Advanced Sheet Metal Estimating

“Turning Your Takeoff into a Winning Proposal”

Participant’s Workbook

Prepared for:
Sheet Metal and Air Conditioning Contractors’ National Association
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Preface

The advanced sheet metal estimating class was developed specifically for the use of SMACNA sheet metal estimators. Research includes surveys, interviews, and the knowledge and wisdom of the advanced estimating task force. Much thanks goes to the Advanced Sheet Metal Estimating Task Force for their cooperation in developing this program.

This course was not developed as "system fix" but rather uses a problem-solving approach and ways to look at the estimating process differently. It is recommended that each attendee take the information and apply it to their individual situation.

This class was developed to teach you to build on your solid background in estimating and think differently about the estimating process and in how you approach each estimate. We hope that each attendee will take a more holistic approach to estimating and not just look at the estimate as a number, but more as a process from job inception to job completion and how the estimator plays an integral part of the process.

We also want to make it clear that this is not a program to teach you how to come up with the perfect number or how to complete takeoffs faster or more accurately.

This workbook was developed as a teaching aid to assist in the learning and discovery process. The real learning comes from the class discussions, team exercises, and case study. Our goal is to help participants think more as a businessperson and take more of a big picture approach to the estimation process than merely doing takeoffs and providing numbers.

The program is divided into five sections. The first section covers the types of customers and the pre-bid qualification process. The second section covers the different types of contracts and project options, as well as looking at the importance and the relevance of good meetings. The third section covers the importance of the schedule, general conditions and how to use this information to take a more proactive approach. The fourth section covers the traps and snares and opportunities that all projects face. The fifth section is the case study.
Advanced Sheet Metal Estimating

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Customer Types

- **Construction Manager**
  - Scheduler, process implementer, group in charge of project
  - In most cases they look after the owner's interest.
  - They usually do not self perform but do provide the documentation function.

- **Owner**
  - The individual or group with vested and financial interest in the building or project. They are the end user and who will occupy or rent space in the building
  - The value buyer... The person who ultimately controls the purse strings.
  - The one player to whom quality and performance is a real issue.
  - The owner is the ultimate decision maker and can override decisions if it is in their best interest

- **Owner Agent**
  - The contact between the owner and the contractors
  - Hired to look after the owner's best interest via price, quality, and what the owner deems important
  - Could be technical or non-technical, e.g., architect or engineer

- **Mechanical Contractor**
  - Prime contractor
  - In some areas of the country sheet metal contractors often work within the scope of their estimate, and the sheet metal contractor's contract is with them.
  - They can be the source of the money for subcontractors
Customer Types (continued)

- General Contractor
  - Can act as construction manager, but traditionally provides more than just project management, many times they perform functions themselves.

How will your number affect their decision to select you?

What is important to each customer?

Is there a way you can add value to the estimate?
Integration...Putting the Package Together

Qualification

- Can you see any reason why you should not bid the job?
- Do they just need another number?
- What is your hit ratio?
- What is the customer's pain?
- Do you know the budget?
- Would you be better off doing something else?
- Do you know your competition?
- What are your chances of success?
- What are the rules? Have you established estimating protocol with the potential customer?
- How will they make the buying decision? Will it be price? Or other? Can you verify?

Build The Job in Your Head

- Conceptualize the job. Does it make sense?
- Does the job fit your company's core competencies?
- Can you do it?
- Is the job worth the risk or would you be better off going after other opportunities?
- Do you know who is best suited for the job?

Cost Of Estimating

- What is your team's cost per hour? How long will it take to estimate this job?
- Don't be afraid to walk.

Political Reasons

- Is this a good customer who needs help?
- Will this estimate help you in the future?

Think Like A Businessperson

- Can we make money at this job?
- What are the benefits and/or opportunities of the job?
Exercise

- What is a good number?
- For your company?
- For you?
- For the production team?
- For the prime?
- For your suppliers?
- General contractor or construction manager?
- Owner?

Discuss in your group...how a good number can be different things to different people.

- What is the fair gross margin (sales price less direct cost) on a job?
  - Less than $100,000
  - $100,001 - $500,000
  - $500,001 - $1,000,000
  - Greater than $1,000,000

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Buying Chain...Where Do We Fit In The Food Chain?

VALUE

Owner
Architect/Engineer
CM and/or GC
Mechanical Contractor
HVAC and Sheet Metal Contractor
Supplier
Manufacturer

As an estimator, where do you fit in? Can you get closer to the owner? If so, how?
Types Of Contracts And Project Options

TYPES OF CONTRACTS

Firm Price Contract
- Open or select bid list
- Low price gets the job based on quoting to a set of specifications and drawings

Time And Material Contract
- Work is billed on an itemized basis
- Requires documentation and justification

Negotiated Contract
- Owner has a preferred vendor
- Usually a budget and/or fee is established

Guaranteed Maximum Price Contracts
- Similar to negotiated plans may or may not be available
- The pricing can be asked for before the plans are completed

PROJECT OPTIONS

Plan Spec
- Contract price is based on specifications and drawings provided

Design Build
- Contract price and design is mutually agreed upon
- May or may not be involved in the design team

