



COMPASS

INTERNATIONAL INC.

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Introduction to Global Construction

The continuing transfer of economic supremacy from West to East is picking up the pace as we move into 2017. Just look at the growing list of Chinese, South Korean (the new Japan), Indian and other Asian-based EPC firms winning global construction projects. In a year (i.e. 2018) five of the top 10 global contractors will be Chinese. We are certainly in a changing world; to better understand this, in 2010, 25% of global construction was in emerging countries and 75% was in developed countries. This situation is forecast to be completely reversed by the year 2020.

Now that the dust is beginning to settle after the recent global financial crisis, the # 1 economy ranking the USA has held for more than a century looks more and more under threat as we move into 2017. They say that the 19th century was the British and French's century, the 20th century was the American century, well, it appears that the 21st century will be the Sino / Indian / Brazilian century, with the USA still being a major player, but perhaps not as powerful as it use to be. Every day we see this possibility gaining more credence, the old adage go "west young man", should now read "go east or south young man or woman" (to be politically correct). City expansion or urban sprawl is the number one trend that will drive global construction activity and costs. More than one billion people will migrate from rural areas to major cities in the next 10 years; these "growth" cities are in China, India, Indonesia, Nigeria, Brazil, South Africa and other

Political Map of the World, April 2006



Table 33

REFURBISHMENT & MODERNIZATION OF SHOPPING CENTER 470,000 SF (43,680 M2): CENTRAL FLORIDA, USA: COST BASIS 2017 COST BASIS: OPEN SHOP (NON UNION) CONSTRUCTION:

DESCRIPTION	SQUARE FEET (FOOTPRINT)	\$ / SF LOW	\$ / SF HIGH	\$ / SF AVERAGE	\$ TOTAL AVERAGE	REMARKS
Add on to existing / Utilities /	470,000	2.35	4.75	3.55	1,668,500	Various Site Clearance activities, Site Work, additional utility lines & retention pond
Staging / Temporary Barricades / Occasional Overtime	470,000	1.75	3.25	2.50	1,175,000	Various temporary dust / noise screens during construction
Revamp & Refurbish Shopping Mall (Building Shell / Roof / External Walls / Windows / Doors & Painting	470,000	15.00	35.00	25.00	11,750,000	Remove & replace 50% of existing walls, new windows & roof
Revamp & Refurbish Flooring existing flooring	470,000	2.25	2.75	2.50	1,175,000	Remove & replace 70% of
Revamp & Refurbish Ceiling	470,000	2.05	2.45	2.25	1,057,500	Remove & replace 80% of existing ceilings
Revamp & Refurbish Racks / Fixture / Shelving Displays / Shelving Displays Check Out Points	470,000	0.25	0.65	0.45	211,500	Remove & replace 40% of existing Racks / Fixture / / Check Out Points, (60% was completed by store operators, costs are not part of this model)
Revamp & Refurbish Power / Distribution / Phone / Internet / Security / Sound System	470,000	0.65	1.35	1.00	470,000	Remove & replace 60% of existing Power / Distribution / Phone / Internet / Security / Sound System
Revamp & Refurbish Lighting	470,000	3.15	3.85	3.50	1,645,000	Remove & replace 80% of existing Lighting system
Revamp & Refurbish Cold Storage / Bally Boxes	470,000	1.05	1.35	1.20	564,000	Remove & replace 25% of existing Cold Storage / Bally Boxes 75% was completed by store operators, costs are not part of this model
Revamp & Refurbish HVAC / AHU's / Ductwork	470,000	3.05	3.85	3.45	1,621,500	Remove & replace 80% of existing HVAC / AHU's & Ductwork
Revamp & Refurbish Fire Protection / O.S. Fire Loop	470,000	1.65	AA2.05	1.85	869,500	Remove & replace 60% of existing Fire Protection / O.S. Fire Loop
Revamp & Refurbish Signage internal / external	470,000	1.45	2.25	1.85	869,500	Remove & replace 100% of existing Signage internal / external
Revamp & Patch / Refurbish Parking Blacktop & Signs (1,000 cars)	520,000	1.65	2.05	1.85	962,000	Remove & replace 60% of Parking Blacktop & Signs

CONSTRUCTION MATERIAL COSTS

The figures on previous page are for a sampling of construction materials that would be installed on a mid-sized commercial or industrial construction project. The data is based on costs for projects in, or close to, Darwin, Melbourne, and Sydney. The values include delivery to site. They exclude taxes and overhead and profit markups to the installing contractor. The values shown are approximate. For small- or add-sized quantities of materials, adjustments of 15-25% should be added to the indicated values. The values shown have been adjusted to reflect mid-2017 values. Discounts of 5-15% can often be had on large-quantity orders.

