



# Ductora

User manual · version 1.3.3

HVAC sheet metal takeoff & estimating for Windows  
Takeoff · pricing · proposal · revisions

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## CHAPTER 1

# Welcome

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Ductora is takeoff and estimating software for HVAC sheet metal contractors in the USA and Canada. You trace the duct and count the fittings, dampers and equipment on the PDF plans; Ductora weighs and prices every line, adds labor, rentals, subs and markups, and writes the proposal and an Excel workbook from the same takeoff.

This manual follows a bid from start to finish, on the sample drawing *M-201 Second Floor HVAC Plan*. Every picture is the real program.

### The screens

| Screen                        | What you do there                                                         |
|-------------------------------|---------------------------------------------------------------------------|
| <b>Dashboard</b>              | Next bid due, the next 14 days, your pipeline and win rate, recent jobs.  |
| <b>Projects</b>               | Every bid: search, filter by status or due date, rows, board or calendar. |
| <b>Overview</b>               | Project details, key dates, bid readiness checklist.                      |
| <b>Plans &amp; setup</b>      | Job information, plan PDFs, sheet index, revised sheets.                  |
| <b>Takeoff</b>                | Trace runs, count items, edit, audit trail, split screen, overlay.        |
| <b>Specs</b>                  | The project manual: Division 23 requirements with page numbers.           |
| <b>Pricing &amp; proposal</b> | Twelve tabs from the bill of quantities to the proposal.                  |

## CHAPTER 2

# Install and start

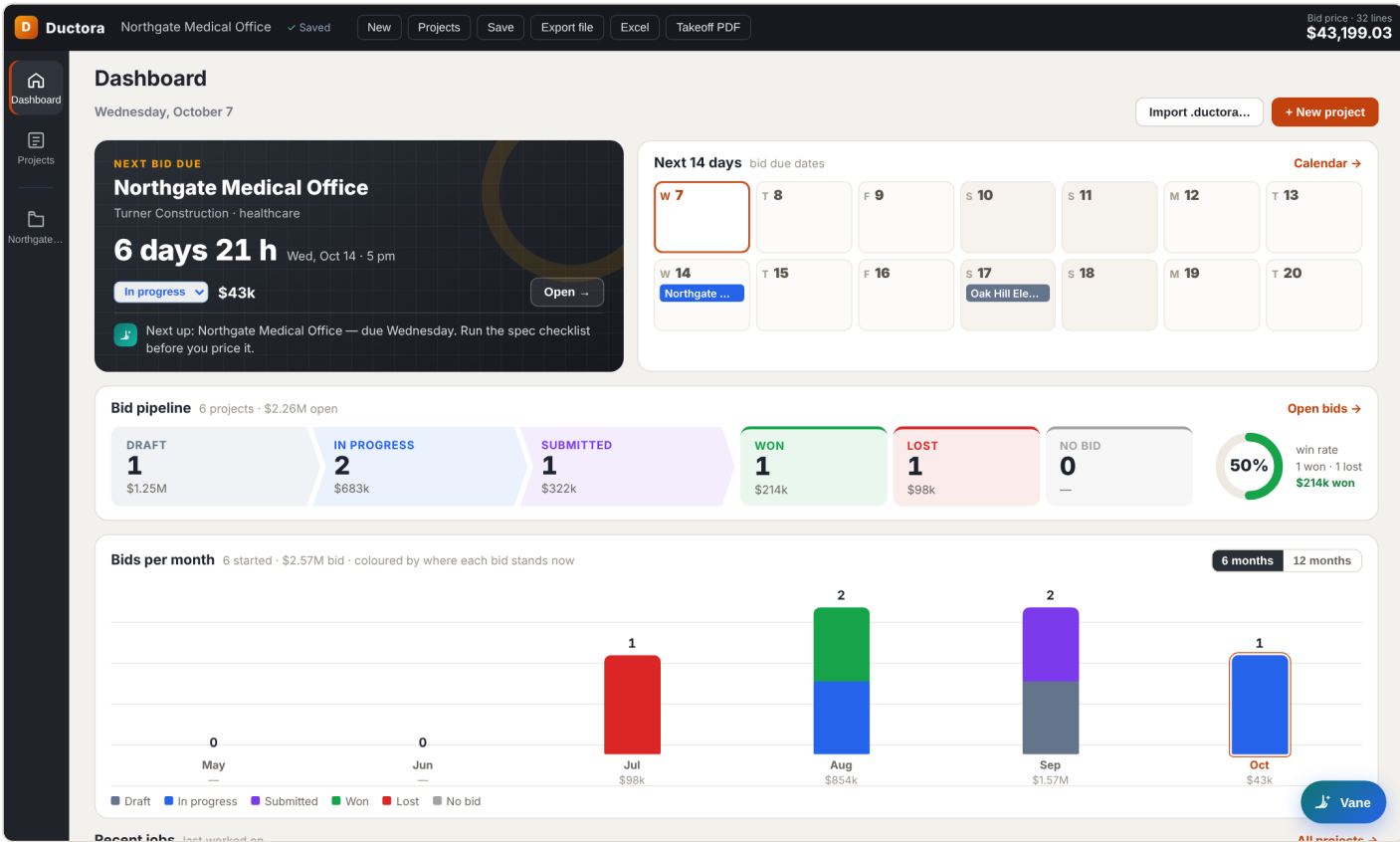
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1. Extract **Ductora 1.3.3 Setup.zip** (right-click → Extract All, or WinRAR → Extract To). Do not run the setup from inside the archive window.
2. Double-click **Ductora Setup 1.3.3.exe**. If Windows shows “*Windows protected your PC*”, click **More info** → **Run anyway**.
3. Click **Next** → **Install** → **Finish**. Ductora starts, and a **Ductora** shortcut is on your Desktop and in the Start menu.

|                  |                                                                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Needs</b>     | Windows 10 or 11, 64-bit. No administrator password. Microsoft Edge WebView2 (part of Windows 11 and an up-to-date Windows 10; the installer offers the download if it is missing). |
| <b>Your data</b> | Documents\Ductora : Projects (bids and their plans), equipment catalog, wage rates, AI settings. Install, update and uninstall never touch this folder. Back it up now and then.    |
| <b>Updating</b>  | Run the new setup. It replaces the program only.                                                                                                                                    |
| <b>Uninstall</b> | Settings → Apps → Installed apps → Ductora → Uninstall.                                                                                                                             |

CHAPTER 3

# Dashboard and projects



Dashboard: next bid due with a countdown, the next 14 days, bid pipeline and win rate, bids per month, recent jobs.

Click a job to open it. **+ New project** starts a bid; you can also drop plan PDFs anywhere on the window.

Ductora

Northgate Medical Office

✓ Saved

New

Projects

Save

Export file

Excel

Takeoff PDF

Bid price - 32 lines  
\$43,199.03

Dashboard

Projects

Northgate...

