

Estimate Preparation

Including it All But Only Once

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The process of preparing an estimate is like few other processes in the construction business, or any other business. There are several characteristics which set estimating apart and while most estimators and users of estimates know what they are, a short discussion of them is in order. They are given below.

Time

From the time an estimator receives a set of documents to prepare a bid or a budget, he or she is under constant pressure up to bid date. It is not unusual to have a two or three week period to put an estimate together, or several estimates.

Complexity

An estimate at any level, material supplier, subcontractor, or general contractor is a complex undertaking. Correct quantity surveys must be made, labor must be correctly priced, suppliers and subcontractors must be contacted and often educated, competing bids and scopes must be reviewed, and everything must be satisfactorily completed by bid time or before.

Outside Pressures

Many material supplier and subcontractor estimators, as well as general contractor estimators, have other responsibilities in their companies. Even the estimator who works only on estimating, as is the case for most large firms, will have the pressure of putting together two (or more) bids at one time, contacting subbidders, helping educate them, addressing questions to designers or owners, and reviewing the status and strategy of the estimate with other company personnel.

Long Hours

Because of the time constraints, the vast majority of estimators work substantially more than a forty hour work week. Studies have shown that overtime on a sustained basis becomes less and less productive as the number of hours increases beyond fifty per week and as the number of work days goes beyond five per week.

Mistakes

Doctors, it is said, bury their mistakes, but estimators' mistakes can at best be a valuable learning tool about what not to do, and at worst can become a demon which haunts them for a long time. Most experienced estimators can quote chapter and verse of mistakes they have made, even years after the event.

While the product of an estimator's labor does not produce profits but only the chance for profits, the products of a mistake are often real losses. As the advertisement says, "When you seal the bid, you seal your fate," and mistakes are always 'fate full.'

Training

Elsewhere we will discuss estimator training. It suffices here to say that estimating is a profession unique in the sense that training for it is almost always on the job. That training is by fire, true enough, and if one survives, in most respects one can become a competent estimator. But in areas where the training is incomplete so is the estimator. We still learn mostly by doing, with all of its dangers, and we are the only major construction category for which this is true.

Given all of the above, it is critical that an estimator and the estimator's company have a well thought out and developed estimating system which aids in doing the tasks which must be done, hopefully in a timely way, and helps minimize the chance for error.

Even in the best company system in existence, and especially in a poor (or no) system, the estimator must develop methods of doing estimates which will give the most results for the time allotted. This is a discussion of some methods which can help in this regard. The following ideas will basically follow the sequence in which the estimate develops.

Know What Is Ahead

Know what is coming, if at all possible, and when. Nothing is more upsetting than having your week all laid out in your head just to find on your desk in the morning another job to bid that you had no idea was coming. Identify your sources of bidding information and use them. You may have a staff member call on upcoming jobs, or you may do so yourself, but following upcoming projects will help you plan your schedule must more effectively.

Because there will always be surprises, plan in some free time as you plan your week. At first glance this may seem a ludicrous suggestion to someone who cannot find nearly enough time to do all that needs to be done, but it is absolutely essential.

Isolation

You have the drawings and specs and are ready to begin work. You start and the phone rings, or someone walks into your office. After three dozen phone calls and interruptions, you look up and the day is gone. The quantity survey and pricing part of the estimating process demand concentration and undivided attention. You are able to accomplish more in a short time of uninterrupted effort than an entire day of business as usual.

How to get the isolation. Leave. Take the drawings and go somewhere where there are no interruptions. That may be to the library, to the plan room, home, wherever. Having worked in the normal general contractor's office for years and having been on my own working in my office at home for the last two, I am totally convinced that when you are working in an environment without interruptions your productivity increases four to fivefold. Not only does the quality of the work product improve, so does your attitude. When you are on top of the estimate instead of being frustrated by your lack of progress by non-estimating events, you can also then concentrate more fully on those things, and they will be done more efficiently.

If is not possible for you to get away from the office, isolate yourself within it. Close your door, tell the receptionist to take your calls, and work uninterrupted for three or four hours. You will be more efficient during that time and more efficient thereafter on other business.

Do Things Consistently and in Order

Set up your procedures for initial estimate preparation (in your mind) and as a Chief Estimator I once worked for said "do things consistently and in order." These things include an initial review of the drawings, making yourself some notes along the way, a detail review of the specs, covering any section which could remotely pertain to your work, and then back to the plans again for the start of quantity survey.

The initial plan review serves to introduce you to the project. It's nice to have an initial picture of the project in your mind, and some important information may be communicated in this initial review. One impression which is important is the location of the project. Another is what the function of the facility is and how many facilities there are. Still another is the general shape of the project and whether it is a single story or multiple stories. As you proceed, initial impressions of your own work will take shape in your mind.

The specification review is thorough and very detailed. It begins with Division One, General Requirements. A lack of a thorough understanding of Division is perhaps the most widespread and potentially harmful shortcoming of most subbidders. As we stressed in an earlier section, you will find

much information which can affect your performance and bid, everything from the layout of the bid form to alternates and unit prices to bid date and time to unfavorable contract language. The review is well worth the time and effort spent.

Any information in any section which may affect your bid should be noted, by subidders because they may not have the plans and specs for the whole bid period, and for general contractors and major subs because your notes are an easier way to track information which is important to you without all that which is not.

As I said above, review, in depth, all of the specifications which may impact your work. The specs themselves may give related spec sections, or you may know from experience which ones to examine. Take your notes section by section, keeping them under the section heading. They will give you much of the meat of the conditions of your bid if you are a subbidder and much of what to ask of a subbidder if you are a general contractor. General Contractor estimators should review all spec sections, making notes of the important questions to ask subidders so that their quotes can be properly analyzed.

Now comes a much more thorough review of the plans. It involves really getting a good mental picture of the project, from its layout to its elevations to its sections and details and schedules. Note the page numbers where important groups of information begin, such as plan site plans, floor plans, elevations, sections, schedules, etc. This will save enormous time in flipping through the drawings trying to rediscover that on view you need at the moment. During this process you will gradually begin to hone in on your work.

Quantity Survey

As you begin to analyze your work in general, be careful not to begin your quantity survey before you have developed, at least in your mind, a strategy for your survey. Sometimes beginning your survey before you have a fundamental grasp on your overall work can lead to doing your takeoff, or parts of it, again. I once did an entire quantity survey on the concrete portion of a large project only to discover that parts of it were described as alternates at the end of the drawing set. Not having surveyed the project initially with alternates in mind, I had to start over. On another occasion I surveyed all the structural work to learn on turning to the architectural drawings that the work was done in several phases which would last several years, then realizing that the near work could not be priced the same as the distant, and so again, I started over.

Use a form for your quantity survey which is amenable to your work. I have included a blank quantity survey form at the end of this paper so that you may modify it to fit your work and use it as necessary. The consistent use of the same quantity survey format is an important example of the principle of doing it the same way every time.

As you proceed through your take off, keep your question list handy to write down items you need more information about before you can finish. It is usually not a good idea to seek an immediate answer to your question unless it is necessary to allow you to continue and cannot be worked around. Ten phone calls raising one question to the designer or contractor or sub are much less efficient than one asking ten questions. It is also true that further survey may reveal the answer and no call will be necessary.

When you are ready to pose your questions, if they are allowed by phone, fine. If not, and in any case, write them down and send them to the person whose responsibility it is to answer, thereby making them part of the record. Do not be surprised if you do not receive answers to all your questions. Answers usually must be made to all bidders in an addenda, and many get lost in the shuffle. If the issue arises during construction and you can show you raised it during bid, your position will be much stronger. If you do receive verbal answers, confirm them to the other party in writing. The spoken word by itself is of little value when the mud flies.

