been installed. An example is rock delivered and stockpiled, perhaps multiple times, could result in losses that will be charged to the owner if not challenged.

Care should be taken when using a method of measurement based on volume, and being verified by a measurement based on weight. Besides the saturation issue, the density of the placed material should be established prior to construction. Typically a rule-of-thumb for stone is one cubic yard equals 1.5 tons. But when compacting a finer material, such as road base stone, this ratio may be 1.8 tons per cubic yard. This can cause a significant under estimation, and resulting extra order.

Per Each or Lump Sum

Measurement may also be in terms of “per Each” or “Lump Sum” and usually involve wording related to performance, such as “Measurement shall be made per EACH headwall satisfactorily installed”. When there is little chance of variation between multiple items (such as headwalls in this case), this method is easy to measure in the field. If there are significant differences between the items as planned, or a likelihood that sizes may vary based on discovery during construction, it would be better to wrap-up all costs related to the installation in terms of a unit that could adequately compensate the contractor. For example multiple headwalls could be paid by the cubic yard, and would encompass all formwork, concrete, rebar and labor as established by the contractor’s bid for expected cost to do the work on a volume basis. Of course the measurement should include the footer dimensions and subtract out the volume of the pipe within the headwall.

Large earthwork projects may have had volumes (in cubic yards) of materials moved established by computer modeling. If the engineer is confident that the initial information from surveying was correct, and the modeling was done correctly, the cubic yardage figure should adequately describe the total quantity of material to be moved. Double handling of the material may not be specifically called out, but if expected, should be considered into the cost of the project. Many times a Lump Sum is specified with the contingency that pre-construction and as-built surveys can be made to establish the actual volume of material moved. Usually as-built surveys are part of a deliverable by a contractor and should be performed by a registered professional surveyor. If the contractor feels the cubic yardage has

a significant error prior to earthwork, they could have this surveyor establish the pre-construction condition.

The contractor would typically want the owner to pay for the survey since they will state it is the error on the owner's part to correctly show the existing conditions. In order to "keep the contractor honest", I have agreed to pay for a pre-construction survey on the condition that there had been in fact an error of at least 10 percent in the final earthwork quantities. That condition has caused more contractors to accept the original Lump Sum value, than to proceed with the survey.

One example that demonstrates a contractor's valid point concerning correct existing conditions would be topographic mapping, usually based on aerial photography, that did not include adequate ground shoots beneath tree cover or the sounding of water-filled pits. Although these areas may have been noted as "approximate" at some point, that fact may get lost during a long design, or changing staff, and significant changes are realized during construction.

Some contracts have provisions that allow for renegotiations of unit prices if changes are in excess of a set percentage, perhaps 25 percent. Although this is typically to allow for relief from hardships due to extensions or deletions of work, some contractors use this for purely economic gain and will attempt to direct work to create this situation.

Summary for Win-Win Measurements

Throughout this course it is important to recognize that adopting a win-win attitude with the yet-unknown contractor will result in a smoother, more productive project. The first step to achieving this goal is the correct selection of how the product is to be measured. Usually the method of measurement will relate to the method of payment. Establishing what would be the equitable method of payment for work that may yet change, and therefore how that work should be measured, sets the stage for smoother coordination and cooperation throughout the contract. If the best method for some work would be "Time and Materials", perhaps because unknown conditions prior to the start of the work, the owner or engineer may need to spend more time monitoring the contractor's workforce to insure correct compensation. The contractor who is bidding the project may recognize previous efforts to be "fair" and would therefore bid lower than others who feel they must "hedge" their bids.

2. Specifications and Methods of Payment

A contractor gets a “first impression” of a project, and how compensation may be made, after reviewing the Bid Proposal Form prior to bidding. Some contractors may decide not to bid based solely on the methods of payment on the bid schedule. Others may recognize potential avenues of economic gain purely by manipulating the bid in anticipation of extras and deducts. The engineer that has designed a project has to know what loopholes may exist and how to write the specifications to ensure the project is built to function properly. How a contractor gets compensated will add to the win-win scenario that will lead to the successful project the engineer and owner desires.