Projects

Search jobs, clients, bid n

STATUS

All 6

Open 4

Draft 1

In progress 2

Submitted 1

Won 1

Lost 1

No bid 0

BID DUE

Any time 6

Past due 0

Next 7 days 1

Next 30 days 3

No due date 0

BUILDING TYPE

Any type 6

Education 1

Healthcare 1

Industrial 1

Office 1

Residential 1

Retail 1

6 of 6 jobs

Sort: Last worked on

Rows

Board

Calendar

↓ CSV

| JOB                                                                                                                                                           | DUE     | STATUS      | BID            | LINES | SAVED |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------|----------------|-------|-------|
| <input type="checkbox"/> <div>Northgate Medical Office <span>open</span></div> <div>Turner Construction · healthcare · 2150 Northgate Blvd, Columbus OH</div> | 6d 21h  | In progress | \$43,199.03    | 32    | Oct 7 |
| <input type="checkbox"/> <div>Harbor Point Retail</div> <div>Skanska · retail</div>                                                                           | Oct 4   | Submitted   | \$322,000.00   | 140   | Oct 6 |
| <input type="checkbox"/> <div>Westgate Apartments</div> <div>Lendlease · residential</div>                                                                    | 16d 21h | In progress | \$640,000.00   | 140   | Oct 6 |
| <input type="checkbox"/> <div>Teaneck Self-Storage</div> <div>Hensel Phelps · industrial</div>                                                                | Sep 8   | Won         | \$214,000.00   | 140   | Oct 6 |
| <input type="checkbox"/> <div>655 Madison TI</div> <div>Structure Tone · office</div>                                                                         | Aug 24  | Lost        | \$98,000.00    | 140   | Oct 2 |
| <input type="checkbox"/> <div>Oak Hill Elementary</div> <div>Gilbane · education</div>                                                                        | 9d 21h  | Draft       | \$1,250,000.00 | 140   | Oct 1 |

Open

Open

Open

Open

Open

Open

Projects save automatically on this computer in this browser (IndexedDB). Export a .ductora file to send a bid to someone or keep a backup.

Vane

Projects: filter by status, bid due date or building type; switch between Rows, Board and Calendar. Drag a card on the Board to change its status.

The status of a bid (Draft, In progress, Submitted, Won, Lost, No bid) drives the pipeline and win rate on the dashboard.

## CHAPTER 4

# Plans and setup

**Project setup**

**1 - Job information**

Project name: Northgate Medical Office

Address: 2150 Northgate Blvd, Columbus OH

Client / general contractor: Turner Construction

Bid / job no.: Bid due: 10/14/2026 Status: In progress

Proposal date: 10/07/2026 Building type: —

Region & currency: USA (USD) Project state: National average Units: Imperial (ft, in)

☒ Adjust labor rates for the state · field \$75.00/hr · labor index 100%

Crew wages: Open shop · journeyman \$32.00/hr · [Crews tab](#)

These fill the proposal and the Excel header. Changing the region reloads the reference rates; the state sets the test & balance prices.

**2 - Plans**

Drag & drop plan PDFs here or click to browse — several files at once are fine

Add revised sheets / addendum

Matched by sheet number · takeoff kept · changes shown in red and green

| FILE                               | SHEETS   |
|------------------------------------|----------|
| Northgate_Medical_Office_M-201.pdf | 1 Remove |

**3 - Sheet index** 1 sheets

| SHEET | TITLE                               | DISCIPLINE | SCALE                | MARKS | PAGE |
|-------|-------------------------------------|------------|----------------------|-------|------|
| M-201 | Northgate_Medical_Office_M-201 — p1 | Mechanical | 1/4" = 1'-0" (sheet) | 1     | Open |

**Start takeoff** — Opens the first Mechanical sheet. You can switch sheets from the drop-down above the plan.

Vane

Plans & setup: job information, the plan files and the sheet index read from the title blocks.

1. **Job information:** name, address, client, bid due date, status, region and currency (USA or Canada), units (imperial or metric), crew wages.
2. **Plans:** drag the plan PDFs onto the box. Each page becomes a sheet, named from its title block (number and title), with its scale.
3. **Sheet index:** check each sheet's scale. Mechanical sheets are listed first. Click **Start takeoff**.

**Tip** If a sheet has no scale in its title block, pick it on Takeoff (SCALE box at the top) or click **Calibrate** and click a known dimension.

## CHAPTER 5

# Takeoff

Takeoff on M-201: supply mains and branches traced at their real width (cover mode, 2" wrap hatched), transitions, fire dampers, VAV boxes, diffusers and return grilles counted.

### 1. Pick the item

Click an item in the palette under the drawing: Rectangular, Snap-lock, Spiral, Flat-oval, Accessories (dampers, flex connectors) or Demo. Equipment (RTUs, VAV boxes, fans, diffusers, grilles, controls...) comes from the **Equipment** catalog: press **F2**.

### 2. Set the specs in the tray

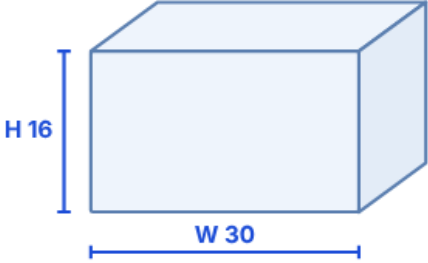

**Straight duct — Rectangular**
GI
×

SYSTEM
Supply
Return
Exhaust
Outside air

PRESSURE
½"
1"
2"
3"
4"
6"
10"

w.g. SEAL
Auto A
A
B
C

Enter the NET (airstream) size from the drawing — liner add is automatic.



W in 30
H in 16

GAUGE AUTO 22 GA
22 ga
JOINT
TDC/TDF

WRAP
None
LINER
None

HANGER
3/8 Rod & 1 5/8 Unistrut

Auto-spacing: 1 hanger / 8 ft → 2 × 3/8 Rod & 1 5/8 Unistrut generated with this duct run (min 2).

Length ft 10 × Qty 1

Close
Add to takeoff →

The spec tray: system, pressure class and seal class, size, gauge (automatic), joint, wrap or liner, hanger type.

- **System:** Supply, Return, Exhaust or Outside air (keys 1–4).
- **Pressure** ½" to 10" w.g. and **Seal** class (Auto follows the class). Each system remembers its own pressure class. See chapter 8.
- **Size:** the net (airstream) size from the drawing. Liner thickness is added for you.
- **Gauge** is picked from the size and pressure class; you can override it. **Hangers** are generated with each run (1 per 8 ft, at least 2).

### 3. Mark the plan

**Run (R)**: click along the duct, press **Enter** or double-click to finish. In **Cover** mode the duct is drawn at its real width: a band that fills the drawn duct means the size and the scale are right. **Count (C)**: click each fitting, damper or piece of equipment. Each mark shows a picture and a tag.

The screenshot displays the Ductora software interface. The top bar shows the project name 'Northgate Medical Office' and various toolbars. The 'Equipment catalog (F2)' is open, showing a list of equipment categories and items. The 'ITEM SPECS' panel on the right shows the specifications for a 'Straight duct — Rectangular' system, including pressure, material, insulation, and hanger details. The 3D model in the center shows a duct system with various components like RTU, VAV, and dampers.

