Construction Cost Handbook

PHILIPPINES 2023

Arcadis Philippines Inc

Electronic Cost Handbook

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The following handbook of information relating to the construction industry has been compiled by:

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The information contained herein should be regarded as indicative and for general guidance only. Whilst every effort has been made to ensure accuracy, no responsibility can be accepted for errors and omissions, however caused.

If advice concerning individual projects is required, we would be happy to assist.

Unless otherwise stated, costs reflected in this handbook are anticipated **Manila costs in 1st Quarter 2023.**

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ARCADIS PHILIPPINES, INC.

ABOUT US

Arcadis is a global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets.

Arcadis Philippines Inc. is the country's leading provider of construction consultancy services for natural and built assets. We are a firm recognized for creating value for our clients and improving the quality of life, creating solutions based on a blend of services. We have worked on various projects nationwide, covering both the private and public sectors and our diverse set of services cater for infrastructure, residential, commercial, industrial, education, health care, recreation facilities, hospitality and interior fit outs projects. The company's experience allows it to continue leading and setting the standards for consultancy services within the Philippine Construction Market.

Key Facts

Offices in Manila and Cebu

300 consultants

Diversified Business Lines: Cost Management | Project & Programme Management | Environmental Sustainability | Water Consultancy | PPP & Infrastructure Consultancy | Construction Loan Monitoring | BIM Management | Digital Solutions

Over 1000 projects nationwide

Over 35 years of experience delivering high performance projects in the Philippines

OUR CORE VALUES

People First

We care for each other and create a safe and respectful working environment where our people can grow, perform, and succeed.

Integrity

We always work to the highest professional and ethical standards and establish trust by being open, honest and responsible.

Client Success

We are passionate about our clients' success and bring insights, agility, and innovation to co-create value.

Collaboration

We value the power of diversity and our global capabilities and deliver excellence by working as One Arcadis.

Sustainability

We base our actions for clients and communities on environmental responsibility and social and economic advancement.

QUALITY POLICY STATEMENT

Our policy is to be the leading Cost Management, Environmental Sustainability, Water Consultancy, Project and Program Management firm in the Philippines providing the highest level of excellence in professionalism and integrity, working on modern, leading edge projects – integrating and coordinating each of our business lines.

Each process within the Company that determines the quality of our services shall be managed and controlled in a planned and systematic manner in accordance with our quality system documents with the highest integrity, impartiality and independency.

We see our quality system as a valuable tool and mechanism to promote, instill, further develop and bring about opportunities for improvement to our staff and our internal processes.

Essential to an effective quality system is our belief in continuous investment in professional development and structured training of our staff at all levels in core skills and knowledge.

All staff members are required to comply with this policy statement, be responsible for the quality of their work, and provide consistently high standard of service to our clients

Park Central Towers
Owner - Ayala Land, Inc.

1 CONSTRUCTION COST DATA

1 Construction Cost Data

CONSTRUCTION COST SPECIFICATION

The costs for the respective categories given on the previous pages are averages based on fixed price competitive tenders. It must be understood that the actual cost of a building will depend upon the design, procurement methods and many other factors and may vary from the figure shown. The costs per square meter are based on construction floor areas measured to the outside face of the external walls / external perimeter including lift shafts, stairwells, plant rooms, water tanks, and the like.

All buildings are assumed to have no basements (except otherwise stated) and are built on flat ground, with normal soil conditions, and minimal external works. The costs exclude land cost, professional fees, finance and legal expenses. The standards for each category of building vary from country to country and do not necessarily follow those of Manila. All costs are in PhP/m^2 CFA. Fluctuation in exchange rates may lead to changes in construction costs. FF&E refers to loose furniture, fixtures and equipment. FF&E is excluded from office, residential and retail project costs, but are included in hotels and country club project costs.

DOMESTIC

Average standard apartment buildings of 6-8 flats per floor, $50m^2$-$150m^2$ per flat, façade comprising textured paint and punch window, internal finishes comprising wood finish, plaster and paint, and painted rubbed concrete ceiling to residential units and local ceramic tiles to toilets. Luxury residential façade comprised of window wall, textured paint with stone accents, finished with homogeneous tiles, wood cladding and coved timber ceiling to lobby, combination of wood planks, plaster and paint, and gypsum board to residential units and homogeneous tiles to toilets.

Air conditioning, gensets, automatic sprinkler system, complete plumbing and disposal system, complete fire alarm and detection system, FTTH (Fiber To The Home) system are allowed for luxury apartments and prestige houses.

Services to standard apartment also include for paging system and Davit type gondola. Services to luxury residential also include CCTV cameras on lobby, track mounted type gondola and helipad provision.

OFFICE/COMMERCIAL

Based on building 30-40 storeys high with floor plate minimum 1,000 m2 per level. Average standard offices and shopping centres have bare finish and exclude A/C ducting and light fittings to tenants areas. Prestige offices have curtain wall elevations, stone finished lobbies.

INDUSTRIAL

Owner operated factories exclude manufacturing equipment,air-conditioning,and special services provisions.

HOTELS

F.F.&E. includes interior decoration and loose furniture, etc. but excludes hotel and gaming operator's items (e.g. cutlery, crocker, linen, gaming equipment etc.). Includes 1 level of basement.

OTHERS

Carparks to be multi-storey, above ground.
Schools with standard government provisions.
Student hostels to university standard.
Hospitals include fit-out to nursing rooms, hospital facilities; services i.e., oxygen piping, A/C, genset, ultrapure water, fire suppression system and special type plumbing fixtures; fit-out to doctor's offices is excluded.
Land development includes earthworks, road right of way, cold water distribution, sewer mains, drainage system, power and communications system, and minor landscaping works.

CONSTRUCTION COSTS FOR PHILIPPINES

BUILDING TYPE	PESO/m²		
	BUILDING / *CIVIL WORKS	M&E TOTAL SERVICES	TOTAL
DOMESTIC			
Apartments, high rise, average standard	43,863 - 57,668	9,797 - 14,270	53,660 - 71,938
Apartments, high rise, high end	59,696 - 107,133	12,840 - 23,102	72,536 - 130,235
Terraces houses, average standard	45,201 - 53,865	2,930 - 5,050	48,131 - 58,915
Detached houses, high end	84,348 - 142,074	9,140 - 17,090	93,488 - 159,164
OFFICE / COMMERCIAL			
Medium/high rise offices, average standard	37,390 - 47,435	11,740 - 16,700	49,130 - 64,135
High rise offices, prestige quality	56,000 - 65,523	15,150 - 26,242	71,150 - 91,765
Out-of-town shopping centre, average standard	31,710 - 36,905	10,110 - 15,200	41,820 - 52,105
Retail malls, high end	45,846 - 61,091	11,220 - 18,860	57,066 - 79,951
HOTELS			
Budget hotels - 3-star, mid market	48,547 - 58,612	13,830 - 18,540	62,377 - 77,152
Business hotels - 4/5-star	55,225 - 92,220	15,960 - 25,820	71,185 - 118,040

Luxury hotels - 5-star	78,554 - 151,300	19,980 - 35,690	98,534 - 186,990
Integrated Hotel and Casino - 4/Luxury 5-Star	94,293 155,296	35,345 60,092	129,638 - 215,388
INDUSTRIAL			
Industrial units, shell only (conventional single storey framed units)	23,187 - 27,967	4,700 - 7,940	27,887 - 35,907
Owner operated factories, low rise, light weight industry	32,741 - 36,797	4,700 - 10,270	37,441 - 47,067
OTHERS			
Underground/basement car parks (<3 levels)	26,028 - 31,322	6,470 - 10,950	32,498 - 42,272
Multi storey car parks, above ground(<4 levels)	20,142 - 27,752	5,560 - 10,830	25,702 - 38,582
Schools (primary and secondary)	27,678 - 31,734	8,960 - 18,850	36,638 - 50,584
Students' residences	30,099 - 34,336	9,190 - 15,500	39,289 - 49,836
Sports clubs, multi purpose sports/leisure centres (dry sports) with a/c and including FF & E	53,783 - 77,095	7,960 - 12,800	61,743 - 89,895
General hospitals - public sector	57,820 - 61,964	16,520 - 24,930	74,340 - 86,894
*Land Development - Residential Lots for Detached Houses	1,430 - 4,720	963 - 1,582	2,393 - 6,302
*Land Development - Commercial Lots	2,370 - 8,185	1,822 - 5,571	4,192 - 13,756

Note:

Costs are at 1st Quarter 2023 levels.
*Cost per m² (Land Area)

M & E COSTS SERVICES COSTS FOR PHILIPPINES

BUILDING TYPE	PESO/m²					
	TOTAL SERVICES	ELECTRICAL SERVICES	MECHANICAL SERVICES	FIRE SERVICES	LIFTS / ESCALATOR	PLUMBING SERVICES
DOMESTIC						
Apartments, high rise, average standard	9,797 - 14,270	3,957 - 4,300	1,540 - 2,930	1,140 - 1,560	850 - 2,300	2,310 - 3,180
Apartments, high rise, high end	12,840 - 23,102	3,900 - 6,442	2,930 - 5,400	1,140 - 1,810	2,200 - 4,760	2,670 - 4,690
Terraces houses, average standard	2,930 - 5,050	1,400 - 1,800	680 - 1,500	-	-	850 - 1,750
Detached houses, high end	9,140 - 17,090	3,000 - 5,800	3,100 - 5,140	-	-	3,040 - 6,150
OFFICE / COMMERCIAL						
Medium/high rise offices, average standard	11,740 - 16,700	3,500 - 4,700	4,000 - 5,680	1,180 - 1,620	1,800 - 3,000	1,260 - 1,700
High rise offices, prestige quality	15,150 - 26,242	4,800 - 8,712	4,620 - 8,120	1,290 - 2,070	2,900 - 4,930	1,540 - 2,410
Out-of-town shopping centre, average standard	10,110 - 15,200	3,060 - 5,100	2,890 - 5,100	1,310 - 1,710	1,600 - 1,800	1,250 - 1,490
Retail malls, high end	11,220 - 18,860	3,600 - 6,000	3,310 - 6,840	1,560 - 2,080	1,450 - 2,300	1,300 - 1,640
HOTELS						
Budget hotels - 3-star, mid market	13,830 - 18,540	4,900 - 5,800	3,500 - 5,000	1,320 - 1,440	1,800 - 2,600	2,310 - 3,700
Business hotels - 4/5 -star	15,960 - 25,820	5,200 - 9,800	5,100 - 6,800	1,440 - 1,800	1,800 - 2,900	2,420 - 4,520

Luxury hotels - 5-star	19,980 - 35,690	5,500 - 10,200	6,900 - 12,350	1,780 - 2,630	2,200 - 3,500	3,600 - 7,010
Integrated Hotel and Casino	35,345 - 60,092	17,704 - 33,205	10,061 12,350	1,780 - 2,630	2,200 - 4,897	3,600 - 7,010
INDUSTRIAL						
Industrial units, shell only (conventional single storey framed units)	4,700 - 7,940	2,000 - 3,500	800 - 1,500	1,080 - 1,200	0 - 400	820 - 1,340
Owner operated factories, low rise, light weight industry	4,700 - 10,270	2,000 - 3,500	800 - 1,600	1,080 - 3,000	0 - 730	820 - 1,440
OTHERS						
Underground/basement car parks (<3 levels)	6,470 - 10,950	2,700 - 4,200	1,410 - 2,250	1,080 - 1,940	260 - 570	1,020 - 1,990
Multi storey car parks, above ground (<4 levels)	5,560 - 10,830	2,500 - 4,000	650 - 2,210	1,220 - 2,350	-	1,190 - 2,270
Schools (primary and secondary)	8,960 - 18,850	3,300 - 4,900	1,450 - 6,580	1,080 - 1,650	1,600 - 2,330	1,530 - 3,390
Students' residences	9,190 - 15,500	3,600 - 4,300	1,390 - 2,440	1,020 - 1,880	1,140 - 3,130	2,040 - 3,750
Sports clubs, multi purpose ports/leisure centres (dry sports) with a/c and including FF&E	7,960 - 12,800	2,900 - 3,770	1,800 - 2,870	570 - 1,230	960 - 2,210	1,730 - 2,720
General hospitals - public sector	16,520 - 24,930	5,000 - 8,000	5,320 - 7,780	1,620 - 2,520	1,990 - 2,800	2,590 - 3,830
*Site or Land Development - Residential Lots for Detached Houses	963 - 1,582	461 - 700	-	-	-	502 - 882
*Site or Land Development - Commercial Lots	1,822 - 5,571	924 - 1,871	-	-	-	898 - 3,700

Note:

Costs are at 1st Quarter 2023 levels.
*Cost per m^2 (Land Area)

1 Construction Cost Data

FIT-OUT COSTS FOR PHILIPPINES

BUILDING TYPE	PESO/m²
HOTELS	
Public Areas (Front of House) :	
3-star Hotel	28,000 - 35,000
4-star Hotel	44,000 - 58,000
5-star Hotel	60,000 - 104,000
Guest Rooms :	
3-star Hotel	21,000 - 31,500
4-star Hotel	51,000 - 71,000
5-star Hotel	71,000 - 107,000
Notes : 1. Includes furniture, floor, wall and ceiling finishes, drapery, sanitary fittings and light fittings. 2. Excludes partitioning, M&E works, building shell, chandeliers, operational items and equipment (e.g. cutlery, crockery, linen, television, refrigerator etc.), opening expenses, stage equipment and computer systems.	
COMMERCIAL	
Shopping Centers	27,000 - 38,000
Notes : 1. Mall / Public areas; excluding tenant areas 2. See notes 1, 2, & 3	

Notes :

1. Costs are at 1st Quarter 2023 Levels.
2. Costs include wall, floor, ceiling furnishes, doors, FF&E, preliminaries
3. Costs exclude operational equipment and supplies, structure, external enclosure, major M&E plant financing and developers costs, professional and marketing fees.

FIT-OUT COSTS FOR PHILIPPINES

BUILDING TYPE	PESO/m²
OFFICES	
Standard offices*	
Shell & Core	32,900 - 57,100
Warmshell by the developer	27,600 - 48,500
Executive offices**	
Shell & Core	52,800 - 88,000
Warmshell by the developer	48,300 - 83,100
Banking lobby***	62,000 - 73,000
* Medium quality systems furniture	
** High quality furniture and finishes	
*** Imported stone finishes; double volume spaces	

Notes :

See notes 1,2 & 3.

