COMPASS
INTERNATIONAL INC.

2025 FRONT END/ CONCEPTUAL ESTIMATING

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2.5 Average Historical Multiplier Factors – Liquids

(2) Average Historical (Multiplier) Factors - Liquid Plants +/- 25% Accuracy (Chemicals / Fluids / Wet Process's type facilities, high percentage of pumps / piping) Assume Major Equipment cost is $1.00 million delivered to site the following average percentages should be used as a starting point. Off sites (O.S.B.L.) are excluded from the following data values.

To establish a budget value for O.S.B.L. add between 5% and 70% of the above compiled values, typically the O.S.B.L. value will fall in the 10% to 25% range.

For revamp / upgrade / modernization projects calibrate the above values by the following:

- Minor revamps multiply by 1.05 –1.15
- Average revamp projects multiply by 1.15 to 1.25
- Major revamps multiply by 1.25 to 1.75

Ref	Direct Construction Costs	Typical % Of M.E.	% Bulk Materials	% Labor - S/C	Total	Remarks
1	Major Equipment (M.E.)					
2	Freight (used 4%)					
3	Overseas Freight					
4	M.E. Setting (Millwright work)					
5	Site work / civil (excavation / roads)					
6	Concrete work					
7	Structural steel					
8	Facilities / Buildings (including services)					
9	Piping** (includes hangars & testing)					
10	Electrical					
11	Instrumentation / Controls					
12	Insulation					
13	Painting					
14	Safety / F P / Miscellaneous (A)					
	Total Direct Cost					
Indirect Project Costs						
15	Field Establishment Costs ***					
16	EPC Office H.O. range 20% - 30%					
17	Construction Management range 20% -.45% of line 16					
18	Owner Engineering & CM 5% – 15% of line 16 & 17					
19	**Total Indirect Costs**					
20	**Total Cost Multiplier**					
	"(A) = Start up costs, initial chemicals, expense items and other minor items. * 1.00 = Total value of Major Equipment / Assume 25 items (M.E.) ** 50% - 150% is based on using a 60 - 40 split of Carbon Steel and 304-316 SS, this value could in some situations exceed 150% in circumstances were exotic / expensive piping materials are utilized, i.e. Glass / Kynar / Teflon lined / Alloy					

2.11 Benchmark – Power Plant (3)

SIMPLE CYCLE - P0WER PLANT

Cost Basis Mid-point of 2024
200 MW USA MIDWEST LOCATION
EPC Duration 22 months
E & P = 9 months C = 17 months

#	DESCRIPTION	$ Cost In Millions	%
1	Major Equipment - Combustion turbines, Compressors, Evaporators, Cooling Systems, Pumps, Tanks, Modules & other minor equipment		
2	Freight		
3	Site works / Clearance		
4	Civil Work / Foundations & Roads		
5	Structural Steel / Pipe Racks		
6	Pipe (Below & Above Ground)		
7	Elec / Instrumentation & Balance of Plant (Switchgear, MCC's, Transformers, SCADA etc.,)		
8	Insulation		
9	Paint / Coatings		
10	Admin - Control Building / Warehouse / Guard House		
11	Water / Nat Gas Pipelines & tie-ins 1.8 & 2.9 miles		
12	New Switchyard / Transmission Line 4.7 miles		
13	New sub stations		
14	Minor Costs - Fencing, Testing, Inspection Services		
15	Field In directs (Site trailers / offices, supervision, construction equipment-plant hire, scaffolding, small tools, site logistics)		
16	**Sub Total Construction Activities**		
17	HO Engineering / Detailed Design / Procurement & Project Control - Admin Support		
18	Project & Construction Management		
19	OCIP Insurance / Fees / Profit		
20	Initial Start Up Spare Parts		
21	Start Up / Commissioning		
22	Contingency / Management reserve		
23	**Total Facility Cost of Facility**		
24	**Cost per MW (Based on 200 MW Facility)**		
25	**Low-Cost Range - 15% per MW**		
26	**High Cost per MW + 15% per MW**		
	EXCLUDES: Owners staff /support costs Land purchase Overtime / shift work Operating spares Future escalation Demo / Relocation Costs		

SIMPLE CYCLE - P0WER PLANT

Cost Basis Mid-point of 2024

200 MW USA MIDWEST LOCATION

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	EXCLUDES: Owners staff /support costs Land purchase Overtime / shift work Operating spares Future escalation Demo / Relocation Costs		

NEW INDUSTRIAL / COMMERCIAL SQUARE FOOT – M2 BUILDING COSTS 2025 COST BASIS

The general approach is to determine the number of floors, footprint of building / facility, calculate usable square foot area of facility / building, select building type / specification from list below and multiply by calculated square footage by the appropriate SF/ M2 cost value. Modify for location by selecting city location factor indicated in Section B - 5. The following Facility / Building costs are specified by cost model size in S.F. together with number of floors in U.S. dollars per square foot / M2 by Facility / Building for each category of building.