Equipment catalog (F2): categories, items with labor and material; assemblies bring their curb, startup and controls along.

### 4. Check and change

The screenshot displays the 'Check and change' panel in the Ductora software. It shows a table of equipment items with columns for SYSTEM, ITEM, SIZE, MAT., INSULATION, PRESSURE, and QTY. The table lists five items, all of which are 'Straight duct' with different sizes and materials. The '3 selected' button is highlighted, indicating that three items are currently selected for editing.

|                                     | SYSTEM | ITEM          | SIZE      | MAT. | INSULATION | PRESSURE | QTY  |
|-------------------------------------|--------|---------------|-----------|------|------------|----------|------|
| <input checked="" type="checkbox"/> | All    | Filter...     | Filter... | All  | All        | All      |      |
| <input checked="" type="checkbox"/> | Supply | Straight duct | 30×16     | GI   | 2" Wrap    | 4" · A   | 21.9 |
| <input checked="" type="checkbox"/> | Supply | Straight duct | 24×14     | GI   | 2" Wrap    | 4" · A   | 13.9 |
| <input checked="" type="checkbox"/> | Supply | Straight duct | 18×12     | GI   | 2" Wrap    | 4" · A   | 12.0 |
| <input type="checkbox"/>            | Supply | Straight duct | 24×14     | GI   | 2" Wrap    | 4" · A   | 16.0 |
| <input type="checkbox"/>            | Supply | Straight duct | 16×12     | GI   | 2" Wrap    | 4" · A   | 20.0 |

Audit trail (F1): every line with system, size, material, insulation, pressure class, quantity and sheets. Tick lines (Shift+click for a range) to Global edit, show or delete them.

Apply to Selected lines (3) ▾ Any shape ▾ Any system ▾ Change Pressure class ▾ to

4" w.g. ▾ gauge, joints & reinforcement and seal class follow (Unit Rates)

3 lines match Apply to 3 lines Cancel

Global edit (F3): change wrap, liner, gauge, pressure class, seal class, hanger, system, labor factor, alternate or breakout tags on many lines at once.

- Double-click a mark (or select it and press **E**) to edit it in the tray. **Del** deletes it, **Ctrl** + **Z** undoes the last mark.
- Right-drag a box to select many marks; move them, copy (**Ctrl** + **C** / **Ctrl** + **V**) or change them together.
- **Split** (**Ctrl** + **2**): a second sheet beside this one, or popped out to a second monitor.
- **Ctrl** + **→** / **Ctrl** + **←**: next / previous sheet.
- **Cloud**, **Highlight** and **Note** mark up the drawing without adding cost.

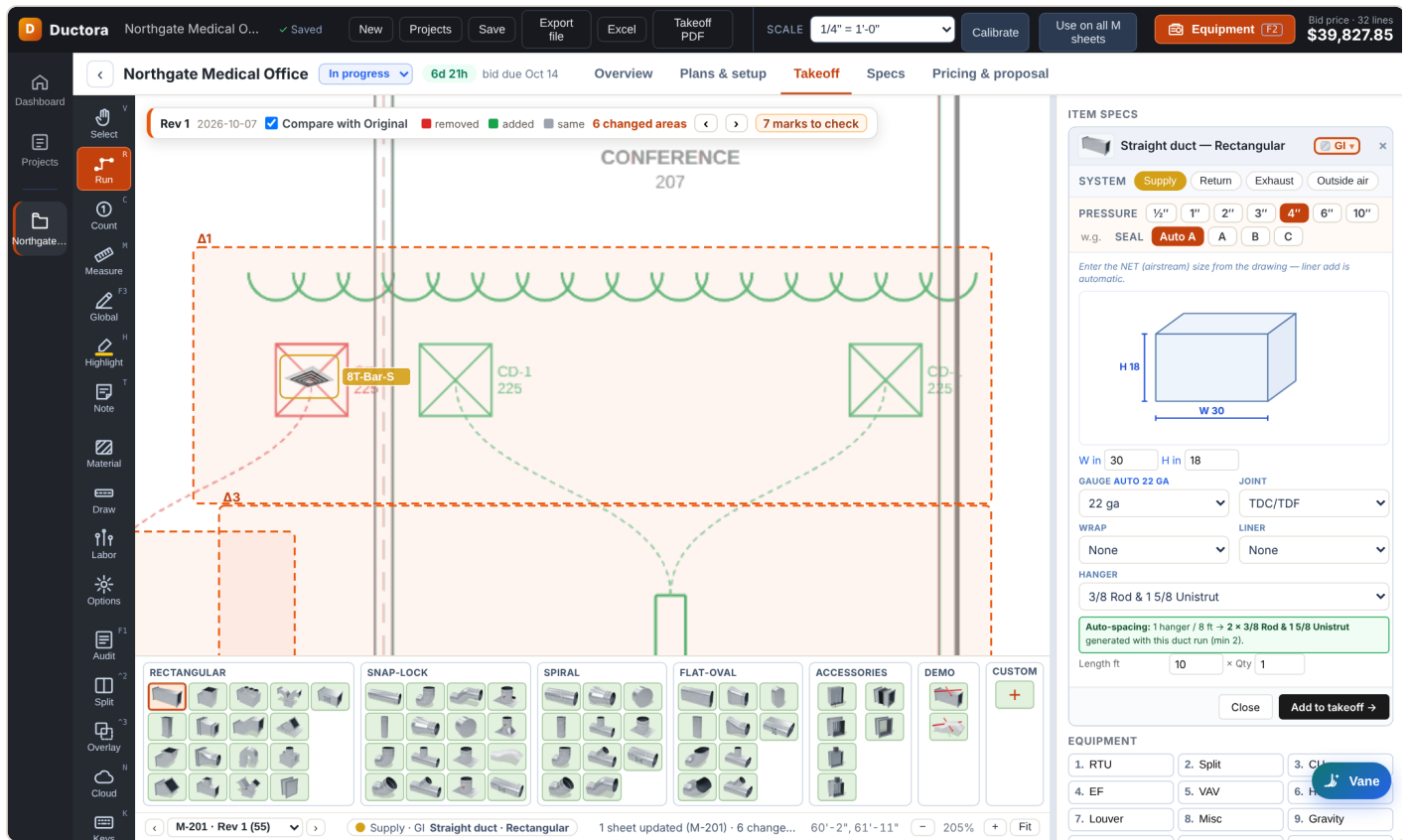
## CHAPTER 6

# Revisions and overlay

The screenshot shows the Ductora software interface. The top navigation bar includes tabs for 'Overview', 'Plans & setup', 'Takeoff', 'Specs', and 'Pricing & proposal'. The 'Takeoff' tab is active. The main workspace displays a duct layout for 'Northgate Medical Office'. A revision overlay is shown, with a legend at the top indicating that red means 'removed' and green means 'added'. The layout includes various duct components labeled with revision numbers (e.g., Δ1, Δ2, Δ3, Δ4, Δ5, Δ6). A status bar at the bottom indicates the current sheet and revision: 'M-201 · Rev 1 (55)'. On the right, the 'ITEM SPECS' panel shows details for a 'Straight duct — Rectangular' with dimensions (W 30, H 18) and material specifications. The bottom of the screen shows a toolbar with icons for different duct types and a status bar indicating the current sheet and revision.

