

The contract sum, taken apart

Chapter 1. Ask for the build-up before the number, at tender, while a competitor is still in the room. Six layers, the base each percentage sits on, and the unit each one is really spent in.

Project		Prepared by	
Contract / stage		Date	

Layer	Basis	Base it is applied to	Amount	Running total	The unit it is spent in
Measured works					
External works and site					
Preliminaries					
Overheads and profit					
Contractor's design development allowance					
Provisional sums					

Translate every percentage	Figure
Preliminaries: fixed element, in pounds	
Preliminaries: time-related share, as a rate per WEEK	
Overheads and profit: the addition rule every variation will carry	
Design development allowance: a pound figure that will be consumed and then exhausted	
Priced portion of the contract sum (quoted against a design)	
Unpriced portion (provisional sums: nobody has quoted it)	

Denominator attached to every metric	Value
Gross internal area, m2	
Net saleable area, m2 (efficiency = NSA / GIA)	
Units, and the average unit area	
Stories, basement, podium, site constraints	
Cost per m2 GIA, and revenue per m2 NSA (they do not subtract)	

Pemberton Yard: 2,180 x 8,640 = 18,835,200; +1,240,000 = 20,075,200; prelims 15.0% = 3,011,280; OH&P 6.0% of 23,086,480 = 1,385,189; allowance 2.0% of 24,471,669 = 489,433; provisional sums 1,340,000; contract sum 26,301,102, of which 1,340,000 was never a price. 3,044 per m2 GIA; 85.0% efficiency; 96 units of 76.5 m2.

The bridge, in three columns

Chapter 2. One test: did the client end up with building that was not in the contract? Bought. More for the same building? Lost. Money coming back? Recovered. Date every input.

Project		Prepared by	
Contract / stage		Date	

Line	Amount	Bought / lost / recovered	Knowable at signature?	Inputs, and the date each first existed	Owner
Design development beyond the allowance					
Provisional sums above the allowance					
Client changes: the scope					
Client changes: the premium					
Prolongation					
Disruption					
Statutory change					
Escalation					
Contra-charges					
Liquidated damages					
Retention never released					
TOTAL MOVEMENT					

Totals	Amount	Share of the movement
Bought: revise the budget, not a variance		
Lost: the variance, with an owner and a running total		
Recovered (minus sign)		
Of the lost, knowable at signature (share of the lost column)		
Knowable, whole movement (nets the knowable credits)		

Pemberton Yard: 1,052,000 bought, 2,030,500 lost, 230,239 recovered; 1,742,160 of the lost (85.8%) knowable; 56.4% of the whole movement. Use the first figure to decide what to do differently, the second to describe the project, and never one in answer to the other's question.

Design completeness and the exposure it creates

Chapter 3. A count, package by package, with an agreed definition of complete. The design team will contest it: that is a reason to do it, not a reason to skip it.

Project		Prepared by	
Contract / stage		Date	

Package	Issued for construction	Performance spec, specialist design (counts complete if priceable)	Performance spec standing in / design intent (incomplete)	Priced value	Date to resolve

The exposure, in front of the board	Figure
Works + preliminaries + overheads and profit (provisional sums excluded)	
Design issued at contract, per cent (the count above, weighted by value)	
Value priced after signature = exposed value x (1 - completeness)	
Premium on late-priced value (the cost consultant's letter: settled packages vs tender, common price date)	
Gross = value priced late x premium	
Contractor's allowance, from its own build-up (not the summary)	
REACHES THE CLIENT = gross - allowance, never below zero	

The plateau, derived: the allowance is a share of the same exposed base, so the line reaches zero once 1 - completeness is below allowance / premium. Completeness above 1 - 0.020 / 0.135 = 85.2 per cent pays nothing more on this line (the book says "beyond 90"); Case B's 0.5 per cent allowance moves the threshold to 96.3, which is why 10,421 still reaches the client at 96. Pemberton Yard: 24,471,669 x 28% = 6,852,067; x 13.5% = 925,029; less 489,433 = 435,596.