On average Australian bulk materials tend to be 5% - 8% higher than its comparable US equivalent.

Engineered bulk items such as motor controlled valves, instrumentation devices etc; tend to be 7.5% - 11.5% more expensive in Australia than in the USA. With the continuing weakening of the US \$, Aus-

lian bulk material items are typically 6.5% - 9% more expensive than US bulk items as of January 2017.

APPROXIMATE COSTS OF BUILDING/FACILITIES

The cost figures shown below include all materials, labor and applicable taxes, plus the contractor's overhead and profit, but exclude land purchase, parking areas, landscaping, offsite work, architectural and engineering fees, owner provided equipment/furniture, owner engineering cost, and owner financing costs. The unit prices were obtained by dividing the final cost of each project by the gross floor area of each building. These values are approximate and should be used only for conceptual estimates; their accuracy at best +/- 25%. The high values should be used for projects that will utilize high-quality specifications, materials, and installation methods and that are located in downtown major city areas. The costs reflect 2017 prices for projects located in the Sydney area.

Australian SF / M2 Facility Unit Costs IN US \$'S

#	TYPE OF FACILITY	SF / LOW	SF/ HIGH	M2 / LOW	M2 / HIGH
1	Airport Terminal 2 – 3 Floors 400,000 - 700,000 SF	162	260	1,744	2,799
2	Apartments (Class B/C) 3 – 6 floors not public housing	159	251	1,707	2,702
3	Apartment public housing 3 – 6 floors	119	170	1,283	1,824
4	Food Production / Dairy Facility 70,000 SF	130	173	1,393	1,866
5	Hotel 3-6 floors 100,000 SF-2 - 3 star - suburban location*	184	260	1,979	2,794
6	Manufacturing / Facility / Factory 2 Floors 75,000 SF	73	132	791	1,415
7	Office 3 Floors 45,000 SF suburban location*	157	218	1,684	2,351
8	R & D Facility (College – Basic Research) 2 Floors 65,000 SF	187	237	2,014	2,547
9	W-House Refrigerated 80% / Admin 20% / 80,000 SF	101	154	1,085	1,661
10	W-House/ Logistics Center 80% / Admin 20% 40,000 SF **	70	101	755	1,089
	* 5-15 miles from city center				
	** Excludes racking / bar coding / warehouse equipment				

of cement to be manufactured each day, number of people to be housed in an office) to be completed together with the operating and quality parameters. The owner will usually have a single contract with the general contractor. The general contractor will have a number of contracts with trade contractors, subcontractors, and equipment vendors and suppliers.

- The FIDIC form of contract is sometimes utilized
- Cost-reimbursable contracts and unit-price contracts are on occasion used.
- Major Fortune 500 companies performing construction work in Germany will often use their own standard form of contract, modified to suit local conditions.
- Negotiated contracts
- Management contracts
- Guaranteed maximum price contract (GMP)

ARCHITECTURAL/ ENGINEERING DATA

The following table (on the next page) shows typical fees for architectural and engineering services on new buildings/facilities in Germany. It should be understood that fees for architectural and engineering services are fixed to a set scale and are governed by an authority that monitors and regulated them (H.O.A.I.). The fees are shown as a percentage of the total cost of the building or facility. These values should be used as a guide only. The percentages can vary significantly depending on scope of work, market conditions, type of facility or building, sophistication of specifications, and design requirements.

The hourly rates that follow are “all in” hourly job rates or selling rates for various construction professionals and are appropriate for 2017. The hourly rates include employees’ salaries, worker compensation insurance, social security payments, health insurance premiums, unemployment insurance, vacation payments, overhead markups, establishment charges, and profit. The rates are appropriate for the Frankfurt area and for individuals with a minimum of 10 years experience. These rates are appropriate for process type facilities.