Try to structure your quantity survey as you will build the job, begin at the beginning as they say. Then go to the second item, and so on. This technique may be common sense, but it is quite often not used. Building

on quantity survey paper (or disk space) as you will build in the field makes it more likely that you will consider all the elements of your job.

As you finish a logical section of your quantity survey, leave room to add things that belong to that section later, which may be discovered as you proceed through the drawings. With that said, however, it is important to finish, as nearly as possible, one logical unit of work before going on to another, again to lessen the chances of leaving something out. While you are entering lines of takeoff, make notes on the takeoff sheets where the work now being surveyed is to be found on the drawings -- sheet number, section number, etc. Also describe the item in such a way as to communicate to all, not the least of whom is you, what it is you are surveying.

As difficult as it is to do, use good penmanship. Remember, not only do others have to read what you write, you must also read it again sometime later, and not to be able to do so is at least embarrassing and maybe costly.

As you proceed through your quantity survey, mark off the items you have surveyed, preferably with a colored lead pencil. This is many times critical, because you cannot always remember where you left off when you return from a break, and if you are confused about whether you included or did not include an item when you look at the drawings next week, it may be too late.

Have as your constant estimating companion a comprehensive checklist of work items which may be included for your sections. This is again an aid to help you make sure you have it all. The beginnings of such a checklist for all 16 spec divisions follows this paper. You may modify it to suit your situation and update it as you have need. A comprehensive checklist for your work is an invaluable tool and should be reviewed on every job.

When you have completed your quantity survey and before you calculate it, review everything, plans, specs, addenda, etc., one final time. Take a break before you do this final review and return to the takeoff when you are fresh. Spend some time asking yourself some questions as you go through the review. Did I get this item, that one? Coming to this review fresh is almost equal to having two estimators independently take off the same project and then compare takeoffs, a version of the two sets of eyes principle.

If you do your extensions manually, have someone check them. The checker could be another estimator, a secretary, or another member of the office staff. It takes time, yes, and costs money. So does the inevitable mistakes in extensions and summation we all make. One small extension error may be significant enough to pay the salary of the checker for a long time. When the totals for the respective items are reached manually, highlight them in some fashion so as not to miss them when you transfer them to a pricing sheet.

If you enter your information into a computer for purposes of extension, have someone check your entries, or at least spot check them. Remember, garbage in, garbage out -- quickly.

When the quantities are totaled, look at them. Do they make sense? Does one or more look out of whack? The experienced estimator can sometimes, almost by feel, see a quantity that is out of kilter and thereby catch a mistake. It is a good idea to develop rules of thumb for such reviews. For example, if I surveyed an elevated concrete slab, I could divide the concrete quantity by the square feet of flat slab forms to determine the average depth of slab and see if that depth made sense. If I surveyed doors and frames, I could calculate the number of doors the frames would hold and thereby see if my door count made sense.

Pricing

When you or the computer has completed extending the quantity survey and you have reviewed the survey for rational results you or the computer must transfer the quantities to a pricing sheet for pricing. I have included a sample pricing sheet for your review at the end of this paper and also on your disk for your use.

If you transfer your quantities manually, mark off the items as you post them onto your pricing sheet and have someone check your work as they did above, both to insure that you transferred them correctly and that you transferred all of them. The staff member who checked the extensions above could do this also. If your computer does this automatically, you are home free. If you do it manually onto a spreadsheet, the same checking should be done as with the manual transfer.

As an aside, possibly the greatest benefit of computers in estimating is the quick calculation of quantities and prices from their input. The greatest drawback of computers is the tendency to rely on their product too heavily, suspending critical review of the output. Over reliance on the computer to do estimating is as potentially disastrous as any other mistake.

It is in the area of pricing where the art of estimating shows most clearly, as all experienced estimators know. This project is not like the last, or any other for that matter, in its detail or location or time frame. It is here that the company's cost history (or better, productivity history) is most valuable as a guide. What our field forces produced per unit of work being considered, say per square foot of elevated flat slab form, on the last job is relevant to your analysis of the unit to use on this job. The productivity achieved on the last ten jobs with elevated slab forms is perhaps even more relevant, because what our company can reasonably be expected to do flat slab forms for begins to take shape after a while. The particular productivity you think you can use may be at the low end or the high end of your company experience, and could nonetheless be appropriate for this job, depending on the quantity, similarities to earlier jobs, personnel involved, systems used, equipment contemplated, etc. It is the rational analysis of these factors and knowledge of the company's history which leads to the use of the correct factor for this project and to the estimator being worth his or her pay.

It takes some time to become familiar with the company's history and even more time to appreciate the subtlety of it. It takes even more time to watch projects which you have estimated being built and studying the cost records of these. This first hand knowledge of the project and the people and circumstances of its construction is invaluable when determining the productivity to use for today's job. Again, two sets of eyes are better than one, especially if the other set has seen a lot of estimates on a lot of projects.

Once the productivities are determined, you must know or be able to find out what the relevant wage rates, fringe benefits, and labor burden will be for your project. The wage rate may be contained in a union contract to which your company is signatory, or you may have to do some research in the accounting department or with field staff or others in the area. The accounting department should be able to furnish information about labor burden, which includes employer's portion of FICA, federal and state unemployment insurance premiums, and worker's compensation rates. Payroll burden varies considerably by craft and over time, so you should have a system for updating your rate information periodically. Fringe benefits may also be straightforward if you are signatory to a union agreement, as they will be part of the contract terms. Determining fringe benefits for nonunion workers is not so easy. It usually requires both management and the accounting department to determine. Examples of fringe benefits would be health insurance, vacation pay, incentive or safety bonuses based on labor, and the like. As a matter of good policy, the management of your company should determine these rates for estimating purposes, publish them, and update the information at least once a year.

With productivities and wage rates and assumed crew composition for each category of work you are pricing, unit prices for the work items can be calculated., posted against the quantity of the item under the labor unit price column, extended, and the total labor price for that item determined. Totaling all the labor items and adding the appropriate labor burden and fringe benefit amounts gives the total labor for the direct work of the project.

Determining unit prices for material may be as straightforward as calling a material supplier and asking for a price for a widget in cartons of 100, or whatever. It is also important to note what the appropriate sales tax rate for material is and whether it is included in the price quoted or must be added. If the material is more complex, (for example, the material for our flat slab example above, consisting perhaps of lumber,

plywood and other elements), the estimator must calculate a unit price for the individual elements, then add them together to get a subcontract unit price.

There may be also a need to price equipment against the quantity of the item in question. This information may also come from company cost history, from rental rates established by management for company owned equipment, or from rates solicited from outside equipment vendors. The cost of the equipment may be quoted in hours or some other time unit. To convert the cost into a unit price for the equipment, the estimator must decide how many of the units can be put into place in a time period for which the equipment price is known. For example, suppose a backhoe renting for \$50/hour can dig 100 cubic yards of dirt per hour;; the cost of the backhoe for a cubic yard of excavation is $\$50/100 \text{ cubic yards/hour} = \$0.50/\text{cubic yard}$.

As an alternative method of pricing equipment the estimator may determine how much equipment is needed for what duration and add the cost of the entire equipment fleet needed as a single lump sum. All the backup calculations must be kept in the estimator's records for reference.

Upon occasion, the estimator may need a subcontractor unit price for a work item, or may need to calculate one. The method for so doing is the same as that described for labor, material and equipment above except that the labor unit, material unit, and equipment unit must be added together, along with an estimated markup to calculate the sub unit price.