Design Bid
- Design is developed by others and then a firm price is given

Design Assist
- Assist with the design and you may or may not be involved in the construction of the project (typically not desirable)
Estimating Feedback

Reactive vs. Proactive

- Reactive is waiting for it to happen
- Proactive is making things happen

- Show up and see your estimate in action
  - Showing up on the job builds trust confidence and improves your knowledge
  - Constantly go over the estimate with field and PM staff to insure proper procedures and accuracy. Learn and take a positive approach – don’t place blame.
  - Learn and improve. Always look for things you may have missed or the field may have missed. Use your visits as a learning experience for both you and the field.
  - Catch mistakes and improve communication, look for ways to really improve estimation techniques and improve the field’s production rates.
  - Just by visiting you can potentially catch things that may or may not be in the original estimate – a couple hours a week visiting jobs in progress can pay huge dividends.

- Early and constant
  - Develop a three-week look ahead report, and insure that it is used, and a one-week look-behind report to monitor and improve the job. These are simple tools that can keep the job moving in the right direction.

- Real world
  - Time constraints and future estimates sometimes make it difficult to take an active role in current jobs, but if you don’t do it who will?
  - Make an effort to set current and real production numbers. A ten minute phone call can tell a lot.
  - Jobs don’t lose money on the last day - they usually start on the wrong foot. If errors are caught early many times they can be corrected and the job has a chance to become profitable again.

- Build team and communicate
  - Insure that your estimating team communicates. Don’t assume anything.
  - Develop an estimating process where everything is double checked before it leaves.
  - A quality estimate helps insure a profitable job.
  - Demand that the field give you open and honest information – “do not shoot the messenger”.
Estimating Feedback (continued)

- Let field know that proper, true and honest feedback is mandatory for accurate estimates.

- Take an active roll in meetings
  - You can insure jobs start off on the right foot by taking an active role in the kick-off meeting, and insure that all information is passed on to the proper people.
  - If time permits, become involved in the production meetings to learn as well as provide valuable input. The time spent in one production meeting looking for competitive advantages may be the difference on the next job.
  - Always find out what went right and wrong at the job closeout meetings. This will show the production team you care and will allow you to learn valuable information for future estimates.
Take An Active Role in Meetings

Kick-off meeting
- Is the transition from the estimator to project team?
- During the kick-off meeting, project knowledge is passed from those who estimated the project to those who will build the project.
- In this handoff, it is important to include all relevant project information the production team needs to hit the estimated production rates.
- It is important to pass all applicable information to the production team. Don’t assume the production department understands the estimate. In many situations it is the first time they have seen the estimate.
- Running a good kick-off meeting is a process. If you follow the process the chance of having a profitable job increases.

Project meetings
- Is a timely meeting to inform critical personnel as to the status of the project and to adjust and correct productivity issues needed? This meeting needs to be proactive and future focused. The goal of the meeting is to keep or improve the project’s profitability.
- Insure the project is on schedule. If it’s not then develop a new schedule to get project back on track.
- Take an active role in project meetings.

Postmortem meeting
- Did the job hit the target?
- Review all jobs – the good, the bad, and the ugly.
- Avoid placing blame – use this as a learning tool and a way to sharpen your estimation skills.
- Review good jobs to calculate if your company has improved production standards and rates.
- Update your production standards after every post mortem meeting.
Kick Off Meeting

Give all project information and details to the participants prior to the meeting, along with an agenda and action item list. Require all participants to be prepared prior to the meeting.

Narrative of the job

In detail, describe the job and how the job was conceptualized. Explain your logic and how you visualize the project. This is your time to explain to the production team your thoughts, money and time saving ideas, as well as some of the pitfalls. The more in depth you are here, the more likely the production team will make the kick-off meeting a success.

Contract

- Can we proceed and when?
- Highlight the contract, review the rules, and read the contract in detail. The more the contract is understood, the less likely for problems to occur.
- Is the contract signed? By who? Who has a copy?
- Are there any concerns, problems, or potential issues with the contract?
- Project type, plan spec, design build, other.
- What type of contract? Lump sum or time and material?
- What form of contract will be used? AIA, AGC, ASA, Custom?
- Any other contract items that may cause concern or seem questionable?
- Are there notice provisions? What are the terms - 5, 10, or 15 days?
Kick Off Meeting (continued)

Plans and specifications

- Problems, omissions, i.e., engineering
- How many sets of plans? Who pays for extra sets? How do we get them? Does the field need a full set?
- Any gray areas? If so, where? Can we get clarification? If so, from whom?
- Are there ways to get electronic files? How about CAD files?

Alternatives

- Are there alternatives included by us? If so, then include.

Are there any last minute changes by you or anyone else? If so provide a copy of the proposal letter addendum along with the proposal letter.

Scope letter

- Highlight and go over inclusions and exclusions in great detail. Provide a copy of the scope letter to construction team.
Kick Off (continued)

Explain your perceptions and concept when bidding the job.