PROCESS RELATED FACILITIES

SKILL	LOW EURO	HIGH EURO
Senior Project Manager (20 years experience)	135	185
Project Manager (10 years experience)	120	153
Architect (15 Years Experience)	110	135
Chemical / Process Engineer (15 years experience)	115	135
C/S/A Engineer (ditto)	110	130
E&I Engineer (ditto)	120	140
CAD Operator (ditto)	60	85
Estimator (ditto)	82	116
Quantity Surveyor (ditto)	80	115
Planner (10 years experience)	75	110
Purchasing Agent (15 years experience)	75	110
S/C Administrator	98	120
Document Control	43	58
Field Accountant (5 years experience)	75	97
Field Clerk (ditto)	55	73
Construction Manager (10 years experience)	120	140
Field Engineer (5 years experience)	106	123
Inspector (10 years experience)	100	115
Site Materials Coordinator (5 years experience)	66	94
Field Expeditor	60	85
Start up Engineer	110	133
Vendor Assistance Engineer (used to start up a complex process equipment item)	125	170

• Germany: in Euros US\$ 0.91 / Euro) July 25, 2016

German professional workers typically work 38.5 – 40 hours per week and receive 5 – 6 weeks paid vacation, they also are entitled to 9 – 11 public holidays, hours worked per year = 1,700 – 1,750 = 1,725 hours .

SKILL	\$ LOW	\$ HIGH
Architect	25.00	41.00
Mechanical Engineer	25.00	42.50
Civil Engineer	24.00	40.00
Electrical Engineer	26.00	43.50
Estimator (10 Years Experience)	24.00	37.00
Planner (5 Years Experience)	20.00	36.00
Construction Manager	29.00	40.00

ENGINEERING PRODUCTIVITY / DESIGN WORK

The following figures show a range of productivity values: (1) Washington, DC (2) Houston Texas, and (3) Budapest, Hungary. The productivity factors are compared against a U.S. basis of 1.00 – Washington DC, engineering labor working on producing the necessary design deliverables for a midsize petrochemical / manufacturing facility (say \$10 – \$50 million).

REF. #	LOCATION	PRODUCTIVITY VALUE
1	Washington, DC	1.00
2	Houston, TX	0.95
3	Budapest, Hungary	1.10 – 1.40

CONSTRUCTION LABOR HOURLY RATES

The following are “selling rates” for skilled and unskilled construction workers; these are the hourly billing rates that a contractor would charge an owner and include base wage rate, insurance, fringes, burdens, holidays, small tools, and training levies, plus all applicable overheads and profit. They have been adjusted to reflect 2017 rates.

SKILL	\$ LOW	\$ HIGH
Carpenter	13.50	17.50
Mason	13.50	17.50
Pipefitter	14.50	18.50
Electrician	14.50	18.50
Unskilled Work	7.50	11.50

APPROXIMATE COST OF BUILDINGS/FACILITIES

The following square-meter and square-foot values include all material, labor, plant, general conditions, overhead, and profit. Excluded are owners’ costs such as furniture, equipment, land purchase, design fees, and major items outside the facility’s footprint. These values have been adjusted to reflect 2017 pricing levels.

FACILITY TYPE		LOW US\$	HIGH US\$
Warehouse/distribution center	m2	484	839
	ft2	45	78
Factory/industrial building	m2	570	893
	ft2	53	83
Office building	m2	1,076	1,700
	ft2	100	158
Apartments (medium quality)	m2	796	1,345
	ft2	74	125

LOCATION FACTORS

- For chemical/process/manufacturing construction projects with a high content of imported engineered equipment and construction material: **0.92**
- For buildings/facilities/civil-type construction projects with high content of locally produced engineered equipment and construction materials: **0.88**

If the above project is for a “first of its kind” building / facility (engineering / construction endeavor will initially experience a steep learning curve as the project navigates it way through local import regulations and various permitting issues) add 0.03 – 0.05 points to above values. If company has built or has operating facilities already in country, use the location factors above.

LABOR BRODUCTIVITY RANGE

- **Good:** 1.15
- **Average:** 1.40
- **Bad:** 2.20

INFLATION

- **2002:** 7.5%
- **2003:** 5.3%

- **2004:** 6.3%
- **2005:** 4.8%
- **2006:** 3.6%
- **2007:** 5.4%
- **2008:** 6.3%
- **2009:** 6.0%
- **2010:** 2.5%
- **2011:** 2.2%
- **2012:** 3.0%
- **2013:** 2.2%
- **2014:** 2.2%
- **2015:** 3.2%
- **2016:** 0.8%
- **2017:** 2.3%

TAXES/TARIFFS/IMPORT DUTIES

The Hungarian government imposes two levels of value added tax on both domestic and imported goods. A 27% rate is applied to foodstuffs, fuel, water, medicines, and basic necessities. The other rate is 20%, which is imposed on the vast majority of other products and services. The government also imposes tariffs and taxes on imported equipment and materials. These rates can range from 0% to 25% of the C.I.F. cost (Average 7%). For specific details, contact the relevant Hungarian government agency.