After Add revised sheets: M-201 Rev 1 compared with the original. Red = removed, green = added; changes boxed Δ1, Δ2...; "marks to check" counts takeoff marks inside a change.

1. On **Plans & setup**, click **Add revised sheets / addendum** and pick the revised PDF.
2. Each page replaces the sheet with the **same sheet number**; your takeoff stays on it. Pages with new numbers become new sheets.
3. On Takeoff, the bar at the top left shows the revision. Use < > to step through the changes, then fix the takeoff where needed. Untick **Compare** to see the new sheet alone.



Zoomed to a change: the main was extended to the conference room and VAV-4 moved.

**Overlay** (**Ctrl** + **3**, or the Overlay button) lays *any* other sheet over the current one in the same colors, for example the architectural plan under the mechanical.

## CHAPTER 7

# Specs

**Ductora** Northgate Medical Office ✓ Saved New Projects Save Export file Excel Takeoff PDF Bid price - 32 lines \$39,827.85

Northgate Medical Office In progress 6d 21h bid due Oct 14 Overview Plans & setup Takeoff **Specs** Pricing & proposal

### Specifications

HVAC finder · AI bid checklist · questions · scope

**DOCUMENTS**

Northgate - Project Manual.pdf 9 pages · 10 sections · 6 HVAC

Drop spec PDFs here or click to browse

☒ AI also reads the notes on the plan sheets

**AI**

Not set up — the HVAC finder works without it.

Set up Vane (Basic is free)

**HVAC SECTIONS FOUND**

- 0123 00 Alternates p.2
- 0121 00 Allowances p.3
- 0110 00 Summary p.3
- 23 05 93 Testing, Adjusting, And Balancing For Hvac p.4
- 23 07 13 Duct Insulation p.5
- 23 31 13 Metal Ducts p.6
- 23 33 00 Air Duct Accessories p.7
- 23 01 30 Duct Cleaning p.8
- 23 05 29 Hangers And Supports p.8

**HVAC finder** offline Bid checklist AI Ask AI Scope summary AI

Added Northgate - Project Manual.pdf (9 pages).

Search the specs (e.g. gauge, seal class, fire damper)...

Found by keywords, no AI — Division 23 pages first. Click a topic to see where, click a page to read it.

- Duct material & coating 3 pages
- Pressure class 2 pages
  - p.4 23 05 93 Northgate - Project Manual.pdf ... be hired by the Mechanical Contractor. B. Duct leakage testing: Test 25 percent of the supply ductwork rated 3 inch w.g. and higher per SMACNA HVAC Air Duct Leakage Test Manual. 23 05 93 - 1...
  - p.6 23 31 13 Northgate - Project Manual.pdf x6 ...struction shall comply with SMACNA HVAC Duct Construction Standards. Supply ductwork downstream of VAV boxes: 2 inch w.g. pressure class. Supply upstream of VAV boxes: 4 inch w.g. pressure class, Seal Class A. C. Return and exhaust ductwork: 2 inch w.g. negative pressure class, Seal Class B...
- Seal class & sealant 1 page
- Construction standard / gauges 3 pages
- Kitchen / grease / welded duct 1 page
- Duct liner 1 page
- Duct insulation / wrap 2 pages
- Flexible duct 1 page
- Dampers (volume / fire / smoke) 1 page
- Access doors, vanes, accessories

Vane

Specs: the project manual, Division 23 sections and the requirements that change the sheet metal price, each with its page.

Drop the project manual (spec book) PDF on the Specs screen. The **HVAC finder** lists the Division 23 sections and, by topic, the paragraphs about material, pressure and seal class, gauges, liner and insulation, dampers, hangers, leakage testing, TAB, duct cleaning, items by others, alternates, wages and bonds. Click a result to read the page. Searchable PDFs work best; scanned pages have no text.

## CHAPTER 8

# Pricing and proposal

---

The **Pricing & proposal** screen has twelve tabs. Prices update as you take off.

| Tab                           | What it is                                                                                                                                     |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Accounting                 | The bid: direct cost by group, subs, rentals, general conditions, tax, bond, overhead and profit → <b>bid price</b> .                          |
| 2. Simple BOQ                 | Quantities by item, for checking and for the GC.                                                                                               |
| 3. Detailed BOQ               | Every line: quantity, waste, labor hours, factor, labor, material, total. Rates and hours can be typed over.                                   |
| 4. Takeoffs & pricing summary | Pounds, square feet and hours by category.                                                                                                     |
| 5. Vendor quotes              | Material or subcontract quotes that replace the calculated price of a category.                                                                |
| 6. Subs & other costs         | Subcontractors, rentals (lifts, crane), permit fee calculator, test & balance, general conditions.                                             |
| 7. Element cost / P.O.        | Cost by element for purchase orders.                                                                                                           |
| 8. Breakouts & alternates     | The base bid split by floor, area, phase, system or sheet; add and deduct alternates. Chapter 9.                                               |
| 9. Unit rates                 | All prices: \$/lb by material and construction, pressure class & sealing, insulation, snap-lock, flex, fittings and dampers per each, hangers. |
| 10. Crews                     | Wage system (open shop by state, union, prevailing wage, Davis-Bacon), wages, burden, fringe, crew mix.                                        |
| 11. Proposal                  | Letterhead, scope, inclusions, exclusions, qualifications, terms, signature. Print or save as PDF.                                             |
| 12. QA / checklist            | The checklist to go through before the bid goes out.                                                                                           |

Ductora

Northgate Medical Office

✓ Saved

New

Projects

Save

Export file

Excel

Takeoff PDF

Bid price - 32 lines

\$43,199.03

Northgate Medical Office

In progress

6d 21h

bid due Oct 14

Overview

Plans & setup

Takeoff

Specs

Pricing & proposal

Bill of Quantities

32 lines

1. Accounting

2. Simple BOQ

3. Detailed BOQ

4. Takeoffs & pricing summary

5. Vendor Quotes

6. Subs & Other Costs

7. Element cost / P.O.

8. Breakouts & Alternates

9. Unit Rates (Material & Labor)

10. Crews

11. Proposal

12. QA / Checklist

Excel exports are formula-driven — yellow cells are inputs; totals recalculate in Excel.