Shell & Core - includes built-in furniture, loose furniture, artworks, floor, wall and ceiling finishes, sanitary fittings, and special lightings.

Warmshell - includes built-in furniture, loose furniture, artworks, floor and wall finishes, sanitary fittings, and special lightings; raised flooring and ceiling finish is provided by the developer.

RESTAURANTS	
General dining restaurant	33,000 - 53,000
Fine dining restaurant	53,000 - 112,000

Notes :
Includes furniture, floor, wall and ceiling finishes, minor alteration to air-conditioning and fire services installation to suit layout, exhaust for kitchen but excludes exhaust flue, operational items (e.g. cutlery, crockery, linen, utensils, etc.)

Notes :

1. Costs are at 1st Quarter 2023 Levels.
2. Costs include wall, floor, ceiling furnishes, doors, FF&E, preliminaries
3. Costs exclude operational equipment and supplies, structure, external enclosure, major M&E plant financing and developers costs, professional and marketing fees.

1 Construction Cost Data

FIT-OUT COSTS FOR PHILIPPINES

BUILDING TYPE	PESO/m^2
THEATRES / CINEMAS	
Theatres*	54,000 - 103,000
Cinemas**	63,000 - 90,000
* Includes stage rigging and equipment, draperies, AV equipment projectors, screens, acoustics and seatings ** Includes screens, projection equipment, seats, finishes, ticketing booth	
AUDITORIUMS	43,000 - 70,000
BUSINESS CLUBS	62,000 - 220,000
BAR / BILLIARDS *	35,000 - 77,000
* Excluding kitchen equipment	

Notes :

1. Costs are at 1st Quarter 2023 Levels.

2. Costs include wall, floor, ceiling furnishes, doors, FF&E, preliminaries

3. Costs exclude operational equipment and supplies, structure, external enclosure, major M&E plant financing and developers costs, professional and marketing fees.

KITCHEN EQUIPMENT COSTS FOR PHILIPPINES

DESCRIPTION	COST (Php)
BUSINESS CLUB 500-900 m^2 floor area	22M - 50M
EXECUTIVE DINING 200-400 m^2 floor area	22M - 50M
4 STAR HOTEL 50 - 150 rooms	41M - 92M
5 STAR HOTEL 200 - 500 rooms	140M - 240M
OFFICE CANTEEN 200 - 300 m2 floor area	10M - 20M

UNIT COSTS FOR ANCILLARY FACILITIES FOR PHILIPPINES

DESCRIPTION	UNIT	PESO
SQUASH COURTS		
Single court on grade with acrylic surfacing completed with chain link fence	per court	1,700,000
TENNIS COURTS		
Single court on grade with acrylic surfacing completed with chain link fence	per court	2,181,000
Single court on grade with artificial turf surfacing including chain link fence	per court	2,624,000
Extra for lighting	per court	500,000
SWIMMING POOLS		
Half Olympic (25m x 16m) 6-lanes outdoor swimming pool built in ground, fully tiled, complete with 5m wide deck and associated equipment	per pool	24,506,000.00
Half Olympic (25m x 16m) 6-lanes indoor swimming pool with suspended structure (enclosing structure not included) fully tiled and completed with 5m wide deck, including mechanical ventilation and associated equipment.	per pool	27,800,000.00
Extra for heating equipment	per pool	1,500,000.00
Extra for salt chlorine generator	per pool	500,000.00
Amenity pool outdoor approx. 300m2 swimming pool with kiddie pool & jacuzzi (pooldeck & structure not included) fully tiled including associated equipment & pool lighting	per pool	11,000,000 to 16,000,000
BASKETBALL COURTS		
Exposed court, approximately 975m2 including player benches and excluding equipment	per court	6,000,000 to 10,500,000
Covered court approximately 975m2 including metal viewing seats, built-in furnitures, provision for T&B, etc	per court	20,000,000 to 40,000,000
* includes provision for forward/rear fold ceiling mounted basketball goal. 1st Quarter 2023 rates		

UNIT COSTS FOR ANCILLARY FACILITIES FOR PHILIPPINES

DESCRIPTION	UNIT	PESO
PLAYGROUND EQUIPMENT		
Outdoor playground equipment comprising various activities and safety mat	per set	750,000 to 4,200,000
SAUNAS		
Sauna room for 4-6 people complete with all accessories (enclosing structure not included)	per room	1,193,000.00
STEAM BATHS		
Steam bath for 4-6 people complete with all accessories (enclosing structure not included)	per room	1,865,000.00
GOLF COURSES		
(Based on 'Average Cost Model' of an 18 hole golf course in Asia) excluding fairway construction and rough hydroseeding	per hole	37,500,000.00
Including fairway construction and rough hydroseeding	per hole	49,600,000.00
GOLF SIMULATOR		
Complete golf simulation system complete with projector, high impact projection screen, artificial grass putting turf, putting green cup and control computer with software overall size 4m x 7m x3m high (enclosing structure not included)	per set	3,000,000 to 6,000,000

CONSTRUCTION COSTS FOR SELECTED ASIAN CITIES

BUILDING TYPE	US$ / m² CFA		
	MANILA	HONG KONG	SINGAPORE
DOMESTIC			
Apartments, high rise, average standard	956 - 1,282	3,140 - 3,620	1,775 - 1,920
Apartments, high rise, high end	1,293 - 2,321	4,060 - 4,690	2,715 - 4,020
Terraced houses, average standard	858 - 1,050	4,320 - 4,970	2,285 - 2,535
Detached houses, high end	1,666 - 2,836	6,290 up	2,900 - 3,875
OFFICE / COMMERCIAL			
Medium/high rise offices, average standard	875 - 1,143	3,130 - 3,550	2,285 - 2,535#
High rise offices, prestige quality	1,268 - 1,635	3,720 - 4,270	2,570 - 2,790#
Out-of-town shopping centre, average standard	745 - 928	3,070 - 3,610	2,465 - 2,715
Retail malls, high end	1,017 - 1,425	3,990 - 4,680	2,715 - 2,970
HOTELS			
Budget hotels - 3-star, mid market	1,111 - 1,375	3,950 - 4,210	2,900 - 3,190
Business hotels - 4/5-star	1,268 - 2,103	4,080 - 4,730	3,730 - 4,130
Luxury hotels - 5-star	1,756 - 3,332	4,760 - 5,400	3,730 - 4,130

INDUSTRIAL			
Industrial units, shell only (Conventional single storey framed units)	497 - 640	-	1,085 - 1,270 ^
Owner operated factories, low rise, light weight industry	667 - 839	2,360 - 2,960	-
OTHERS			
Underground/basement car parks (<3 levels)	579 - 753	3,390 - 4,040	1,305 - 1,705
Multi storey car parks, above ground (<4 levels)	458 - 687	2,030 - 2,400	835 - 1,195 ^
Schools (primary and secondary)	653 - 901	2,630 - 2,830	-
Students' residences	700 - 888	3,000 - 3,370	2,140 - 2,245
Sports clubs, multi purpose sports/leisure centres (dry sports) with a/c and including FF & E	1,100 - 1,602	3,940 - 4,460	2,610 - 2,790
General hospitals - public sector	1,325 - 1,548	5,000 - 5,500	3,695 - 3,875
Exchange Rate Used : US$1 =	PHP 56.120	HK$ 7.84	$1.38

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

Manila
Rates are exclusive of contingencies & include 12% VAT

Hong Kong
Rates are exclusive of contingencies
Offices of average standard are built to the following provisions:
(i) Curtain wall/window wall facade
(ii) Tenant are with screeded floor, painted wall and ceiling
Schools (primary and secondary) are of public authority standard, no a/c and complete with basic external works.

Singapore
Rates are nett of GST and exclusive of contingencies
Includes raised floor and ceiling to tenanted areas but excludes office carpets (normally under tenant's fit-out)
^ Open on all sides with parapet

*Source of data: **Singapore** - Asia Infrastructure Solutions Singapore Pte. Ltd.*

CONSTRUCTION COSTS FOR SELECTED ASIAN CITIES (Cont'd)

BUILDING TYPE	US$ / m² CFA		
	KUALA LUMPUR	BANGKOK	MACAU
DOMESTIC			
Apartments, high rise, average standard	315 - 625#	701 - 857	2,497 - 3,054
Apartments, high rise, high end	725 - 1,500	955 - 1,152	3,487 - 5,328
Terraced houses, average standard	230 - 370^	440 - 544	4,254 - 5,077
Detached houses, high end	770 - 1,045	767 - 941	5,189 - 6,751
OFFICE / COMMERCIAL			
Medium/high rise offices, average standard	605 - 800*	776 - 941	2,874 - 3,711
High rise offices, prestige quality	950 - 1,360**	970 - 1,259	3,711 - 4,059
Out-of-town shopping centre, average standard	445 - 665	663 - 857	2,706 - 4,059
Retail malls, high end	700 - 1,070	889 - 941	4,254 - 5,134
HOTELS			
Budget hotels - 3-star, mid market	1,020 - 1,500	1,210 - 1,361	3,781 - 4,283
Business hotels - 4/5-star	1,330 - 2,330	1,549 - 1,789	5,134 - 6,137
Luxury hotels - 5 star	1,955 - 2,620	1,809 - 2,113	6,137 - 7,254

INDUSTRIAL			
Industrial units, shell only (Conventional single storey framed units)	330 - 460	515 - 666	-
Owner operated factories, low rise, light weight industry	435 - 550	-	-
OTHERS			
Underground/basement car parks (<3 levels)	315 - 560	593 - 776	2,245 - 3,292
Multi storey car parks, above ground (<4 levels)	210 - 365	194 - 333	1,241 - 1,633
Schools (primary and secondary)	255 - 325+	-	2,483 - 2,874
Students' residences	305 - 385^^	-	1,967 - 2,287
Sports clubs, multi purpose sports/leisure centres (dry sports) with a/c and including FF & E	610 - 775	-	-
General hospitals - public sector	845 - 1,235	-	-
Exchange Rate Used : US$1 =	RM4.41	BAHT 34.55	MOP 8.01

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

Kuala Lumpur

6 - 12 units per floor, 46m2 - 83m2 per unit; excluding air-conditioning, kitchen cabinets and home appliances

^Excluding air-conditioning, kitchen cabinets and home appliances

* Exclude tenant fit-out and raised floor

** Exclude tenant fit-out.

+ Schools with standard government provisions

^^ Student hostels to university standard

Bangkok

Rates exclude VAT and contingencies

Macau

Rates are exclusive of contingencies and any management contract fee

Source of data: ***Kuala Lumpur*** *- JUBM Group.* ***Bangkok*** *- Mentabuild Limited.*

CONSTRUCTION COSTS FOR SELECTED ASIAN CITIES (Cont'd)

BUILDING TYPE	US$ / m² CFA		
	JAKARTA	INDIA	HO CHI MINH
DOMESTIC			
Apartments, high rise, average standard	864 - 979	705 - 859	653 - 809
Apartments, high rise, high end	1,188 - 1,342	1,125 - 1,433	830 - 941
Terraced houses, average standard	459 - 597	496 - 560	441 - 512
Detached houses, high end	1,243 - 1,389	628 - 712	503 - 606
OFFICE / COMMERCIAL			
Medium/high rise offices, average standard	852 - 945	532 - 587	763 - 873
High rise offices, prestige quality	1,338 - 1,480	607 - 767	880 - 1,186
Out-of-town shopping centre, average standard	735 - 813	521 - 571	-
Retail malls, high end	808 - 876	706 - 809	713 - 923
HOTELS			
Budget hotels - 3-star, mid market	1,483 - 1,751	1,026 - 1,111	1,415 - 1,713
Business hotels - 4/5-star	2,018 - 2,179	1,448 - 1,863	-
Luxury hotels - 5-star	2,138 - 2,411	1,998 - 2,346	1,787 - 2,120

INDUSTRIAL			
Industrial units, shell only (Conventional single storey framed units)	397 - 432	453 - 557	314 - 391
Owner operated factories, low rise, light weight industry	430 - 474	478 - 596	355 - 463
OTHERS			
Underground/basement car parks (<3 levels)	611 - 751	346 - 399	648 - 764
Multi storey car parks, above ground (<4 levels)	397 - 432	288 - 338	417 - 452
Schools (primary and secondary)	-	360 - 422	548 - 591
Students' residences	-	376 - 461	548 - 695
Sports clubs, multi purpose sports/leisure centres (dry sports) with a/c and including FF & E	1,238 - 1,857	693 - 777	809 - 856
General hospitals - public sector	-	779 - 904	-
Exchange Rate Used : US$1 =	IDR 15,538	INR 81.50	VND 23,730

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

India
Rates are based on projects in Bangalore and are nett of GST. Mumbai costs are generally 8% higher.