- Specification A Facing with concrete block back-up
- Specification B Stucco on concrete block
- Specification C Ribbed concrete block
- Specification D Pre-Cast concrete panels
- Specification E Insulated metal panels
- Specification F Tilt-up concrete panels
- Specification G R.C. frame cast on site
- Specification H Curtain wall / metal & glass panels
- Specification I EIFS / Dryvit wall panels

New Industrial / Commercial Sq. Ft. – M2 Building Costs

2025 COST BASIS: INCLUDE ALL MATERIAL, LABOR, PLANT, GENERAL CONDITIONS, PRELIMINARIES, OVERHEAD, AND PROFIT.

Facility / Building Costs	Cost Model SF	Cost Model M2	SF $ Low	SF $ High	Average $ SF Cost	Average $ M2 Cost
300 mm wafer manufacturing facility						
Advanced Chemical Weapons Laboratory						
Agricultural R&D Center						
Animal Research / Testing Facility 2 Floors						
Apartments 1 – 3 Floors (Spec A)						
Apartments 1 – 3 Floors (Spec B)						
Apartments 3 – 5 Floors (Spec C)						
Apartments 3 – 5 Floors (Spec A)						
Apartments 3 – 5 Floors (Spec D)						
Apartments 5 – 25 Floors (Spec D)						
Apartments 5 – 25 Floors (Spec A)						
API – Pharmaceutical Facility						
Auditorium 2 Story (Spec A)						
Auditorium 2 Story (Spec D)						
Auditorium 2 Story (Spec C)						
Automobile Production Facility						
Bakery						
Bank 1 Story (Spec A)						
Bank 1 Story (Spec B)						
Bank 1 Story (Spec C)						
Biological Manufacturing						
Bio – Medical / R&D Center 3 Floors						
Bleach Manufacturing Facility						

CSI DIVISION 3, 4 & 5 STRUCTURAL ELEMENTS / WALLS / FLOORS
STRUCTURAL STEEL FRAMING (100 – 1,000 TON)

#	Description	Unit	Material	Labor	Total
1	Offices 1 – 3 floors				
2	Factory / Manufacturing Facility				
3	Hi-Rise Building 5 – 10 floors				
4	3” metal decking ribbed 20 g				
5	Ditto 18 g				
6	Ditto 16 g				
7	10” L B wall				
8	Ditto 12”				
9	Ditto 14”				
10	Flat 4” thick (PCCWS)				
11	Ditto 6” (PCCWS)				
12	Ditto 8” (PCCWS)				
13	Exposed aggregate face 4” thick (PCCWS)				
14	Ditto 6” (PCCWS)				
15	Ditto 8” (PCCWS)				
16	Ribbed finish 4” thick (PCCWS)				
17	Ditto 6” (PCCWS)				
18	Ditto 8” (PCCWS)				
19	Concrete reinforced (Tilt up wall panels) 4” thick				
20	Ditto 6” thick				
21	Ribbed Concrete block wall in 1-3 Cement mortar 8” wide				
22	Ditto 10” wide				
23	6” thick				
24	8” thick				
25	Concrete Column, cast in place, round, 12” diameter				
26	Concrete Column, cast in place, round, 14” diameter				
27	Concrete Column, cast in place, round, 18” diameter				
28	Concrete Column, cast in place, square, 10”X10”				
29	Concrete Column, cast in place, square, 12”X12”				
30	Column, Pre cast concrete, 12”X12”				
31	Column, Pre cast concrete, 14”X14”				
32	Column, Pre cast concrete, 16”X16”				

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4.24 Process Piping Systems Cost Data

Process Piping Systems

DATA TABLE

Diameter	$ Material Cost Per LF	$ M-H Cost Per LF	$ Cost Per LF	$ Material Cost Per M	$ M-H Cost Per M	$ Cost Per M
Alloy 20 schedule 40 Complicated / Intricate (ISBL - Inside Facility) Piping - Numerous changes in direction						
2" / 50 mm						
4" / 100 mm						
6" / 150 mm						
Add 4.5% - 7.5% to labor & material costs for hangars, bolts, gaskets & testing						
Alloy 20 schedule 40Staight run / OSBL Piping - Less Welding						
2" / 50 mm						
4" / 100 mm						
6" / 150 mm						
Add 4.5% - 7.5% to labor & material costs for hangars, bolts, gaskets & testing						
Aluminum schedule 40 Complicated / Intricate (ISBL - Inside Facility) Piping - Numerous changes in direction						
2" / 50 mm						
4" / 100 mm						
6" / 150 mm						
Add 4.5% - 7.5% to labor & material costs for hangars, bolts, gaskets & testing						
Aluminum schedule 40 Straight run / OSBL Piping - Less Welding						
2" / 50 mm						
4" / 100 mm						
6" / 150 mm						
Add 4.5% - 7.5% to labor & material costs for hangars, bolts, gaskets & testing						
Inconel schedule 40 Complicated / Intricate (ISBL - Inside Facility) (Piping - Numerous changes in direction)						
2" / 50 mm						
4" / 100 mm						
6" / 150 mm						
Add 4.5% - 7.5% to labor & material costs for hangars, bolts, gaskets & testing						
Inconel schedule 40 Straight run / OSBL Piping - Less Welding						
2" / 50 mm						
4" / 100 mm						
6" / 150 mm						
Add 4.5% - 7.5% to labor & material costs for hangars, bolts, gaskets & testing						
Carbon Steel A 53 - A 106 Schedule 40 Complicated / Intricate (ISBL - Inside Facility) Piping - Numerous changes in direction						

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4.18 HVAC Cost Data

O.O.M. Air Conditioning / Cooling Values

DATA TABLE

Facility Type	SF Per Ton	M2 Per Ton	Cost Per Ton
Apartment (3-5 story)			
Computer / Data Processing Center			
Manufacturing Facility / Factory			
Hospital (3-5 story)			
Hotel (3- 5 story)			
Office Building (3 - 5 story)			
Refrigerated Warehouse			

O.O.M. Air - Handler Units

DX - Chilled water includes coils, blower & drives

Tons	HP	CFM	Material Cost	Man-Hours
10				
25				
50				

O.O.M. Packaged Water Chiller / Recip. Compressor

C / W condenser / H.E. / chiller / Piping & local controls

Tons	????	Material	Man-Hours	Misc. Hook-Up Materials
25				
50				
100				