EXCHANGE RATES

The following were the exchange rates for the Hungarian forint on July 25, 2016:

- **Euro:** 313
- **UK pound:** 374
- **US dollar:** 285

ADDITIONAL INFORMATION

1. Major Cities: Debrecen, Pecs, Miskolc
2. GDP: \$142 billion
3. GDP per Head: \$21,000
4. Freight from USA: 8.5 – 10.5 / 30 days
5. Local freight: 2% - 3% of material / equipment purchase price.
6. Government website: www.meh.hu/english/government www.mfa.gov.hu
7. Import duties: Refer to website mentioned on page 64, note 10
8. Electricity: 220 v – 50 Hz
9. Major Sea Ports: Hungary is landlocked; most goods are shipped in via Austria and Romania

Time: Budapest is 6 hours ahead of Eastern Standard Time (E.S.T.).

Construction Equipment / Plant Hire Rental

EXCLUDES DRIVER, INCLUDES ROUTINE MAINTENANCE, EXCLUDES FUEL, INCLUDES MOB/DE-MOB COSTS

EQUIPMENT / PLANT HIRE RENTAL	USA COST PER 8 HOUR DAY	COST IN HUNGARY PER 8 HOUR DAY
Backhoe -F.E. Loader (JCB or similar)	\$247.44	
Bulldozer 50kW	\$544.24	
F.E. Loader 2.5 CY/2 M3	\$405.96	
Hydraulic Crane 20 Ton lifting capacity	\$754.17	
Bobcat mini F.E. loader	\$275.49	
Welding machine diesel 200 A	\$124.46	
COST PER DAY	\$2,351.76	DISCOUNT USA VALUES BY 15 – 25%

For Indonesian skilled / non-skilled workers working on” Western / US Fortune 500 / Major petro-chemical” type chemical plants / refineries / offshore oil platforms following Western Owner (HSE) practices the hourly / bill out rate is in the following range for 2017.

- Unskilled Worker \$8 - \$12 / hour
- Skilled Worker \$12 - \$17 / hour
- Skilled Worker Offshore \$53 - \$85 / hour
- Camp Establishment / Maintenance and de-mobilization ranges from \$2.50 to \$3.50 per direct hour included in above rate.

• Food / Messing Costs- range \$1.00 to \$1.50 per direct hour included in above rate:

CONSTRUCTION MATERIAL COSTS

Listed on the next page are costs for a sampling of construction materials that would typically be used in a midsize commercial or industrial project. The values are typical for the Jakarta area and have been adjusted to reflect 2017 pricing levels. They include delivery to site and profit to the vendor or supplier furnishing the materials. They exclude taxes and any overhead or profit charged by the installing contractor. The values shown are for reasonably sized quantities; premiums of 5-15% would need to be added to these

values for small or odd-sized quantity orders. Discounts of 5-15% can be negotiated and achieved for large or significant quantities of materials.

With the continuing weakening of the US \$, generally Indonesian bulk materials cost 20% - 40% less than their equivalent US. Engineered bulk items such as motor controlled valves, instrument devices are usually imported and can cost 10% - 20% more than their US equivalent.

APPROXIMATE COSTS OF BUILDING/FACILITIES

The following values include all necessary materials, labor, construction equipment, general conditions, overhead, markups, and profit. Excluded are owner costs such as furniture and fixtures, owner provided equipment, owner engineering and construction management, together with architectural and engineering fees and parking areas, landscaping, and any service roads. The rates have been adjusted to reflect 2017 pricing levels. The values shown reflect projects completed in the Jakarta area.

- Indonesian SF / M2 Facility Unit Costs in US \$'s (see chart next page.)

Construction Labor Hourly Rates

“ALL IN” SELLING RATES FOR SKILLED AND UNSKILLED CONSTRUCTION WORKERS

CATEGORY	LOW	HIGH	AVERAGE
Civil / social / community burdens			20 – 40%
Vacation / Holidays			
Home office support (admin, payroll, procurement / buy-out assistance, management support, estimating, rent / utilities to maintain H.O.			
Field supervision / timekeepers / warehouse men			
Temporary facilities / trailers / porta johns / office supplies			
Small tools			
Consumables, gas, welding rods etc			
Construction equipment / scaffolding (excludes heavy lift cranes)			
Maintenance of CE / fuel oil / repairs to CE			
PROFIT			
TOTAL (ADJUSTED)	80%	115%	100%

UNIT PRICES

It is extremely difficult to document unit price values for Indonesia that are accurate and meaningful. Unit prices from different project types and from different locations within Indonesia often have pricing differential in excess of 100%. It is hard to understand why this is the case. In future editions of this book an effort will be made to document a sampling of unit prices specific to Indonesia.