The theory of procuring work varies from company to company. Many firms believe that they get their edge on the competition by being able to do its own work more cheaply than its competitor. Many believe that they procure more work by getting better sub bids than their competitor. Whatever your company's bent, the importance of pricing one's own work cannot be overstated.

You do not want to be continually pricing company production records, but there is certainly nothing wrong in building a better mousetrap in your mind. Sometimes creative solutions prove to be not only doable but also indispensable. Picture the estimator who put together the first flying form estimate or the first tilt up estimate. But remember, in pricing you may always think "even I could do it for that price" but not until you actually do it should you always use your most aggressive pricing strategy.

You may gain a lot of insight into pricing from talking to your field personnel about an item you are pricing, although you must filter what you are told through your field filter. Most field people, those who are going to build it and who are going to be judged on how close they came to the estimate, tend to be a little gun shy, for understandable reasons. As a superintendent told me once, "You estimators have three weeks to make a mistake and I have 18 months to find it, then correct it at the least cost." What field personnel are extremely good at is helping with the building procedure and the organization to implement that procedure. They are not so keen at developing the cost for the procedure, being overly conservative in many cases.

When your pricing and extensions are done and checked, take a break, perhaps overnight, and review the estimate again. Looking with fresh eyes will almost always reveal something you should change. Look not only at the individual items but at the patterns they form. After a while you will begin to develop a "sense" for the distribution and ratio of prices to each other. When something doesn't look right or feel right, there you may find an error or a better pricing approach.

Analyzing Subbids

It is fair to say that most estimators solicit prices from vendors for material or subcontractor for subbed work. In the article on bidding procedures, we discuss analysis of subbids at some length. It suffices to say here that they must be analyzed, not just looked over, and the analysis process must be known to all who assist on bid day. It is important to get unanswered questions answered, by the subbidder if known or by you or members of your team. Develop a consistent, rational way of so doing and train your staff in it, so that they can be used to supplement your efforts and/or lead others when you are unavailable.

As difficult as it is to do, read the subbid, don't skim it. Look for exclusions, conditions, etc. If you expect items which are not included, develop a way to price them so that you may have comparable values for the scope in question. This is discussed more deeply in the bidding procedures article.

Question List

If you are going to be taking many subbids on many items, as does a general contractor estimator, develop a standard question list which can be used by everybody who is working on the job. If you have only a few subbidders on a couple of items, develop a checklist for yourself as well. It will help you be consistent in what you ask of and expect from all your bidders. Don't forget the general items, too, like sales tax, bonding, and the like. These general items are also discussed in the bidding procedures section of the manual.

Talk to your subbidders, as much as possible, before bid day. Develop friends by helping educate your subbidders, in the hope that they will give you preferential bids. Even if this does not occur, you have lessened the chances of one of your subbidders inadvertently leaving some major item out of its bid to you.

Also keep in mind that it is you, in the bid and scope analysis, who determine what goes where. Build your sub analysis sheet the way you want with the scope you want. You must be prepared to determine prices for items not covered in a subbidder's quote. This will admittedly take some advance preparation, but it is infinitely better than not adding money for a scope item left out and then having to fight with the subbidder about it after you get the job.

Have someone check your subbidder's analysis to try to minimize chances for errors. If you have subbidders who traditionally submit their bids at the last minute, as mechanical and electrical contractors do to general contractors, contact them to establish scope and conditions earlier in bid day, so that the two of you won't have to deal with anything but price when the subbid is submitted.

There are always questions about whether the bid of the low subbidder must be used to compile your bid. Legally, you can use any bid you want to compile your bid. As a practical matter, you know that if your subbidder is bidding your competitors, some of them will always use the low price, and if you do not, you will probably not get the job. This may be true, but sometimes we forget on bid day that there are some jobs that we should not want to get, because of the amount of risk involved in using all the low bidders. It may be possible to use a risky bid if you can manage the risk by better management of the sub. This will usually involve more of your project staff's time and will have a cost, but the cost may be acceptable.

There will be different solutions to each problem of this type that you encounter on bid day. But always remember that the only thing worse than getting the job is getting it and then losing your shirt on it. The disappointment of not getting the job is usually short-lived, but the agony of an unprofitable job lasts a long time.

Totaling Your Bid

If you have many subbidders, you may find it necessary to calculate a subtotal for your bid sometime in the bid day process and adjust that total by the late changes you receive which cause you to change the subbidder you are using. It is a good idea to determine this subtotal early enough to allow someone to check it, including both your math and the subbidders you are currently using. Another "two sets of eyes" principle. From that check, it may not be possible to have someone else check you, so do everything twice, or more than twice. When you post a revised subbid (remember to post only the difference in the subbid you are using and the one you are going to) or several, start with your initial subtotal and re-add the rest of your bid several times to make sure you did not make a mistake.

If you close your bid on computer, much of the opportunity for double checking your entries may be lost. This means that you must be even more cautious when entering the data.

Clerical errors in adding up bids are quite common, and are an adequate reason for withdrawing your bid if you discover them after you have turned your bid in, but it is far better not to make them at all.

The Fee

What fee? Sometimes it seems that our competitors must not be including a fee when they bid, and in some cases this may actually be true. While it would be nice if we did not take our competition into account when we bid, as a practical matter it is not always possible to do that. Even so, we must always keep in mind that the fee we should put on the job should bear some relationship to the risk of the job; the greater the risk, the greater the fee. If we keep this in mind, we may not always get the job. If we do not, eventually we may not be around to bid the next job.

Bid Form

Develop a consistent set of guidelines for handling the bid form, including filling it out, signing it properly, checking for the bid bond, etc. Review the bid form thoroughly with the bid runner, and include any other bid filer provisions which may be present. Review the timing of giving information with the bid runner. If the bid will be submitted late on bid day, ask the runner to determine the official time, where the bids will be taken, etc. The bid filer should also find out what phones can be used in filing bids and how long it will take to go from the phone to the location where the bids file. Cellular phones are becoming more and more popular and convenient for this purpose. But don't forget, they are not as secure as regular phone lines. The bid filer must allow enough time to accomplish all these activities and should probably plan on spending most of bid day doing them. This may sound like an excessive amount of time, but compared to not filing a bid properly or on time, it is a good investment.

Post Bid

In the bidding procedures article we discuss post bid procedures and the importance of filing your bids for future use, in contracting the job if you get it, or in preparation of future bids if you do not. It is also important, before you file the bid, to do a thorough post-bid analysis to see if you made mistakes that went undetected, either mathematical or using the wrong subbidder.

Conclusion

Estimate preparation in heaven would not be easy. On earth it will vary from difficult to impossible, and still we must do it. We must be aware of the weakness of what we are doing now, and willing to try to improve them. Hopefully, this discussion will aid you as you determine the specific steps you need to take to improve your own system.