- Discuss the opportunities and ideas for increasing productivity and/or saving money.
- Explain potential pitfalls, and suggestions to overcome them.
- Include concerns about traps and snares, and possible solutions to minimize the effects.

Labor (What if any will affect the labor either positively or negatively?)

- Include total man hours broken down per company procedure.
- Include thoughts on quality and realistic production rates.
- Is any overtime or shift work included in the estimate? If yes or no, who approves?
- What's the project duration? Do you have the required crew size? What is the peak crew size? What's your crew mix?

List all the subcontractors with company name, contact name, phone number and email and any other pertinent information the production team may need.
Kick Off (continued)

Equipment and material

- List equipment types with suppliers' names, phone numbers and estimated delivery dates – include all critical items for the meeting targeted dates.
- List any problems, or potential problems, along with concerns with equipment, material, delivery and storage, etc.
- Are there any alternatives? If so, what?

Schedule of the project

- Estimated start dates, benchmarks, completion date, and other critical targets.
- Include any incentives or damages for performance or non-performance
- Include copy of the schedule along with any drawings or addendums
- Include any and all milestones that can impact the job, i.e., delivery, weather
- Are they required to submit a schedule? If so, how often and to whom?
- Are we required to submit a schedule? If so, how often? When? How much detail?
Kick Off (continued)

- Are there safety considerations? If so, what are the requirements? Can they be met? If so, how?
- Include any special equipment needs, and procurement procedures for getting the equipment. Is there anything out of the ordinary?
- Include information, such as weld testing, and any other requirements that may be needed
- Job Close out
  - What are the requirements for as-bulpts, warranties, punch list items and start-up?
  - What are our commissioning responsibilities?
- What are possible mistakes? Opportunities?
- Prefabrication opportunity – any area that could be prefabricated that was not included in the estimate.
- Travel time
- Parking
- Storage
- Other on-site logistics
- Trucking and delivery
- Any opportunity to sell a service maintenance account?
Project Meetings

- During project meetings keep things simple and future focused. The goal is not to place blame but to meet and exceed the goals of the estimate.

- Jobs get behind schedule and lose money for several reasons.
  - Missed the estimate
  - Production not hitting the benchmarks or milestones
  - Change of scope, improper scope or change in specifications.
  - Acts of God
  - Changes in job site conditions

- Project meetings allow everyone to learn and determine what is right/wrong and help the job move forward in a positive fashion and identify potential opportunities.

- Have the field fill out form copy (next page), with a copy for the Project Manager and the estimator. This helps to ensure the estimate is accurate. If everything is status quo, the job should be on track.

- The project form, a set of marked plans, and production meeting provide an accurate up-to-date production picture.

- Insure the estimating team receives accurate meeting minutes.
Sample Project Meetings

Job Progress Meeting

Manpower: Will you need more or less people on the job?

Additional Tools/Lifting Devices: Will you need any additional tools you currently do not have, or do any present tools require maintenance or removal from the job?

Material: Is adequate material on hand or verified for delivery?

Areas: Are work areas and the job site ready?

Anticipation: Is there any reason why this job will not be completed on time and/or within budget?
Sample Postmortem Meeting

Manpower: Were less man hours used on the job than estimated? Why or why not?

Additional tools/lifting devices: Were more tools/lifting devices needed than originally estimated? Why or why not?

Material: Was more or less material used than estimated? Why or why not?

Work areas: Did the work areas and schedule match the schedule in regards to hitting the production rate? Why or why not?

Special reasons: Did the job beat or miss the estimate? Explain.

What are the lessons learned?

Top ten list would-of, should-of, could-of?

List all the good, the bad and the ugly items associated with the job.
Schedule "The Real World Picture"

- Schedule
  - The schedule is the road map to success. It gives the directions for where you should be, when you should be there, and how long you should be there.
  - It is premises for what you base your good faith estimate.
  - Don't take the minimum as a yard stick. In fact, many times the schedule used to estimate the job is outdated as soon as the project begins.
  - Realistically you have 1) the schedule the owner wants, 2) the schedule you probably based your estimate on, 3) the GC or CM schedule which speeds construction to catch up to the original schedule, and 4) the actual schedule, which in most cases is the production team's schedule.
  - Original estimate in most cases is based on the schedule received in the original bid package. Make sure this is the bid day schedule. The company's schedule and the schedule based the estimate should be the same.
  - Always submit or make sure you have the bid day schedule. If there is no schedule, then add bid day addendum.
  - Opportunity to drive the schedule (if possible).

- Types of schedules
  - Gantt or bar charts
  - Arrow diagrams
  - Critical paths method
  - There are multitudes of scheduling software packages, standard off the shelf packages, semi-custom, or customized. All of them work if the proper logic and information is used when developing the schedule.
  - If no schedule, then add bid day addendum
Schedule "The Real World Picture"

- **What is it like to run a job (the sequence of construction)**
  - What is the format for construction? How is the building being constructed? In what order?
  - During this process develop a value for everything. If there is a lot of time in material handling develop values for this time.
    - Hours per floor or labor dollars per floor or days
    - Pounds for floor, footage, tonnage
    - Hours for shop time, installation, storage, material handling
    - These values can be used to develop benchmarks and production goals.