The provisional sums schedule

Chapter 4. A page of its own in the board paper. Every line: undesignable now, or merely undesigned now? Decide in a room where someone can make the specification decision on the spot.

Project		Prepared by	
Contract / stage		Date	

Item	Allowance	Defined? (nature, location, quantity, sequence given)	Undesignable or merely undesigned	What stops it being designed today	Replace with	Release date / owner

Replacement	When it fits
Measured item against a performance specification with defined scope	
Client-held contingency OUTSIDE the contract sum (released by a decision, not an instruction)	
Provisional quantity against a firm rate (nature known, extent not: behind a facade, ground works)	

Month	Allowance	Instructed to date	Forecast on items outstanding	Running overrun %	Items still uninstructed

Pemberton Yard: 1,340,000 released at 2,150,000 (60.4%), 810,000 of gap, 28.4%, the largest line. Case B: 210,000 released at 243,000 (15.7%). A sum labelled "defined" against thin information is an undefined sum with a better label: the contractor recovers time and preliminaries after all.

The change register, in two columns

Chapter 5. Scope at contract rates is bought; the premium for valuing it after award is lost. One column called variations destroys the only information the number contains.

Project		Prepared by	
Contract / stage		Date	

Instruction	Date issued	Scope at contract rates	As valued	Premium	Rung: contract / pro-rata / fair valuation / daywork	Quotation before instruction?

Before signature	Answer
Three changes you can imagine in month nine, valued ENTIRELY from the schedule that will be in the contract: what could not be valued?	
Share of the works value covered by an applicable rate; trades with no rate at all	
Rate shape checked item by item against benchmark and the other tenderers (loading on items expected to move)	
Omissions valued at the same rate as additions?	
Packages too urgent for the quotation procedure, named now	

Pemberton Yard: 742,000 of scope valued at 847,364, a premium of 14.2% (105,364). Case B, against a complete design: 6.1% (45,262). The premium to 0 moves the gap by 112,285 only: attack it because it is knowable, not because it is large. Date every instruction: the date is when its work enters the escalation base.

What a week costs

Chapters 6 and 10. The rate is three numbers from the priced document. Publish it in the board paper and put it in the contract particulars at tender.

Project		Prepared by	
Contract / stage		Date	

Preliminaries item	Fixed	Time-related (per week)	Quantity-related	Tested against the item by

The rate and what it prices	Figure
Time-related preliminaries a week = total x time-related share / contract weeks	
Agreed weekly prolongation rate in the contract particulars (binds both ways)?	
Liquidated damages a week, and the cap	
Client's own cost of a week of contractor delay: interest on the facility at completion (and fees)	
A week granted as an extension costs: weekly rate + damages forgone	
Delay decision in hand: weeks x rate, plus damages that will not be recovered	

Item	Answer	Evidence / note
Settle before either is needed		
Concurrency: what happens when two causes run together		
Assessment method (prospective or retrospective) and the baseline programme it runs against		
Records each party keeps; who assesses, on what evidence, within what period		
Notice: a bar or a factor?		

Pemberton Yard: 3,011,280 x 72% / 94 = 23,065.12 a week; 11 weeks = 253,716; damages 14,500 a week, so a granted week costs 37,565. The client's own debt, fully drawn at completion, costs 34,640 a week (case two).

Disruption: the records that make a measured mile possible

Chapter 7. A condition of tender or nothing: the hours belong to subcontractors on lump sums. State the zone map, the format and the frequency in the preliminaries the contractor prices.