Ho Chi Minh
Rates are nett of VAT and contingencies

*Source of data: **Jakarta** - PT Lantera Sejahtera Indonesia. **India** - Arkind LS Private Limited.*

CONSTRUCTION COSTS FOR SELECTED ASIAN CITIES (Cont'd)

BUILDING TYPE	US$ / m² CFA			
	SHANG HAI	BEIJING	SHENZEN / GUANGZHOU	CHONGQING / CHENGDU
DOMESTIC				
Apartments, high rise, average standard	5,081 - 5,601	4,472 - 4,911	4,281 - 4,911	3,996 - 4,718
Apartments, high rise, high end	11,473 - 12,508	10,839 - 12,338	6,955 - 7,929	6,453 - 8,058
Terraced houses, average standard	7,019 - 7,647	6,404 - 6,937	6,485 - 7,753	5,560 - 6,528
Detached houses, high end	12,344 - 13,097	12,307 - 12,840	12,442 - 14,578	7,074 - 8,036
OFFICE / COMMERCIAL				
Medium/high rise offices, average standard	6,518 - 8,612	6,379 - 8,594	6,080 - 6,944	6,384 - 7,336
High rise offices, prestige quality	8,374 - 11,453	10,368 - 14,113	8,900 - 11,184	8,050 - 10,699
Out-of-town shopping centre, average standard			5,793 - 6,586	5,166 - 6,539
Retail malls, high end	8,850 - 11,931	8,625 - 11,874	8,571 - 12,420	7,674 - 10,593
HOTELS				
Budget hotels - 3-star, mid market	7,132 - 8,693	7,057 - 8,693	7,800 - 8,845	6,967 - 8,516
Business hotels - 4/5-star	11,492 - 15,556	12,025 - 15,876	12,607 - 18,555	12,503 - 15,466
Luxury hotels - 5-star	15,538 - 18,573	15,305 - 19,702	16,967 - 19,280	15,396 - 18,306

INDUSTRIAL				
Industrial units, shell only (Conventional single storey framed units)	2,007 - 2,459	1,970 - 2,402	2,257 - 2,773	3,151 - 3,918
Owner operated factories, low rise, light weight industry	3,105 - 3,889	3,808 - 4,365	-	-
OTHERS				
Underground/basement car parks (<3 levels)	5,326 - 7,427	5,451 - 5,990	4,018 - 6,574	3,013 - 4,173
Multi storey car parks, above ground (<4 levels)	2,729 - 3,814	3,280 - 3,312	2,862 - 3,243	2,402 - 2,936
Schools (primary and secondary)	4,071 - 5,138	3,795 - 4,899	3,234 - 4,200	3,184 - 3,508
Students' residences	2,980 - 4,064	2,684 - 3,795	2,980 - 3,800	2,229 - 3,188
Sports clubs, multi purpose sports/leisure centres (dry sports)	6,869 - 8,437	6,498 - 6,555	5,525 - 6,260	5,024 - 5,507
General hospitals - public sector	10,494 - 13,530	8,544 - 10,701	8,366 - 10,783	8,029 - 9,942
Exchange Rate Used : US$1 =	RMB 7.20	RMB 7.20	RMB 7.20	RMB 7.20

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

Beijing, Shanghai, Guangzhou/Shenzhen, Chongqing/Chengdu
Rates are exclusive of contingencies.

M&E COSTS FOR SELECTED ASIAN CITIES

BUILDING TYPE	MANILA[=] (PHP/m²)	HONG KONG (HK$/m²)	SINGAPORE[+] (S$/m²)
MECHANICAL SERVICES			
Offices	4,000 - 8,030	2,100 - 2,600	212 - 327
Industrial *	800 - 1,600	350 - 500	40 - 151
Hotels	3,500 - 12,350	2,500 - 2,750	272 - 355
Shopping Centres	2,890 - 6,840	2,100 - 2,300	186 - 309
Apartment	1,540 - 5,400	1,200 - 1,500	116 - 215
ELECTRICAL SERVICES			
Offices	3,500 - 8,140	2,400 - 2,700	197 - 354
Industrial **	2,000 - 3,500	800 - 950	68 - 170
Hotels	4,900 - 10,200	2,500 - 2,700	350 - 463
Shopping Centres	3,060 - 6,600	1,800 - 2,100	201 - 387
Apartment	3,500 - 6,300	1,400 - 1,700	135 - 295
HYDRAULIC SERVICES			
Offices	1,260 - 2,410	700 - 850	34 - 70
Industrial	820 - 1,440	500 - 650	23 - 46
Hotels	2,310 - 7,010	2,000 - 2,600	153 - 213

Shopping Centres	1,250 - 1,640	700 - 850	57 - 103
Apartment	2,310 - 4,690	1,600 - 2,000	101 - 237
FIRE SERVICES			
Offices	1,180 - 2,070	650 - 800	38 - 87
Industrial	1,080 - 3,000	550 - 700	28 - 62
Hotels	1,320 - 2,630	700 - 900	34 - 69
Shopping Centres	1,310 - 2,080	650 - 800	46 - 68
Apartment	1,140 - 1,810	400 - 700	27 - 67
LIFTS / ESCALATORS			
Offices	1,800 - 4,930	850 - 1,100	80 - 204
Industrial	0 - 730	500 - 650	51 - 130
Hotels	1,800 - 3,500	600 - 850	63 - 102
Shopping Centres	1,600 - 2,300	850 - 900	70 - 112
Apartment	850 - 4,760	550 - 850	50 - 141

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

* Generally without A/C
** Excludes special power supply

Manila
Transformer, included in Electrical Services

Source of data: ***Singapore*** *- Asia Infrastructure Solutions Singapore Pte. Ltd.*

M&E COSTS FOR SELECTED ASIAN CITIES (Cont'd)

BUILDING TYPE	KUALA LUMPUR (RM/m²)	BANGKOK# (BAHT/m²)	MACAU (MOP/m²)
MECHANICAL SERVICES			
Offices	395 - 555	4,400 - 4,900	N/A
Industrial *	110 - 210	1,550 - 1,700	N/A
Hotels	375 - 670	4,600 - 5,200	2,610 - 3,010
Shopping Centres	370 - 535	4,600 - 4,800	2,370 - 2,960
Apartment	145 - 230	4,300 - 4,500	910 - 1,210
ELECTRICAL SERVICES			
Offices	360 - 515	3,450 - 3,900	N/A
Industrial **	185 - 215	1,950 - 2,200	N/A
Hotels	370 - 600	3,800 - 4,600	2,610 - 3,110
Shopping Centres	365 - 510	2,800 - 3,200	2,610 - 2,960
Apartment	135 - 235	2,800 - 3,400	1,010 - 1,300
HYDRAULIC SERVICES			
Offices	55 - 80	780 - 990	N/A
Industrial	55 - 65	750 - 800	N/A
Hotels	215 - 305	1,400 - 1,820	1,800 - 2,210

Shopping Centres	45 - 50	790 - 990	600 - 800
Apartment	65 - 110	1,200 - 1,520	1,500 - 2,000
FIRE SERVICES			
Offices	75 - 95	780 - 890	N/A
Industrial	65 - 80	730 - 790	N/A
Hotels	75 - 110	780 - 930	920 - 1,130
Shopping Centres	70 - 90	780 - 890	610 - 820
Apartment	30 - 40	750 - 930	250 - 300
LIFTS / ESCALATORS			
Offices	165 - 395	1,100 - 1,400	N/A
Industrial	65 - 190	N/A	N/A
Hotels	135 - 325	1,100 - 1,400	610 - 820
Shopping Centres	120 - 130	300 - 500	460 - 720
Apartment	80 - 120	600 - 800	460 - 610

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

* Generally without A/C
** Excludes special power supply

Bangkok
Based upon nett enclosed area and nett of VAT

Source of data: ***Kuala Lumpur*** *- JUBM Group.* ***Bangkok*** *- Mentabuild Limited.*

M&E COSTS FOR SELECTED ASIAN CITIES (Cont'd)

BUILDING TYPE	JAKARTA= (IDR'000/m²)	INDIA+ (INR/m²)	HO CHI MINH (VND'000/m²)
MECHANICAL SERVICES			
Offices	1,057 - 1,217	5,887 - 8,211	2,800,000 - 3,980,000
Industrial *	479 - 765	2,764 - 5,241	N/A
Hotels	1,090 - 1,415	6,819 - 8,217	N/A
Shopping Centres	930 - 1,118	6,007 - 8,369	3,150,000 - 3,190,000
Apartment	1,040 - 1,321	3,099 - 4,420	2,080,000 - 2,855,000
ELECTRICAL SERVICES			
Offices	854 - 1,090	5,288 - 8,082	2,890,000 - 3,460,000
Industrial **	605 - 754	3,113 - 5,744	N/A
Hotels	880 - 1,212	586 - 8,893	N/A
Shopping Centres	743 - 936	5,041 - 7,499	2,620,000 - 3,275,000
Apartment	980 - 1,144	2,667 - 3,884	2,430,000 - 3,070,000
HYDRAULIC SERVICES			
Offices	215 - 303	874 - 1,497	426,000 - 795,000
Industrial	143 - 220	602 - 1,169	N/A
Hotels	1,029 - 1,212	4,598 - 7,690	N/A

Shopping Centres	204 - 314	1,310 - 2,632	350,000 - 630,000
Apartment	1,040 - 1,232	2,075 - 3,189	850,000 - 985,000
FIRE SERVICES			
Offices	293 - 386	1,382 - 2,002	805,000 - 1,325,000
Industrial	154 - 220	632 - 966	N/A
Hotels	341 - 424	1,607 - 2,281	N/A
Shopping Centres	286 - 335	1,323 - 1,697	735,000 - 900,000
Apartment	325 - 353	740 - 977	647,000 - 803,000
LIFTS / ESCALATORS			
Offices	456 - 1,095	1,082 - 1,448	760,000 - 1,460,000
Industrial	N/A	721 - 951	N/A
Hotels	727 - 1,134	1,623 - 2,405	N/A
Shopping Centres	335 - 903	1,899 - 2,475	1,560,000 - 2,190,000
Apartment	738 - 919	976 - 1,297	855,000 - 1,250,000

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

* Generally without A/C
** Excludes special power supply

India
Rates are based on projects in Bangalore and are nett of GST. Mumbai costs are generally 8% higher.

Source of data: ***Jakarta*** *- PT Lantera Sejahtera Indonesia.* ***India*** *- Arkind LS Private Limited.*

M&E COSTS FOR SELECTED ASIAN CITIES (Cont'd)

BUILDING TYPE	SHANG HAI (RMB/m²)	BEIJING (RMB/m²)	SHENZEN / GUANGZHOU (RMB/m²)	CHONGQING / CHENGDU (RMB/m²)
MECHANICAL SERVICES				
Offices	813 - 1,002	767 - 1,188	783 - 1,162	756 - 1,021
Industrial *	180 - 295	169 - 277	157 - 288	146 - 237
Hotels	1,028 - 1,302	941 - 1,211	1,070 - 1,364	977 - 1,336
Shopping Centres	796 - 936	798 - 960	722 - 920	893 - 1,018
Apartment	326 - 418	141 - 455	154 - 414	151 - 297
ELECTRICAL SERVICES				
Offices	638 - 698	484 - 875	535 - 803	505 - 716
Industrial **	320 - 439	335 - 473	323 - 464	280 - 378
Hotels	696 - 861	740 - 991	722 - 960	627 - 878
Shopping Centres	555 - 675	505 - 711	500 - 697	560 - 714
Apartment	269 - 383	266 - 417	288 - 505	241 - 356
HYDRAULIC SERVICES				
Offices	114 - 163	96 - 141	107 - 186	90 - 125
Industrial	92 - 129	96 - 141	90 - 125	93 - 128
Hotels	385 - 513	373 - 485	394 - 505	371 - 493

Shopping Centres	144 - 187	141 - 202	115 - 170	107 - 156
Apartment	175 - 230	172 - 231	152 - 283	104 - 182
FIRE SERVICES				
Offices	238 - 324	182 - 268	240 - 354	244 - 294
Industrial	165 - 266	152 - 227	144 - 275	136 - 235
Hotels	303 - 395	221 - 379	288 - 429	280 - 376
Shopping Centres	270 - 391	221 - 379	250 - 387	268 - 381
Apartment	58 - 105	71 - 136	79 - 300	62 - 114
LIFTS / ESCALATORS				
Offices	285 - 549	291 - 571	295 - 517	306 - 563
Industrial	138 - 390	143 - 396	120 - 440	154 - 356
Hotels	223 - 494	229 - 515	250 - 480	255 - 439
Shopping Centres	332 - 494	323 - 515	300 - 470	310 - 463
Apartment	168 - 291	173 - 286	130 - 450	143 - 247

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

* Generally without A/C
** Excludes special power supply

MAJOR RATES FOR SELECTED ASIAN CITIES

DESCRIPTION	UNIT	MANILA	HONG KONG	SINGAPORE
		(PHP)	(HK$)	(S$)
1. Excavating basement ≤ 2.00m deep	m^3	300 - 450	230	29
2. Excavating for footings ≤ 1.50m deep	m^3	538	210	29
3. Remove excavated materials off site	m^3	350 -370	290	30 - 37
4. Hardcore bed blinded with fine materials	m^3	1,400 - 1,800	950	69.5
5. Mass concrete grade 15	m^3	4,500	1,200	255 - 269
6. Reinforced concrete grade 30	m^3	6,300	1,300	175 - 182
7. Mild steel rod reinforcement	kg	51 -54	12.5	2.1 -2.2
8. High tensile rod reinforcement	kg	51 - 54	12.5	2.1 - 2.2
9. Sawn formwork to soffits of suspended slabs	m^2	950 - 1,200	420	55.5
10. Sawn formwork to columns and walls	m^2	1,200	420	55.5
11. 112.5mm thick brick walls	m^2	N/A	420	45 -50
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m^2	1,500	1,100	55

13. Aluminium casement windows, single glazed	m^2	16,000	4,200	375
14. Structural steelwork - beams, stanchions and the like	kg	180	37	6.6 - 7.4
15. Steelwork - angles, channels, flats and the like	kg	160	45	6.6 - 7.4
16. 25mm cement and sand (1:3) paving	m^2	650	160	28
17. 20mm cement and sand (1:4) plaster to walls	m^2	500 - 700	165	29
18. Ceramic tiles bedded to floor screed (measured separately)	m^2	1,800 - 2,000	430	86
19. 12mm fibrous plasterboard ceiling lining	m^2	1,400 - 1,700	580	38
20. Two coats of emulsion paint to plastered surfaces	m^2	500 - 800	130	4.3 - 4.9
Average expected preliminaries	%	12 - 18	10 -15	14 - 18

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

Manila
Item 13 - Aluminium with powdercoat finish; 6mm thick
Hong Kong
Item 3 - Rate including dumping charges

Singapore
Rates are nett of GST
Item 5 - Rate for lean concrete blinding

*Source of data: **Jakarta** - PT Lantera Sejahtera Indonesia. **India** - Arkind LS Private Limited.*

MAJOR RATES FOR SELECTED ASIAN CITIES (Cont'd)