- **Floors**
  - How are the floors being constructed – bottom-to-top or top-to-bottom? What type of material concrete, aggregate, exposed finish floor, or mosaic tile will be used?
  - When can you get access to the floor? Does it match the schedule?
  - Does the schedule make sense?

- **Manpower**
  - What is the peak number of hours? What are the low points in terms of hours?
  - Based on the schedule how many jobs are running? Will there be a labor shortage?
  - Has the business agent been called? How about the hall?
  - Is the technical expertise available to accomplish the job?
Schedule “The Real World Picture” (continued)

- Any OSIP (Owner Supplied Insurance Plan) issues? Any way around it or to use as a competitive advantage?
- Any CSIP (Contractor Supplied Insurance Plan) issues? Any way to around it or to use it as a competitive advantage?
- Are there Union industry dollars available?

- Walls, when, where, material types
  - When will the walls be constructed,
  - What type of material? Pre-cast, tilt-up, post tension, glass, other.
  - Are windows available for material handling? If so, when?

- Roof
  - When covered, will it be at a time appropriate for us?
  - Is work expected before the roof is completely dried in?

- Other trades and their sequence
  - Do we know the other trades on the jobs? Do we have a relationship with any of them? Based on experience with other sub-trades, are there any advantages or disadvantages?
  - Does the sequence of construction make sense? If no, then why?

- Customer
  - Is this a good customer?
  - Are they reasonable? Have you spoke with the owner?
  - What are their key concerns or hot buttons?

- Planning
  - Does the schedule include time for planning?
  - Are there ways to develop look ahead and look behind reports? Can you honestly and easily monitor the project?
  - How can it be determined if milestones are met?
Labor Rate Analysis

- Expertise needed
  - What is the expertise needed? Is special expertise needed that will require additional hiring? What are the special skill sets needed? How can they be obtained and at what cost?

- Labor rates
  - What are the labor rates? Is there any reason to pay above scale? Are there any holiday, overtime or special pay considerations?

- Historical data
  - Can you use historical data or is the project different from the usual scope?
  - Is the historical data accurate? Is the data applicable to this project?

- Rules of thumb
  - Do rules of thumb hold true? Why or Why not?

- Reality check
  - Do labor rates make sense? Do they seem right?

- Manuals
  - How do historical manuals hold-up? Keep a list of production rates to check and cross reference.
Labor Rate Analysis (continued)

- Guidelines
  - How do your company’s standards compare to the industry? Each company has its own unique flair and standards. Do your company’s standards reflect positively or negatively?

- Database
  - Based on tracking past jobs, are the labor standards favorable? If so, or if not, have the standards been changed to meet increased or decreased production rates?

- Manpower
  - Is manpower available at the hall?
  - Is staff available internally from other projects? Will this hurt production on the other projects?
  - Are other large projects starting at the same time as the new project? How about from competitors?
  - Are travelers needed? Or will you have to hire travelers?
  - Is adequate project management support available to run the job?
  - Has the business agent been contacted?
  - Is there a desired crew mix? Is it legal?
  - Will there be market recovery funds available? Will that be included in the bid or used as a bonus?
What Goes Into A Total Bid Price?

- Labor
- Material
- Special job costs
- Subs
- Overhead
  - Fixed
  - Variable
- The numbers are the numbers.
- Are there pressures to get work?
- Have you tested the market?
General Conditions

Putting the pieces together is the logic behind the project. The general conditions are covered under AIA document A201, or a custom document specific to the project. Traditionally they are as follows:

2. Owner
3. Contractor
4. Administration of Contract
5. Subcontractors
6. Construction by Owner or by Separate Contractors
7. Changes in Work
8. Time
9. Payments and Completion
10. Protection of Persons and Property
11. Insurance and Bonds
12. Uncovering and Corrections of Work
14. Termination or Suspensions of the Contract

Who is responsible for what?

- What is fair? Must be a win-win situation.
- Do the General Conditions make for a good project?
- Do they make sense for this project?
- Are they going to be fair for this particular situation?
- Do you feel you can do the project?
- Can your staff beat the estimate and turn the project profitable with these General Conditions? Why or why not?
- Are there any gray areas or blind spots with the General Conditions?

Bid day schedule

- Make sure you include the bid day schedule.
- Who will be responsible to thoroughly review the schedule?
General Conditions (continued)

Contract

- Do you have a contract? Are you comfortable with the contract?
- Who is the contract with?

Scope of work
  - What exactly is included in the project? Is it clear or are there some questionable areas? Inclusions and/or exclusions?

Specification requirements
  - Are the specifications clear and concise? Any room for interpolation?
  - Is there a way to gain a competitive advantage?

Cost considerations
  - Is there room to cover extra costs such as shift work, over time, etc.?

Job start-up and completion date
  - How firm are the start-up and completion dates?
  - Can the start-up and completion dates be met? What if they can or cannot?

Craft and operational procedures (standard operating procedures)
  - Are the operational procedures in line with the standards?
  - Can we do the job?

