

The Complete Takeoff Deliverable Checklist

52 items across 9 sections. Score any takeoff before it leaves your desk or comes back from a vendor.

1. Scope and Drawing Verification

- **Drawing register cross-referenced against bid package index**
Confirms every drawing in the IFB was received and reviewed.
- **Drawing revision levels recorded and consistent**
Mixed revisions produce quantity conflicts between P&IDs; and isometrics.
- **Scope of work document reviewed and boundaries noted**
The SOW defines what is in and out. A takeoff that ignores it counts the wrong items.
- **Spec cross-reference completed (pipe specs, valve specs, insulation specs)**
Each spec callout on a P&ID; should trace to a spec sheet. Missing specs mean assumptions on material and rating.
- **Area or unit boundaries defined**
Every line item should be tagged to its area so quantities are not double-counted or lost between areas.
- **Line list vs P&ID; cross-check (if line list provided)**
When both exist, they should agree. A line on the P&ID; but not the line list is a scope question.
- **Exclusions list started**
Document what the takeoff does not include from the first drawing review.

2. Pipe and Fitting Quantities

- **Pipe listed by spec, size, schedule, material, and linear footage**
If any of these five fields is missing, the vendor quote comes back with qualifications.
- **Fittings counted by type, size, and rating**
Fittings run 20-40% of piping material cost. Missed reducers and branch connections are the most common error.
- **Flanges counted by type, size, rating, and face**
A 150# RF and a 1500# RTJ in the same size can differ by 5x. The spec callout must carry through.
- **Valves counted by type, size, rating, end connection, and material**
Valves are the highest unit-cost line item. A gate valve and ball valve in the same size can differ by 3x.
- **Specialty items captured (strainers, steam traps, expansion joints, sight glasses)**
Low-count, high-cost items that sit as symbols on a P&ID; and get missed in bulk methods.

- **Gaskets and bolting derived from flange count and spec**
Every flanged connection needs a gasket and bolt set. 200 flanged joints with no bolt line means the MTO is incomplete.
- **Supports and hangers included or explicitly excluded with basis**
Either show the factor and source, or include the detailed count.

3. Quantities, Units, and Formatting

- **Consistent unit system throughout (imperial or metric, not mixed)**
Mixed units inside a single MTO cause purchasing errors.
- **Pipe measured in linear feet (or meters), not just piece counts**
Vendors price pipe by the foot. A takeoff that says '47 pipes' without footage is not quotable.
- **Dia-inch totals included for welding and labor estimates**
Welding labor is priced per dia-inch. Without dia-inch roll-ups, the labor estimate rebuilds that summary.
- **Quantities rounded to a sensible precision**
1,247.3 linear feet suggests a measured count. 1,200 feet suggests a rough guess. Precision should match method.
- **Units labeled on every column, not just the header**
When an MTO runs 50+ rows, people scroll past the header. Unlabeled cells get misread.
- **Bulk items factored with the factor and source stated**
Factored quantities are legitimate at bid stage. Unstated factors look like guesses.

4. Welds, Fabrication, and Labor Data

- **Weld count by size, type, and procedure (butt weld, socket weld, fillet weld)**
Welding is 40-60% of piping labor cost. No weld summary means the labor estimate is unanchored.
- **Weld footage (linear inches of weld) calculated or derived**
Many contractors price field welding per inch of weld. Count without inches forces a recalculation.
- **Field vs shop weld distinction made**
Shop and field welds carry different rates, NDE requirements, and productivity factors.
- **Labor units or productivity norms identified (MCAA, NECA, or company-specific)**
MCAA norms and company historical data can differ by 30%.
- **Hydro test package boundaries noted**
Hydro testing is a separate labor and equipment cost. Without boundaries, it cannot be priced.
- **NDE requirements captured from spec**
Specs define what percentage of welds require x-ray, UT, or PT. This affects weld productivity and NDE subcontract cost.