LOCATION FACTORS VS. USA

The factors shown below are used to quantify the cost differences for specific construction methods

in different locations. Use of the factors involves either (1) estimating the proposed project on a U.S. basis or (2) knowing the cost of a particular U.S. facility (often a Gulf Coast project is the model). The U.S. estimate is expressed as a base index of 1.00. Locations factors typically reflect disparities in construction materials, labor hourly rates, productivity differentials, equipment costs, importation of materials and capital equipment, and design costs. The purchase of land and inflation are excluded from the location factor. The following location factors are applicable for Indonesia:

Construction Material Costs

MID-SIZED COMMERCIAL OR INDUSTRIAL CONSTRUCTION PROJECT

#	BULK MATERIAL	QTY	SI UNIT	LOCAL COUNTRY UNIT COST IN US \$	TOTAL IN US \$	USA UNIT COST IN US \$ SI UNIT	TOTAL IN US \$
1	Blocks (Concrete 8" x 16" x 4")	5,000	Each	0.65	3,262	1.67	8,371
2	Bricks (Common) 1,000	15	1000	96	1,444	434	6,516
3	Bricks (Facing) 1,000	10	1000	155	1,551	605	6,050
4	Cement in bags	150	Ton(M)	128	19,251	268	40,209
5	Conduit 2" / 50 mm rigid galv steel	1,000	M	17.35	17,345	21.95	21,949
6	Instruments 4 # 2" / 4" CV (8 #), 12 # (F/P/T) Devices	20	Each	5,017	100,335	4,256	85,125
7	Copper pipe 0.50" / 12 mm L	1,000	M	7.10	7,098	6.54	6,538
8	R M Concrete 3500 PSI / 25 MPa	350	M3	77	26,898	148.05	51,817
9	Sand / Stone 1.5" diameter / Imported fill / Hardcore (Average)	2,500	Ton(M)	17.63	44,068	23.49	58,722
10	Stainless steel 304 pipe 1" / 25 mm	1,000	M	20.40	20,400	16.21	16,213
11	Steel pipe A-53 1" / 50 mm diameter	1,000	M	13.56	13,555	11.87	11,871
12	Steel Reinforcement (not installed)	50	Ton(M)	765	38,240	1,203	60,166
13	Structural Steel (Fabricated not installed)	50	Ton(M)	1136	56,818	2,439	121,926
14	Valves (Ball) 4" diameter 150 #	25	Each	792	19,805	712	17,798
TOTAL					370,070		513,269
<i>NOTE: Metric Ton = 2,205 lb • Long Ton = 2,240 lb (L) • Short Ton = 2,000 lb (S) • Metric Tonne = 1,000 kg /2,205 lb</i>							

- Chemical/process/manufacturing plant (utilizing some imported equipment): **0.91**
- Building/facility/civil project (utilizing local materials): **0.82**

For example, if a recently completed process project was built in the U.S. for US\$50,000,000, then the cost of a similar facility in Indonesia would be $US\$50,000,000 \times 0.91 = US\$46,410,000$. A building, i.e. warehouse to be constructed in Indonesia estimated on a U.S. basis with an estimated cost of US\$10,000,000 would be budgeted at US\$8,200,000.

If the above project is for a “first of its kind” building / facility (first construction effort will initially experience a steep learning curve as it navigates through governmental / local issues) add 0.03 – 0.05 points to above location factors. If company has built or has operating facilities already in country, use above indicated location factors:

LABOR PRODUCTIVITY

The following figures shown are a range of productivity values: (1) good, (2) average, and (3) poor. The productivity factors for Indonesia are measured against a U.S. value of 1.00, based on open-shop (i.e., nonunion) labor working at a midsize petrochemical facility on the Texas Gulf Coast.

PRODUCTIVITY RANGE

- **Good:** 2.50
- **Average:** 2.80
- **Poor:** 3.60

For example, if a task took 5,000 man-hours to complete in the U.S., then, using the average value of 2.80, it would take 14,000 man-hours to perform in Indonesia.