Unit Price Items

A typical method of payment is per a unit of a particular item. Examples already noted are linear feet of pipe, cubic yards of stone, tons of stone, or square yards of fabric. If the planned quantity of the item may change due to site conditions, having the payment in units will readily allow the contractor to request an extra, or the owner to recognize the need for a deduct. Although most of the examples relate to earthwork projects, unit items can encompass just about anything. Payment could be per specific type of bolt, per liner foot of wire or per gallon of paint.

This ability to add or deduct also leads to the greater possibility of abuse. A contractor may suggest changes to plans that would ultimately eliminate some items, perhaps items that were bid cheaply, and require an extra for another. The contractor may then prompt to renegotiate the original unit price to something even higher. It is imperative that the engineer of design remains in contact with those overseeing construction to insure that the changes are warranted and compensation is reasonable. Quite a few times I have thanked contractors, and staff, for their suggestions, but then noted I would consider such changes for future projects. There have been times when the changes do have merit, and the flexibility to compensate was then possible. If renegotiation was requested, there had been times when I suggested paying a lower unit rate based on “quantity discount”. Some cases this led to the contractor accepting no change.

The engineer has to establish a level of quality for the design and bid package to attempt to identify these potential loopholes and close them before the bid package is sent out.

In some cases, compensation for unit items may begin to reflect lump sum items. This occurs when many items become “incidental” to the unit item. An example would be an aggregate underdrain. The contractor would first need to excavate the trench, perhaps requiring OSHA trench safety measures. Aggregate would be placed for the pipe bedding, the pipe would need to be placed and then the remaining aggregate. There may be filter fabric placed around the stone, or just over the top of the stone, and then some of the soil that had been excavated would be replaced and compacted. This would be a considerable amount of work, with some drastic variations in complexity, if it were just paid at the “contract unit price bid per **linear foot** of underdrain”. A smart contractor would base the cost per foot on the more expensive version of what may be expected because if an extra is required, it may require trench boxes and deep excavation. The owner will pay a premium for a bid written in this fashion. A bid that fosters a win-win condition would be to include trench excavation as earthwork paid per cubic yard, the stone under an item paid by the ton, and the pipe paid per linear foot as installed. Filter fabric may be incidental to something like stone or earthwork, as it may increase with increasing amounts of excavation or stone. This only leaves expense related to use of a trench box and could be paid for per liner foot of trench requiring a box. All these items can easily be measured in the field and/or verified with weight slips. Contractors will be more comfortable bidding lower knowing appropriate means to compensate will be in place.

Many times these separate items are already in a contract, so unless they vary significantly from the other items, the number of line items can still be kept manageable.

Lump Sum Payments

Unlike the trench example, which may vary greatly, work that is not expected to change from the plan, or is not easily measurable, may be made as a Lump Sum. Examples are typically mobilization to a project site. Many contracts will pay a large portion of the mobilization, but not all, to compensate the contractor for gaining access, bringing materials and preparing the site to begin construction. Some contracts may combine “mobilization and clearing”, but if there is concern about how much clearing will be required, keeping them separated may be warranted. Site restoration may be also lump sum, thereby reinforcing the contractor’s need to minimize damage to an area. Wording such as “no compensation for site restoration beyond the work limits shown on the drawings” sends the

message that this is not an item that can be negotiated upwards because of sloppy work.

Some organizations may allow for payment systems to treat a “Lump Sum” item as if it were “1 Each”. This is particularly handy if a change is reasonable and the payment system will allow for this. Perhaps a 20 percent increase in a Lump Sum item is required, the payment system may allow for payment at 1.2 Lump Sum. Check with your accounting office to verify that this is possible. It is my opinion that the engineer is the ultimate watchdog for a project, and it’s costs, since they design the project, bid it, and supervise construction. Lump Sum items should send the message that the work described is complete, accurate and should have little to no changes. Confidence in that position should minimize the times a Lump Sum would be extended. Contractors should not expect variations, thereby hedging bids in anticipation of changes.

Too Many Line Items

If expanding a Lump Sum into a few Unit Items may be a good thing, perhaps everything that can be broken into units should have it’s own line item! The Contractor may have a great time with this, but your accounting and field personnel probably will not. Finding a good “middle ground” will help you keep your final bid costs within reason, whereas micro-examination of every detail will tend to increase the cost of the project. Since we are dealing with human nature, some contractors see the detail as a precursor of potential micromanagement during construction, and hedge their bids, if they bid, accordingly. Some realize the gold mine of future extra orders, looking for many more opportunities to unbalance bids, even if for only a large number of small items.