CESCO

TELEPHONE QUOTE

PROJECT _____	DATE _____	TIME _____
FIRM _____	LIC. NO. _____	FOB _____ F&I _____
ADDRESS _____		TAX INCL _____ EXCL _____
PHONE _____	REPR. _____	BONDABLE YES _____ NO _____
FAX _____	QUOTED TO _____	RATE _____ INCL _____
UNION _____ NONUNION MBE _____	WBE TO _____	ADDENDA _____
SPEC SECTION TRADE OR MATERIAL _____		PP&S YES _____ NO _____

INCLUSIONS

EXCLUSIONS

ALTERNATES

UNIT PRICES

BID PREPARATION CHECKLIST

DIVISION 2 - SITEWORK

Demolition

Asbestos Removal
Backfill Basements
Backfill Underground Utilities
Barricade Lighting
Cap and Protect Underground Utilities
Cleaning Streets
Demolition License
Dump Fees
Dust Control, Erosion
Electrical Responsibility
End of Day Cleanup
Equipment Restrictions
Flagging and Traffic Control
Local Regulations
Mechanical Responsibility
Move-in and Move-Outs
Permits
Protect Adjacent Structure
Removal of Underground Utilities
Restrictions on Methods
Safety Precautions
Salvage
Sidewalk Demolition
Special Insurance
Street Demolition
Temporary Partitions and Barricades
Temporary Shoring
Use of Explosives
Watchmen

Electrical Excavation
Engineering and Layout
Excavation Permit
Explosive Storage Regulations
Final Site Grading
Frost Excavation
Grading Tolerance
Granular Fills
Hand Compaction
Hand Excavation
Mechanical Excavation
Over Excavation
Permits and Insurance
Protect Existing Facilities
Protect Trees and Shrubs
Replace Top Soil
Rock Excavation
Selected Fills
Sheathing and Shoring
Site erosion control requirements
Soil Poisoning
Soil Sterilization
Stockpile Topsoil
Street Cleaning
Subdrainage
Subgrade Preparation
Surface Drainage
Temporary Fences/Stock Control
Temporary Roads
Temporary Water
Traffic Control/Flagging
Underground Obstructions

Earthwork

Bank Protection/Shoring
Barricades and Safety Measures
Blasting
Borrow Pits
Caisson Spoils
Clear and Grub
Compaction Tests
Compliance Industrial Commission
Dewatering
Disposal Surplus
Dress Up Borrow Pits
Dump Fees
Dust Control, Erosion

Piling

Barricades and Lights
Butt Treatment
Casing
Concrete Work
Cutoff Removal
Cutoffs
Dowels, etc.
Engineering and Layout
Excavation
Existing Facilities
Extraction
Frames and Templates
Haul and Off-Load
Jetting

Navigational Aids
Pile Extensions
Pile Points
Protection of Existing Property
Re-Drill and Pre-Drill
Reinforcing Steel
Removal
Return Sheet Pile
Storage
Testing
Tolerance
Trim Sheet Piling
Vibration Protection
Waste Factor
Water

Caissons

Caisson Caps and Forms
Caisson Logs
Casing Loss
Casings
Concrete Work - Furnish, Place
Dewatering and Suitable Disposal of Water
Dewatering Equipment On-Site
Dowel Placement
Inspection
Layout and Engineering
Layout Protection
Level Pad
Lights and Barricades
Over Drill/Under Drill
Overhead Obstructions
Overrun Concrete Limitations
Rebar Hoisting
Reinforcing Steel-Furnish, Pretie, Install
Replacement of Broken Dowels
Review Soil Report/Boring Logs
Rock
Sandblast Rebar
Shear Rings
Spoil Removal
Stockpile Spoils
Tolerances
Type and Quantity of Equipment
Underground Obstructions

Site Utilities

Adjust Manhole Tops
Cast Iron Accessories
Cathodic Protection

Clean Outs
Cleanup and Sterilize
Coffins
Colored Concrete
Concrete
Concrete Encasement
Concrete Structures
Dewatering
Disposal of Surplus
Excavation
Joint Bonding
Maintain Existing Facilities
Monuments and Markers
Pavement Cut and Patch, A.C.
Plug and Cap Existing
Public Utility Charges
Remove Existing
Restoration of Site
Select Fills
Sheathing and Shoring
Special Coatings
Special Inspections
Surface Drainage
Temporary Connections
Testing
Thrust Blocks

Concrete Paving

Backfill Edge
Cast Iron Items
Compaction
Concrete Materials
Dowels and Supports
Edging
Engineering and Layout
Expansion Joint
Filler or Base Course
Final Cleanup
Final Grading Tolerance
Finishing
Grading Tolerances
Handwork
Joint Sand Blasting
Joint Sawing
Joint Sealing
Mesh
Methods
Protection
Special Curing
Striping
Subgrade Preparation and Grading Tolerance
Sweeping

Testing

Bituminous Paving

Asphalt Curbs
Asphalt Walkways
Base Course
Base Course Under Curbs
Compaction
Edge Protection
Equipment List
Final Chip Course
Final Cleaning
Final Grading Tolerance
Mix Design
Overrun Limitations Unit Price
Patch Existing Asphalt
Pavement Striping
Plant Specifications Requirements
Prime Cost
Redwood Edging
Removal Existing
Sawing for Removal
Shoulder Grade and Shape
Soil Sterilization
Special Sealers
Special Subbase
Subgrade Preparation and Grading Tolerance
Testing
Utility Trench Patching
Wheel Bumpers
Yield Requirements

Crushed Stone and Base Course

Compaction
Daily Weight Tickets
Delivery Capacity
Edge Strips
Final Grade Tolerance
Gradation
Hardness Test
Place and Haul Methods
Polyethelene
Pre-Moisture Mix
Soil Sterilization
Subgrade Preparation and Crading
Testing
Tolerance
Yield and Weight

Railroad Work

Ballast
Barricades
Bumper Stops
Cross Arm Warning Signs
Electrical
Engineering and Layout
Frogs
Hand Derailer
Plates
Point Derailer
Rails
Reflectorized Signs
Retarder Brake
Siding Spurs
Subgrade Preparation
Switches
Ties
Turn Outs

Marine Work

Boat Facilities
Dock Regulations
Dredging
Layout and Engineering
Protective Marine Structure
Tide Information

Curb and Gutter

Backfill Edge
Cast Iron Items
City Regulations
Compaction
Cure and Protect
Daily Production
Driveway Pans
Expansion Joints
Final Grade Tolerance
Gravel or Base Course
Layout and Engineering
Linseed Oil Treatment
Mesh and Rebar
Permits
Replace Existing
Seal Expansion Joints
Slip Dowels
Subgrade Preparation and Grading
Tolerance

Chain Link Fence

Barbed Wire Rails
Concrete for Posts
Embedded Sleeves
Engineering Layout
Gates and Hardware
Grading and Clearing
Grounding
Nonstandard Posts
Padlocks
Post Excavation
Razor Wire
Relocation Work
Security Guards at Culverts
Signs
Special Mesh
Temporary Fence Removal
Touch-Up of Vinyl Coated Fence

Controls
Coverage
Cut and Patch Concrete
Excavation/Trenching
Layout and Engineering
Maintenance
Service
Sod or Lawn Repair
Special Protection
Special Valves
System Design
Tie-in with Mechanical
Timers
Union Affiliation
Water Meter Pit
Water Taps

Lawns and Planting

Architectural Rock
Decorative Walkways
Edge Strips
Fertilizer
Final Grade Topsoil
Grading Tolerances
Gravel or Bark Cover
Growth Establishment
Jute Mesh
Maintenance
Mulch
Planter Fills
Protect Embankment
Protect Existing Plants
Prune Existing Plants
Relocate Existing
Rock Removal at Topsoil
Soils Testing
Special Blending
Stepping Stones
Temporary Water
Topsoil
Tree Staking
Union Affiliation
Visqueen

Lawn Sprinklers

Beneficial Use
Cathodic Protection

DIVISION 3 - CONCRETE

Cement

Extra Hose for Cement Transfer from
Trailer to Silo
Packaging
Sealed Silos
Standby Time
Storage
Tests
Type
Type of Truck Delivery and Equipment
Unloading

Concrete: (Ready Mixed)