DESCRIPTION	UNIT	KUALA LUMPUR (RM)	BANGKOK (BAHT)	MACAU (MOP)
1. Excavating basement ≤ 2.00m deep	m^3	18 - 35	125 - 160	150
2. Excavating for footings ≤ 1.50m deep	m^3	18 - 35	150 - 190	180
3. Remove excavated materials off site	m^3	20 - 38	125 -160	150
4. Hardcore bed blinded with fine materials	m^3	75 - 110	680 - 790	1,300
5. Mass concrete grade 15	m^3	250 - 310	2,300 - 2,700	1,500
6. Reinforced concrete grade 30	m^3	270 - 320	2,800 - 3,470	1,400
7. Mild steel rod reinforcement	kg	4.1 -5.3	28 - 31	7.5
8. High tensile rod reinforcement	kg	4.1 - 5.3	28 - 31	7.5
9. Sawn formwork to soffits of suspended slabs	m^2	41 - 52	450 - 500	280
10. Sawn formwork to columns and walls	m^2	41 -52	450 - 500	280
11. 112.5mm thick brick walls	m^2	50 - 60	650 - 890	450
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m^2	75 - 105	1200	N/A

13. Aluminium casement windows, single glazed	m^2	390 - 680	7,600	4,000
14. Structural steelwork - beams, stanchions and the like	kg	7.2 - 15	55 - 80	30
15. Steelwork - angles, channels, flats and the like	kg	7.2 - 15	55 - 80	40
16. 25mm cement and sand (1:3) paving	m^2	19 - 27	220 - 275	120
17. 20mm cement and sand (1:4) plaster to walls	m^2	20 - 35	250 - 295	150
18. Ceramic tiles bedded to floor screed (measured separately)	m^2	65 - 120	1,200	450
19. 12mm fibrous plasterboard ceiling lining	m^2	40 - 55	850 - 950	650
20. Two coats of emulsion paint to plastered surfaces	m^2	3.6 - 5.5	140 - 180	200
Average expected preliminaries	%	6- 15	12-18	10

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

Bangkok
Rates are nett of VAT

Source of data: ***Kuala Lumpur*** *- JUBM Group.* ***Bangkok*** *- Mentabuild Limited.*

MAJOR RATES FOR SELECTED ASIAN CITIES (Cont'd)

DESCRIPTION		(IDR '000)	(INR)	(VND)
	UNIT	JAKARTA#	INDIA[G]	HO CHI MINH#
1. Excavating basement ≤ 2.00m deep	m^3	75	260	72,400
2. Excavating for footings ≤ 1.50m deep	m^3	110	245	72,400
3. Remove excavated materials off site	m^3	50	N/A	84,700
4. Hardcore bed blinded with fine materials	m^3	700	4,900 - 5,200	280,900
5. Mass concrete grade 15	m^3	1,015	6,850	1,847,360
6. Reinforced concrete grade 30	m^3	1,175	8,590	2,199,135
7. Mild steel rod reinforcement	kg	13.5	78	23,010
8. High tensile rod reinforcement	kg	13.8	70 - 73	23,010
9. Sawn formwork to soffits of suspended slabs	m^2	250	715 - 765	240,000
10. Sawn formwork to columns and walls	m^2	210	810 - 840	290,000
11. 112.5mm thick brick walls	m^2	270	1,275 - 1,320	312,780
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m^2	370	1,950 - 2,010	480,000 - 680,000

13. Aluminium casement windows, single glazed	m^2	1,750	6,600 - 7,000	6,630,750
14. Structural steelwork - beams, stanchions and the like	kg	36	148	49,500
15. Steelwork - angles, channels, flats and the like	kg	38	148	49,500
16. 25mm cement and sand (1:3) paving	m^2	100	550 - 620	105,000
17. 20mm cement and sand (1:4) plaster to walls	m^2	100	490 - 540	144,000
18. Ceramic tiles bedded to floor screed (measured separately)	m^2	220	1,880 - 1,945	674,180
19. 12mm fibrous plasterboard ceiling lining	m^2	215	1,510 - 1,690	255,700
20. Two coats of emulsion paint to plastered surfaces	m^2	35	220 - 250	96,000
Average expected preliminaries	%	8 - 10	9 - 13	8 - 12

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

Jakarta
Rates exclude VAT and contingencies
India
All rates above are Supply & Fix based on projects in Bangalore and are nett of GST. Mumbai costs are generally 8% higher.

Ho Chi Minh
Rates are nett of VAT

Source of data: ***Jakarta*** *- PT Lantera Sejahtera Indonesia. India - Arkind LS Private Limited.*

MAJOR RATES FOR SELECTED ASIAN CITIES (Cont'd)

DESCRIPTION	UNIT	RMB SHANG HAI	RMB BEIJING	RMB SHENZEN / GUANGZHOU	RMB CHONGQING / CHENGDU
1. Excavating basement ≤ 2.00m deep	m^3	30	35	38.5	36
2. Excavating for footings ≤ 1.50m deep	m^3	30	40	38.5	36
3. Remove excavated materials off site	m^3	175	160	170	65
4. Hardcore bed blinded with fine materials	m^3	210	220	195	180
5. Mass concrete grade 15	m^3	750	680	680	500
6. Reinforced concrete grade 30	m^3	800	800	730	530
7. Mild steel rod reinforcement	kg	5.9	6.5	6.4	5.5
8. High tensile rod reinforcement	kg	6	6.6	6.5	5.5
9. Sawn formwork to soffits of suspended slabs	m^2	95	90	90	75
10. Sawn formwork to columns and walls	m^2	90	85	70	75
11. 112.5mm thick brick walls	m^2	105	80	80	80
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m^2	N/A	N/A	N/A	N/A

13. Aluminium casement windows, single glazed	m^2	780	850	700	760
14. Structural steelwork - beams, stanchions and the like	kg	11	14.5	13	10
15. Steelwork-angles, channels, flats and the like	kg	9.5	13	11	9
16. 25mm cement and sand (1:3) paving	m^2	35	34	35	34
17. 20mm cement and sand (1:4) plaster to walls	m^2	35	34	35	34
18. Ceramic tiles bedded to floor screed (measured separately)	m^2	160	155	160	150
19. 12mm fibrous plasterboard ceiling lining	m^2	160	162	170	150
20. Two coats of emulsion paint to plastered surfaces	m^2	42	34	35	35
Average expected preliminaries	%	6 - 12	5 - 12	6 - 12	5 - 12

The above costs are at 4th Quarter 2022 Levels, inclusive of preliminaries unless otherwise stated.

Shanghai
Item 11 - Rate for 120mm thick concrete block walls
Beijing, Chongqing/Chengdu
Item 13 - Rate for double glazed window

1 Construction Cost Data

M & E MAJOR PLANT COSTS FOR THE PHILIPPINES

DESCRIPTION	UNIT	COST (Php)
1. Water cooled chiller; conventional bearing	per TR	19,000 - 36,000
2. Water cooled chiller; magnetic bearing	per TR	37,000 - 50,000
3. Air-cooled chillers	per TR	34,500 - 48,000
4. Cooling Towers; induced draft	per GPM	2,900 - 5,320
5. Air Handling Units (AHU)	per TR	18,500 - 36,300
6. Packaged Water-Cooled Chiller units (PWCU)	per TR	31,300 - 45,900
7. Fire Pumps; electric motor driven; up to 180 psi	per GPM	1,900 - 4,900
8. Fire Pumps; electric motor driven; 180 to 295 psi	per GPM	4,400 - 9,600
9. Fire Pumps; diesel engine driven; up to 180 psi	per GPM	2,500 - 5,400
10. Fire Pumps; diesel engine driven; 180 to 295 psi	per GPM	4,600 - 10,600
11. Air to Water Heat Pumps (KW based on heating capacity)	per KW	33,100 - 46,300
12. Water to Water Heat Pumps (KW based on heating capacity)	per KW	13,500 - 41,600
13. Generator (Low Voltage-400V) Standby Rating	per KVA	8,500 - 10,500
14. Generator (Low Voltage-400V) Prime Rating	per KVA	11,000 - 12,800
15. Generator (Medium Voltage-4160V)	per KVA	11,000 - 12,577
16. Power transformers, with built-in primary protections; padmount	per KVA	2,500 - 5,000

Notes:

1. Rates are based on direct supply of imported equipment and materials by the developer.
2. Rates include all government imposed taxes, import duties brokerage fees and allowances for local materials and installation cost.

M & E MAJOR PLANT COSTS FOR THE PHILIPPINES

DESCRIPTION	UNIT	COST (Php)
17. Power transformers, with built-in primary protections; silicon oil filled	per KVA	1,300 - 4,400
18. Power transformers, with built-in primary protections; cast resin	per KVA	2,000 - 6,000
19. Hot Water Storage Tank with Heating Coil	per Gallon	3,000 - 5,700
20. Sewage Treatment Plant, Sequencing Batch Reactor (SBR); including civil works (no piling and located within the building)	per m3/day	30,000 - 40,000
21. Kitchen Waste Water Treatment; Gas Energy Mixing (GEM); including civil works (no piling and located within the building)	per m3/day	93,000 - 111,000
22. Desalination System; Reverse Osmosis up to 200 CMD	per m3/day	68,000 - 101,000
23. Desalination System; Reverse Osmosis 200 CMD to 600 CMD	per m3/day	35,000 - 74,000
24. Elevator; 1000 kgs, 1 to 2 mps (no skip floors; less than 10 floors)	cost/stop	550,000 - 1,400,000
25. Elevator; 1350 kgs, 2.5 to 3 mps (no skip floors; 10 to 20 floors)	cost/stop	885,000 - 1,155,000
26. Elevator; 1350 kgs, 2.5 to 3 mps (no skip floors; 20 to 30 floors)	cost/stop	700,000 - 885,000
27. Elevator; 1350 kgs, 2.5 to 3 mps (no skip floors; 30 to 40 floors)	cost/stop	550,000 - 744,000
28. Elevator; 1600 kgs, 4 mps (no skip floors; 20 to 30 floors)	cost/stop	760,000 - 1,085,000
29. Elevator; 1600 kgs, 4 mps (no skip floors; 30 floors to 40 floors)	cost/stop	660,000 - 881,900
30. Elevator; 1600 kgs, 5 mps (no skip floors; 40 floors to 45 floors)	cost/stop	1,180,000 - 1,284,000

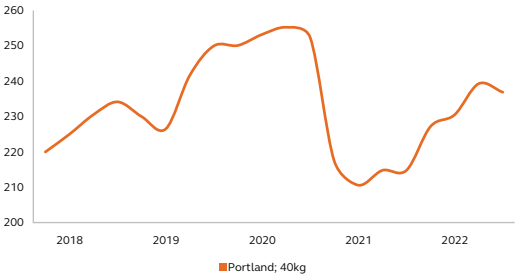
3. Rates exclude preliminaries and contingencies.
4. Rates are based on fixed price tenders received in 1st Quarter 2023.
5. The cost per unit of the equipment is higher at lower capacity

1 Construction Cost Data

RETAIL PRICES OF BASIC CONSTRUCTION MATERIALS FOR PHILIPPINES

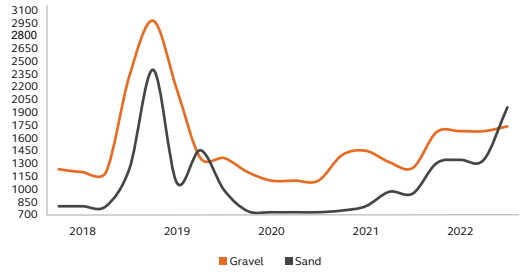
Cement

Php / bag (40 kg)



Aggregates

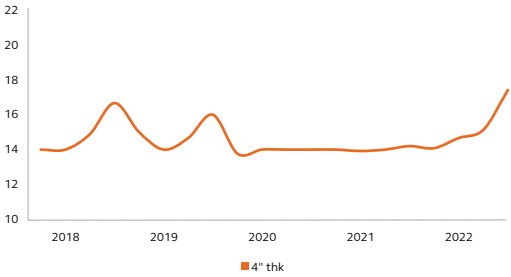
Php / m3



RETAIL PRICES OF BASIC CONSTRUCTION MATERIALS FOR PHILIPPINES

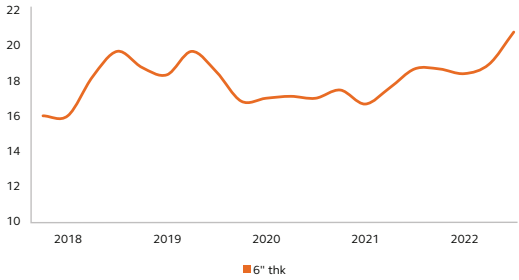
Ordinary Concrete Hollow blocks 4" thick

Php / piece



Ordinary Concrete Hollow blocks 6" thick

Php / piece

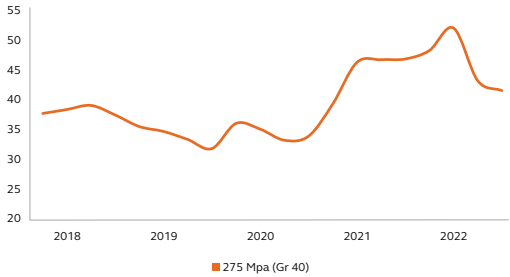


1 Construction Cost Data

RETAIL PRICES OF BASIC CONSTRUCTION MATERIALS FOR PHILIPPINES

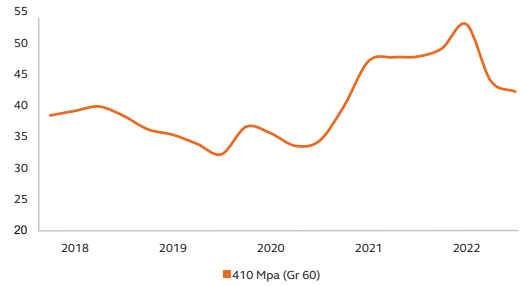
Reinforcing Bar (Intermediate Grade - Grade 40; 275MPa)

Php / kg



Reinforcing Bar (High Yield Grade - Grade 60; 400MPa)

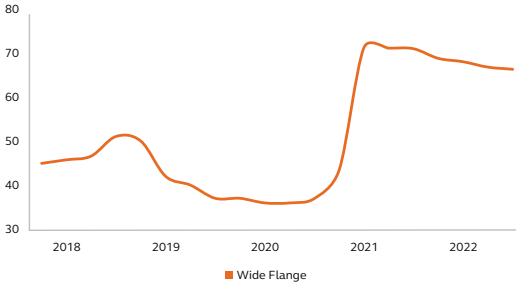
Php / kg



RETAIL PRICES OF BASIC CONSTRUCTION MATERIALS FOR PHILIPPINES

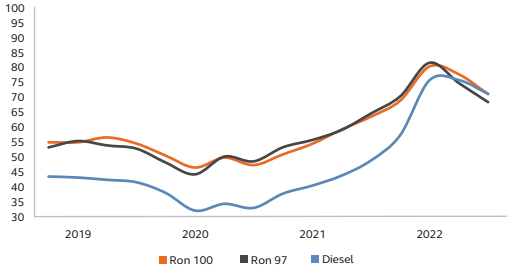
Structural Steel Wide Flange

Php / kg



Fuel

Php / liter



Axis T2
Owner - Cyberzone Properties, Inc.