Export this tab

Export full estimate (all tabs, linked)

Install productivity

0.089

hr/lb

Fabrication productivity (off)

0.027

hr/lb

Install labor rate (manual)

\$ 75

/hr

Use crew rate (\$37.8/hr)

Default wastage

0

%

Tick Fabrication productivity to add shop fab hours; unticked, fab hrs are 0. Duct lines carry sheet metal only. Insulation and hangers are their own categories below, priced by type in Unit Rates.

| ITEM                                 | QTY   | UNIT | WASTE % | NET QTY +WASTE | INSTALL HRS | FAB HRS | FACTOR % | ADJ HRS | LABOR COST | MATL COST | TOTAL COST |
|--------------------------------------|-------|------|---------|----------------|-------------|---------|----------|---------|------------|-----------|------------|
| Supply                               |       |      |         |                |             |         |          |         |            |           |            |
| Straight duct 30×16 4" w.g. · seal A | 255   | LB   | 0 %     | 255            | 22.7        | 0       | 0 %      | 24.1    | \$1,803.92 | \$ 303.39 | \$2,107.31 |
| Straight duct 24×14 4" w.g. · seal A | 287.5 | LB   | 0 %     | 287.5          | 25.6        | 0       | 0 %      | 27.1    | \$2,034.56 | \$ 342.19 | \$2,376.75 |
| Straight duct 18×12 4" w.g. · seal A | 91.1  | LB   | 0 %     | 91.1           | 8.1         | 0       | 0 %      | 8.6     | \$644.64   | \$ 108.42 | \$753.06   |
| Straight duct 16×12 4" w.g. · seal A | 141.7 | LB   | 0 %     | 141.7          | 12.6        | 0       | 0 %      | 13.4    | \$1,002.77 | \$ 168.65 | \$1,171.42 |
| Straight duct 12×10 4" w.g. · seal A | 111.7 | LB   | 0 %     | 111.7          | 9.9         | 0       | 0 %      | 10.5    | \$790.31   | \$ 132.92 | \$923.23   |
| Straight duct 14×10 4" w.g. · seal A | 85    | LB   | 0 %     | 85             | 7.6         | 0       | 0 %      | 8       | \$601.66   | \$ 101.20 | \$702.86   |
| Straight duct 12×10                  | 53.2  | LB   | 0 %     | 53.2           | 4.7         | 0       | 0 %      | 4.7     | \$354.79   | \$ 61.12  | \$415.91   |
| Straight duct 10×8                   | 119.6 | LB   | 0 %     | 119.6          | 10.6        | 0       | 0 %      | 10.6    | \$798.28   | \$ 137.54 | \$935.82   |
| Transition — concentric 30×16 → 8×6  | 41.9  | LB   | 0 %     | 41.9           | 3.7         | 0       | 0 %      | 3.7     | \$280.00   | \$ 48.24  | \$328.24   |
| Transition — concentric 24×14 → 8×6  | 55.2  | LB   | 0 %     | 55.2           | 4.9         | 0       | 0 %      | 4.9     | \$368.17   | \$ 63.43  | \$431.60   |
| Return                               |       |      |         |                |             |         |          |         |            |           |            |
| Straight duct 30×18                  | 65.7  | LB   | 0 %     | 65.7           | 5.8         | 0       | 0 %      | 5.8     | \$438.29   | \$ 75.51  | \$513.80   |
| Duct insulation                      |       |      |         |                |             |         |          |         |            |           |            |
| 2" Wrap                              | 930.7 | SF   | —       | 930.7          | 11.2        | —       | —        | 11.2    | \$837.68   | \$837.66  | \$1,675.34 |
| Hangers & supports                   |       |      |         |                |             |         |          |         |            |           |            |

Vane

Detailed BOQ: the supply lines carry "4" w.g. · seal A" and the seal labor (+6 seal) under the labor factor.

Ductora

Northgate Medical Office

✓ Saved

New

Projects

Save

Export file

Excel

Takeoff PDF

Bid price - 32 lines

\$43,199.03

Northgate Medical Office

In progress

6d 21h

bid due Oct 14

Overview

Plans & setup

Takeoff

Specs

Pricing & proposal

Bill of Quantities

32 lines

1. Accounting

2. Simple BOQ

3. Detailed BOQ

4. Takeoffs & pricing summary

5. Vendor Quotes

6. Subs & Other Costs

7. Element cost / P.O.

8. Breakouts & Alternates

9. Unit Rates (Material & Labor)

10. Crews

11. Proposal

12. QA / Checklist

Excel exports are formula-driven — yellow cells are inputs; totals recalculate in Excel.

Export this tab

Export full estimate (all tabs, linked)

Every cost of the job in one place — takeoff (labor, material), vendor quotes, subcontractors, rentals, general conditions, taxes and warranty — then markup and profit to the final bid value. This is the price the Proposal uses.

| DESCRIPTION                          | LABOR HRS    | LABOR \$           | MATERIAL / EQUIP. \$ | SUBCONTRACTOR \$  | OTHER \$          | TOTAL \$           |
|--------------------------------------|--------------|--------------------|----------------------|-------------------|-------------------|--------------------|
| HVAC equipment                       | 112.7        | \$8,453.25         | \$205.00             |                   |                   | \$8,658.25         |
| Air distribution                     | 9.5          | \$712.50           | \$22.80              |                   |                   | \$735.30           |
| Dampers & accessories                | 4.9          | \$371.25           | \$22.68              |                   |                   | \$393.93           |
| Sheet metal ductwork - installation  | 121.6        | \$9,117.39         | \$1,542.61           |                   |                   | \$10,660.00        |
| Duct insulation                      | 11.2         | \$837.68           | \$837.66             |                   |                   | \$1,675.34         |
| Hangers & supports                   | 16           | \$1,200.00         | \$359.00             |                   |                   | \$1,559.00         |
| Subcontractors                       |              |                    |                      | \$5,210.00        |                   | \$5,210.00         |
| Equipment rentals                    |              |                    |                      |                   | \$4,489.25        | \$4,489.25         |
| General conditions, permits & travel |              |                    |                      |                   |                   | \$0.00             |
| Sales tax (0%)                       |              |                    |                      |                   |                   | \$0.00             |
| Warranty (0%)                        |              |                    |                      |                   |                   | \$0.00             |
| Bond / insurance (0%)                |              |                    |                      |                   |                   | \$0.00             |
| <b>SUBTOTALS — DIRECT COST</b>       | <b>275.9</b> | <b>\$20,692.07</b> | <b>\$2,989.75</b>    | <b>\$5,210.00</b> | <b>\$4,489.25</b> | <b>\$33,381.07</b> |

Crew size

3

men

Hours / day

8

Crew days: 11.5

Avg labor \$/hr: \$75.00

Tons of equipment

0

Building sq ft

0

Price method — markup & profit

| COST TYPE            | COST        | MARKUP (x) | COST + MARKUP | % OF JOB |
|----------------------|-------------|------------|---------------|----------|
| Material / equipment | \$2,989.75  | 1.1        | \$3,288.73    | 9.0%     |
| Labor                | \$20,692.07 | 1.1        | \$22,761.28   | 62.0%    |
| Subcontractor        | \$5,210.00  | 1.1        | \$5,731.00    | 15.6%    |

Vane

Accounting: from direct cost to the bid price.