Even though you want the project built as designed and bid, you may not want to go beyond verification that it was built correctly. Considering each measurement for payment requires someone in accounting to keep track of each line item. That means more entries for payment and more potential Change Orders for extras and deducts.

Having too few items seems more troublesome than too many. With too many, there may be more involvement than you and the staff you work with may want, but at least you will have the flexibility to work with items that have been established within the contract. Too few items forces the creation of extras that are outside the contract and that may cause problems with negotiated extras, which are described later in this course.

Other Methods of Payment

Paying for items “per Each” has been mentioned and is comparable to multiple lump sums of a particular, uniform type of work. If there is a chance there will be variations, the difference should be well documented and an “average” price per each still can be used. Keep in mind this will again cause the contractor to hedge his average price toward the higher side. The more likely there will be changes, the less likely this should be used.

“Time and Materials” is a common form of payment method, although my past history with State government has expressly not allowed this form to be used. It has its applications and would require closer supervision. Smaller projects that could be a combination of investigation, and design-on-site would benefit greatly by the use of this method.

“Work Allowances” or “Specific Work Allowances” have a variety of uses. One is typically a set amount already inserted onto the contractor’s Bid Proposal Form to pay for work that already has a set cost to the owner, and no significant involvement by the contractor. One example is a utility relocation by a utility company. The engineer has coordinated the work with the utility company, has described how the contractor will coordinate with the utility company and the cost to the owner may just be passed through the contractor.

Another use of this “Work Allowance” is to designate a dollar figure to compensate for a number of minor, probable but yet unknown work activities, such as the need for water pumps if water becomes an issue in an excavation, the need to bring a concrete pump to the site, if exploratory excavations are needed or expected “unknown” utilities are discovered, and need to be repaired. This item becomes a “catch-all” checkbook written into the contract that will be drawn down based on need and acceptance by the engineer. Later in this course you will see how this helps get contractors their payments in a more timely fashion.

Summary for Win-Win Payments

Like methods of measurements method of payments can be tailored to help minimize the bid cost of your project. They can offer both controls against excessive changes, and yet flexibility to compensate the contractor when appropriate. Over the years contractors have discussed bid arrangements that left them with concerns about their financial safety, which left them the

choices to bid high, or not at all. If work is plentiful, the engineer needs to formulate a package that will attract contractors, rather than having the owner may not receive any bids. A win-win payment arrangement gets the owner lower bids because the contractors concerns have been addressed.

3. Unique Methods of Payment

My work environment required contracts for proposed work to be competitively bid. To do so, required a specified quantity of items, such as tons of stone, cubic yards of earthwork and linear feet of pipe. This becomes difficult when the bidders are bidding on potential projects that do not yet exist. They are bidding on small projects at will be “similar to” a given description. Usually covering a specified geographic area, so regional costs can be somewhat consistent, there would be enough materials covered on the Bid Proposal Form for, perhaps 10 projects. These contracts had no re-negotiation clause since the only undue hardship suffered by a contractor would be the cost of the construction bond required to cover the entire bid. As long as the contractor had access to a backhoe that had a reach of 23-feet, no other materials were needed at the time of the awarding of the contract.

The owner then had to set-aside the bid amount to pay for the potential work, if it occurred. As a result the owner requested minimizing the quantities of the work, rather than encumbering large dollar values for work that would ultimately be deducted at the end of the year.

One solution was to establish payment for work by combining similar items under a common unit. In this case double wall polyethylene pipe, 4-inch, 6-inch and 8-inch diameter, to be paid for under the one line item “pipe by the pound”. Unlike the trench example previously, the specifications indicated that the pipe was for shallow trench drains, and driveway access, excavation and stone to be covered by their own line items. At the time this was performed, the cost of the pipe, supplied to the site was nearly identical per pound, yet of course the weight per foot of each pipe varied exponentially with the diameter. The contractors to receive bid packages were also supplied with examples of how this would work and facts about the pipe characteristics. After specifying the length and pipe size, and the total weight for one project, then a second project with differing diameter, length and resultant weight, the contractor was comfortable with the process and it became “work as usual”. Once the overall contract was complete, there was one deduct for the pounds of pipe, rather than three deducts, one for each pipe. Before the contract was complete we could have even required an extra for one of the sizes had the original linear footage been exceeded,

rather than just drawing from the single amount of pipe by the pound like we had.