2 GENERAL CONSTRUCTION DATA

ECONOMIC HIGHLIGHTS 1ST QUARTER 2023

GDP EXPANDS BY 6.4 PERCENT IN THE FIRST QUARTER OF 2023

The Philippine Gross Domestic Product (GDP) posted a growth of 6.4 percent in the first quarter of 2023. This was the lowest growth registered after seven quarters when the country started to recover from the pandemic in the second quarter of 2021.

The main contributors to the first quarter 2023 growth were: Wholesale and retail trade; repair of motor vehicles and motorcycles, 7.0 percent; Financial and insurance activities, 8.8 percent; and Other services, 36.5 percent.

Major economic sectors, namely: Agriculture, forestry, and fishing, Industry; and Services all posted positive growths in the first quarter of 2023 with 2.2 percent, 3.9 percent, and 8.4 percent, respectively.

On the demand side, Household Final Consumption Expenditure (HFCE) grew by 6.3 percent in the first quarter of 2023. The following items also recorded growths: Government Final Consumption Expenditure (GFCE), 6.2 percent; Gross capital formation, 12.2 percent; Exports of goods and services, 0.4 percent, and Imports of goods and services, 4.2 percent.

The Gross National Income (GNI) grew by 9.9 percent in the first quarter of 2023. Likewise, Net Primary Income (NPl) from the Rest of the World grew by 81.2 percent during the period.

Source:
National Accounts of the Philippines
Philippine Statistics Authority (www.psa.gov.ph)

Other Highlights:

Industry slows down in the first quarter of 2023

Industry grew by 3.9 percent in the first quarter of 2023, a deceleration from the 10.0 percent growth posted in the same quarter of 2022. This decelerated growth was the slowest since the second quarter of 2021.

Construction recorded a slower growth of 10.8 percent during the period, compared with the 13.1 percent growth in the same quarter of the previous year.

Moreover, Manufacturing expanded by 2.0 percent in the first quarter of 2023.

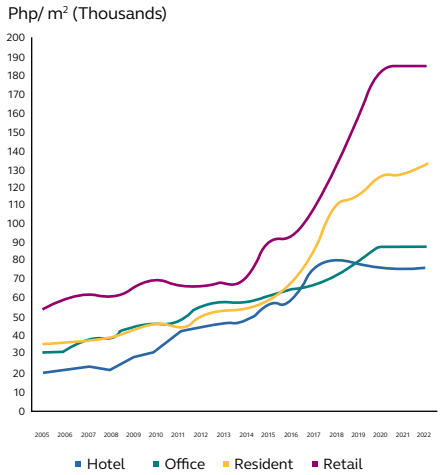
Gross Capital Formation (GCF) continues to grow driven by Private Construction

GCF grew by 12.2 percent in the first quarter of 2023. This growth was slower than the 17.7 percent increase in the same period of the previous year. (Figure 7) Construction grew by 14.3 percent in the first quarter of 2023. General government, Financial and non-financial corporations, and Households and NPISHs1 all recorded positive growths with 4.7 percent, 20.6 percent, and 13.3 percent, respectively.

Source:
National Accounts of the Philippines
Philippine Statistics Authority (www.psa.gov.ph)

2 General Construction Data

TRENDS IN CONSTRUCTION COSTS FOR PHILIPPINES



Building Construction Cost (Php/m²)

Year	Hotels	Office	Residential	Retail	US$ to Php
2005	58,941	32,225	36,907	19,831	55.09
2006	61,577	34,894	37,973	22,322	51.31
2007	64,608	39,688	40,149	24,459	46.15
2008	62,042	41,806	40,917	23,572	44.47
2009	67,908	45,732	44,779	29,535	47.64
2010	70,822	48,042	46,914	33,156	45.11
2011	69,301	46,738	46,345	41,581	43.31
2012	69,175	57,009	50,675	46,452	42.23
2013	70,885	59,000	53,058	48,389	42.45
2014	73,252	60,600	54,606	49,723	44.40
2015	92,371	62,111	59,609	57,334	45.50
2016	95,935	66,015	70,764	59,366	47.49
2017	109,628	69,809	86,291	75,808	50.40
2018	132,914	73,197	110,955	80,201	52.66
2019	161,217	82,497	116,191	79,537	51.05
2020	185,130	89,213	126,773	79,561	48.94
2021	186,990	90,503	127,643	79,951	50.77
2022	186,990	91,765	130,235	79,951	56.12

Note:
The figures used on the Construction Trends were based on high-end / prestige projects.

CONSTRUCTION VALUE

Construction Value (Php Billions)

YEAR	Construction Value ('000)	
	Residential	Non-Residential
2009	80,108,885	51,295,024
2010	102,943,619	82,722,312
2011	100,220,969	89,952,721
2012	125,864,536	112,083,457
2013	133,783,612	135,163,094
2014	152,755,734	184,873,176
2015	160,065,906	143,221,467
2016	187,599,731	162,517,347
2017	164,153,250	143,315,470
2018	257,417,054	181,481,663
2019	225,818,368	233,185,922
2020	131,084,663	124,961,618
2021	191,514,816	136,101,916
2022*	171,792,395	148,283,673

*Forecast Source: www.psa.gov.ph

2 General Construction Data

CONSTRUCTION ACTIVITY

Usable Floor Area (Millions m^2)

YEAR	Usable Floor Area (m^2)	
	Residential	Non-Residential
2009	10,059,645	5,918,411
2010	12,196,450	9,273,089
2011	11,674,389	8,875,138
2012	13,687,037	11,295,492
2013	13,672,027	10,278,621
2014	14,935,518	12,811,930
2015	15,723,803	12,793,261
2016	17,592,013	14,421,105
2017	16,301,228	15,035,707
2018	22,961,367	17,409,516
2019	20,011,536	20,916,613
2020	12,401,694	12,285,488
2021	17,136,940	12,394,409
2022*	16,780,022	15,072,487

* Forecast Source: www.psa.gov.ph

CONSTRUCTION MATERIALS WHOLESALE PRICE INDEX IN THE NATIONAL CAPITAL REGION (NCR) 2022

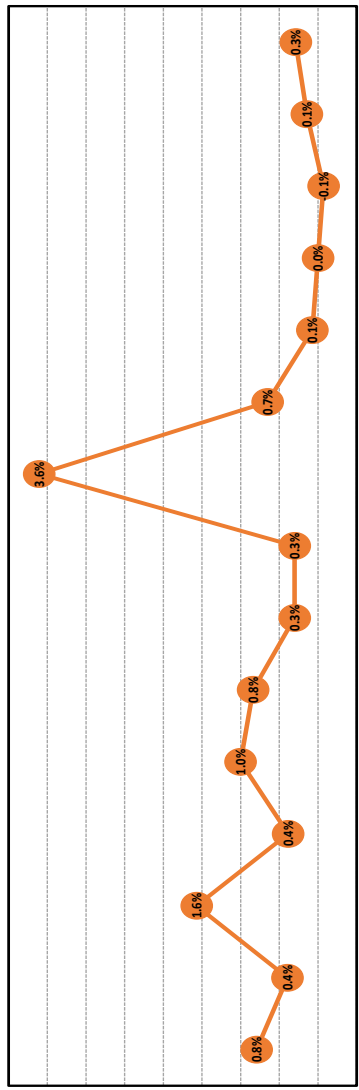
	2021	2022												1st Quarter 2023		
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
ALL ITEMS	**125.90**	**126.90**	**129.90**	**127.40**	**129.40**	**131.20**	**132.30**	**132.70**	**133.10**	**137.90**	**138.80**	**138.90**	**138.90**	138.80	139.00	139.40
ALL ITEMS	125.90	126.90	127.40	129.40	129.90	131.20	132.30	132.70	133.10	137.90	138.80	138.90	138.90	138.80	139.00	139.40
A. Sand and Gravel	138.30	141.00	141.00	142.00	142.20	143.80	144.70	145.40	147.40	149.30	149.40	149.40	149.30	149.00	149.20	148.80
B. Concrete Products & Cement	126.60	127.00	127.00	128.90	129.30	129.40	130.10	130.70	131.60	139.10	139.90	139.90	139.90	139.90	140.90	140.90
C. Hardware	124.90	125.40	125.60	126.50	127.90	129.00	129.70	130.40	131.00	133.10	133.80	134.30	134.40	134.30	134.50	136.20
D. Plywood	116.80	117.10	118.40	119.70	119.60	120.10	120.60	121.00	121.20	123.20	123.50	123.50	123.60	123.90	124.50	125.70
E. Lumber	136.40	137.20	137.20	137.90	137.90	139.00	141.10	142.30	142.30	145.60	146.70	146.70	147.00	147.30	147.30	147.30
F. G.I. Sheet	124.90	126.80	126.80	127.60	127.60	128.20	129.10	129.40	129.40	144.10	145.60	145.70	146.30	145.20	145.20	145.90
G. Reinforcing & Structural Steel	125.60	126.40	127.60	131.60	132.40	135.30	137.30	137.10	137.10	139.80	141.00	141.10	141.10	140.80	140.30	140.90
H. Tile Works	132.70	134.30	134.30	135.80	135.80	136.80	137.50	138.90	138.90	138.80	140.50	140.50	140.50	141.20	139.90	137.10
I. Glass & Glass Products	128.60	128.60	130.40	130.40	130.40	130.70	130.70	130.70	130.70	130.70	130.70	130.70	130.70	130.70	130.70	130.40

CONSTRUCTION MATERIALS WHOLESALE PRICE INDEX IN THE NATIONAL CAPITAL REGION (NCR) 2022 (Cont'd)

	2021	2022												1st Quarter 2023		
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
J. Doors, Jambs, and Steel Casement	112.70	113.20	113.10	113.10	113.80	114.10	114.40	114.80	114.80	119.90	119.90	119.90	119.90	119.70	119.70	120.00
K. Electrical Works	135.10	135.60	136.30	138.70	139.50	140.70	141.40	142.10	142.90	143.50	145.40	145.60	146.00	146.30	147.20	147.80
L. Plumbing Fixtures & Accessories / Waterworks	127.50	130.60	131.60	131.50	132.20	131.90	132.60	133.10	133.10	134.50	134.50	134.60	135.00	133.30	136.70	136.90
M. Painting Works	109.90	110.40	110.70	111.30	111.60	112.50	113.70	114.90	115.20	120.00	121.80	122.00	123.10	123.30	123.50	125.70
N. PVC Pipes	120.80	121.90	122.40	122.40	123.00	128.60	129.70	131.20	131.20	123.50	124.10	124.10	124.10	124.10	124.90	124.60
O. Fuel and Lubricants	140.10	144.00	153.40	168.10	173.50	182.30	190.90	187.50	172.50	172.10	166.70	165.70	152.20	153.20	155.60	154.60
P. Asphalt	104.20	104.20	104.20	104.20	104.20	104.20	104.20	104.20	104.20	104.20	104.20	104.20	104.20	104.20	104.20	104.20
Q. Machinery and Equipment Rental	146.90	146.90	146.90	146.90	146.90	146.90	146.90	146.90	146.90	146.90	146.90	152.90	152.90	152.90	152.90	152.90

Construction Materials Wholesale Price Index 2022 - 1Q 2023

Monthly Price Movement (2012=100)

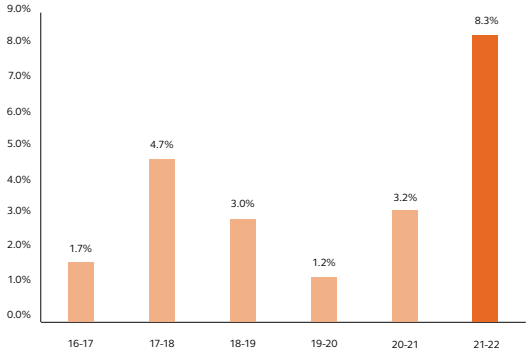


ANNUAL AVERAGE OF CONSTRUCTION MATERIALS WHOLESALE PRICE INDEX (CMWPI) IN NCR

(2012=100)

Construction Materials Wholesale Price Index

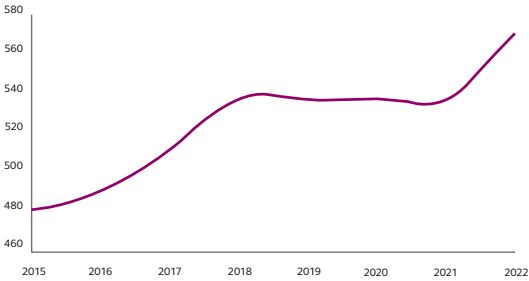
Annual Average Price Movement (2012-100)