Ductora

Northgate Medical Office
✓ Saved
New
Projects
Save
Export file
Excel
Takeoff PDF

Bid price - 32 lines  
**\$43,199.03**

Dashboard

Projects

Northgate...

Northgate Medical Office
In progress
6d 21h
bid due Oct 14

Overview
Plans & setup
Takeoff
Specs
Pricing & proposal

Bill of Quantities
32 lines

1. Accounting
2. Simple BOQ
3. Detailed BOQ
4. Takeoffs & pricing summary
5. Vendor Quotes
6. Subs & Other Costs
7. Element cost / P.O.

8. Breakouts & Alternates
9. Unit Rates (Material & Labor)
10. Crews
11. Proposal
12. QA / Checklist

Excel exports are formula-driven — yellow cells are inputs; totals recalculate in Excel.
Export this tab
Export full estimate (all tabs, linked)

Three simple steps: 1 enter what you pay each person per hour, 2 add one % for taxes, insurance & benefits, 3 say who is on your install crew and your shop crew. The tool works out the average cost per man-hour and can send it to the BOQ.

0 - Wage system & state — who sets the pay rates on this job

Project state

National average

Wage system

Open shop
Union (CBA)
State prevailing wage
Davis-Bacon (federal)

Merit shop — your own payroll. Starting wages follow the state (sheet metal worker median pay, BLS OEWS). Benefits sit inside the burden %.

Wages follow National average (sheet metal worker median pay index 100%).

Fill National average open-shop wages
Save as my National average Open shop rates

1 & 2 - Hourly wages — what each role costs you per hour

| ROLE             | WAGE \$/HR | + BURDEN | FRINGE \$/HR | LOADED \$/HR |
|------------------|------------|----------|--------------|--------------|
| Foreman          | \$ 38      | 35%      | \$ 0         | \$51.30      |
| Journeyman       | \$ 32      | 35%      | \$ 0         | \$43.20      |
| Apprentice       | \$ 20      | 35%      | \$ 0         | \$27.00      |
| Helper / Laborer | \$ 18      | 35%      | \$ 0         | \$24.30      |
| Shop Fabricator  | \$ 26      | 35%      | \$ 0         | \$35.10      |

Loaded = wage × (1 + burden %) + fringe. Overtime is paid on the wage only, not on fringes.

Burden % (payroll tax, workers comp, insurance, benefits)

35 %

Overtime (% of hours at 1.5×)

0 %

Open shop: 30–45% burden is common (payroll taxes, workers comp, insurance and benefits). Leave fringe empty unless you pay benefits per hour.

3a - Field install crew

Vane

Crews: wage system and state, wages, burden and fringe; the crew rate feeds the labor.

Proposal # **P-2026-001**Date **October 7, 2026**Valid for **30 days**

## SUBMITTED TO

**Turner Construction**

## PROJECT

**Northgate Medical Office**

2150 Northgate Blvd, Columbus OH

Bid date: October 14, 2026

**HVAC Sheet Metal & Equipment Proposal**

We are pleased to submit our proposal to furnish all labor, material, equipment and supervision required to complete the HVAC sheet metal scope described below, in accordance with the plans and specifications referenced in this proposal.

**SCOPE OF WORK****Description****1. Sheet metal ductwork**

Galvanized steel rectangular ductwork &amp; fittings

**2. Duct insulation**

2" duct wrap

**3. Hangers & supports**

Duct hangers and supports

Projects

Save

Export file

Excel

Takeoff PDF

**6d 21h**

bid due Oct 14

**Overview****Plans & setup****Takeoff****Specs****Pricing & proposal**

1 Rooftop unit (RTU)

6 VAV boxes

19 Grilles, registers &amp; diffusers

**6. Other scope**

Test &amp; balance

Test &amp; balance sub

**BASE BID PRICE**

Forty-Three Thousand One Hundred Ninety-Nine Dollars and 03/100

**\$43,199.03****BASE BID BREAKDOWN — SYSTEM**

| System          | Price              |
|-----------------|--------------------|
| Supply          | \$41,704.74        |
| Return          | \$1,494.29         |
| <b>Base bid</b> | <b>\$43,199.03</b> |

**ALTERNATES**

| Alternate                     | Add / (Deduct) |
|-------------------------------|----------------|
| Alt 2 — Owner furnishes RTU-1 | (\$5,352.79)   |

**INCLUSIONS****EXCLUSIONS**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Shop drawings and coordination drawings for the ductwork shown</li> <li>• Fabrication, delivery and installation of sheet metal ductwork, fittings and accessories</li> <li>• Duct hangers and supports</li> <li>• Duct insulation as scheduled</li> <li>• Grilles, registers, diffusers and dampers as scheduled</li> <li>• Startup assistance and air-side balancing support</li> </ul>                | <ul style="list-style-type: none"> <li>• Cutting, patching and painting</li> <li>• Electrical power wiring, control wiring and line voltage terminations</li> <li>• Structural steel, roof curbs and penetration framing by others</li> <li>• Temporary heat, temporary filters and construction filters</li> <li>• Fire stopping at rated penetrations unless separately priced</li> <li>• Permit fees and testing agency costs unless shown in the price</li> <li>• Overtime, shift work and premium time unless noted</li> </ul> |
| <b>QUALIFICATIONS</b> <ul style="list-style-type: none"> <li>• Price is based on the drawings and specifications listed above and on the quantities in this estimate.</li> <li>• Work is priced for continuous, unrestricted access during normal working hours.</li> <li>• Material pricing is subject to escalation beyond the validity period.</li> <li>• Quantities shown are from our own takeoff and are not a certified survey.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>PAYMENT TERMS</b> <ul style="list-style-type: none"> <li>• Progress billing monthly against a schedule of values, net 30 days.</li> <li>• Retention not to exceed 10%, released at substantial completion.</li> <li>• Stored material billed on delivery to site or bonded storage.</li> </ul>                                                                                                                                                 | <b>WARRANTY</b> <p>One year from substantial completion on materials and workmanship.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>ACCEPTANCE</b> <p>The above prices, scope and conditions are satisfactory and are hereby accepted. Your Company Mechanical is authorized to perform the work as specified.</p>                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>YOUR COMPANY MECHANICAL</b>                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>TURNER CONSTRUCTION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <hr/> Authorized signature · Date                                                                                                                                                                                                                                                                                                                                                                                                                 | <hr/> Authorized signature, printed name & title · Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Your Company Mechanical · Proposal P-2026-001 · This proposal may be withdrawn if not accepted within 30 days.                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

The proposal document: scope by section, base bid price, breakdown and alternates, inclusions, exclusions.

**Excel:** *Export full estimate* writes every tab to one workbook with live formulas (change a rate and the totals follow). **Takeoff PDF** exports the marked-up sheets with a summary page.