5. Insulation, Coatings, and Heat Tracing

- **Insulation type and thickness by line spec or service**
Hot, cold, and personnel protection insulation have different materials. A yes/no column is not enough.
- **Insulation square footage or linear footage by size and type**
Subs price by the square foot or linear foot at each pipe size.
- **Coating or painting spec captured**
Coating specs (fusion bonded epoxy, fireproofing) carry material and labor costs.
- **Heat tracing requirements flagged and quantified**
Electric or steam heat tracing is often buried in the insulation spec or a general P&ID; note.

6. Traceability and Audit Trail

- **Every line item references a drawing number and sheet**
If someone asks where the 14 gate valves came from, the answer should be immediate.
- **Marked-up drawings included or available on request**
The markup is the audit trail. It shows what was counted and where.
- **Revision level noted on the MTO**
When drawings revise mid-bid, the lead needs to know which MTO was done from which revision.
- **Bulk allowances separated from counted items**
A reviewer should see at a glance which quantities are hard counts and which are factors.
- **Takeoff date and preparer name on the deliverable**
If the takeoff was done three weeks ago by a different estimator, the reviewer needs to know.

7. Deliverable Format and Usability

- **Output in Excel (.xlsx), structured by area, system, or line**
Excel is the universal handoff format. A PDF table forces re-keying.
- **Columns organized for direct vendor RFQ use**
Purchasing should be able to filter by material group and send to a vendor without rebuilding the spreadsheet.
- **Pipe spec breaks and size breaks visible as separate line items**
6" Sch 40 CS and 6" Sch 80 SS are different procurement items. Do not combine them.
- **Summary roll-up sheet included**
A front-page summary lets the lead sanity-check the entire takeoff in 60 seconds.
- **No merged cells, hidden rows, or broken formulas**
Merged cells break sorting. Hidden rows hide quantities. Broken formulas produce wrong totals.

8. Assumptions, Exclusions, and RFIs

- **Assumptions tab or section included in the deliverable**
Every factored quantity, material substitution, and spec interpretation should be stated.

- **Exclusions listed with reasoning**
"Demolition excluded per SOW Section 3.2" is defensible. "Demolition excluded" alone is not.
- **RFI log or clarification list included**
"No clarifications were needed" is better than no RFI list at all.
- **Contingency or allowance items documented with basis**
If the takeoff includes a 10% small-bore allowance, say so. Unnamed contingencies get cut in bid review.
- **Scope gaps and ambiguities flagged**
Flag gray areas explicitly rather than filling them with assumptions nobody else knows about.

9. Vendor Scoring Matrix

Score outsourced takeoff work on a 1-5 scale in each category, multiply by weight, and sum for the weighted total.

Category	Weight	What 5 looks like	Score
Scope coverage	20%	Every line item traced to a drawing, nothing missing	__ / 5
Quantity accuracy	25%	Matches internal check within 5%, method documented	__ / 5
Traceability	15%	Every quantity links to drawing, area, and line number	__ / 5
Format and usability	10%	Ready for vendor RFQ and direct pricing import	__ / 5
Assumptions and exclusions	15%	All assumptions with basis, exclusions with reasoning	__ / 5
Turnaround and communication	15%	Early delivery, proactive RFI list, flagged ambiguities first	__ / 5
Weighted total			__ / 5.0

4.0 - 5.0 Strong. Minor cleanup only.

3.0 - 3.9 Acceptable. Requires review time. Identify recurring gaps.

Below 3.0 Incomplete. Rework time may exceed the time the outsourcing saved.

TheTakeOff.AI does this automatically

TheTakeOff.AI reads your P&IDs (piping and instrumentation diagrams), extracts the material quantities, and gives your estimator an accept/reject interface to verify every line item. Every number traces back to a spot on the drawing, and the final output exports to Excel, structured for vendor RFQs (requests for quotation).

See it on your own drawings → thetakeoff.ai/demo

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