COMMODITY GROUP	2016 Ave.	2017 Ave.	2018 Ave.	2019 Ave.	2020 Ave.	2021 Ave.	2022 Ave.
ALL ITEMS	**107.4**	**109.2**	**114.3**	**117.7**	**119.1**	**122.9**	**133.1**
A. Sand and Gravel	113.8	116.7	120.7	131.5	133.8	138.3	145.4
B. Concrete Products& Cement	109.2	110.4	115.5	120.6	122.3	124.1	132.7
C. Hardware	106.4	107.7	113.9	115.8	120.4	123.0	130.1
D. Plywood	109.2	108.6	111.7	113.8	113.3	115.2	121.0
E. Lumber	109.3	111.9	120.6	127.0	131.8	135.0	141,7
F. G.I. Sheet	105.3	105.5	107.0	109.8	111.9	118.1	133.9
G. Reinforcing & Structural Steel	104.8	107.8	115.6	116.0	115.3	121.1	135.7
H. Tile Works	108.7	110.1	112.9	115.6	133.7	135.8	137.7
I. Glass & Glass Products	104.9	104.9	104.9	104.9	112.4	127.3	130.5
J. Doors, Jambs, and Steel Casement	103.9	106.6	109.7	109.9	110.0	111.8	115.9
K. Electric Works	109.8	109.7	117.0	123.3	125.3	130.4	141.5
L. Plumbing Fixtures & Accessories/ Waterworks	116.8	117.9	119.4	124.6	125.0	124.0	132.9
M. Painting Works	102.7	103.9	104.7	104.9	105.7	107.5	115.6
N. PVC Pipes	106.5	106.4	107.1	109.5	115.8	118.5	125.5
O. Fuel and Lubricants	81.6	94.6	117.7	120.3	109.9	129.8	169.1
P. Asphalt	104.2	104.2	104.2	104.2	104.2	104.2	104.2
Q. Machinery and Equipment Rental	146.9	146.9	146.9	146.9	146.9	146.9	152.9

MINIMUM WAGE

Peso Day



Year	NCR Wage Order No.	Amount of Increase	Peso per Day
08 January 1991	W.O. No. NCR 2	12.00	118.0
16 December 1993	W.O. No. NCR 3	17.00	135.00
01 April 1994	W.O. No. NCR 3	10.00	145.00
02 February 1996	W.O. No. NCR 4	16.00	161.00
01 May 1996	W.O. No. NCR 4	4.00	165.00
06 February 1997	W.O. No. NCR 5	15.00	180.00
01 May 1997	W.O. No. NCR 5	5.00	185.00
06 February 1998	W.O. No. NCR 6	13.00	198.00
31 October 1999	W.O. No. NCR 7	25.50	223.50
01 November 2000	W.O. No. NCR 8	26.50	250.00
05 November 2001*	W.O. No. NCR 9	15.00	265.00
01 February 2002*	W.O. No. NCR 9	15.00	280.00
10 July 2004*	W.O. No. NCR 10	20.00	300.00
16 June 2005	W.O. No. NCR 11	25.00	325.00
11 July 2006	W.O. No. NCR 12	25.00	350.00
28 August 2007	W.O. No. NCR 13	12.00	362.00
14 June 2008	W.O. No. NCR 14	15.00	377.00
28 August 2008	W.O. No. NCR 14	5.00	382.00
23 June 2010	W.O. No. NCR 15	22.00	404.00
26 May 2011	W.O. No. NCR 16	22.00	426.00
03 June 2012	W.O. No. NCR 17	20.00	446.00
01 November 2012	W.O. No. NCR 17	10.00	456.00
04 October 2013	W.O. No. NCR 18	10.00	466.00
04 April 2015	W.O. No. NCR 19	15.00	481.00
02 June 2016	W.O. No. NCR 20	10.00	491.00
05 October 2017	W.O. No. NCR 21	21.00	512.00
05 November 2018	W.O. No. NCR 22	25.00	537.00
04 June 2022	W.O. No. NCR 23	33.00	570.00

* ECOLA (Emergency Cost of Living Allowance)
Source: National Wages and Productivity Commission, Department of Labor and Employment

2 General Construction Data

ESTIMATING RULES OF THUMB

Densities of Common Materials			
Concrete	2,400 kg/m^3	Water	1,000 kg/m^3
Cement	1,441 kg/m^3	Softwood	700 kg/m^3
Sand	1,600 kg/m^3	Hardwood	1,100 kg/m^3
Gravel	1,350 kg/m^3	Aluminum	2,750 kg/m^3
Steel	7,850 kg/m^3	Soil (compact)	2,100 kg/m^3
Concrete	Minimum Recommended Cement Factor Based on Concrete Strength (in bags of 40 kg cement)		

Concrete		Ordinary Design Mix		Pumpcrete Design Mix
Psi	Mpa	1 1/2"	Gravel Size 3/4"	Gravel Size 3/4"
8,000	55	21	22	23
7,000	48	19	20	21
6,000	41	17	18	19
5,000	35	15	16	17
4,000	28	11.75	12.75	14.5
3,000	21	9	10	11.5

Bar Diameter (mm)	Weight/m (kg/m)	Perimeter (mm)	Area (mm^2)
6	0.222	18.85	28.27
8	0.395	25.13	50.26
10	0.616	31.42	78.54
12	0.888	37.70	113.10
16	1.579	50.27	201.06
20	2.466	62.83	314.16
25	3.854	78.54	490.88
28	4.834	87.96	615.80
32	6.313	100.53	804.25
36	7.990	113.09	1017.90
40	9.864	125.66	1256.64

ESTIMATING RULES OF THUMB

Structure Desing - Concrete Ratios The following is a range of concrete ratios for building superstructure design in Manila:			
Concrete/floor area	0.4 m^3/m^2	to	0.55 m^3/m^2
Formwork/floor area	2.0 m^3/m^2	to	3.0 m^3/m^2
Reinforcement	180 kg/m^3	to	280 kg/m^3

Average External Wall/Floor Ratio	
Residential Apartments	0.35 m^2/m^2
Office, Hotel	0.40 m^2/m^2
Industrial	0.40 m^2/m^2

Average Internal Wall/Floor Ratio	
Residential Apartments	1.00 m^2/m^2
Office	0.50 m^2/m^2
Hotel	1.50 m^2/m^2

Dimensions for Standard Parking Space, Loading/Unloading Bays and Lay-bys			
	Length (m)	Width (m)	Headroom (m)
Private Cars	5	2.5	2.4
Taxi and Light Vans	5	2.5	2.4
Coaches and Buses	12	3.0	3.8
Lorries	11	3.5	4.1
Container Vehicles	16	3.5	4.5

Mimimum headroom means clearance between the floor and the lower most projection from the ceiling including any lighting units, ventilation duct, conduits or similar.

The above ratios are indicative and for reference purpose only. They do not account for buildings with special shapes, configurations or particularly small foot prints.

ESTIMATING RULES OF THUMB

Average Loads	
Lorry (24 ton)	10.0 m^3
Concrete Truck (24 ton)	5.5 m^3

Functional Area Distribution in 5-star Hotel	
Functional Area	% of Total Hotel CFA
Private Cars	15-25%
Taxi and Light Vans	45-60%
Coaches and Buses	25-30%

Dimensions of Typical Grade A Office Space	
Component	Dimension
Distance from curtain wall to core wall	9-13%
Population	usable floor area / person
	30 - 40 s

Average Lighting Level	
Building Type	Lux
Residential	300
Office	500
Retail	500
Hotel	300
School	300-500

ESTIMATING RULES OF THUMB

Average Power Density	
Building Type	VA/m^2 CFA
Residential	80 - 100
Office	70
Retail	300 - 400
Hotel - Accomodation	30
Hotel - F & B Area	550
School	50

Average Cooling Load	
Building Type	m^2 Cooling Area/RT
Residential	18 - 23
Office	14 - 18
Retail	12 - 14
Hotel	23
School	23

Indicative Dimensions for Sports Grounds		
Building Type	Length	Width
Tennis Court	40 m	20 m
Squash Court	10 m	6.4 m
Basketball Court	34 m	20 m
Volleyball Court	36 m	20 m
Badminton Court	20 m	10 m
Ice Rink	61 m	26 m
Soccer Pitch	120 m	90 m

The above dimensions are for a single court with appropriate clearance.
No spectator seating or support area has been allowed.

ESTIMATED EMBODIED CARBON FOR COMMONLY USED CONSTRUCTION MATERIALS

Description	Unit of Measurement	Embodied Carbon EC - kgCO2e
Concrete		
3,000 psi	m3	222.46
5,000 psi	m3	297.93
6,000 psi	m3	328.83
7,000 psi	m3	368.44
8,000 psi	m3	421.08
9,000 psi	m3	473.71
10,000 psi	m3	526.34
12,000 psi	m3	631.61
Reinforcement Steel Bar		
Grade 40	kg	1.99
Grade 60	kg	1.99
Grade 75	kg	1.99
Structural Steel	kg	2.76
Concrete Formworks	m2	0.681
CHB Wall		
10mm thick	m2	30.48
150mm thick	m2	48.59
Mortar Topping (Cement and Sand)	kg	8.82
Plastering/Rendering Works (Cement and Sand)	m2	7.19
Drywall	m2	49.64
Gypsum		
Painting		
Latex	m2	2.12
Elastomeric	m2	2.12
Enamel	m2	3.13

ESTIMATED EMBODIED CARBON FOR COMMONLY USED CONSTRUCTION MATERIALS

Description	Unit of Measurement	Embodied Carbon EC - kgCO2e
Suspending Ceiling		
Gypsum Board	m2	47.36
Ficemboard	m2	50.41
Glass		
IGU Curtain Wall on aluminum framing; 6x 12x6mm	m2	825.24
Waterproofing		
Cementitious Capillary	m2	1.51
Polyurethane	m2	6.02
Metalworks		
Stair Nosing (1.8 x 14.7 x 33mm)		
Brass	m	0.73
Aluminum	m	1.16
Column guards (angle bar)	m	32.98
Fire Exit Stair Railings (tubular steel)	m	59.27
Finishes including installaton material		
Carpet Tiles	m2	8.82
Ceramic Tiles	m2	18.41
Porcelain Tiles	m2	8.4
Marble	m2	8.56
Granite	m2	21.12
Pipes and Conduits		
Polyvinyl chloride (PVC) pipe series 1000		
- 50mm diameter	m	2.33
- 100mm diameter	m	6.1

ESTIMATED EMBODIED CARBON FOR COMMONLY USED CONSTRUCTION MATERIALS

Description	Unit of Measurement	Embodied Carbon EC - kgCO2e
Pipes and Conduits		
Polyvinyl chloride (PVC) pipe series 1000		
- 50mm diameter	m	2.33
- 100mm diameter	m	6.1
Black iron (BI) pipe schedule 40		
- 25mm diameter	m	6.95
- 50mm diameter	m	15.1
- 100mm diameter	m	44.65
Galvanized iron (GI) pipe schedule 40		
- 25mm diameter	m	7.58
- 50mm diameter	m	16.45
- 100mm diameter	m	48.66
High density polyethylene (HDPE) pipe SDR 21		
- 50mm diameter	m	3.18
- 100mm diameter	m	15.65
Polyvinyl chloride (PVC) conduit		
- 25mm diameter	m	2.87
- 50mm diameter	m	6.4
- 100mm diameter	m	23.93
Intermediate metallic conduit (IMC)		
- 25mm diameter	m	5.36
- 50mm diameter	m	11.53
- 100mm diameter	m	31.54
Electrical metallic tubing (EMT)		
- 25mm diameter	m	2.12
- 50mm diameter	m	4.69

ESTIMATED EMBODIED CARBON FOR COMMONLY USED CONSTRUCTION MATERIALS

Description	Unit of Measurement	Embodied Carbon EC - kgCO2e
- 100mm diameter	m	12.44
Wires		
Thermoplastic High Heat-resistant Nylon-coated wire (THHN)		
- 3.5 mm^2	m	0.15
- 5.5 mm^2	m	0.24
- 8.0 mm^2	m	0.42
- 14.0 mm^2	m	0.59
- 22.0 mm^2	m	0.93

UTILITY COSTS FOR SELECTED ASIAN CITIES

COUNTRY	Exchange Rate Used	ELECTRICITY	
		Domestic	Commercial/ Industrial
	US$=	US$/kwh	US$/kwh
Manila	**PHP 56.120**	**0.118 - 0.205**	**0.180**
Hong Kong	HK$7.84	0.11	0.13
Singapore	S$1.38	0.22^	0.22^
Kuala Lumpur	RM4.41	0.049 - 0.130	0.086 - 0.115
Bangkok	Baht : 34.545	0.068 - 0.128**	0.090 - 0.092
Macau	MOP8.02	0.18	0.18
Jakarta	IDR15,538	0.093*	0.093**
Bangalore	INR.81.5	0.085-0.120	0.110-0.165
Ho Chi Minh	VND 23,730	0.12	0.103/0.057
Shanghai	RMB 7.2	0.043–0.136	4.725 (Basic Tariff) 0.082 (summer) 0.077 (non-summer)
Beijing	RMB 7.2	0.060–0.098	0.169–0.171 (Peak) 0.105–0.107 (normal)
Guangzhou	RMB 7.2	0.081–0.122	0.087–0.108
Chongqing	RMB 7.2	0.071-0.114	0.077-0.091

Cost are at 4th Quarter 2022 Levels

Basis of Charges in Manila, Philippines

Water
Domestic: 20m³ - 23m³/month
Commerial/Industrial : 3m³

Electricity
Domestic: 63kWh - 560kWh
Commerial/Industrial: 10,369kWh

Basis of Charges in Hong Kong, China

Water
Domestic
0 - 12m³ : Free of Charge
12 - 43m³ : HK$4.16/m³
43 - 62m³ : HK$6.45/m³
Above 62m³ : HK$9.05m³

Electricity (Based on tariff scheme of CLP Holdings Ltd.)
Domestic (bi-monthly consumption)
0-400 kWh: US$0.87/kWh 400-1,000 kWh: HK$1.004/kWh
1,000-1,800 kWh: HK$1.162/kWh 1,800-2,600 kWh: HK$1.47/kWh
2,600-3,400 kWh: HK$1.699/kWh 3,400-4,200 kWh: HK$1.803/kWh
Above 4,200 kWh : HK$1.815/kWh

Basis of Charges in Singapore

* All rates are nett of GST
^ Electricity tariff is based on low tension power supply
^^ Domestic water tariff effective from 1 July 2018. Rate includes water conservation tax, water-borne fee, sanitary appliance fee and is an average for ≤ 40m³
^^^ Domestic water tariff effective from 1 July 2018. Rate includes water conservation tax, water-borne fee, sanitary appliance fee and is an average for > 40m³
^^^^ Non-domestic water tariff effective from 1 July 2018. Rate includes water conservation tax, water-borne fee and sanitary appliance fee
^^^^^ As at 27 October 2021
^^^^^^ 98 Unleaded petrol as at 27 October 2021

The data is provided by Asia Infrastructure Solutions Singapore Pte Ltd.