Add or Deduct Cement Unit
Admixtures
Cement Content
Cement Types
Color Control
Cooled Concrete
Defective Material Clause
Delivery Capacity
Equipment Availability
Haul Time
Heated Concrete
Mix Designs
Overtime Charges
Plant Facility
Pour Rates
Quality Control
Slump Control
Testing
Theoretical Yield (27.5 CF)
Truck Boss Provided
Waiting Time Charges
Washout Provisions

Formwork

Architectural Concrete
Back Shores
Beam Bottoms
Beam Hangers
Beam Sides

Blockouts
Bulkheads
Camber
Centering
Centering
Chamfers
Column Clamps
Concrete Quality
Control Joints
Curb Forms
Domes
Dovetail Slot
Embedded Items
Engineering and Layout
Flat Slab Areas
Form Deflection
Form Oil
Hoisting
Inserts
Joists
Keyways
Ledgers for Joists
Material
Material Types
Metal Pans
Mud Sills
Patterned Ties
Pilasters
Pour Scaffold
Reglets
Rough Hardware
Round Forms
Rustification Strips
Shores
Sleeper Chips
Sleeves
Specific Scope
Stair Risers
Stair Soffits
Stripping
Textured Liners
Tie Loops
Ties
Tolerance
Water Stops

Reinforcement

Bar Supports and Accessories

Brick Bats
Bundling and Tagging
Butt Weld Preparation
C-Locks
Cadwelds
Delivery Schedule
Dowel Baskets
Dowel Supports
Dowels and Caps
Dunnage and Truck Loading
End Protection
Expansion Anchors
Galvanized Bars
Galvanized Mesh
Grade Steel Required
Grounding
Hoisting
Masonry Rebar
Maximum Bundle Size
Maximum Lengths
Mesh, Flat or Roll
Oxy-Acetylene
Plastic Feet on Chairs
Post-Tensioning Bursting Steel
Post-Tensioning Supports
Sand Chairs
Scaffolding
Shop Drawings (Special)
Site Structure Rebar
Special Bars, Epoxy Coated, Dywidag
Special Delivery
Spiral Column Cages
Stainless Steel
Tagging/Identification
Templates
Temporary Braces
Threaded Dowels/Inserts
Tie Wire
Unit Prices
Unload/Shake Out

Post-Tensioning

Accessories
Clean Conduit
Couplers
Engineering
Grout Pumps
Grout Sleeves
Grouting
Hoisting
Method of Payment: Net Weight
Packaging

Prefabrication
Scaffolding
Shoring
Special Ancors
Stressing Equipment/Calibration
Supervision
Supports
Type Ends, i.e., Button Headed
Welding, etc.
Work Platforms

Finishing

Acid Floor Materials
Admixtures
Bulkheads
Curb Finishing
Cure and Seal
Daily Production Requirements
Equipment
Equipment Bases
Final Strike Off
Grout Rub
Hoist Concrete
Joint Sawing & Sealing
Mesh Placement
Patch Tie Holes
Place Concrete
Prepare Base Slab
Replace Failures
Runways
Seal and Wax
Set Screeds
Stair Finish
Subgrade Preparation
Temporary Heat
Temporary Lighting
Temporary Protection
Time Limitation Hours
Topping
Vapor Barrier
Vibrators
Water Supply

Precast

Access
Anchor Bolts
Anchors (embedded)
Anchors (loose)
Bearing Pads
Blockouts

Caulking and Sealing
Certified Welders
Color Quality Control
Differential Camber
Delivery and Unloading
Dovetail Slot
Engineering and Layout
Erection Access Road
Field Measurements
Final Clean Down/Acid Etch
Grouting
Hoisting
Inserts Other Trades
Maximum Size and Weight
Miscellaneous Metals
Move-ins
Panel Tolerance
Patching
Plant Facility
Post-Tensioning Ducts
Protection
Quality Control and Tests
Reglets
Reinforcing
Remove Lifting Eyes and Patch
Rigging
Safety Barricades
Sample Panels
Sandblasting
Schedules
Sealants
Shims
Shop Drawings
Special Alignment Criteria, i.e.,
 P/C Adjacent to Curtain Wall
 or Joint Tolerance
Special Inserts
Temporary Centering
Touch-Up Painting
Type of Reinforcing

Gypsum - Types
Hoisting
Metal Deck an Centering
Placement Methods
Reinforcing
Screeds
Stripping of Deck
Sump Pans
Temporary Heat
Testing
Tolerances
Vapor Barrier
Vent Boards
Vermiculite - Types
Water Connection

Special Decks

Acceptance by Roofer
Breather Vents
Bulb Tees
Cants
Crout Cypsum Planks
Cure and Protect
Curing
Design Mix
Expansion Joints
Form Openings

DIVISION 4 - MASONRY

Unit Masonry and Stone

Acoustical Block
Ash Dumps
Bonding Masonry Rebar
Bonds Beams
Breakage Responsibility
Built-in Items
Burnished
Caulking
Ceramic Glazed
Clay Backup Tile
Clean and Point
Clean Effervescence
Cleaning
Cold Weather Masonry Procedures
Concrete CMU
Control Joint
Delivery and Unloading
Delivery Sequence
Expansion Joints
Fire Brick
Fireplace Accessories
Flashings
Flashings, All Types
Floor Cleaning
Flue Liner
Flue Liners
Glazed Sills
Grade Specified
Grout Metal Frames
Gypsum Block Units
Hoisting
Installation of Access Panels
Insulation
Layout
Lead-Lined Block
Lead-Lined Block
Light Weight CMU
Lintels (built-up)
Manufactured Stone
Material Handling
Mortar Colors
Mortar Materials
Mortar Mix Design
Natural Stone (quarried)
Non-Standard Specials
Openings, Other Trades
Packaging, Banding, etc.

Parging
Patch Existing
Paver Brick
Payment and Performance Bond
Precast Sills
Prescored
Protection
Protection of Stored Material
Pump Grout
R. F. Shielding
Reinsloring
Restoration of Existing
Salt Glazed
Sarabond Mortar
Scaffolding
Scaffolding, All Types
Set Hollow Metal Frames
Set Lintels Supplied by Others
Shelf Angle Installation
Shop Drawings
Shoring and Centering
Special Accessories
Special Color Blends
Special Shapes
Special Treated Brick
Stone Trim
Submittals
Swinging Scaffolding
Temporary Braces
Temporary Heating
Terra Cotta Trim
Test Shielding
Testing
Tests of Materials
Thru-Wall Flashing
Tie-In Hollow Metal Frames
Tie-in Wood Bucks
Ties and Anchors
Toothing
Veneer Core
Vertical Cell Fill
Vitreous Glazed
Waterproofing
Weld Anchors to Frames
Winter Protection

DIVISION 5 - METALS

Structural Steel, Material, and Subcontract

Access to Work
Anchor Belts
Auto Torque Bolts
Bar Joist Erection
Beams at Mechanical Supports
Bridge Crane Rails
Builder's Stairs
Camber
Certified Welders
Class A Structural Erection
Fabrication Tolerances
Field Splicing
Field Touch-Up Paint
Field welding
Grounding
Grout Base Plates
Hardware Preparation
High Strength Bolts or Rivets
Identification/Erection Markings
Inserts
Jobsite Storage
Layout and Plumb
Lintels at Mechanical and Electrical
Loose Lintels
Metal Siding Supports
Monorail Erection
Nelson Studs
Oversize Delivery Permits
Plumb Up
Prefabrication
Rail Delivery
Roof Opening Frames
Safety Platforms and Nets
Sandblasting
Schedules
Set Base Plates
Shop Coat Paint
Special Paint
Special Testing - Ultrasonic, X-Ray
Stair and Hand Rail Erection
Subgirts
Supports for Insulation
Truck Delivery
Unistruts
Unload and Shakeout

