

## **A Study on Materials Procurement and Management for Small Companies**

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### Introduction

Materials procurement and management is an integral part of the building process. Materials affect every aspect of a construction project.<sup>1</sup> However, smaller companies have little to no material procurement and management systems. As a result these companies incur additional but avoidable costs. Some of these costs are due to; a) large delivery times for materials, b) excess ordering of material, c) paying premium price for materials, d) lack of tracking of materials, e) lack of communication with material specifiers. The objective of this study was to collect data from small construction companies on their procurement practices and produce a set of common procedures that may be used by such companies.

### Materials Specification and Submittals

Material specification is a description of materials that are agreed to be used in a construction project by the architect/engineer and owners. In most cases construction materials are specified from materials catalogues and past practices. Problem with this procedure is the materials specified may not be readily available.

A material submitted is the contractor's proposal to approving authority a list of materials to be used in the project. A material submittal confirms that the contractor is using materials specified or approved equals. Approved equals are materials that are considered functionally and qualitywise equivalent to the materials specified.

### Materials Ordering Process for Small Projects

Materials quoting or obtaining prices for materials start with the bidding process for a job. Most contractors acquire one to three price quotes for materials. Sometimes contractors use their own database for prices. Once the contractor is awarded the job, the contractor provides the architect/engineer with the material submittal. The majority of the contractors surveyed obtained three to six estimates on materials. Ordering was done via telephone or facsimile. In person ordering was performed some of the times. The main reason for picking a material supplier was prompt delivery and best price.

## The Survey

The survey questionnaires were sent to 200 contractors selected randomly. An introductory letter was included with each of them to explain the purpose and procedures. We received thirty four (34) responses back. Almost all of them requested the result of the survey. Thirty of them agreed to talk to us over the telephone. All thirty were contacted for further discussion and clarification.

### Questionnaires

1. How many material suppliers does your company use on a regular basis for estimating and purchasing general building materials?

2. What are the main reasons for using a material supplies? (Check in order of importance)

Very Important                      Mod. Imp.                      Somewhat Imp.                      Not Imp

Best Price

Prompt Delivery

Good Delivery and  
Return Policy

Variety of Stock

Availability of  
Non-off-the-shelf  
items

Quality of materials

3. What are the main forms of communication to material suppliers for price quotes and material ordering? (Check in order of importance)

Most of the time                      Frequently                      Sometimes                      Never

Telephone

Facsimile

Two Way Radio

In Person

4. Does your material supplier keep you aware of material sales and new materials? (Check answer)

Most of the time                      Frequently                      Sometimes                      Never

5. Does your company stock a large amount of standard building materials? (Check answer that applies)

Most of the time                      Frequently                      Sometimes                      Never

6. Does your company buy standard materials wholesale? (Check answer that applies)
- Most of the time                      Frequently      Sometimes                      Never
7. What is the average size of a job contract for your company?
- A. 0 to 10,000    B. 10,000 to 30,000    C. 30,000 to 100,000    D. 100,000 to 500,000
8. How many employees does your company employ at each job site?
- A. 1 to 4            B. 4 to 10            C. 10 to 20            D. 20 to 40            E. over 40
9. How many jobs does your company usually run at the same time?

### Survey Results

1. Main forms of communication:
  - a) Telephone – 69% most of the time, 31% frequently
  - b) Facsimile – 46% most of the time, 38% frequently. 16% some of the time
  - c) Two-way Radio – 31% sometime, 69% never
  - d) In person Radio – 1% most of the time, 54% sometime, 45% never
  
2. Main reasons for using a material suppliers:
  - a) Best price – 77% very important, 15% moderately important, 8% somewhat important
  - b) Prompt Delivery – 84% very important, 16% moderately important  
 Good Delivery and Return policy – 54% very important, 1% moderately important, 45% somewhat important
  - c) Variety of stock - 38% very important, 38% moderately important, 24% somewhat important
  - d) Availability of non-off-the-shelf items – 38% very important, 23% moderately important, 31% somewhat important, 8% not important
  
3. Communication from material suppliers regarding new materials and sales – 0% most of the time, 23% frequently, 64% sometimes, 13% never
  
4. Stocking standard materials – 10% most of the times, 10% frequently, 40% sometimes, 40% never
  
5. Buying building materials wholesale – 27% most of the times, 13% frequently, 47% sometimes, 13% never

## Developing a Procedure for Small Contractors

Based on our discussion with the contractors during the study and using some of the survey results the following procedure is developed for small contractors.