Weather
  - Are there weather or environmental impact considerations? If so, are they included or excluded?

Sequence of schedule
  - Is the schedule in sequence? Look to see if it makes sense. If not, verify. If unsure, always clarify.
Pre Bid Addendum

- Have you received copies of the Bid Addendum?
- Have you responded in writing and asked for clarifications, if needed?
- Has it been made clear that the Bid Addendum will take precedent?
- Do not acknowledge something unseen.
- Develop a strategy with the pre-bid addendum and insure all addendums and documents are numbered.
- Always cover your bases.
How to manage the process

- The job analysis (the Litmus test). Don’t wait until the last day to do this.
  - Ask yourself the question, does this project make sense?
  - Use common sense, or use a team approach if necessary. What is missing on the project?
  - The more eyes the better. Even if you have estimated thousands of jobs, allowing other people look over your work makes good sense. Don’t take the “it’s all mine role.”
  - Are you estimating to a mutual agreed upon schedule? Is this what we should estimate?
  - Have you received and responded to all the bid addendums?

Checklist

Use the checklist on bidding day to identify any red flags.

- Narrative of job
- General conditions
- Contract
- Plans and specifications
- Alternatives
- Last minute changes
- Scope letter
- Estimating concept and general perceptions
  - Sub assembly and shop economics, trucking
  - Material handling, site logistics
  - Site access
  - Scheduling issues and job sequence
  - Weather or environmental impact
- Labor and issues
- Equipment and material
- Job schedule
- Safety considerations
- Job closeouts
- Special considerations
Change Orders

- Change orders are a profit function.
- For additional information see the SMACNA “Guidelines for Change Orders Manual” (go to www.smacna.org).
- Reasons for change orders
  - Increase or decrease in the job scope.
  - Changes in job conditions can impact production
  - Adjustments to the schedule, which may or may not effect production.
- Institute a policy to develop pricing, approval, and documentation guidelines during the estimating process, not after.
- Bid all requests fair
  - Bid all change orders fair. It is much easier to drop your price then to increase it after the fact. Recognize change orders as a new job/separate project.
  - Leverage value at the start and play hard ball before the job starts, not after.
  - Make sure you and the production team understands the contract and your responsibilities for documentation.
- The real cost of change orders
  - Profit
  - Lost production
  - Schedule concerns
  - Missed opportunities
  - Manpower issues
  - Take a proactive approach to change orders. Don't assume anything.
  - Make sure all change orders are completed in a timely manner.
Computer Estimating Programs

- Pros and cons of computer estimates
- The program is only as accurate as the info inputted into the system.
- Computerized programs can provide a lot of information, be careful not to have information overload.
- Computerized programs are excellent for repetitive work where the potential for mistakes is high.
- Computerized programs are a great way to check work for accuracy and to give confidence in the price or production rates.
- You can do comparisons with suppliers in regard to your material takeoff.
- Estimating programs can be 1) purchased off the shelf, 2) semi customized to fit a company's specifications, or 3) developed specifically for a company.
Traps and Snares and Opportunities

- Sub assembly
- Trucking
- Material handling
- Scheduling issues
- Engineering/engineers
- Access
- Sequence of work
- Rigging
- Commissioning
- Safety
- Storage
- Leak testing
- Vertical transportation
- Specialty tools and equipment
- Weather
- Site logistics
- Scope creep
- Change orders
- Punch list
- Maintenance list
- Cash flow and collections
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| **Engineering/Engineers** |  |
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| **Negatives**            |  |
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| **Site Access**          |  |
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| **Negatives**            |  |
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**Sequence of Work**

**Positives**

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**Negatives**

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**Rigging**

**Positives**

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**Negatives**

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**Commissioning**

**Positives**

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**Negatives**

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| **Safety** |  | **Negatives** |
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| **Storage** |  | **Negatives** |
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<p>| <strong>Leak Testing</strong> |  | <strong>Negatives</strong> |
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### Site Logistics
**Positives**

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**Negatives**

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### Scope Creep
**Positives**

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**Negatives**

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### Change Orders
**Positives**

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**Negatives**

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Summary

- Think outside the box.
- Think like a business person.
- Bid every job like you want it.
- Develop bid strategies.
- There is a difference between mediocre and profitable.
- Be consistent with job meetings.
- Demand accurate information from the field.
- Provide field and production team with the logic and information needed to build profitability.
Advanced Estimating Survey

These are the results from the survey, which were distributed to foremen, superintendents and production managers.

What could estimators do to help make your jobs easier to run and manage?
- Pre Job meetings, progress and post job meetings
- Jobsite talks
- Phone conversations
- Go over how the job bids are acquired
- Involve or get current data from the shop and field personnel regarding installation and fabrication
- Companies believe they have a secret when it comes to estimating the only difference is mark-up take-off is take-off
- Tell everything about the job
- Give a breakdown of hours
- Do job walk on Remodels
- Buy out all jobs ASAP
- Recognize that every job is different

What are estimators currently doing to make your jobs easier to manage?
- Taking off jobs by floors
- Break-down of the jobs
- Communicating with the foreman about the estimates
- Providing us their notes about the estimates
- They help when a problem does arise with a job
- They are providing hours per task
- They show the hours and the money on the scope letter
- Nothing
- Help us with change orders
- They will answer any question I ask, but I have to ask it.