Basis of Charges in Kuala Lumpur, Malaysia
Electricity
Commercial/Industrial: Low voltage
Unleaded Fuel
Fuel: Rates for 15 - 21 Dec 2022. Unleaded = Petrol Ron 95
The data for Kuala Lumpur is provided by JUBM Group.

Basis of Charges in Bangkok, Thailand
****Electricity** (Domestic) = For normal tariff with consumption not exceeding 150kWh per month
***Fuel** (Unleaded) = Gasohol 95
The data for Bangkok is provided by Mentabuild Limited.

Basis of Charges in Macau, China
Electricity
Electricty tariffs are a composition of demand charges, consumption charges, fuel clause adjustment and government tax.
Water
Domestic: Consumption charge = US$0.56/m3 for 28m3 or below; US$0.64/m3 for 29m3 to 60m3; US$0.75/m3 for 61m³ to 79m³; and US$0.90/m3 for 80m3 or above. Other charges (Depending on meter size 15mmto 200mm) : Meter rental = US$0.34 - 57.64/month;

Commercial/Industrial: Charges for ordinary users (e.g Business, government buildings, schools, associations, hospitals and others) only.

Special users (e.g gaming industries, hotels, saunas, golf courses, construction, public infrastructure and other temporary consumption) are excluded.

UTILITY COSTS FOR SELECTED ASIAN CITIES

WATER		FUEL		
Domestic	Commercial/ Industrial	Diesel	Leaded	Unleaded
US$/m3	US$/m3	US$/litre	US$/litre	US$/litre
0.399 - 0.455	2.179	1.172	N/A	1.225
0.82	0.58	2.65	N/A	2.95
2.06^^ 2.77^^^	2.06^^	1.92^^^^^	N/A	2.44^^^^^^
0.129 - 0.454	0.470 - 0.517	0.49	N/A	0.47
0.246 - 0.418	0.275 - 0.458	1.01	N/A	0.997*
0.56 - 0.91	0.75	2.03	N/A	1.79
0.068 - 0479*	0.439 - 0.808**	1.21	N/A	0.90
0.680-0.855	1.65	1.08	NA	1.30
0.28	0.898 / 0.51	0.91	NA	0.87
0.479-0.810	0.69	1.06	N/A	1.17
0.617–1.112	1.112–1.172	1.01	NA	1.12
0.275–0.55	0.48	1.01	NA	1.06
0.462-0.78	0.60	1.02	N/A	1.12

Cost are at 4th Quarter 2022 Levels

Basis of Charges in Jakarta
*Electricity : domestic group in Indonesia will cover non-subsidized categories for residential up to 2200VA capacity
**Electricity : commercial group in Indonesia will cover non-subsidized categories for business up to 200kVA capacity
*Water : domestic group in Indonesia will cover religion place, residential, small business (category I to III)
**Electricity : commercial group in Indonesia will cover offices, medium business, hotel, commercial and apartment (category IV)
Fuel Diesel: Based on Pertamina Dex (CN 35)
Fuel Unleaded: Based on Pertamina Pertamax (RON 92)

The data is provided by by PT Lantera Sejahtera Indonesia

Basis of Charges in Bangalore
The data is provided by Arkind LS Private Limited

Basis of Charges in Ho Chi Minh, Vietnam
+ All rates are VAT inclusive

Basis of Charges in Beijing, China
Unleaded Fuel
Unleaded 95

Basis of Charges in Guangzhou, China
Fuel ¤ Unleaded gasoline 92#
* Unleaded 95# = US$1.283/litre; Unleaded 98# = US$1.461/litre

Basis of Charges in Shanghai, China
Unleaded Fuel
Unleaded 95

Basis of Charges in Chongqing, China
Unleaded Fuel
Unleaded 95

LEAD TIME OF DIFFERENT PACKAGES

Packages	Progress Code* (in weeks)			
	A	B	C	D
Insitu Concrete Works	1	1	2	-
Structural Steel Frames	4	2	-	5
Cladding-Curtain Walling	10	2	-	14
Brickwork	1	1	2	-
Roof Finishes - Profiled Metal	3	1	4	4
Windows	2	1	3	6
Drylining Plaster and screeds	1	1	1	-
Demountable partitions	2	1	8	8
General joinery	4	2	3	6
Raised floors	2	1	3	3
Suspended ceilings	2	2	2	4
Decorations (wall coverings)	-	3 to 4	2 to 4	-
Stone wall and floor finishes	3	2	4	5
Passenger lifts (non-standard)	1	1	2	-
Escalators	4	2	-	5
Mechanical Pipework	10	2	-	14
Ductwork	1	1	2	-
Sprinklers	3	1	4	4
Air-conditioning plant	1	1	2	-
Variable air-volume unit	4	2	-	5
Electrical package	10	2	-	14
Electrical-Panel box	1	1	2	-
Switchgear	3	1	4	4
Generators (600kW)	1	1	2	-
Light fittings	4	2	-	5
Security Systems	10	2	-	14

Controls	1	1	2	-
Furniture	3	1	4	4
Data and voice cabling	1	1	2	-
Stones	1	1	2	-
Countertops (Natural)	1	1	2	-
Countertops (Synthetic)	1	1	2	-
Decorative Glass	1	1	2	-
Specialty Water Feature	1	1	2	-
Specialty Light Diffuser: Stretched Fabric	1	1	2	-
Toilet Fixtures	1	1	2	-
Glass Reinforced Gypsum	1	1	2	-
Digital Elements (Screens, Software, etc)	1	1	2	-
Fire Suppression	1	1	2	-
Special Lightings	1	1	2	-

*Process Code

Legend

A - Working Drawing
B - Approve Working Drawing
C - Procurement of Materials
D - Manufacture

The lead time provided shall serve only as guide for use in projects, this is due mainly to the variability of factors like local customs processing/clearing, material availability, among others.

Lead times do not refer to any particular building/project type and are based on average time.

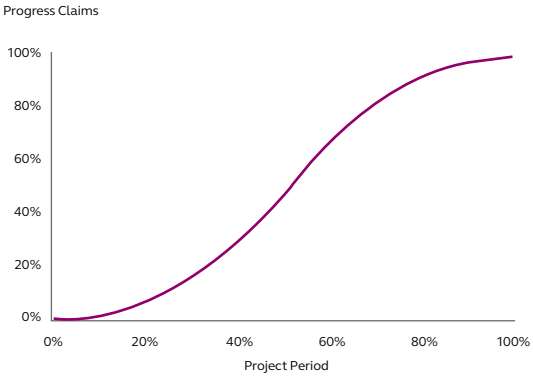
For examples:

Air-conditioning plant may require between six and twelve weeks depending on the plant specified or required. Therefore, an average of nine weeks has been used in the table.

PROGRESS PAYMENTS

The following graph and table are an indication of the rate of expenditure for construction projects. The rate of expenditure is an average rate and will vary from project to project when specific project circumstances are taken into account.

No account has been made for downpayments or retention.



Contract Period	Cumulative Progress Claims
5%	1%
10%	3%
15%	5%
20%	7%
25%	10%
30%	14%
35%	21%
40%	38%
45%	48%
50%	59%
55%	68%
60%	77%
65%	83%
70%	88%
75%	92%
80%	94%
90%	96%
95%	98%
100%	100%

TENDER PRICE INDEX

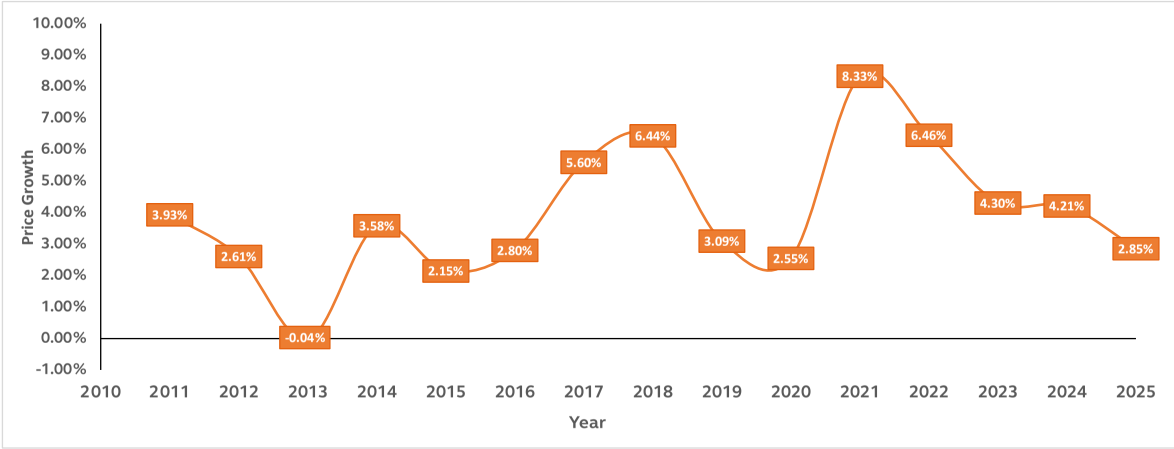
Year	Tender Price Index
2010	100.00
2011	103.93
2012	106.64
2013	106.60
2014	110.42
2015	112.79
2016	115.95
2017	122.44
2018	130.32
2019	134.35
2020	137.77
2021	149.25
2022	158.89
2023	165.73
2024	172.71
2025	177.64

This tender price index data does not consider the construction fluctuations ie prices of plant and equipment, materials, and labor, from the tender date up to the mid-point of the construction period. It is estimated that construction fluctuations would approximately be at 3% - 5% per annum.

The computation is based on a priced bill of quantities which composed of Civil, Structural, Architectural and MEPF services.

The projection for year 2023 to year 2025 is based on geopolitical landscapes, prices of commodities globally as of March 2023.

TENDER PRICE INDEX



LEED CERTIFICATION COST PREMIUM

What is LEED?

LEED stands for Leadership in Energy and Environmental Design. It is a green building certification system sponsored by the United States Green Building Council.

Why LEED?

LEED certified buildings have lower energy and water consumption that reduces the cost of operations. Better indoor air quality, lighting, thermal comfort, quality views and acoustic performance, also the reduction of carbon dioxide emissions and solid waste creates a healthier environment that helps improve both physical and mental health that leads to increase in productivity of the tenant or employees.

Additional Benefits of LEED

- Increased Building Valuation
- Reduces liability
- Promote better employee relationships
- Reduce energy and water usage
- Promote better indoor air quality
- Reduce maintenance and operation costs
- Triggers innovation and processes to optimize building performance
- Reduce construction waste during the process
- Promote and attracts companies with sustainable goals
- Reduce 'sick building' syndrome in the employees
- Increase employee performance
- Promote the usage of recycled material.

LEED CERTIFICATION COST PREMIUM

Rating Systems

- Building Design and Construction: works for all project types from hospitals to manufacturing plants, showrooms and office buildings. LEED BD+C has options to fit every project. Use a specialty option for unique needs or use New Construction and Major Renovations for everything else.

- Interior Design and Construction: (LEED ID+C) enables project teams, who may not have control over whole building operations, the opportunity to develop indoor spaces that are better for the planet and for people

- Operations and Maintenance: offers existing buildings an opportunity to pay close attention to building operations, by supporting whole buildings and interior spaces that have been fully operational and occupied for at least one year. The project may be undergoing improvement work or little to no construction

- Homes: LEED certified green homes use less energy and fewer resources and are healthier for you and your family

- Neighborhood Design: For new land development projects or redevelopment projects containing residential uses, nonresidential uses, or a mix. Projects can be at any stage of the development process, from conceptual planning to construction.

LEED CERTIFICATION COST PREMIUM

L evels of Certification

- Certified (40 - 49 points)
- Silver (50-59 points)
- Gold (60-79 points)
- Platinum (80+ points)

Cost Premium on Office, Commercial and Residential

Office and Commercial: Shell and Core

3%

4%

5%

7%

LEED CERTIFICATION COST PREMIUM

High Rise Residential: New Construction

3%

4%

5%

9%

Note:
LEED premium cost on office and commercial applies to average standard level, residential applies to high end level. Innovation and Regional Priority credits were not considered on the computation.