### Step 1 – Getting involved in initial specification

Get involved as early as possible in the project for material specifications, to help the Architect/Engineer to identify proper materials for the specific project

### Step 2 – Get two (2) to three (3) estimates on materials using the contract specifications for bidding purposes

Using the telephone or facsimile get two (2) to three (3) material prices on expensive items, long lead items, large quantity items. Other materials may need only one bid.

### Step 3 – When job is awarded prepare a material submittal

Use a three (3) step procedure

1. Submittal outline
  2. Get material data
  3. Arranging data in a binder
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1. Prepare an outline covering each item. Use the contract specifications given by the architect/engineer. Copy the materials down in the order they are presented in the contract specifications. Copy each section number of the specifications used.
  2. Determine whether you agree to use the materials specified by the architect/engineer. If so, write (as specified) next to the item.  
  
If you intend to change any of the materials specified by the architect/engineer, you should note the change next to the item number of the initial material.  
  
If you can not determine the changes or do not have a firm answer on an item to be submitted write (submittal to follow), next to the item number of the initial material.
  3. Arrange all data in order that it is presented in the specifications of the contract in a binder with tabbed index sheets.

#### Step 4 – Get material submittals from subcontractors

Subcontractor should submit material submittals in the same fashion as the primary contractor.

Be prepared to get submittals that are of inferior quality.

Revise subcontractor's submittals and have them check and sign the new submittal. Submit subcontractors signed material submittal to the architect/engineer.

#### Step 5 – Get three (3) to six (6) estimates for all materials

Use the telephone or facsimile to get your material submittals. Be sure to get material price and delivery time for all materials.

#### Step 6 – Make a schedule for material delivery

Make a schedule and order of materials needed.

Use a material schedule chart or a CPM chart to coordinate materials.

Coordinate material schedule with work schedule.

#### Step 7 – Order materials for project

The most important detail to recognize when ordering materials is to make sure they will be delivered to the job site when needed.

The second most important item is the price of materials.

All material orders will be documented via purchase orders and project managers job log.

It may be to the project manager's advantage to occasionally go in person to order materials. This may establish a personal relationship between the project manager and the suppliers.

#### Step 8 – Construction superintendent receives materials

The construction superintendent or his assistant receives materials on the job site. Use the best means possible (crane forklift, laborers, etc...) to remove materials from the truck and place them in the safest most efficient place available for use.

All material deliveries must be documented via material receipt and superintendent job log. Logs should show time of delivery; any damaged materials or any back order materials, etc...

### Step 9 – Superintendent orders day to day materials

The Superintendent receives requests for new materials from a construction foreman.

The Construction foreman's request should be written on a material requisition order. The Superintendent should then check the request and order those materials via cellular, facsimile, job phone or the quickest means possible to get the materials to the job site.

Superintendents should have all requests documented by specific forms and the requests placed in a superintendent's log.

### Step 10 – Superintendent orders change order materials

Change order materials are sent out by the architect/engineer.

The superintendent must do a material submittal to the architect/engineer.

When the architect/engineer approves the material submittals, materials must be ordered.

Most important aspects of this order is prompt delivery. The second most important aspect is price.

Try to get three (3) estimates if time allows.

Set a time of delivery for materials from the material supplier.

### Step 11 – Superintendent orders punch list materials

A Punch list is given to the superintendent from the architect/engineer or owner's representative.

The superintendent may have to do a material submittal if these materials haven't already been submitted to the architect/engineer.

Architect/engineers approve the submittal and materials are ordered. Delivery time is the most important aspect when ordering punch list materials.

All phases should be documented through purchase orders, material requisitions and superintendent's log book.

### Conclusion

The above procedures were distributed among all thirty contractors that responded to our survey. We received a number of positive comments from the contractors regarding the procedures.

## Bibliography

1. Clough, Richard H., Glenn Sears, S. Keoki Sears, Construction Project Management, 2000, pp. 156-176, John Wiley & Sons, Inc. New York

## Biography

AMITABHA BANDYOPADHYAY, Ph.D., P.E. is a professor and the chair of Architecture & Construction Management Department at SUNY Farmingdale. Dr. Bandyopadhyay is a member of ASEE, ASCE, New York Academy of Science and many other regional trade and professional groups. His teaching and research interest is in the area of construction engineering & management.

JOHN DI MILIA is a graduate of the Bachelor of Science program in Construction Management from SUNY Farmingdale. Mr. DiMilia did his senior project under Prof. Bandyopadhyay on materials management. Mr. DiMilia is now owner and operator of a construction company on Long Island