If you were put in charge of the estimating department what changes would you make?
- More personal job site visits
- Be more selective with the jobs
- Make every job have a start-up, progress and closeout meeting
- Make more jobsite checks for progress and manpower progress
- Complete understanding of how the jobs are bid
- Improve communication with those installing and fabricating
- Pay attention to manpower and shop availability issues when bidding jobs
- Do not agree to the price until all scope issues are covered and put on the table.
- Assign certain estimators to certain PM for better working relationship.
- Have the estimating department do a better job of quoting jobs we have a chance of getting.
• Make the estimators go out a meet the customers.

How could communication improve between you and the estimating department?
• Work together to create a more accurate estimate for the field
• Weekly meetings
• Stay in tune with each other and realize we are not the enemy
• Schedule discussions on new ideas and company changes and challenges both side face.
• Job reviews at the end of the job with the people who actually run the jobs.
• Updates weekly.
• If the estimators could understand what it takes to close out and complete certain jobs.
• Answer the phone and return all phone calls
• Have pre-bid meetings with PM Field prior to all big bids.
• Pre-job meetings
• Give the project team everything you know about the job

What could the estimators do to improve your company’s ability to have profitable jobs?
• Walk the job more often and see what difficulties there are on the different jobs.
• Allow for planning.
• Be more Selective in the jobs
• Pre job meeting to share information and post job meetings to learn and not make the same mistake twice.
• Follow through with the jobs
• Realize that every job is different and productivity may change per job.
• Add or subtract to the price based on the specs.
• Don’t miss whole sections of work like whole floors.
• Understand more about sheet metal fabrication and production
• Realist figures not what in the computer
• Add more labor to the jobs
• Better pre and post job communication
• Allow for supervision and job meetings

Rate the estimators on the following with 1 being the weakest and 5 being the strongest.

Accuracy of the estimates 3
Estimators understanding of the job 2
Communication 1
Help with the job during construction 3
Job kick-off meeting 2
Understanding of the construction process 3
Advanced Sheet Metal Estimating

Case Study

Support facility

Your company “Your Air Handling Company” is looking to build a new support facility. The estimating team has given you the proposal letter and you are reviewing it to check for any changes that may be needed. Your company needs work desperately and this job seems to fit the need. It is not a difficult job and you know that your company can do it. The estimating team is usually pretty good at looking at a set of prints and coming up with a good number. You just need to validate this estimate.

The project is a two story facility located in a remote location in the local market area. Transportation to and from the job is quite difficult. The customer is someone you have not worked with before.

- Job is on a small island.
- Building is approximately 120,000 square feet.
- This is a fast track job.
- We estimate the job can be completed working 40 hours a week.
- The general and the other subs may work seven days a week because of the remote location.
- There are double ceilings with two feet of space.

- The total job price is ______________.
- The total labor dollars are ______________.
- The labor rate per hour is including fringes is ______________.
  - Shop hours ______________.
  - Field hours ______________.
  - Commissioning hours ______________.
- Material and equipment total is ______________.

Because of your company’s size you are getting some of the best prices on material and equipment.
Your company will fabricate everything.

It is now bid day and the construction manager is available to all competing contractors for any questions about the project.

The customer wants a firm price quickly.
Case Study

Support Facility

January 30, 200X

Kevin Mechanical
P.O. Box
Anywhere, USA

Attention: Kevin Mechanical
PHONE: XXX-XXX-XXXX
FAX: XXX-XXX-XXXX

Reference: Support Facility
Bid Package – HVAC Sheetmetal Complete

Bid Date: January 31, 200X
Bid Time: 4:00 p.m.

Gentlemen:

We offer the following proposal for your favorable consideration for the HVAC sheet metal work on the above referenced project. Subject to the following scope narrative, clarifications, exclusions, and time limitations, this proposal is complete in accordance with plans and specifications including: Addendum No. 2, as prepared by Architects, dated November 15, 200X.

1. PRICE

   A. Base Bid......................................................................................................................$

      Add for Bond (if req.-see bonding clarification below).................................$
      Total.......................................................................................................................$

   B. ALTERNATES
   1) Add ..............................................................................................................$ N/A
2. SCOPE OF WORK:
The following plans and specifications are included in our quotation, as clarified in this proposal:

A. Drawing Numbers:
   M0.1, M0.3, M0.4, M0.6, M2.1, M2.3, M2.4, M2.5, M2.6, M2.7, M2.8, M2.9,
   M2.10, M2.11, M2.12, M2.13, M2.14, M2.15, M3.1, M3.2, M3.1

B. Specification Sections Descriptions:
   *15070  Seismic Protection for Mechanical Equipment
   *15895  Air Supply, Distribution, Ventilation, and Exhaust System

We include all work to the extent described in SHEET METAL SCOPE OF WORK below.

