CLIENT DOCUMENT

# Example estimate — API 650 cone-roof tank, 12.2 m × 9.75 m

| | | | |
|---|---|---|---|
| TO | Scott Hubert | OUR REF | FM-CD-26-002 |
| FROM | Craig Haas | DATE | 2026-11-14 |
| SUBJECT | **What a Fabrimap tank estimate looks like: register, priced lines, check and assumptions, on an example tank** | | |

This is a worked example of the estimate described in FM-CD-26-001, built on a typical small field-erected tank so you can see the shape of the output before sending a real one. The quantities are calculated from the datasheet below by the method in the basis document. The unit rates are illustrative and are the kind of thing you would adjust; every one of them is visible and editable in the issued estimate, and the quantities do not move when you change a rate.

> **Read this first** The tank, the rates and the prices in this document are illustrative. They show the structure and traceability of a Fabrimap estimate, not a quotation for any tank. A real estimate carries your plate prices, your labour rate and your site conditions.

## 1 The tank

Everything below is derived from these datasheet values and the nozzle schedule. Nothing is taken from a drawing that is not referenced here.

| | | | |
|---|---|---|---|
| SERVICE | Diesel storage, atmospheric | CODE | API 650, Appendix A not used |
| DIAMETER | 12.2 m (40 ft) | SHELL HEIGHT | 9.75 m, 4 courses × 2.44 m |
| NOMINAL CAPACITY | 1,140 m³ (7,170 bbl) | COURSES | 8 / 6 / 6 / 6 mm, A283 Gr C |
| BOTTOM | 6 mm lap welded, no annular ring | ROOF | 5 mm cone, rafters and centre column |
| ERECTION | Conventional, crane set | COATING | External 3-coat; internal lining bottom + 1 m |
| TESTING | Spot RT per API 650, vacuum box, hydrotest, settlement survey | | |

## 2 Register — what the datasheet quantifies to

The register is the take-off: one line per plate group, structure group, nozzle group and appurtenance group, each with a count, a weight and the seams it generates. This is what drives every labour line in section 3.

| ITEM | DESCRIPTION | COUNT | KG | SEAMS AND NOTES |
|---|---|---|---|---|
| Shell course 1 | PL 8 × 2440 × 9580, A283 Gr C | 4 plates | 5,873 | 4 vertical seams 2.44 m; shell-to-bottom fillet 38.3 m |
| Shell courses 2–4 | PL 6 × 2440 × 9580, A283 Gr C | 12 plates | 13,215 | 12 vertical seams; 3 horizontal seams 38.3 m each |
| Bottom | PL 6, lap welded, 50 mm projection | 13 plates + sketch | 6,044 | Lap seams 95 m; vacuum box full length |
| Roof plate | PL 5 cone, slope 1:16, lap welded | 12 plates + sketch | 4,919 | Lap seams 90 m |
| Roof structure | 16 rafters C150×12, centre column W200×27 | 17 pieces | 1,446 | 48 bolted/welded clips |
| Top curb angle | L75×75×8 | 5 pieces | 341 | Fillet to shell 38.3 m |
| Nozzles and manways | 2 × 24" MW, 1 × 20" roof MW, 1 × 8", 3 × 6", 3 × 4", 2 × 3", 3 × 2" | 15 | 900 | Set-through with reinforcing pad ≥ 3"; 1,940 weld in |
| Appurtenances | Spiral stair 14 m, roof handrail 20 m, 12 anchor chairs, 4 earthing bosses, nameplate | 86 pieces | 1,710 | Shop fabricated, field fitted |

Total steel 34.4 t. Seam inches are kept by thickness and position because weld output and radiography both depend on them: vertical shell 1,537 in; horizontal shell 4,527 in; shell-to-bottom 3,018 in; curb 1,509 in; bottom laps 3,740 in; roof laps 3,543 in; nozzles 1,940 in.