CHAPTER 9

# Pressure class and sealing

Pressure class changes the **weight** of the duct, and the weight drives labor and material. Seal class adds labor and sealant. The surface area does not change, so insulation does not change.

Ductora

Northgate Medical Office

Saving...

New

Projects

Save

Export file

Excel

Takeoff PDF

Bid price · 32 lines

\$43,199.03

Northgate Medical Office

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Excel exports are formula-driven — yellow cells are inputs; totals recalculate in Excel.

Export this tab

Export full estimate (all tabs, linked)

Price region

USA (USD)

Load reference rates for this region

Reference rates are US distributor pricing, Oct 2026 (Canada converted at the USD → CAD rate). Loading overwrites sheet metal, insulation and hanger material rates. Always replace with your supplier quotes.

All rates below are applied per line in the Detailed BOQ and roll into the Summary. Click a section to expand. Equipment material prices live in the Equipment catalog.

Sheet metal — \$/lb (material × construction)

Pressure class & sealing (SMACNA) — gauge, joints & reinforcement, seal class

| PRESSURE CLASS    | GAUGE: STEPS HEAVIER | JOINTS & REINF. % · UP TO 30" |      |      | 31–54" | OVER 54" | SEAL CLASS | LINES |
|-------------------|----------------------|-------------------------------|------|------|--------|----------|------------|-------|
| ½" w.g.           | 0                    | 0 %                           | 0 %  | 0 %  | 0 %    | C        | —          |       |
| 1" w.g.           | 0                    | 0 %                           | 0 %  | 0 %  | 0 %    | C        | —          |       |
| 2" w.g. (default) | 0                    | 0 %                           | 0 %  | 0 %  | 0 %    | C        | 11         |       |
| 3" w.g.           | 1                    | 5 %                           | 10 % | 15 % | B      | —        |            |       |
| 4" w.g.           | 1                    | 8 %                           | 12 % | 18 % | A      | 11       |            |       |
| 6" w.g.           | 2                    | 10 %                          | 15 % | 20 % | A      | —        |            |       |
| 10" w.g.          | 2                    | 12 %                          | 18 % | 25 % | A      | —        |            |       |

| SEAL CLASS | WHAT IS SEALED                                                       | LABOR ADDED | SEALANT \$/LB |
|------------|----------------------------------------------------------------------|-------------|---------------|
| A          | All transverse joints, longitudinal seams and duct wall penetrations | 6 %         | \$ 0.04       |
| B          | All transverse joints and longitudinal seams                         | 3 %         | \$ 0.02       |
| C          | Transverse joints only                                               | 0 %         | \$ 0          |

Pick the pressure class per system on Takeoff (spec tray → Pressure). Starting values follow the usual SMACNA practice (seal class C up to 2", B at 3", A at 4" and up; one gauge heavier at 3–4", two at 6–10"). They are an estimating allowance, not the SMACNA construction tables: set them to your shop standard and the project spec (many specs now ask for seal class A on all duct). Joints & reinforcement apply to rectangular duct and fittings (flat oval half); round spiral has none. Gauge changes apply to lines whose gauge was picked automatically.

Insulation — material \$/ft² & labor hr/ft² (by type)

Snap-lock duct pipe 26GA — \$/ft & install hr/ft

Insulated flex R6.0 — \$/ft & install hr/ft

Vane

Unit rates → Pressure class & sealing: your schedule. The starting values are an estimating allowance, not the SMACNA tables. Set them to your shop standard and the project spec.

| Setting                | Starting value                                                                                                                                                   |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gauge                  | Up to 2": the normal schedule · 3–4": one gauge heavier · 6–10": two gauges heavier                                                                              |
| Joints & reinforcement | % of the sheet weight by longest side (≤30" / 31–54" / over 54"): 3" 5/10/15 · 4" 8/12/18 · 6" 10/15/20 · 10" 12/18/25. Rectangular; flat oval half; round none. |
| Seal class             | A: +6% labor, \$0.04/lb · B: +3%, \$0.02/lb · C: none. Auto: C up to 2", B at 3", A at 4" and up.                                                                |

Example: 36×18 galvanized duct, 100 ft

|                       | <b>2" w.g. (seal C)</b> | <b>4" w.g. (seal A)</b>  |
|-----------------------|-------------------------|--------------------------|
| Surface               | 900 SF                  | 900 SF                   |
| Gauge                 | 22 ga (1.406 lb/SF)     | 20 ga (1.656 lb/SF)      |
| Weight                | 1,265 lb                | 1,490 + 12% = 1,669 lb   |
| Labor at 0.089 hr/lb  | 112.6 hr                | 148.6 hr + 6% = 157.5 hr |
| Material at \$1.15/lb | \$1,455                 | 1,669 × \$1.19 = \$1,986 |

## CHAPTER 10

# Breakouts and alternates

**Northgate Medical Office** In progress 6d 21h bid due Oct 14 Overview Plans & setup Takeoff Specs **Pricing & proposal**

**Bill of Quantities** 32 lines

1. Accounting 2. Simple BOQ 3. Detailed BOQ 4. Takeoffs & pricing summary 5. Vendor Quotes 6. Subs & Other Costs 7. Element cost / P.O.  
8. Breakouts & Alternates 9. Unit Rates (Material & Labor) 10. Crews 11. Proposal 12. QA / Checklist

Excel exports are formula-driven — yellow cells are inputs; totals recalculate in Excel. Export this tab Export full estimate (all tabs, linked)

Split the base bid the way the GC asks for it, and price alternates separately. Floors, areas and phases come from the plan sheets (tag them below); a line can also carry its own tag (Takeoff → Global edit). Alternates take their lines out of the base bid (Add) or price their removal (Deduct).

**Base bid breakout** Floor / level Area / zone Phase **System** Sheet Show on the proposal

| SYSTEM          | LABOR HRS    | LABOR              | MATERIAL          | DIRECT COST        | SHARE       | BID PRICE          |
|-----------------|--------------|--------------------|-------------------|--------------------|-------------|--------------------|
| Supply          | 266.6        | \$19,995.80        | \$2,866.85        | \$22,862.65        | 96.5%       | \$41,704.74        |
| Return          | 9.3          | \$696.27           | \$122.90          | \$819.17           | 3.5%        | \$1,494.29         |
| <b>Base bid</b> | <b>275.9</b> | <b>\$20,692.07</b> | <b>\$2,989.75</b> | <b>\$23,681.82</b> | <b>100%</b> | <b>\$43,199.03</b> |

Direct cost is split by where the marks are (run length, count). Subs, rentals, general conditions, tax, overhead and profit follow each group's share of the direct cost, so the groups add up to the base bid.