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NOTES:
1. Where shown on mechanical drawings only.
2. For ductwork and/or equipment supplied by Your Air Handling Co.
3. Mechanical Louvers LVR-1 and LVR-2 only.
3. BID CLARIFICATIONS AND EXCLUSIONS:

A. CLARIFICATIONS:

1. We confirm receipt of Post Addendum Clarification #2 which includes the requirement to have beneficial occupancy by January 1, 200X. We can meet this date as long as we are given sufficient time in the schedule to complete this work. Your Air Handling Co. will need access for installation of rough-in ductwork on the first floor by August 1, 200X, as well as access to the second floor by October 1, 200X.

2. Your Air Handling Co. will provide duct sleeves for round ducts through fire rated walls as required in specification section #15895 paragraph 2.3.3.1. Wall framing for larger ducts as required by this specification is to be by others.

3. Once we have drawings showing locations, we will provide all necessary block out drawings for all ductwork penetrations of ceilings, walls, roofs and floors for use by others to provide and install required block outs. Structural reinforcement for all openings required for mechanical systems are to be by others.

4. A crane and man/material hoist will be provided to Your Air Handling Co. at no cost.

5. Your Air Handling Co. will use CAD 2000 plus to create detailed shop drawings and will provide these drawings to others at no charge for their use in coordination. Our proposal is based on the assumption that the General Contractor will accept and carry out the responsibility for conducting and requiring all contractors to participate effectively in the coordination effort including attending coordination meetings. If coordination is not required of other crafts or coordination meetings are not held on this project, we reserve the right to provide cost impacts as they apply to our installation.

6. The mechanical contractor will provide preliminary submittals to Your Air Handling Co. for any equipment and accessories being provided by that mechanical contractor that Your Air Handling Co. is required to integrate with the duct system no less than three (3) weeks after award of the project to Your Air Handling Co. In addition the mechanical contractor will provide submittals no less then one (1) week after receiving approval.

7. This proposal is predicated on Your Handling Co. receiving architectural, structural and mechanical plans on electronic media within two weeks of the notice to proceed.

8. This proposal is provided on the basis that project coordination and the project activity schedule will be managed by the prime contractor, such that all rough-in work will be completed by Your Air Handling Co. prior to the installation of interior walls, and that this requirement will be incorporated in any subcontract offered by Your Air Handling Co.

9. This bid is being submitted on a firm price basis. Prices quoted will be valid for a period of (60) sixty days.

B. EXCLUSIONS:
1. All electrical work including, but not limited to, wiring, conduit, switches, motor control centers, starters, and disconnects and final connections to mechanical equipment.

2. Concrete work of any nature, including, but not limited to, curbs, concrete encasements, grouting, housekeeping pads and equipment bases.

3. All painting and preparation for painting, prime coating and cleaning of materials or equipment.

4. Receiving, unloading, storing, handling and setting in place all equipment and materials furnished by others.

5. Temporary construction utilities and services. All temporary water, sewer, heating, cooling for commissioning tests, toilets, lights, electrical power, environmentally controlled areas if required for equipment and material storage, job-site security, traffic control, safety barriers, fencing, street cleaning and dust control will be provided by others.

6. All permit fees and assessments for inspections, building and development.

7. Performance bond, Payment bond, Bond premiums and Builders Risk Insurance. If added as an option to this proposal, the furnishing of these is subject to the review of the contract documents and financial security of the project by Your Air Handling Co. and our bonding company.


9. All general sheet metal work such as architectural sheet metal, architectural louvers, door grills, expansion joints, downspouts, scuppers and pitch pockets, roof hatches, skylights and roof accessories.

10. All structural steel and wood framing reinforcement.

11. All demolition, cutting and patching of walls, floors, roofs, ceilings, structures, road and driveways.

12. All access doors, which are not shown on the mechanical plans, or specified in the mechanical specifications.

13. Fire rated enclosures and shafts.

14. All insulation and lagging with the exception of duct liner.

15. Temperature controls and testing and balancing.

16. All piping, including, but not limited to, plumbing, refrigeration, fire protection and mechanical.

17. Sales Tax.

4. SUBCONTRACT REQUIREMENTS – This information is addressed in Attachment A to this scope letter and remains part of this document whether attached or not.

Thank you for the opportunity to offer this quotation. If we can be of further assistance, or if you require further clarification, please do not hesitate to call our office.
Sincerely,

Your Air Handling Co.
Estimating Manager
Attachment A

SUBCONTRACT REQUIREMENTS

1. Contract Form – This proposal is predicated upon mutual acceptance of the terms and conditions of the AGC/ASA/ASC standard form construction subcontract, AGC document No. 640 copyright 1994.

2. Document and Flow – You will provide us with copies of all contract documents. We will be entitled to all privileges and protection granted you by the Owner.

3. Scope – Our performance of the scope of work will be required only to the extent consistent with this proposal and reasonably inferable from the bid documents as being necessary to produce the indicated results.

We have brought to your attention inconsistencies within the bid documents that were discovered while preparing this proposal. Any inconsistencies that we have not called to your attention will be interpreted in our favor.