One limiting factor was that the labor costs would have to be consistent with the change in material costs for each of the pipe sizes. The second relationship was the need for a pound of polyethylene to be constant between the three sizes. In this case, 12-inch diameter pipe was sharply more expensive per foot of pipe than its cost per pound of polyethylene (for the 4, 6 and 8-inch pipe), and was not able to be included.

With enough explanation, and disclosure of how the computations are made, contractors are usually open to new methods of payments. The key is to foster, or have fostered a win-win track record and they will trust you to be fair, yet firm when necessary, even if they are a bit fuzzy on your new and wild alternatives.

4. Balanced Bids

The engineer usually is relied on to verify that the bids submitted, on the Bid Proposal Form, are mathematically correct and balanced. An assessment of the apparent low bidder's company to carry out the work may also be required. This review may shed light on how this particular bidder considered the methods of measurements and method of payments that were used in the bid documents.

References have been made to contractors adjusting their bid prices in order to hedge their bets against changes in the contract. These changes can be either warranted because the contractor feels he has background information that is apparently not addressed in the plans, or because he may be successful in convincing staff to promote changes that will then benefit his bottom-line.

To create the estimate, the engineer had to research the costs to do the work, accounting for regional cost and labor trends, material availability, fuel prices and current number of similar types of projects currently or proposed for the area. If the quantities of the work are correct, and the estimated cost to do those quantities are realistic, then the final Engineer's Estimate should be a decent reflection of the types of bids that will be received. There may be other factors not known to the engineer, such as a newer contractor wanting to get their foot-in-the-door with a workable, but low price. A contractor already in the area may also want to acquire the project to keep his work force busy as insurance against a suspected slow period.

Can they buy the materials?

These scenarios resulting in lower bids and others that may also result in significantly higher bids occur all the time. So how does an engineer determine if a bid is “balanced”? Some subscribe to percent deviation from the Line Item values determined on the Engineer’s Estimate. This is less subjective, but could also raise doubts when the cause for the deviation was information not known to the engineer.

My personal overriding factor is answering the question, can the contractor purchase the required materials for the price bid? I have had some decent contractors that apparently had low overhead, or just liked to stay busy, but could at least purchase the materials for their bid price. If I set my Engineer’s Estimate based on what I thought that contractor might bid, and then they did not bid, my estimate would be too low and then that would raise questions as to why the actual bidders were so high.

If you plan to reject a bid, and the contractor is a fighter, one sure method to slam the door shut is to show how the materials cannot possibly be supplied at the unit price bid.

I’m sure there are other “rules” adopted by various agencies or organizations, but for over 1,000 projects spanning the past 20 years, this has been my mainstay.

Can we get hurt?

The other important consideration is how can this bid, which varies from the estimate, hurt the owner? In some cases the contractor loads up mobilization and other lump sum items to acquire early payments. Most contracts allow for a pro-rated payment to avoid too much payment, too early. This is usually not a problem unless there is a reason to believe the unit items, that are now bid low, will be deducted, thereby allowing the contractor to collect through the lump sum for work deducted. If the engineer knows the plan, and sees no reason for the deduct, care should be taken to look for hints by the contractor, and staff that these deducts are really a good thing. This is where I have suggested we consider that idea on the next project, but on this project we perform the work as planned.

In some cases unit prices are high, perhaps for a small portion of the over all project. A phone call before execution of the contract to clarify our position

would be in order. Suggesting that the price bid is acceptable for the quantity bid, but a negotiated price for additional material would be in order. This at least safeguards against some unknown, that perhaps the contractor is aware of, but investigation prior to design had missed.

There are numerous other possible issues that can be considered when reviewing a bid to see if it is balanced. For this course, I would assume that the contract has submitted a balanced bid.