Project		Prepared by	
Contract / stage		Date	

Week	Zone	Trade / package	Gang size	Hours booked	Output (unit)	Output per hour	Event reference

Notice of a disruption event: particulars	Given?
Area and trade affected	
Gangs affected and hours at risk	
Cause, and the instruction or event it follows	
Date noticed, date notified, to whom	

The one question for any claim on this line	Answer
Which value pool is it computed on (trade labour, or the contractor's total cost for a period)?	
Does any resource in it already appear in a prolongation settlement (site management, crane, scaffold, supervision)?	
Method: measured mile / tender allowance / industry factors / global claim (weakest)	

Pemberton Yard: 11,200,000 of trade value / 94 weeks = 119,148.94 a week; 22 weeks at 11.0% loss = 288,340 (the rounded 119,149 gives 288,341). The whole range, 0 to 16%, is 419,404: less than the provisional sums line alone.

Statutory change and escalation

Chapters 8 and 9. One line you cannot underwrite and should name; one derived line you can shrink by shortening the lag rather than forecasting the index.

Project		Prepared by	
Contract / stage		Date	

Statutory change: decide in the tender documents	Decision
Base date: tender date or a later base date?	
Operative verb: made, announced, published, or brought into force?	
Allocation: client / contractor (only if it owns the design) / split at the date	
Named contingency line (not a general percentage), and the reason it cannot be sized	
Register of drafts, consultations and transitional provisions touching this building type	

Late-priced item (design development, sums, changes)	Value	Month priced (from tender)	Value x months

Escalation	Figure
Base exposed = value priced after the tender (not the contract sum)	
Lag = sum(value x months) / sum(value): the weighted midpoint	
Index a year (published series, month by month)	
Factor = $(1 + \text{index})^{(\text{lag} / 12)} - 1$, carried to four decimals	
Escalation = base x factor	

Pemberton Yard: 2,092,960 x 6.5689% (4.1% over 19 months) = 137,484; the rounded 6.6% gives 138,135. Case B: 830,683 x 3.7520% (11 months) = 31,167. Split a statutory event on the day it lands: the work to the bought column, its weeks to prolongation and disruption.

Credits, and the notice calendar

Chapter 10. Entitlement is not collection. A deduction is taken by notice inside a window that closes, and the dates are derivable at signature for every payment cycle of the job.

Project		Prepared by	
Contract / stage		Date	

Cycle	Valuation	Due date	Payment notice by	Pay less notice by	Final date for payment	Deduction (damages / contra-charge)	Owner / deputy

Contra-charge event	Date	Instruction / notice to contractor	Why the cost fell on the client	Invoice	Accepted / disputed

Damages and retention	Figure
Damages rate against the client's own weekly cost (a rate below it caps recovery below cost)	
Cap, and the weeks of contractor delay it takes to reach it	
Retention: percentage, pool, defects exposure it stands against	
Release triggers, who certifies, rectification period	
Time value of retention held: to the FINANCE line, never the account	

Pemberton Yard: damages $3 \times 14,500 = 43,500$ against a cap of 1,315,055 (90.7 weeks at the rate); retention 789,033, 11.5% never released = 90,739; time value 71,923 over 1.154 years, a figure that implies a six-month rectification period (0.5 x 47 weeks, and the second half 47 weeks plus half a year).

Two procurement routes, in one board paper

Chapters 11 and 12. Print both options at the same size. A board that sees only the higher contract sum is being asked to approve a premium with the benefit removed from the page.

Project		Prepared by	
Contract / stage		Date	

	Option A (as designed today)	Option B (design completed first)
Design issued at tender		
Provisional sums		
Contract sum		
Projected final account (line by line, not a percentage)		
Gap, per cent of contract sum		
Profit on cost: underwritten		
Profit on cost: at the projected final account, facility fixed		
Profit on cost: facility stretched		
Headroom above the contract sum		

What buying option B costs, and what it can afford	Figure
Rate difference the tenderers state between the design you have and the one you could reach	
Rate premium at which the final accounts are equal (the break-even)	
Extra design fee to complete, and extra pre-tender weeks x land carry	
Fee and weeks that would erase the advantage	

Pemberton Yard: B is 90,648 dearer at contract and 1,620,289 cheaper at the final account; 17.40 / 8.59 against 17.07 / 13.40. The whole comparison survives a rate premium of up to 303 per m2 against the 150 assumed (2.02 times, case one), not "several times": ask the tenderers, and set their answer against that figure.