Steel Joists

Bearing Plates
Bridging
Field Touch-Up
Hoisting Equipment
Hook Anchors
Joist Extensions
Layout
Opening Frames
Safety Equipment
Temporary Bracing
Type Delivery
Type of Joist
Type of Paint
Welding Equipment

Metal Decking

Asphaltic Coated
Attachment Screws
Cant Strips
Ceiling Inserts
Closure Plates
Coordinate with Electrical
Coordinate with Erector
Cut to Size at Factory
Deck Type for Coordination
Design Coordinate Other Trades
Fire Underwriters Compliance
Galvanized
Gauge Requirements
Hoisting and Unloading
Metal Flashings
Nelson Studs
Opening Frames
Painted
Perimeter Angle
Protection Weld Splatter
Ridge Plates
Rubber Closure Strips
Shear Connectors
Shoring
Shoring and Centering
Sump Pans
Testing
Touch-Up Paint

Tuff-Core and Mesh
Valley Plates
Venting Requirements
Welding Washers

Miscellaneous Metals

Access Doors
Anchor Bolts and Sleeves
Architectural Metals
Bench Marks
Bolts
Bolts - Blocking
Bolts - Masonry
Bridging
Closure Angles
Coordinate with Hardware
Coordination Sheet Metal Items
Divider Strips
Door Subframes
Draft Curtain Framing
Drill and Tap for Hardware
Drill Imbeds for Attachment to Forms
Drilling and Tapping
Elastomeric Pads
Embedded Anchors
Engineering and Layout
Erected Items
Exclusions
Expansion Joint Assemblies
Field Measurements
Financial Stability of Supplier
Flagpoles
Galvanized Items
Grind Welds
Grounding Rods
Grouting
Imbeds
Interface Structural versus Misc.
Items for Other Trades
Knock Down Versus Assembled
Landing and Stair Forms
Loose Anchors for Precast
Loose Lintels Other Trades
Louvers, Grills, and Screens
Manhole Items
Metal Forms
Misc. Metal at Building Specialties
Mounting Plates in Partitions
Non-Ferrous Expansion joints
Opening Frames Other Crafts
Ornamental Metals
Paint

Painting Requirements
Piece Identification
Plaques
Pulling Eyes and Irons
Quality Control
Railroad Accessories
Roof Hatches
Roof Opening Frames
Rough Hardware (cinch anchors, etc.)
Sandblasting
Shelf Angle Inserts
Shims
Shop Paint Grating
Sitework Cast Iron
Smooth Dowels
Special Equipment
Special Gasketed Items
Special Gratings and Plates
Special Hangers
Special Sleeves
Special Welding
Stainless Steel, Aluminum
Stair Nosings
Supplied Only Items
Supplier
Support Framing Other Items
Supports at Metal Siding
Temporary Bolts and Angles
Testing Requirements
Thresholds
Tolerances
Touch-Up Paint
Treatment Plant Equipment
Treatment Plant Metalwork - by Equipment
Unistrut
Weld Dislocation
Wire Mesh Partition Supports

DIVISION 6 - CARPENTRY AND MILLWORK

Rough Carpentry

Backer Board
Bridging
Cant Strips
Carload Quantity Items
Caulk Wallboard"
Creosote Dip
Cutting and Waste
Embedded Lumber Items
Felt Underlayment
Finish Flooring
Glue Laminated Work
Grade of Lumber
Grounds
Gypsum Wallboard
Haul and Unload
Heavy Timber Work
Insulation
Metal Studs and Trim
Non-Comp Lumber
Plumb and Secure Hollow Metal Frame
Plywood and Types
Precut Items
Prefabrication
Roof Sheathing
Rough Bucks
Rough Hardware (nails)
Scaffolding
Screws
Shingles and Types
Siding
Sitework Wood Posts
Solt Connections
Special Joists
Special Metal Specialties
Special Treatment
Stairs
Subfloor Sheathing
Subflooring
Suspension System
Tape and Bed
Temporary Barricades
Texture Gypsum Board
Timber Connectors
Truss Framing
Type of Lumber
Unload and Distribute
Vapor Barrier

Wall Sheathing
Wolmanized Lumber
Wood Sleepers

Finish Carpentry and Millwork

Batten Strips
Cabinet Bases at Millwork
Cabinet Hardware
Cabinet Hardware Installed
Cabinet Tops
Cabinet Work
Doors and Windows
Finish Trim
Glue-Lam MaterialS
Knocked Down
Plastic Laminate Doors/Premachined
Plastic Laminate Paneling
Plastic Laminate Trim
Preassembled
Prefinished Floor and Roof Deck
Scribe Strips
Set Up and Assembled
Shelving
Siding and Fascia
Sink Cutouts
Stairs and Rails
Standing and Running Trim
Unload and Distribute
Wall Paneling
Wood Benches
Wood Floors, Sanded

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

Waterproofing and Dampproofing

Flashings
Hot or Cold Application
Joint Caulking
Membrane Waterproofing
Protection Board
Protection of Adjacent Work
Substrate Preparation
Vapor Barrier

Insulated Metal Siding

Anchor Bolts
Bumper Guards and Posts
Caulking
Class and Glazing
Closure Pieces
Concealed Anchoring
Coordination with Roofer
Cutters and Down Spouts
Door Frames
Door Weatherstripping
Doors and Windows
Draft Curtains
Erection Accessories
Expansion and Contraction Joints
Fasteners
Flashing at Roof Penetrations
Flashing, Facias, and Copings
Flashings
Foundations
Gauges Required
Gravel Guards
Grout, Caulk, and Paint Touch-Up
Insulation
Insulation and Support
Interface with Existing
Interior Partitions
Layout and Engineering
Liners
Louvers
Metal Windows
Panel Closures
Plastic Panels
Prefinished Trim
Reglets

Rigid versus Blanket Insulation
Roof Ventilators
Roof Ventilators
Rubber Closure Strips
Separate Permits
Sill Anchors
Sills
Skylights
Sliding or Rolling Doors
Special Finishes
Stairs and Steps
Standard Modular Accessories
Standard versus Specified
Subframes at Openings
Subframing for Equipment
Subgirts
Supervision
Touch-Up Fasteners
Touch-Up of Prefinished
Underground Ties at Rigid Frames
Unload, Store, and Protect
Utility Connections

Roofing and Sheet Metal

Access Doors
Aluminum Copings, etc.
Area Way Walls
Asbestos Cement Shingles
Asphalt Shingles
Back Prime Metal Flashings
Bin Walls
Built-Up Bituminous Roofing
Butyl Rubber
Canopy
Cant Strips
Cap Flashings
Caulking Roof Accessories
Ceiling Vents
Clay Tile Roof Tile
Coating of Galvanized Surface
Color Control Tile Roofs
Concrete Roof Tiles
Copings
Copper Roofs and Treatment
Counter Flashing
Cutters
Downspout Boots
Downspouts
Eave Drips