5. Change Orders and Timely Payments

With a contract in the contractor's hands, work begins and rarely will the project progress smoothly to completion without some reasons to change the original contract. Since this course is focused on ways to create a win-win scenario through the wise choices of methods of measurement and payment, it is at this point when the benefits are beginning to be seen.

Our focus will be those Change Orders that require alteration of the scope and monetary compensation for the revised work. A common cause would be the discovery of some previously unknown factor that will negatively affect the outcome of the work, if not addressed during construction. An example could be the discovery of a seep during an earthwork project. If left unaddressed, the seep would saturate the hillside and may cause future movement. An underdrain system would need to be installed, requiring at least stone and pipe.

Typically the contractor is given direction by the engineer to address the issue, complete with sketches quantities and material types. Some of these materials may already be in the contract. For this example a simplistic description that the Change Order is written and defines all the work and materials needed to address the problem. Also included on the Change Order are the agreed upon unit prices and total cost to do the additional work.

Timeliness now becomes a function of the bureaucracy of the construction company and the owner's organizations. Typically the details worked out between the contractor and the owner's engineer in the field, complete all but the owner's legal approval of the change to the contract. Legal personnel recognize construction cannot come to a halt while waiting for paperwork to be processed, and some organizations have mechanisms in place to address this.

In our example, consider the stone and pipe were not already part of the contract. If the contractor proceeds believing that the change order will ultimately be processed, then materials are delivered to the site and personnel are set to work on constructing the solution. The material supplier's clock is now ticking. Typically payment is expected within 30 days of delivery. The contractor still needs to meet payroll and other business expenses while the underdrain system is being installed. The contractor is basically working "in good faith" without a contract for that portion of the project.

As the engineer, can you help create a win-win scenario to aid the contractor? Besides riding herd on the paperwork, one helpful method is to write the Change Order to take advantage of items already in your contract. Continuing with our example, and ignoring the pipe, consider that the stone needed for the underdrain needs to be washed river gravel, yet you have limestone for addressing stormwater issues as part of the contract. Both paid by the ton, and both require little labor other than to dump in place and smooth. If the cost to purchase, truck and place the washed river gravel is more than the limestone, the Change Order can be written to take advantage of that fact. The washed river gravel can be paid for at the "contract unit price bid per ton of limestone plus the negotiated contract unit price bid for washed river gravel". If the washed river gravel will cost \$2/ton more, then that becomes the only negotiated item not already in the contract. The Change Order would include an extra for limestone to cover the tonnage of washed river gravel being added.

There is a word of caution that must be made at this point. The engineer is now committing materials in the contract to work being performed by the contractor, who is operating "in good faith" that the Change Order will be processed. I strongly recommend that before using this technique, the engineer clear this with those he believes will stand behind the continuation of the construction project as defined in the Change Order. In nearly 3 decades I have not had one case when the Change Order had not been processed. Problems had occurred when I had not been involved and work proceeded, but that speaks more to adherence to established procedures to protect all the parties.

Assuming your organization is flexible enough to allow this process to be followed, how does this then help the contractor? Remembering the material supplier's 30 day clock is ticking. The day the Change Order was written, showing that 90% of the cost of the washed river gravel was covered under the limestone line item. The contractor ordered stone, perhaps

800 tons, it was delivered and placed within a few days. Before the Change Order may have even found its way to the legal department, you could approve payment for 800 tons of limestone, thereby initiating the payment process for all but 10% of the material and labor expenses for that new work..

In some organizations the Change Order processing just creates a new Pay Request Form that then must be filled out for processing. This example shows one method to utilize the existing Pay Request Form to cover most of the work, typically cutting the time to get payment in half.

6. Line Item Extensions or Negotiated Items

In the previous example we had a “negotiated extra” for 800 tons of washed river gravel, perhaps at \$0/ton for labor (as it will be covered under limestone) and \$2/ton for materials. The limestone already in the contract may have been intended for stormwater, but 800 more tons would need to be added to cover the cost of the washed river gravel used in the drainage system. This additional amount would be termed a “line item extension”.

These terms (or similar terms) may be important to your organization, and the engineer has a means to lessen the impact that the more “negative” negotiated extras seem to pose.