Factors that can contribute to good productivity typically include good access to the work areas, an experienced workforce, adequate supervision, moderate weather conditions, specifications that are

Building / Facilities Costs

INDONESIAN SF / M2 FACILITY UNIT COSTS IN US \$'S

#	TYPE OF FACILITY	SF / LOW	SF/ HIGH	M2 / LOW	M2 / HIGH
1	Airport Terminal 2 – 3 Floors 400,000 - 700,000 SF	92	118	988	1,268
2	Apartments (Class B/C) 3 – 6 floors not public housing	37	60	398	645
3	Apartment public housing 3 – 6 floors	35	49	382	530
4	Food Production / Dairy Facility 70,000 SF	60	72	646	775
5	Hotel 3-6 floors 100,000 SF-2 - 3 star - suburban location*	60	100	643	1,072
6	Manufacturing / Facility / Factory 2 Floors 75,000 SF	36	65	388	703
7	Office 3 Floors 45,000 SF suburban location*	45	81	484	871
8	R & D Facility (College – Basic Research) 2 Floors 65,000 SF	72	115	779	1,233
9	W-House Refrigerated 80% / Admin 20% / 80,000 SF	35	66	377	715
10	W-House/ Logistics Center 80% / Admin 20% 40,000 SF **	30	46	318	494
* 5-15 miles from city center					
** excludes racking / bar coding / warehouse equipment					

not overly complicated, and materials and equipment that are close at hand: Factors that can contribute to poor productivity include limited education and construction skills of construction workforce, overcrowded or tight working areas, extreme weather conditions, inadequate or poor supervision, complex work items, sophisticated specifications, fast track construction requirements, limited use of construction equipment, limited utilization of power hand tools, use of extended overtime, materials and equipment not stored close to the work area, and small or scattered elements of work.

REGIONAL COST VARIATIONS

To accurately determine construction cost variations between different locations in Indonesia is very difficult. Indonesia is a vast country that extends more than 3,000 miles and is made up of over 13,000 islands. Indonesia has many variations in climate, and population distribution. However, the following information attempts to indicate the percentage cost differences for some of the major cities located in Indonesia.

- **Bandung:** -5 to -10%
- **Jakarta:** 0%
- **Medan:** -5% to -10%
- **Surabaya:** -5% to -10%
- **Other cities & locations:** -10% to -25%

INFLATION

The following are actual and forecasted annual increases in consumer prices.

- **2002:** 6.0%
- **2003:** 8.6%
- **2004:** 6.8%
- **2005:** 6.5%
- **2006:** 9.3%
- **2007:** 6.8%
- **2008:** 8.5%
- **2009:** 9.5%
- **2010:** 5.5%
- **2011:** 6.2%
- **2012:** 5.5%
- **2013:** 8.5%
- **2014:** 7.6%
- **2015:** 6.5%
- **2016:** 4.7%
- **2017:** 5.1%

TAXES/TARIFFS/IMPORT DUTIES

Indonesia makes use of a value added tax (VAT); the current rate is 10% and applies to imported items. This tax can in certain circumstances be refunded to the organization incurring it. Additionally, there is sales tax of either 10% or 20% on luxury goods. The above taxes do not apply to goods that are exported from Indonesia.

Taxes in Indonesia are divided into two classifica-

Construction Equipment / Plant Hire Rental

EXCLUDES DRIVER, INCLUDES ROUTINE MAINTENANCE, EXCLUDES FUEL, INCLUDES MOB/DE-MOB COSTS

EQUIPMENT / PLANT HIRE RENTAL	USA COST PER 8 HOUR DAY	COST IN INDONESIA PER 8 HOUR DAY
Backhoe -F.E. Loader (JCB or similar)	\$247.44	
Bulldozer 50kW	\$544.24	
F.E. Loader 2.5 CY/2 M3	\$405.96	
Hydraulic Crane 20 Ton lifting capacity	\$754.17	
Bobcat mini F.E. loader	\$275.49	
Welding machine diesel 200 A	\$124.46	
COST PER DAY	\$2,351.76	DISCOUNT USA VALUES BY 25 – 35%

tions: State tax, which is collected by the central government, and regional tax, which is collected by the regional government. The taxes levied by the central government are:

- Income tax
- Value added tax and tax on luxury items.
- Stamp duty
- Land tax
- Import duties

Taxes levied by regional government are:

- Motor vehicle tax/road tax
- Motor vehicle transfer of ownership tax
- Tax on the construction of hotels and restaurants
- Tax on land and buildings

Import duties and tariffs on construction materials and equipment can vary from 0% to 170%. Typical tariffs/import duties are in the 7-15% range. Indonesia also levies an import surcharge on some specific items. This surcharge can range from 0% to as high as 35% of the value of the imported item.