The headroom page

Chapter 13. No threshold, no headroom. The contingency is inside the construction cost the headroom is measured from: spending it consumes headroom, it does not create any.

Project		Prepared by	
Contract / stage		Date	

The closed form (facility held, fees a percentage of construction)	Figure
Return threshold, stated in writing	
Revenue	
Total cost the threshold implies = revenue / (1 + threshold)	
Less land, finance (held), sale costs	
Leaves construction plus fees; divide by (1 + fee %)	
BREAK-EVEN CONSTRUCTION COST	
HEADROOM = break-even - contract sum, and as a share of it	
Proof: profit on cost at the break-even = threshold exactly	

Month	Committed change to date	% of headroom consumed	Contingency held inside / outside the contract sum	Forecast final account	Profit on cost at the forecast

Pemberton Yard: break-even 27,033,648; headroom 732,546 (2.8%); the gap ran 3.9 times it. Each pound of overrun costs 1.098 pounds of profit once fees follow; every 1 per cent of construction cost is about 4.3 per cent of profit. The overrun that halves the return is 2,812,970 (the first Solve sheet said 5,345,384).

One input at a time, ranked, and eight errors

Chapter 14 and Chapter 15. Hold the contract sum. Rank by span. Put the joint move beside the single moves, then look at the diary.

Project		Prepared by	
Contract / stage		Date	

Input	Low	Base	High	Movement low	Movement high	Span	Client control before signature

Item	Answer	Evidence / note
Eight errors that survive a review		
A contingency sized against a figure that has since been superseded		
A solver that returned its own search bound (is the break-even interior?)		
A sensitivity that re-sizes the thing being stressed (did the reference move?)		
A return measure quoted without the time it took		
A correction applied to one case and not the other		
A ratio escalated when both halves were already at outturn		
A financing cost carried by the asset instead of the loan (retention time value)		
An item removed at one end and given back at the other (prolongation inside a disrupted labour rate)		

Pemberton Yard spans: provisional sums 1,342,767; design 1,062,726; extension of time 572,042; productivity 419,404; escalation 340,921; post-award premium 173,963. Joint move (Case B): 1,710,937 of movement. Management attention ran in almost exactly the inverse order.

Before, thirty, sixty, ninety

Chapter 15. Seven measurements, five instruments, four reports, three disciplines. Before signature matters more than the other three together.

Project		Prepared by	
Contract / stage		Date	

Item	Answer	Evidence / note
Before signature: seven measurements		
Design completeness, package by package		
Exposed value and the design development it creates		
Provisional sums listed, each undesignable or merely undesigned		
Time-related preliminaries per week, and the rate in the particulars		
Tender date and the lag to the midpoint of late-priced work		
Headroom against a stated threshold		
Three plausible changes priced from the rate schedule		
First thirty days: five instruments		
Baseline programme accepted in writing, critical path agreed		
Schedule of rates in force and tested on a small change		
Zonal labour records running (bought at tender)		
Register of disputed design development (the depletion report from the other side)		
Provisional sum release programme: dates and named owners		
Sixty days: four reports		
Gap in three columns: bought, lost, recovered		
Committed change as a share of headroom, not of contingency		
Escalation base monthly, as a leading indicator		
Extension of time positions kept current		
Ninety days and after: three disciplines		
A named owner for each of the eleven lines		
Final account re-forecast quarterly, line by line		
Standing agenda item: which line moved, and was it bought, lost or recovered?		

Together the seven measurements price the five knowable lines that reached Pemberton Yard's client: 435,596 + 810,000 + 105,364 + 253,716 + 137,484 = 1,742,160, against a headroom of 732,546.