**Plan sheets — floor, area, phase** 1 sheet with takeoff · Show all 1 sheets Fill from sheet titles

| SHEET | TITLE                               | FLOOR / LEVEL | AREA / ZONE | PHASE | MARKS |
|-------|-------------------------------------|---------------|-------------|-------|-------|
| M-201 | Northgate_Medical_Office_M-201 — p1 | Level 2       | West wing   | —     | 55    |

**Alternates** Base bid without add alternates: \$43,199.03 + Add alternate + Deduct alternate

| NO. | DESCRIPTION           | TYPE   | LINES | PRICE        | LINES IN IT                                |
|-----|-----------------------|--------|-------|--------------|--------------------------------------------|
| 1   | Restroom exhaust      | Add    | —     | —            | + Lines from sheet... Selected marks       |
| 2   | Owner furnishes RTU-1 | Deduct | 1     | (\$5,352.79) | + Lines from sheet... Selected marks Clear |

Price = bid with the alternate – base bid (Add), or base bid – bid without its lines (Deduct, shown in brackets), so tax, bond, overhead, profit and automatic rentals are included. Add-alternate lines are left out of the BOQ and the base bid. Alternates go on the proposal; lump-sum alternates without takeoff can still be typed on 11. Proposal.

Breakouts & alternates: the base bid by system; an add alternate (restroom exhaust) and a deduct alternate (owner furnishes RTU-1).

## Breakouts

Pick **Floor / level**, **Area / zone**, **Phase**, **System** or **Sheet**. Tag the sheets in the table (**Fill from sheet titles** reads "LEVEL 2", "AREA B"...); only sheets with takeoff are listed. A line can carry its own tag through Global edit. Direct cost is split by where the marks are; subs, rentals, tax, overhead and profit follow each group's share, so the groups add up to the base bid. Tick **Show on the proposal** to print the breakdown.

## Alternates

**+ Add alternate** takes its lines *out* of the base bid; its price is the bid with it minus the base bid. **+ Deduct alternate** keeps its lines in the base bid; its price is what is saved without them. Give an alternate its lines with **Lines from sheet**, **Selected marks** (select them on Takeoff first) or Global edit → Alternate. Alternates print on the proposal.

## CHAPTER 11

# Keyboard shortcuts

Press **K** on Takeoff to show this list.

### TOOLS

|          |                                                             |
|----------|-------------------------------------------------------------|
| <b>V</b> | Select / pan — click a mark to select, double-click to edit |
| <b>R</b> | Run — trace a duct run (LF)                                 |
| <b>C</b> | Count — click each item                                     |
| <b>M</b> | Measure — distance only, nothing added                      |
| <b>S</b> | Scale — calibrate from a known dimension                    |
| <b>N</b> | Cloud — revision cloud with a note                          |
| <b>H</b> | Highlight — drag over the plan (H again changes colour)     |
| <b>T</b> | Note — click, type, Enter                                   |
| <b>U</b> | Custom item — add something not in the lists                |

### WHILE DRAWING

|                     |                                                              |
|---------------------|--------------------------------------------------------------|
| <b>Enter</b>        | Finish the run / measurement                                 |
| <b>Double-click</b> | Finish the run / measurement                                 |
| <b>Backspace</b>    | Remove the last point                                        |
| <b>Shift</b>        | Hold for straight (90°) lines                                |
| <b>Esc</b>          | Cancel what you are doing — press again to go back to Select |

### SELECTED MARK

|                                                 |                                                                              |
|-------------------------------------------------|------------------------------------------------------------------------------|
| <b>Right-drag</b>                               | Selection box (Select tool) — left→right: fully inside, right→left: touching |
| <b>Ctrl</b> + <b>click</b>                      | Add / remove a mark from the selection                                       |
| <b>Ctrl</b> + <b>A</b>                          | Select every mark on this sheet                                              |
| <b>Ctrl</b> + <b>C</b> / <b>Ctrl</b> + <b>V</b> | Copy the selected marks, paste them at the mouse                             |
| <b>Ctrl</b> + <b>D</b>                          | Duplicate the selection right next to it                                     |
| <b>E</b>                                        | Edit its specs in the tray                                                   |
| <b>Del</b>                                      | Delete the mark (its line or one count)                                      |
| <b>Ctrl</b> + <b>Z</b>                          | Undo the last mark on this sheet                                             |

### SYSTEM & VIEW

|                                                 |                                                                |
|-------------------------------------------------|----------------------------------------------------------------|
| <b>1</b> <b>2</b> <b>3</b> <b>4</b>             | Supply · Return · Exhaust · Outside air                        |
| <b>L</b>                                        | Duct draw: Cover ↔ Line                                        |
| <b>Drag</b> <b>(Select)</b>                     | Move a mark or its tag · drag a corner square to reshape a run |
| <b>F</b>                                        | Fit the sheet                                                  |
| <b>+</b> / <b>-</b>                             | Zoom in / out                                                  |
| <b>PgUp</b> / <b>PgDn</b>                       | Previous / next sheet                                          |
| <b>Ctrl</b> + <b>→</b> / <b>Ctrl</b> + <b>←</b> | Next / previous sheet                                          |
| <b>Right-drag</b>                               | Pan (from the drawing tools)                                   |

### PROJECT

|                                       |                                                                                |
|---------------------------------------|--------------------------------------------------------------------------------|
| <b>Ctrl</b> + <b>S</b>                | Save now (projects also save themselves)                                       |
| <b>Ctrl</b> + <b>Shift</b> + <b>S</b> | Export a .ductora file                                                         |
| <b>Ctrl</b> + <b>N</b>                | New project                                                                    |
| <b>Ctrl</b> + <b>0</b>                | My projects                                                                    |
| <b>Ctrl</b> + <b>Shift</b> + <b>P</b> | Export the marked-up sheets as a PDF                                           |
| <b>F1</b>                             | Audit trail (quantities) — open / close                                        |
| <b>F2</b>                             | Equipment catalog — open / close                                               |
| <b>F3</b>                             | Global edit — change many lines at once (selected marks, or all)               |
| <b>Ctrl</b> + <b>2</b>                | Split screen — a second sheet beside this one (pop it out to a second monitor) |
| <b>K</b> or <b>?</b>                  | Show / hide this list                                                          |

## CHAPTER 12

# Questions

|                                           |                                                                                                                                                           |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Blank or white window</b>              | Install Microsoft Edge WebView2 (free): <a href="https://go.microsoft.com/fwlink/p/?LinkId=2124703">go.microsoft.com/fwlink/p/?LinkId=2124703</a>         |
| <b>"Ductora is open" during setup</b>     | Close Ductora (check the taskbar), then click Retry.                                                                                                      |
| <b>Lengths look wrong</b>                 | The sheet scale is wrong: pick the scale at the top of Takeoff, or Calibrate on a known dimension. In Cover mode the band no longer fills the drawn duct. |
| <b>A sheet is not in the overlay list</b> | Its plan file is missing on this PC; add the PDF again on Plans & setup.                                                                                  |
| <b>Moving to a new PC</b>                 | Copy Documents\Ductora to the new PC, or use Export file (.ductora) per project.                                                                          |
| <b>Prices</b>                             | The reference rates are a starting point. Replace them with your supplier quotes and crew rates in Unit rates and Crews.                                  |

Ductora 1.3.3 · ductora.com