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FIGURE 1.4 – GENERAL JOB INFORMATION WORKSHEET

Job Name: _____

Ref No. _____ Checked By: _____

Bid Due Date/Time: _____

Job Location: _____ Tax Rate: _____

Construction Type: New Construction Renovation

Gross Floor Area: _____ Number of Floors: _____

No. of Condo Units: _____ No. of Hospital Beds: _____

No. of Hotel Rooms: _____

Send Bid To: Owner: _____

General Contractor: _____

Owner: _____ Tel No.: _____

General Contractor: _____ Tel No.: _____

Architect: _____ Tel No.: _____

Mechanical Engineer: _____ Tel No.: _____

Plans/Specs or Design/Build: _____

CAD required? _____

Project Start Date: _____ Project Finish Date: _____

Retainage: _____ Liquidated Damages: _____

Warranty Period: _____

Labor Conditions: Prevailing Wages Union Open Shop

Bond Required: Yes No

Test and Balance Include Exclude

Send RFI to General Contractor Mechanical Engineer

Other: _____

Work Done by Owner's Contractor: _____

Cost Breakdown Requirements: _____

Allowances: _____ Alternates: _____

FIGURE 2.1 – CHECKING DOCUMENT COMPLETENESS

Job Name: _____

Ref No.: _____ Checked By: _____

HVAC Plan

- Drawn to the same scale as the architectural plans
- Separate from the plumbing plans and electrical plans
- Shows partitions, room layouts, and fire and smoke rated partitions
- Shows ductwork layout including size and pressure class
- Includes all necessary details, sections, schedules, and notes to show the extent of the work
- Includes building heating and cooling loads (in BTU's/Hr), temperature differentials used, and rated capacity of heating units
- Shows location of fire and smoke dampers
- Shows coil and tube pull areas
- Indicates required code clearance areas
- Includes all devices such as balancing dampers, splitter dampers, volume extractors, balancing valves, thermometers, pressure gauges, instrument-flow fittings, and instrument-access panels required for balancing

Specifications

- Basic mechanical materials and methods
- Testing, adjusting, and balancing
- Manufacturers' names, products brands, or catalog numbers
- Required performance criteria for all materials and assemblies
- Installation procedures, coordination procedures, and clean up methods
- Operations and maintenance manuals covering each item of equipment

Conclusions:

Do you think these documents are complete enough for bidding?

- Yes No

Issues to be resolved with the design engineer:

FIGURE 5.2 — TIPS TO REDUCE ESTIMATING MISTAKES

- Be organized and keep your desk clean
- Get information from a complete set of drawings instead of a few sheets
- Read specs
- Use estimating checklists
- Use estimating forms
- Spend more time on large cost items
- Mark drawings when taking off items
- Prepare detailed estimates instead of estimating by square feet
- Figure material and labor for each item instead of applying a combined unit rate
- Round up the results in each step of calculation and drop the pennies
- Have someone else check your estimate and take-off
- Use specialized HVAC estimating software
- Check all formulas if using spreadsheet programs
- Compare costs with similar projects on a unit price basis
- Always verify site conditions with the drawings
- Ask questions instead of making assumptions
- Take your time and never rush the estimate

ESTIMATING GALVANIZED STEEL SPIRAL DUCTWORK

Estimating Math

Duct Perimeter = $3.1416 \times \text{Duct Diameter}$

Duct Total Area = Duct Perimeter \times Duct Length

Duct Weight = Duct Weight per Sq. Ft. \times Duct Total Area

Estimating Example

Find the weight for 26 gage 14" galvanized spiral ductwork 150' long

Calculation:

Duct diameter 14" /12 = 1.17 ft.

Duct perimeter is: $3.1416 \times 1.17 = 3.68$ ft.

Total duct area is: $3.68 \times 150 = 552$ sq. ft.

Add 25% waste for bracing, hangers, waste, and seams

Area = $552 \times (1 + 25\%) = 690$ sq. ft.

Weight = 690 sq. ft. \times 0.906 lbs./sq. ft. = 625 lbs.