To encourage more overseas manufacturers to relocate to Indonesia, the government has recently lowered import duties and tariffs between 5% and 15% on approximately 200 products.

EXCHANGE RATES

The following were the exchange rates for the Indonesian rupiah on July 25, 2016.

- **Euro:** 14,463
- **UK pound:** 17,271
- **US dollar:** 13,167
- **Yen:** 12,583

TRANSPORTATION COSTS

Ocean freight: Typically the cost of ocean freight for goods (Major Equipment / Bulk Materials) originating in North America to Indonesia is in the 8.5% - 11.5% range of the purchase price of the goods in question. Inland freight: the cost of transporting major equipment / materials from one location to another in Indonesia can be estimated as between 3% and 5% of the FOB purchase price of the equipment / material being transported, the resulting value gives a budget

or estimated cost for in-land freight and insurance costs. Most ocean freight is paid on the establishment of weight or measurement tons. Weight tons can be expressed in short tons of 2,000 pounds, long tons of 2,240 pounds or metric tons of 1,000 kilos (2,204 pounds). Measurement tons are usually expressed as cargo measurement of 20 cubic feet (0.56 meters) or 40 cubic feet (1.12 meters) or cubic meters (35.3 cubic feet.). A shipping container is generally a means of transportation / trailer body that can be detached from the body / chassis of a truck (lorry), railroad car or barge for loading into or onto a truck, ship, a rail car or stacked in a container depot. Shipping containers may be open or (secured) lockable, in addition some can be air conditioned or refrigerated. A shipping container may be 20 feet, 40 feet or 53 feet in length, 96" or 102" in width, and 102" or 114" in height. Items included or sometimes excluded from above percentages that need to be evaluated and priced out and included in the estimated transportation cost are as follows.

- Packaging and loading onto and off truck
- Terminal costs / charge
- Original Bill of Lading (OBL)
- Pallets, skids, special packaging materials / Shrink-wrap
- Cranes / forklift and offloading labor costs
- Any brokers charges
- Manifest documentation /Waybill documentation
- Certificate of origin documentation
- Storage and warehousing costs.
- Freight forwarder costs / Freight bill documentation
- Marine Insurance / Ocean freight insurances and local insurance
- Import licenses
- Seaport / entry taxes
- Customs and bonded warehouses costs
- Import duties / Tariffs
- O/M manuals

The time required transporting items of equipment or material by ship from the U.S. to Indonesia is typically 25 - 40 days.

vacation days, hours worked per year = 1,810 – 1,880
= Average 1,845 billable hours per year.

The following hourly bill out rates apply to industrial / commercial construction work. (Assume all personnel have 10 – 20 years experience.

SKILL	US \$ LOW	US \$ HIGH
Senior Project Manager	130	180
Project Manager	115	165
Mechanical Engineer	107	140
Civil Engineer	107	140
Electrical Engineer	110	143
Purchasing Agent	92	125
Estimator	95	135
Planner	90	130
CAD Operator / Designer	60	75
Document Control	50	65
Site Manager (does not include temporary living allowance)	105	145
Field Engineer	95	133
Safety Engineer	90	125
Architect	110	145

ENGINEERING PRODUCTIVITY / DESIGN WORK

The following figures show a range of productivity values: (1) Washington, DC (2) Houston, Texas, and (3) Bern, Switzerland. The productivity factors are compared against a U.S. basis of 1.00 – Washington DC, engineering labor working on producing the necessary design deliverables for a midsize petro-chemical / manufacturing facility (say \$10 – \$50 million).

REF. #	LOCATION	PRODUCTIVITY VALUE
1	Washington, DC	1.00
2	Houston, TX	0.95
3	Bern, Switzerland	1.05-1.15

CONSTRUCTION LABOR HOURLY RATES

The following are “selling rates” for skilled and unskilled construction workers; these are the hourly billing rates that a contractor would charge an owner and include base wage rate, insurance, fringes, burdens, holidays, small tools, and training levies, plus all applicable overheads and profit. They have been adjusted

to reflect 2017 rates.

• Switzerland: 1 US \$ = 0.99 Swiss Franc July 25, 2016

The number of hours worked per week by Swiss construction workers is typically 37 – 40.50 hours, spread over five day period.