Helping your organization

Our example required \$2/ton x 800 tons for \$1,600 for a negotiated extra to a contract. Included in that Change Order is \$18/ton x 800 tons for \$14,400 to cover the cost of the washed river gravel paid through the line item extension. We could have just written the entire \$20/ton for the washed river gravel resulting in a negotiated extra for \$16,000. In some organizations concern is expressed over the amount of “negotiated extras” had been written

Although the entire reason for the extra work is clearly documented, and agreed to as necessary, the issue here is what work had been directly negotiated rather than competitively bid. Obviously as an engineer, I can't offer legal opinions or advice, but if your organization has no strong feelings about how the payment should be processed, offer the method that creates more win-win scenarios. In this case, for this item, one contractor's directly negotiated items is 90 percent less than it might have been shown, so

scrutiny by others, of both the contractor and your organization may be less intensive.

Helping yourself

Using existing contract items to cover changes in work will also eliminate some inquiries from the “Principal’s Office”. An example would be the substitution of a concrete mixture for construction.

Although the same concept is involved, now the issue is a small change is required, perhaps remove some sand, add superplastizicer and add a sack of cement to the mix. The superplastizicer is hopefully already on your Bid Proposal Form, but if not, it usually is not a major issue when compared to the cost of the entire project. A portion of the sand being removed from the original mix will be negligible. Adding 94 lbs cement per cubic yard could be significant.

Previously, it was common practice to deduct the entire quantity of the original concrete mix, and use a Change Order to add a negotiated extra for perhaps the same quantity of the revised concrete mix.

Now you are being called into the Principal’s Office to explain why there is such a huge extra order! Even though you could point out that you are just substituting the original mix for a new mix that has only 94 lbs of cement added, some non-engineering personnel are still concerned.

Create a win-win scenario for yourself. Pay for the new mix under the existing line item of the old mix, and have the Change Order just note the change. The new mix will be explained adequately in the Change Order, to use less sand and to use the superplastizicer. The line item extension for the superplastizicer (or negotiated extra) would be shown. Then restrict the negotiated extra for the new mix by only adding to the contract the one line item for, perhaps “cement paid per pound”. You can also create a “Concrete Mix 2” line item that then covers only the difference in costs between the two mixes.

Showing just the NET end-result of the change to the mix design may eliminate a number of meetings to justify apparent large changes. Deducts of the original mix may actually be on a separate Change Order Form and therefore the fact it is a substitution many times, did not register.

A word of warning concerning method of measurement when using these techniques. Inspection staff may need guidance concerning delivery tickets for payment of the line items. When collecting weight tickets for the 800 tons of washed river gravel in our underdrain example, they may realize that they are also paying for 800 tons of limestone. I typically refer to one of the items as my “base” item. In this case the washed river gravel has actual tickets submitted for the material. That is some of the proof I need (as the engineer) that payment can be processed. Once the inspector has those tickets, and the work is performed, I would direct the Pay Request to be filled out “in accordance with the Change Order”, probably explaining the process and filling in the Pay Request Form myself the first few projects. This is usually not an issue once the inspector has dealt with these methods a few times.

Course Summary:

This course focused on how to develop a win-win operation through your Bid Proposal. How you structure your initial bid package has ramifications throughout the life of your project. Building in simplicity of measurements will insure your inspectors can perform their job. How the method of payment is defined should assure all parties involved that fair compensation for acceptable work is a priority. Once bids are received, all the bidders should know that acceptance of unbalanced bids are not an option, thereby prompting bids that are reasonable along a line-item basis.

During construction a good contractor and engineer need to work together. The engineer (and some contractors) wants to insure the best product is produced. The contractor (and some engineers) wants appropriate compensation in a timely manner. By making use of existing contract items, payments for completed work may be received much faster. Many contractors who recognize efforts are being made on their behalf will reciprocate during the construction process.

Finally the owner of the project could be impressed by the engineer’s reduction of negotiated extras, which leads the owner to be viewed in more favorable light by outside entities.

Developing a good working relationship with a contractor is recognized by all parties to save time, money and reduce stress in the workplace. If the owner, engineer, contractor, material supplier and even inspectors have issues with one of the other members of this group, the engineer’s work will be made more difficult. Setting the normal working environment as win-win

between engineer and contractor will go a long way to having smoother projects.