Entrance Heads
Final Cleanup
Forms at Lightweight Fill
Foundation Screened Vent
Gravel Guards
Gravel Surfacing
Gravity Vents
Grills and Louvers
Hoisting
Hypalon
Joint Covers at Gravel Guard
Metal Coping
Metal Flashing
Metal Shingles
Payment and Performance Bonds
Pitch Pockets
Pitch Pockets
Porcelain Enamel Shingles
Protection
Protection
Protection Finishes Areas
Rain Diverter
Reglets
Removal Existing Roof
Ridge Roll
Ridge Ventilator
Roof Bond
Roof Bond
Roof Hatches
Roof Insulation
Roof Jacks
Roof Jacks
Roof Schuttle
Roof Scuppers
Roof Ventilators
Roof Walkways
Roof Walkways
Safety
Sill Flashing
Sill Pans
Skylights
Skylights
Slate Shingles
Special Aggregates
Special Expansion Joints
Spray Insulation
Standing Seam Roofing
Sun Louvers and Shades
Tar Removal
Temporary Roofing
Testing
Thickness Roof Insulation
Thickness Roof Insulation
Through Wall Flashing
Tie-in to Existing Roof

Valley Flashing
Vents Through Roof
Wall Louvers
Wall Protection
Window and Door Flashing
Wood Shingles
Wood Stripping at Shingles

Caulking and Sealing

At Ceiling Perimeter
At Wallboard Floor Runners
Backer Strip
Caulk Interior Hollow Metal
Clean Floor Joints
Color Samples
Compression Seals
Control Joints (Wall)
Dissimilar Materials
Expansion Joints (wall)
Exterior Doors and Windows
Floor Expansion Joints
Interior Doors and Windows
Joint Primer
Metal Siding
Precast Panels
Protect Existing Work
Thresholds
Weather Stripping
Weather Tight
Window Wall

DIVISION 8 - DOORS AND WINDOWS

Metal Doors and Frames

Aluminum Door Hardware
Aluminum Doors and Frames
Anchor Plates and Devices
Angle Reinforcing at Transom
Astragals
Automatic Door Bottoms
Bottom Strut for Shipment
Bronze Doors and Frames
Coordinate with Hardware
Cutouts
Door Screens
Door Subframes
Door Thresholds
Electric Locks
Factory Glazing
Fire Dampers Installed with Louver
Fire Underwriters Label
Glass View Windows
Grout Frames
Hardware Reinforcing/Preparation
Hardware Templates
Knocked-Down Frames
Lead Lining
Louvers
Mark for Identification
Masonry Anchors
Prepare Weather Stripping
Prime Coat
Rubber Silencers
Scheduled Deliveries by Floors/Areas
Setup and Welded Frames
Stainless Steel Doors and Frames
Storm Doors
Unload and Distributed
Weather Stripping

Wood and Plastic Doors

Bolts and Anchors
Coordinate with Hardware
Door Cutouts
Door Guarantee
Door Identification
Door Louvers

Factory Glazing
Fire Doors
Hardware Preparation/Premachine
Lead-Lined Doors
Plastic Laminate
Prefinished
Prehung Units
Protection in Shipment
Sequenced Deliveries
Steel Subframing
Subframing
Undercut
Uniformity of Finish
Unload and Distribute

Special Doors

Automatic Door Operators
Counterweights
Final Adjustments
Floor Check
Fusible Link Requirements
Hanger Doors
Hardware Preparation
Hoods and Baffles
Hookup Electric Doors
Hookup Hydraulic Doors
Hookup Pneumatic Doors
Limit Switches

Storefront

Caulking and Sealants
Class and Glazing
Cleaning Rail at Roof
Door Hardware
Final Cleaning
Flashing at Head and Sill
Hardware Reinforcing
Protection
Scaffolding
Screens
Security Windows
Wall Anchors
Wall Subframes
Weather Stripping
Window Hardware

Window Sills

Metal Windows

Aluminum Windows
Anchors
Caulking and Sealants
Class and Glazing
Corner Reinforcing
Final Cleaning
Flashing at Head and Sill
Location of Glazing Stops
Protection
Scaffolding
Security Windows
Subframes
Weather Stripping
Window Cleaner Bolts
Window Hardware
Window Screens
Window Sills

Hardware

Astragals
Attachment Hardware
Boxing and Marking
Cabinet Hardware
Construction Keying
Door Bottoms
Door Sweeps
Hardware Samples
Hardware Schedule
Key Cabinet
Master Keying
Metal Thresholds
Numbers
Package or Bundle by Floors/Area/Set
Shelf Brackets
Shipping Dates
Templates
Temporary Cylinders
Weatherstripping

Glazing

Accessories
Automatic Door Controls
Caulking
Clean Excess Caulking
Field Measurements
Final Cleaning
Glass at Doors

Hoisting
Magic Eye
Medicine Cabinets
Mirrors
Obscure
Plexiglass
Processing
Staging
Stainless Shelves
Unload and Distribute
Window Glass
Zipper Strips

Curtainwall

Anchoring Devices
Caulking and Sealants
Clean Excess Caulking, etc.
Final Cleaning
Glazing
Hoisting
Insulation
Interface with Structure
Louvers
Metal Panels
Mockup
Payment and Performance Bonds
Provisions for Other Crafts
Scaffolding
Scheduling
Shop Drawings
Spandrelite
Testing
Window Wash Tie-Back

DIVISION 9 - FINISHES

Lath and Plaster

Access Doors
Acoustical Plaster
All Accessories
Back Plaster at Ceramic
Colt Storage Plaster
Coordinate with Other Trades
Expansion Joints
Felt (15 lb) Backer
Furring
Gypsum Lath
High Rib Lath
Insulation
Keenes Cement
Metal Base
Metal Studs
Metal Trim
Molding and Ornaments
Plaster
Scaffolding
Sprayed-On Fire Protection
Sprayed-On Thermal
Stucco
Suspension for Work by Others
Temporary Grounds
Temporary Lighting
Thin Coat at Drywall
Waste Molds
Window Stools

Gypsum Drywall

Access Doors
Asbestos Cement Board
Backer Board for Attachment
Caulking and Sealants
Corner Beads
Fire Tape Shaftwalls
Furring
Hardboard
Insulation
Joint Treatment
Metal Studs and Runners
Movable Partitions
On Wood Studs
Plenums
Prefinish Board
Secure and Plumb Hollow Metal Frames
Set Hollow Metal Frames

Sound Deadening Board
Suspension System
Tape Behind Ceramic Tile
Temporary Lighting
Texture
Thin Coat

Tile Work

Access Doors
Base Coat
Caulk Control Joints
Conductive Ceramic
Glass Mosaics
Grounds
Grouting
Metal Stud Partitions
Metal Trim
Protection
Scratch Coat with Lath
Setting Bed
Skim Coat
Special Shapes
Suspension Systems
Thick Set
Thin Set

Terrazzo

Abrasive Terrazzo
Cleanup
Cove Base
Curbs
Divider Strips
Epoxy Terrazzo
Expansion Joints
Grounding (Conductive)
Grout
Metal Trim
Plaques
Precast Terrazzo
Protection
Samples
Setting Bed
Shower Bases
Stair Treads and Risers
Temporary Water
Temporary Grounds
Temporary Power

Wainscot
Water Protection
Waxing
Window Stools
Wire Mesh Reinforcing

Acoustical Treatment

Access Doors
Acoustical Ratings
Air Delivery Stems
Backer Board
Damage Replacement
Fire Ratings
Hangers - Shot
Hangers - Through Deck
Insulation
Metal Pin
Metal Trim
Stuck-On
Suspended
Suspension Systems
Wall Application

Wood Flooring

Cork Underlayment
Felt Underlayment
Filler
Graphics/Logos
Hardware
Mastic (poured)
Perimeter Base
Protection of Work
Sand and Finish
Seal and Finish
Sleepers
Striping
Subbase Preparation
Thresholds
Waxing