SKILL	\$ LOW	\$ HIGH
Carpenter	68.00	88.00
Mason	68.00	88.00
Pipefitter	71.00	90.00
Electrician	71.00	90.00
Unskilled Worker	50.00	67.00

APPROXIMATE COST OF BUILDINGS/FACILITIES

The following square-meter and square-foot values include all material, labor, plant, general conditions, overhead, and profit. Excluded are owners’ costs such as furniture, equipment, land purchase, design fees, and major items outside the facility’s footprint. These values have been adjusted to reflect 2017 pricing levels.

FACILITY TYPE		LOW US\$	HIGH US\$
Warehouse/distribution center	m2	710	1,173
	ft2	66	109
Factory/industrial building	m2	753	1,270
	ft2	70	118
Office building	m2	1,614	2,529
	ft2	150	235
Apartments (medium quality)	m2	1,237	2,044
	ft2	115	190

DESCRIPTION	UNIT	\$ COST
Excavate for foundation n/e 1.5M	M3	22 - 33
Reinforced concrete foundation (MPs 30) incl. rebar & formwork	M3	490 - 845
Block wall 9” thick	M2	130 - 235
PCC wall 3” thick	M2	145 - 250
Curtain wall / window system	M2	700 - 1,300
Single door c/w frame & hardware	No	750 - 1,100
FP system	M2	40 - 57
EPDM Roofing Systems	M2	32 - 47

LOCATION FACTORS

- For chemical/process/manufacturing construction projects with a high content of imported engineered equipment and construction material. **1.10**

- For buildings/facilities/civil-type construction projects with high content of locally produced engineered equipment and construction materials. **1.05**

If the above project is for a “first of its kind” building / facility (first construction effort will initially experience a steep learning curve as it navigates through governmental / local issues) add 0.03 – 0.05 points to above location factors. If company has built or has operating facilities already in country, use above indicated location factors:

LABOR PRODUCTIVITY RANGE

- **Good:** 1.05
- **Average:** 1.15
- **Bad:** 1.25 - 1.40

INFLATION RATES

The following are historical and forecasted annual increases in consumer prices.

- **2005** 4.8%
- **2006** 3.6%
- **2007** 1.7%
- **2008** 1.2%
- **2009** 2.2%
- **2010** 0.5%

- **2011** 0.8%
- **2012** 0.7%
- **2013** 0.6%
- **2014** 0.6%
- **2015** 0.4%
- **2016** 0.5%
- **2017** 0.5%

TAXES/TARIFFS/IMPORT DUTIES

The highest VAT rate in Switzerland is 8%; this, of course, is one of the lowest rates in Europe. There are two reduced rates: 2.4% on goods for personal consumption, newspapers and agricultural and pharmaceutical products and 3.6% on hotels. Certain goods and services (medical treatment, education) are completely exempt from VAT.

For additional information on taxes click on the following links:

- <http://www.standortschweiz.ch>
- <http://www.ezv.admin.ch>

EXCHANGE RATES

The following were the exchange rates for the Swiss Franc on July 25, 2016

- **Euro:** 1.09
- **UK pound:** 1.30
- **US dollar:** 0.99
- **Yen (x100):** 0.95

Construction Equipment / Plant Hire Rental

EXCLUDES DRIVER, INCLUDES ROUTINE MAINTENANCE, EXCLUDES FUEL, INCLUDES MOB/DE-MOB COSTS

EQUIPMENT / PLANT HIRE RENTAL	USA COST PER 8 HOUR DAY	COST IN SWITZERLAND PER 8 HOUR DAY
Backhoe -F.E. Loader (JCB or similar)	\$247.44	
Bulldozer 50kW	\$544.24	
F.E. Loader 2.5 CY/2 M3	\$405.96	
Hydraulic Crane 20 Ton lifting capacity	\$754.17	
Bobcat mini F.E. loader	\$275.49	
Welding machine diesel 200 A	\$124.46	
COST PER DAY	\$2,351.76	ADJUST USA VALUES BY 15% - 20% MORE FOR SWISS VALUES.

ADDITIONAL INFORMATION

Time: Bern is 6 hours ahead of Eastern Standard Time (E.S.T.).

Telephone: The access code for Switzerland is (41). The main city Direct Dialing: Codes are:

- **Bade** 56
- **Basel** 61
- **Berne:** 31
- **Davos:** 83
- **Fribourg:** 37
- **Geneva:** 22
- **Lausanne:** 21
- **Neuchatel:** 38
- **St Gallen:** 71
- **Zurich:** 1

**ADDRESSES / CONTACTS /
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