## 3 Estimate

Material is priced by kilogram, plate separate from sections, and nozzles each. Labour is quantity ÷ output rate, so a fabricator can check any line against what their crew achieves. Subcontract and equipment are priced as lines, not as a percentage.

| MATERIAL | UNIT | QTY | RATE | COST |
|---|---|---|---|---|
| Shell plate 8 mm | kg | 5,873 | $1.70 | $9,984 |
| Shell plate 6 mm | kg | 13,215 | $1.70 | $22,466 |
| Bottom plate 6 mm | kg | 6,044 | $1.70 | $10,275 |
| Roof plate 5 mm | kg | 4,919 | $1.75 | $8,608 |
| Sections (rafters, column, curb, stair, chairs) | kg | 3,497 | $2.20 | $7,693 |
| 24" manway, 150# blind, davit | ea | 2 | $2,800 | $5,600 |
| 20" roof manway | ea | 1 | $1,900 | $1,900 |
| 8" nozzle, flange, pad | ea | 1 | $650 | $650 |

| MATERIAL | UNIT | QTY | RATE | COST |
|---|---|---|---|---|
| 6" nozzle, flange, pad | ea | 3 | $520 | $1,560 |
| 4" nozzle, flange, pad | ea | 3 | $380 | $1,140 |
| 3" nozzle, flange, pad | ea | 2 | $300 | $600 |
| 2" coupling nozzle | ea | 3 | $180 | $540 |
| Welding consumables, grinding, gas | kg steel | 34,400 | $0.12 | $4,128 |
| **Material total** | | | | **$75,144** |

| LABOUR LINE | QTY | UNIT | OUTPUT RATE | HOURS | COST |
|---|---|---|---|---|---|
| Shop rolling, shell plates | 16 | plates | plates/hr | 20 | $1,700 |
| Cutting: sketch plates, roof, openings | 2,400 | cut in | 30 in/hr | 80 | $6,800 |
| Fit and weld vertical shell seams 6–8 mm | 1,537 | seam in | 8 in/hr | 192 | $16,331 |
| Fit and weld horizontal shell seams 6 mm | 4,527 | seam in | 12 in/hr | 377 | $32,066 |
| Shell-to-bottom fillet 8 mm, both sides | 3,018 | seam in | 14 in/hr | 216 | $18,324 |
| Curb angle to shell fillet | 1,509 | seam in | 16 in/hr | 94 | $8,017 |
| Bottom lap welds 6 mm | 3,740 | seam in | 18 in/hr | 208 | $17,661 |
| Roof lap welds 5 mm | 3,543 | seam in | 20 in/hr | 177 | $15,058 |
| Nozzles: set-through and reinforcing pad welds | 1,940 | seam in | 6 in/hr | 323 | $27,483 |
| Roof structure: rafter and column connections | 48 | conn | conn/hr | 69 | $5,829 |
| Appurtenances: stair, handrail, chairs, bosses | 86 | pieces | pcs/hr | 172 | $14,620 |
| Handling: heavy > 1 t (shell plates) | 16 | pieces | 2 pcs/hr | 8 | $680 |
| Handling: medium 100 kg – 1 t | 75 | pieces | 4 pcs/hr | 19 | $1,594 |
| Handling: light < 100 kg | 130 | pieces | 10 pcs/hr | 13 | $1,105 |
| Erection, conventional, crane set | 34.4 | t | 12 hr/t | 413 | $35,088 |

| LABOUR LINE | QTY | UNIT | OUTPUT RATE | HOURS | COST |
|---|---|---|---|---|---|
| Vacuum-box test, bottom seams | 312 | ft | 25 ft/hr | 12 | $1,061 |
| Hydrotest: fill, hold 24 h, drain — 2-man attendance | 124 | hr | 1 hr | 124 | $10,540 |
| Blast SP-6 and 3-coat external | 491 | m² | 2.5 m²/hr | 196 | $16,694 |
| Blast SP-10 and lining, bottom + 1 m shell | 155 | m² | 1.6 m²/hr | 97 | $8,234 |
| Supervision and QC, 10% of direct | | | | 281 | $23,888 |
| **Labour total · 3,091 hr × $85** | | | | | **$262,772** |