Resilient Flooring

Access Panels
Base
Cove Base
Divider Strips
Elevator Flooring
Felt Underlayment
Final Clean and Wax
Masonite Underlayment
Plywood Underlayment

Prepare Concrete
Stripping
Substrate Tolerance
Thresholds
Transition Strips
Treads and Risers

Carpet

Carpet Base
Cleanup
Edge Strips
Elevator Flooring
Glue Down
Move Existing Equipment/Furniture
Prepare Substrate
Stripping
Temporary Protection
Thresholds
Vacuum

Special Flooring

Bonding Agents
Cleanup
Cure and Protect
Divider Strips
Expansion Joints
Pre-Treatment
Prepare Substrate
Threshold
Transition Strips

Special Coating

Bonding Agents
Cure and Protect
Divider Strips
Expansion Joints
Vinyl Chlorides

Painting

Acceptance of Drywall
Back-Priming
Cabinet Finishes
Caulking and Sealing
Color Coding
Don't Paint UL Label
Door Finishes
Electrical Painting
Fill Nail Holes and Cracks
Floor Filler

Mechanical Painting
Metal Deck Touch-Up
Overspray Protection
Paint Steel Grating
Parking Lot Stripes
Payment and Performance Bonds
Pipe identification
Protection of Work
Sand and Fill Floors
Sandblasting
Sheet Metal Painting
Silicon Waterproofing
Structural Steel Touch-Up
Super Graphics
Tape and Bed
Texture
Touch-Up Allowance
Wallcovering

Wallcovering

Acceptance of Substrate
Cleanup
Edge Molding
Protection of Work
Sand Walls
Sizing
Wall Carpet

DIVISION 10 - SPECIALTIES

Chalkboard and Tackboard

Backer Board
Bolts, Shields, Screws, etc.
Coordinate with Electrical Switches
Divider Strips
Installation
Outlets
Touch-Up Paint
Trim—Precut

Chutes

Electrical
Fire Protection
Fire Safing
Fusible Links
Installation
Mechanical

Cubicles

Backing and Framing
Fastening Devices
Shower Bases

Demountable Partitions

Cutouts
Hardware
Prefinished
Screws and Bolts
Top and Bottom Rail

Disappearing Stairs

Hardware
Prefinished
Screws and Bolts

Fire Fighting Devices

Cabinet
Carbon Dioxide
Dry Chemical
Mounting Screws
Soda Acid
Wall Mount Hooks

Water Cartridge
Water Pressure

Flag Poles

Aluminum
Base Sleeve
Blinker Light
Electrical Hookup
Grounding
Hardware
Pulley
Ropes
Steel

Fireplace Equipment

Accessories
Anchorage Devices
Clean-Out Doors
Dampers
Grills and Louvers
Prefab Liners

Miscellaneous

Corner Guards
Display and Trophy Cases
Floor Mats and Frames
Folding Cates
Identifying Devices
Lockers
Louvers and Grills
Mesh Partitions
Postal Specialties
Retractable Partitions
Scales
Shower and Janitor Receptor
Signs, Letters and Plaques
Storage Shelving
Sun Control Devices
Telephone and Sound Booths
Telephone Booths
Toilet and Bath Accessories
Toilet Room Partitions
Vending Machines
Wardrobe Specialties
Waste Disposal Units

DIVISION 11 - EQUIPMENT

DIVISION 12 - FURNISHINGS

Art Work

Window Treatment

Bolts and Screws
Drapery Tracks
Hardware
Rods and Brackets
Special Tracks

Cabinets and Fixtures

Bolts and Screws
Hardware
Installed
Layout Drawings
Prefinished

Rugs and Mats

Edge Strip
Final Cleaning
Installation
Maintenance Instructions
Padding

Furniture

Seating

Bolts and Screws
Cutouts - Installed on Carpet
Installation
Prefinished
Shims
Tolerances

DIVISION 13 - SPECIAL CONSTRUCTION

DIVISION 14 - CONVEYING SYSTEMS

Cab Flooring
Cranes
Elevator Status Indicators in Fire Control Rooms
Grout Frames
Hoists
Hookup Electrical
Inserts
Jack Hole Casing
Jack Hole Drilling
Labor to Install Phone Jacks and Speakers
(supplied by others)
Lifts
Maintenance
Permits and Inspections
Pit Ladders
Screening Elevator Shaft
Shaft Tolerance
Sill Angles and Grouting
Steel Framing
Steel Trusses
Temporary Power
Temporary Cab Protection
Temporary Cars
Temporary Construction Elevator
Temporary Lighting

DIVISION 15 – MECHANICAL

Access Doors
Cap Existing Utilities
Cathodic Protection
Clean Fixtures
Clean-Out and Valve Boxes
Color Coding
Control Wiring
Coordination Drawings
Core Drilling
CPM Scheduling
Cut Asphalt/Concrete
Demolition
Drinking Water
Embeco Grout
Engineering and Layout
Equipment
Equipment Bases
Excavation and Backfill
Filter Change
Fire Protection Work
Formed Concrete
Grout Equipment Bases
Haul Debris
Hoisting
Hookup Kitchen Equipment
Hookup of Casework, Lab, and Kitchen
Hydraulic Door Hookup
Ice and Cups
Install Diffusers in Integrated Ceilings
Insurance Coverage
Irrigation Piping within Building Proper
Louvers in Doors
Manhole Covers and Frames
Manhole Steps
Manholes
Mechanical Painting
Motor Bases
Motor Starters
Operator Instruction
Painting Finish
Patch and Repair to Building
Payment and Performance Bonds
Pipe Identification
Pneumatic Door Hookup
Quality Control Engineer
Set Bathroom Accessories
Set Loose Motors
Siesmic Supports
Site Restoration
Sitework
Steel Equipment Supports
Temporary Electric
Temporary Plumbing
Temporary Toilet
Temporary Water
Thrust Blocks
Touch-Up Factory Finishes
Underground Utilities

DIVISION 16 – ELECTRICAL

Access Panels
Backer Boards
Cap Existing Utilities
Ceilings
Chain Link Fences
Clean Fixtures
Concrete Bases
Concrete Duct Encasement
Coordination Drawings
Coordination of Service Outlets with
Core Drilling
Demolition
Drinking Water
Electric Door Hookup
Electrical identifications
Electrical Painting
Elevator Pit Light, Switch, and Outlet
Excavation and Backfill
Exterior Layout
Formed Concrete
Ground Rods
Grounding
Haul Away Debris
Hoisting
Hookup Casework
Hookup Kitchen Equipment
Hookup Mechanical
Hookup Overhead Doors
Hydraulic Door Hookup
Ice and Cups
Install Light Fixtures for Integrated
Interface with Temporary Controls
Interlock Equipment
Irrigation Wiring within Building Proper
Light Pole Bases
Lightning Protection
Manhole Cast Iron Items
Manhole Hardware
Manholes
Millwork, Cabinets, Chalkboard, etc.
Operator Instruction
Payment and Performance Bonds
Pneumatic Door Hookup
Power Wiring (line voltage) to
Quality Control Engineer
Set Loose Motors
Seismic Supports
Site Restoration

Sitework
Steel Supports
Temporary Control
Temporary Electric
Temporary Toilets
Touch-Up Factory Finishes
Tower Crane/Hoist Hookup
Utilities

Controls and Instrumentation

Cabinetry
Conduit/Wire
Core Drilling
Elevator
Fire Alarm
Hardware
Hoisting
Instrumentation Interface
Interface Mechanical Controls
Maintenance
Operator Instruction
Scaffolding
Security Interface
Software
Temporary Lighting
Temporary Power
Terminations
Warranty
Wiring