4. Payment – Prior to any request that we consider accepting the risk of owner payment, and prior to our commencement of our work and thereafter you will furnish to us reasonable evidence that financial arrangements have been made to fulfill the Owner’s obligations under the Contract. Furnishing of such evidence shall be a condition precedent to our commencement or continuation of work. You will furnish us with additional evidence if the Owner materially varies such financial arrangements. If, through no fault of ours, you do not receive payment for our work you will make payment to us in a reasonable time after our work is satisfactorily performed.

You will promptly pay to us the full amount of funds you receive on our account providing our performance is satisfactory.

We will waive our rights to file a mechanics lien only for work for which we have received payment and you will not penalize us for filing a mechanics lien for work for which we have not been paid.

You will not require us to sign documents which release our existing or possible claims until we have received payment of the agreed amount for such claims and we will sign unconditional lien releases only after we receive payment.

Payment to us for an undisputed invoice will be due 30 days after the time period covered by that invoice and we will have the right to stop work in the event that we have not received payment for an undisputed invoice within 60 days after the time period covered by that invoice.

Provided our performance is satisfactory you will withhold retention from us in a percentage amount no greater than the lesser of what the law allows or is withheld from you.

We will hold payments we receive for work on this project properly performed by our sub tier subcontractors and suppliers for payment to them but we will not place the payments in a separate account nor hold the funds with the obligations of a trustee.

If you direct us to proceed on changed work but have not issued a change order including the agreed price for the changed work, we have the right to include a reasonable amount for such work in our progress billing and to be paid therefore as part of the payment for that progress billing.

5. Changes – Your payment to us for changes will be based either on a lump sum derived from an estimate or on actual time and actual material evidenced by supporting documents.

We will grant you the right to audit the documents and records supporting time and material work but you will not request the right to audit documents on which lump sum work is based.
As approved by you, our estimates for lump sum changes and the calculations for time and material changes will include costs plus an allowance for corporate overhead and profit.

6. Indemnification – We will agree to indemnify others for damages caused by our own activities and/or negligence and the activities and/or negligence of those directly or indirectly employed by us, but we will not be required to indemnify others for damages caused by their own activities and/or negligence or the activities and/or negligence of third parties.

You will agree to indemnify us for damages caused by your own activities and/or negligence and the activities and/or negligence of those directly or indirectly employed by you.

When there are costs and/or damages arising out of the co-activities or co-negligence of you (including those directly or indirectly employed by you) and us, then the responsibility for payment of such costs and/or damages arising from such co-activities or co-negligence will be apportioned between you and us in accordance with the degree of activity and/or negligence of each party resulting in such costs and/or damages.

7. Law, Codes, Design – We will perform our activities in accordance with the law and codes but will not be required to identify and report violations of the law and codes contained in the design except as we become aware of them in the course of our work.

Our duty to find and report or be responsible for the errors and defects in the work of others will be limited to those errors and defects as are sufficiently evident as to be found and reported by a contractor of ordinary skill and expertise for the type of work that is the subject of this proposal.

8. Activity Schedule – We will provide a detailed schedule of our activities, their logic with respect to other activities, their access requirements and their duration, for incorporation in a mutually agreed construction schedule that is to be prepared in advance of construction and that provides for completion of the project by the date required in the Contract Documents. Such a schedule will provide for completion of work precedent to our work by the dates set forth in the Documents. We will be allowed to participate with you in making changes to the project schedule which affect our work to result in a mutually agreed revised project schedule. You will agree to be bound by such mutually agreed schedule. Changes in the activity schedule which were not caused by us and to which we have not reasonably agreed will entitle us to monetary and time compensation.

9. Insurance – Our work will be covered by a policy of builders risk insurance provided by others and you will provide us with a copy of the policy and notify us if the policy lapses.

10. Notice – We will agree to reasonable contractual notice provisions.

11. Disputes – We will agree to be bound only by proceedings to which have been a participating party. We will have the right to make claim against any entity that causes us damages during the course of the prosecution of our work.

We will not be required to pay fees or back charges for events that are reasonably part of the contracting process such as missing meetings, re-submittals, working overtime or personnel performing work for others.

The only action by us that will act to waive our rights, release our claims, cause us to assume a responsibility beyond what we proposed or act as an acknowledgment by us that we are at fault is our delivery to you of a signed document to that effect.

12. Warranty – The start date of our warranties on our work that is beneficially occupied is the date that such occupancy begins.
Exercise 1

What was your worst estimate?

Describe the situation you were in where you gave an estimate which turned out to be a real loser.

What specifically caused this to happen?

How can you avoid making this or ones like these again?

What was your best estimate?

Describe a situation you were in where you gave an estimate which turned out to be a real winner.

What specifically caused this to happen?

How can you duplicate the success again?
Exercise 2

1. Describe your estimating approach prior to taking this class.

2. How will this class have an impact on your estimating approach?

3. As an estimator how can you impact the profitability of a job, beyond just having a good number?

4. How are you going to implement this item?

5. If you had time to do just one thing to help you with estimating what would it be?