| SUBCONTRACT, EQUIPMENT, FREIGHT | UNIT | QTY | RATE | COST |
|---|---|---|---|---|
| Crane 90 t hydraulic with operator | days | 15 | $2,400 | $36,000 |
| External scaffold, ring at each course | m² | 450 | $18 | $8,100 |
| Radiography: 14 spots per API 650 schedule | spots | 14 | $140 | $1,960 |
| RT film review and report | lot | 1 | $600 | $600 |
| Settlement survey, 3 visits | visits | 3 | $900 | $2,700 |
| Hydrotest pump, hoses, blind flanges | days | 10 | $250 | $2,500 |
| Paint material, external system | m² | 491 | $11 | $5,401 |
| Lining material, internal | m² | 155 | $22 | $3,410 |
| Blast abrasive | m² | 646 | $4 | $2,584 |
| Welding machines, generators, site set-up | weeks | 4 | $1,800 | $7,200 |
| Freight, 4 loads delivered to site | loads | 4 | $1,800 | $7,200 |
| **Subcontract, equipment and freight total** | | | | **$77,655** |

| SUMMARY | HOURS | COST |
|---|---|---|
| Material | – | $75,144 |
| Labour at $85/hr all-in field rate | 3,091 | $262,772 |
| Subcontract, equipment and freight | – | $77,655 |
| **Subtotal** | | **$415,571** |
| Markup 12% (overhead and profit, agreed with client) | | $49,869 |
| **ESTIMATE TOTAL, excluding tax** | | **$465,440** |

## 4 Check against the tonne factor

Total labour is 3,091 hours on 34.4 t, which is 89.7 hr/t. That sits inside the field-fabrication band we hold for crane-erected tanks under 50 t, where small tanks run high because nozzles, appurtenances and testing do not scale down with the shell. Had the bottom-up figure fallen outside the band, we would have found the line responsible before issuing. The check never replaces the bottom-up total; it tells us whether to trust it.

## 5 Assumptions and exclusions

Each assumption names the input that would remove it. These are written on every estimate, not kept in the estimator's notes.

| # | ASSUMPTION OR EXCLUSION | REMOVED BY |
|---|---|---|
| A1 | Plate supplied cut to size and rolled by the mill; site cutting limited to sketch plates, roof and openings. | Mill quote confirming rolled plate, or add site rolling |
| A2 | Shell plates 8 ft × 31 ft 5 in; four plates per course, four vertical seams per course. | Plate size from the supplier |
| A3 | Spot radiography per API 650 for shell plate ≤ 10 mm: 14 spots. No full RT. | Client specification, if it calls for more |
| A4 | Hydrotest water supplied and disposed of by the owner; our price covers pump, fill, hold and drain labour. | Confirmation of who supplies water |
| A5 | Foundation, ring wall and anchor bolts by others; anchor chairs by us. | Foundation drawing |
| A6 | Internal lining is bottom plus the first metre of shell only. | Coating specification |
| A7 | Single mobilisation; site has crane access and laydown within 50 m of the foundation. | Site visit or plot plan |
| X1 | Excluded: piping beyond the first flange, instrumentation, fire protection, insulation, earthworks, permits. | — |

## 6 What you would receive

- This document, issued from Fabrimap as PDF, with your tank, your rates and your assumptions in it.
- The register as a cut list, so if the job proceeds the same lines become the weld map and the progress record.
- A rate sheet you can change: labour rate, every output rate, material $/kg, markup. Change one and the estimate re-prices; the quantities stay.

If this is the level of detail you want, send the datasheet for a real tank and we will produce the same document with your rates in it.

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