CONSTRUCTION PERMITS

REQUIREMENTS BEFORE CONSTRUCTION	PURPOSE	LOCATIONS REQUIRED TO SECURE	WHERE TO SECURE	REQUIREMENTS	TIMELINE
1. Zoning Certifcate	To ensure compatibility or conformity of the project with the existing Land Use Plan of the city or municipality	All Areas	LGU - Office of the Municipal / City Planning and Development	Request Letter, Barangay Clearance, Proof of Land Ownership, Site Development Plan	1 month
2. Barangay Clearance	Prerequisite for applying permits to cover the business or activity conducted by a particular firm or entity which is located in that barangay	All Areas	LGU - Barangay Hall or Municipal Office	Request Letter, Signed and Sealed Achitectural Plans	1 month
3. Civil Aviation Authority of the Philippines (CAAP) Permit	To check or limit the height of the structure located on the flight path of the airport.	Areas within the flight path of the airport. Coordinate with CAAP Central Office or email to osd@caap.gov.ph	Civil Aviation Authority of the Philippines	Duly signed application form, signed and sealed elevation plans, locational plan with vicinity map, certification of Geodetic Engineer. Geodetic Coordinates (WGS 84 Datum), Copy of Reference Elevation from NAMRIA, Copy of Horizontal Control Reference using WGS 84	2 months

4. Environmental Compliance Certificate	To ensure that the proposed project will not cause a significant impact on the environment	All Areas	Department of Environment and Natural Resources (DENR) in coordination with other government agencies that is directly responsible to the type of the proposed project	Environmental Examination (IEE) Environmental Impact Assessment (EIA)	5 months for IEE 9 months for EIA
5. Location Clearance	To ensure compliance with the local zoning ordinance	All Areas	LGU - Office of the Municipal / City Planning and Development	Duly accomplished and notarized application form, signed and sealed achitectural plans, lot plan and vicinity plan, Professional consultant details and supporting credentials (PRC ID and PTR), CTC of TCT, Consent from immediate neighbours, Barangay Clearance, MOA / SPA / Affidavit / Authorization, Certification from PHIVOCS, Height Clearance form CAAP, Photo of establishment, Tax Declaration, Latest Tax Receipt, ECC from DENR	2 months

CONSTRUCTION PERMITS

REQUIREMENTS BEFORE CONSTRUCTION	PURPOSE	LOCATIONS REQUIRED TO SECURE	WHERE TO SECURE	REQUIREMENTS	TIMELINE
6. Laguna Lake Development Authority (LLDA) Clearance	To ensure that the proposed project will not cause sginificant impact on the Laguna Lake	Rizal, Laguna, Selected City or Municipalities in Metro Manila, Cavite and Batangas	Laguna Lake Development Authority	Duly accomplished and notarized application form, ECC or Certificate of Non Coverage, SEC approved Articles of Incorporation including GIS or Articles of Cooperative duly approved by CDA or valid Certificate of Business Registration from DTI, IEE, EIA	1 month
7. Fire Safety Evaluation Clearance	To ensure that the codes, standards and minimum requirement for buildings is complied	All Areas	Bureau of Fire Protection	Duly accomplished and notarized application application form, Endorsement Letter from Office of Building Official or Building Permit Certification, Signed and Sealed Plans (CSA, MEPF, Electronics), Professional consultant details and supporting credentials (PRC ID and PTR), Cost estimate of the building including labor cost signed and sealed by the designer or contractor duly notarized, Fire Safety Clearance for welding, cutting and other hot work operations if required	3 months

8. Building Permit (Building, Mechanical, Electrical, Electronics, Sanitary / Plumbing)	To ensure that the codes, standards and minimum requirement for buildings is complied	All Areas	LGU - Office of the Building Official	Duly accomplished and notarized application form (Signed and Sealed by Consultants, Proponent and Lot Owner) Signed and Sealed CSA, MEPF and Electronics Plans and Technical Specifications, Professional consultant details and supporting credentials (PRC ID and PTR), Proof of Land Ownership	3 months
9. Fencing Permit and Excavation, Ground Preparation Permit	To ensure that the codes, standards and minimum requirement for buildings is complied	All Areas	LGU - Office of the Building Official	Duly accomplished and notarized application form (Signed and Sealed by Consultants, Proponent and Lot Owner) Signed and Sealed CSA, MEPF and Electronics Plans and Technical Specifications, Professional consultant details and supporting credentials (PRC ID and PTR), Proof of Land Ownership	3 months

Note on Timeline:

- The Zoning Certificate, Barangay Clearance, CAAP Permit, ECC, Locational Clearance, LLDA Clearance and Fire Safety Evaluation Clearance are to be secured consecutively as a requirement of the Building Permit. For large scale construction the approximate timeline in securing the permits is 13 months to 18 months, for small scale constructions it is no longer than 12 months

2 General Construction Data

Abbreviations:

- LGU - Local Government Unit
- NAMRIA - National Mapping and Resource Information Authority
- WGS - World Geodetic System
- PRC - Professional Regulations Commission
- PTR - Professional Tax Receipts
- CTC - Certified True Copy
- TCT - Transfer of Certificate of Title
- MOA - Memorandum of Agreement
- SPA - Special Power of Attorney
- SEC - Securities and Exchange Commission
- GIS - General Information Sheet
- CDA - Cooperative Development Authority
- DTI - Department of Trade and Industry
- CSA - Civil, Structural and Architectural
- MEPF - Mechanical, Plumbing and Sanitary, Fire Protection

Proof of Land Ownership:

- Certified True Copy of Land Title
- Certificate of Transfer
- SEC Amendment
- Lease Contract

References:

- Local Government Units
- Civil Aviation Authority of the Philippines
- Department of Environment and Natural Resources
- Laguna Lake Development Authority
- Bureau of Fire Protection

Edades West
Owner - Rockwell Land Corporation

3 PROPERTY

3 Construction market update

ECONOMIC INDUSTRY PROPERTY COMMENTARY

In General

The Philippines' Gross Domestic Product (GDP) continued its growth trajectory, recording a full-year growth of 7.6% in 2022 from 5.8% a year ago. The latest growth is the fastest since 1976 and surpasses the government's growth target range for the year of 6.5%-7.5%. The strong economic performance was attributable to the buoyant household spending which grew by 8.4% in 2022, from a growth of 4.3% in 2021. The growth of the services sectors also rose from 5.4% in 2021 to 9.1% in 2022 whilst the continued global disturbances weighed on the performance of the industry sectors, particularly on the manufacturing and construction industries, which exhibited a tamer growth of 6.9% in 2022 from 8.8% a year ago. Meanwhile, the economic growth target for 2023 is set at 6.0%-7.0%, a downgrade from the previously set target by the government of 6.5%-8.0%, weighing the impacts of the external headwinds and the rising level of prices.

Annual inflation surged to a 14-year high and past the target band set by the Bangko Sentral ng Pilipinas (BSP) of 2%-4% to 5.8% in 2022, mainly driven by the rising global oil prices as the result of the Russia-Ukraine war and the elevated prices of food and beverages. Since June 2022, the inflation rate breached the 6% mark, eventually reaching 8.0% and 8.1% in November and December, respectively. Being an issue on a global scale, the pressures on inflation have prompted a series of policy rate hikes by various countries which were echoed by the Bangko Sentral ng Pilipinas (BSP). Since the start of the year, the BSP has raised the benchmark interest rate by a total of 350 basis points (bps) by end-2022, the latest of which is the 50 bps increase delivered in December which brings the overnight borrowing rate at 5.5%, the highest since the 6.0% November 2008. Whilst the combination of external and local uncertainties is seen to dampen consumer confidence in the medium term, domestic demand is expected to remain strong which will propel the economy to be among the fastest

in terms of growt in Southeast Asia in 2023.

Inflationary pressures and the expected global slowdown will continue to delay occupancy and real estate investment decisions. As many corporate occupiers remain unsure about their future office needs coupled with the advent of hybrid work practices, the growth of office space demand and other allied property sectors will thread below pre-pandemic levels. Notwithstanding, allowing liberal work-from-home (WFH) arrangements for IT-BPM companies registered with the Board of Investments (BOI) will favour further growth of flex spaces. A "hub-and-spoke" strategy will likely increase the demand for "plug-and-play" office spaces which are readily-available on short notice and with flexible terms.

The retail sub-sector will continue to thrive on the sustained reopening that allows greater mobility of people. Whilst better retail sales can be expected as footfall improves, expansion of international businesses will continue to be hampered by the uncertain global environment. The growth momentum of consumer spending will remain the sub-sector's main driver, whilst the high inflation which has a greater cost-of-living impact on low- and mid-income households will likely cool overall demand.

Domestic tourism will remain the strongest driver of the recovery of the hotel and accommodation industry, led by leisure tourism. With the resumption of normal business operations of many companies, the activities of the MICE (Meetings, Incentives, Conferences & Exhibitions) market are also seen to also improve while international travel is faced with optimism with the increased activity in the Asia Pacific region.

Despite the delayed recovery of the manufacturing and international trade industries, the industrial sub-sector will be buoyed by the accelerated growth of the online economy, fueled by the sustained growth of e-commerce activities which drives the demand for standard-built facilities (SFBs), cold storage logistics, and other modern storage facilities to serve local and global e-commerce companies, as well as from local micro, small, and medium-sized enterprises (MSMEs). The increased demand for warehouses, fulfillment centers,

and distribution centers from e-commerce companies will continue to attract investors in these areas.

Commercial Sector

The consolidated office stock for Prime and Grade 'A' developments in Metro Manila reached approximately 9.2 million sq.m. by end-2022. Taguig City (where Bonifacio Global City and the other mixed-use developments such as McKinley Hill, McKinley West, and ARCA South are located) corners approximately 28% of the existing total Prime and Grade 'A' stock in Metro Manila. Makati City (consisting of the Makati CBD and its fringe areas) account for approximately 20%, while Pasig City and Quezon City captured 15% and 14% of the total Prime and Grade 'A' stock, respectively. The consolidated office stock in Metro Manila grew by 340,000 sq.m. in 2022 – roughly 43% of the scheduled completions for the year and lower by 30% from the average new completions over the last three (3) years prior to the pandemic.

The recovery of the office market remains on track whilst a handful of buildings post slight downward rental adjustments, although rental flexibility is dependent on the amount of space to be taken in by the prospective tenant. Positive rental growth is likely to happen in 2023 as delayed prospects are expected to get a green light this year, giving confidence to developers and landlords to test resistance levels on the pre-pandemic published rates, while overall market vacancy tapers down.

Despite the presence of several global economic headwinds ahead, the Philippine IT-BPM industry is expected to significantly benefit from large-scale lay-offs in tech companies. Mass job cuts among tech and start-up companies have driven the demand for outsourcing and IT-BPM related industries in order to further save up on operating costs amidst the challenging business environment.

The average net rents in Prime and Grade 'A' developments in Metro Manila declined by 0.51% year-on-year (YoY) despite a 0.4% y-o-y growth in net absorption in 2022. Cushman & Wakefield Research forecasts the average net rents of Prime and Grade 'A' developments in Metro Manila through 2023 to recover and grow by 1.6% in 2023 and 1.3% in 2024. Estimated average office (gross)

rental yields declined by about 2.0 bps by end-2022 from its year-ago levels. Rental yields are expected to inch up in the short-term due to expected adjustments in the key policy rate in early 2023.

Overall vacancy rates marginally increased by to 16.13% by end-2022. Prime and Grade 'A' office supply in Metro Manila is expected to grow by another 0.53 million sq.m. within 2023. The continued flight-to-quality and availability of higher grade office developments will drive vacancy rates downwards to 15% by end-2023.

Residential Condominium Sector

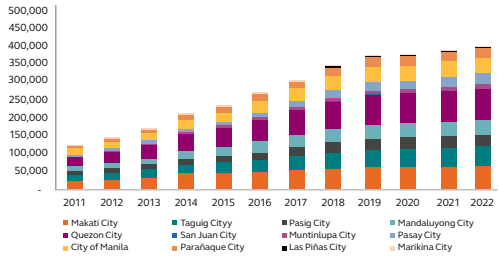
With the completion of approximately 10,000 units by end-2022, the total supply of completed residential condominium units in Metro Manila reached more than 398,000 units. Due to the restrictions in movements in early 2022 that affected the schedule of constructions coupled with the conservative stance among major property developers, the total number of completed residential condominium units in 2022 was down by more than 40% from the average number of completed developments in the last five (5) years.

Demand for residential condominiums in key business districts is slowly reverting to a positive trend as business activities have begun to normalize. Movements in completion dates were made for several projects during the pandemic due to subdued demand in the last two years. Whilst the higher interest rates are likely to have little effect on the high-end residential segment, greater impacts are likely to be observed in the mid-market residential segment in the medium term. The demand for horizontal residential development projects was sustained through 2022, as buyers consider locations outside Metro Manila as a good alternative for dwelling enhanced by the availability and growing trend of flexible working practices.

The growth of average monthly rents and selling prices of both mid-end and luxury residential condominium developments in Metro Manila have continued in 2022. The estimated range of rental rates within Metro Manila is within PHP450 to PHP1,150 per sq.m. per month. Rental rates in Makati CBD and BGC are estimated to be in the higher end of the range between PHP750 to

PHP1,500 per sq.m. per month.

Figure 1. Total Number of Residential Condominium Units in Metro Manila (2011-2022)



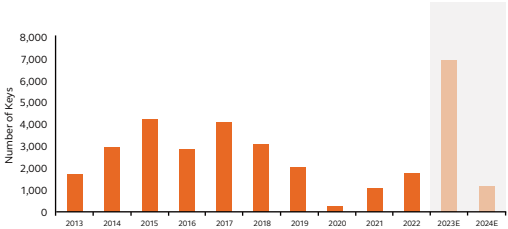
Source: Cushman & Wakefield Research

Hotels and Serviced Apartments Sector

New completions in Metro Manila in 2022 were recorded at around 1,700 keys with the addition of eight hotels and serviced apartments in the capital region, 59% higher than the recorded new number of rooms in 2021. The bulk of new supply was in the City of Manila (25%), Pasay City (18%), Taguig City (14%), and Pasig City (14%). The total stock of hotel and serviced apartments stood at roughly 44,000 keys in 2022 and it is estimated to reach around 50,900 in 2023 and around 52,500 keys in 2026. The existing stock is concentrated in Makati City (22%), Pasay City (19%), City of Manila (18%), and Quezon City (12%) while upcoming new supply up to 2026 will be coming from Quezon City (35%), Parañaque City (20%), Makati City (14%), Taguig City (12%), and Pasay City (12%). More than 45% of the upcoming number of keys were from stalled projects as the result of the pandemic restrictions and its financial implications for hotel operators.

Inbound tourism expenditure, which measures the tourism expenditure of non-resident visitors, further contracted by 79.2% in 2021 to PHP 27.62 billion, from a decline of 77.9% to PHP 132.58 billion in 2020 due to the muted foreign arrivals. In 2022, international arrivals have since picked up to 2.65 million, from only 0.16 million during the same period in 2021, upon the

Figure 2. Number of New Hotels and Serviced Residences in Metro Manila (2013-2024E)



Source: Cushman & Wakefield Research

easing of travel restrictions for international travelers. Meanwhile, domestic travel activities buoyed the local hotel and accommodation industry in the past two years. Domestic tourism expenditure, which measures the tourism expenditure of resident visitors, grew by 38.7% in 2021, a reversal from a contraction of 82.1% a year ago. For 2023, the Department of Tourism (DOT) targets around 4.8 million international arrivals as the global travel and tourism market is on a gradual recovery with many countries restarting tourism activities.

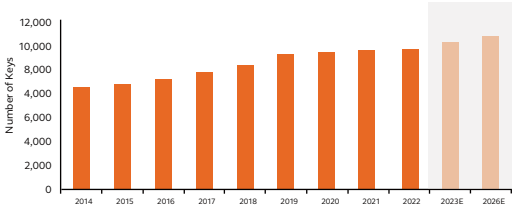
Retail Sector

New retail space supply in 2022 is recorded at around a gross floor area (GFA) of 40,000 sq.m upon the completion of two retail developments in the Central Business Districts (CBDs) of Makati and Bonifacio Global City (BGC), a decline from the recorded 237,000 sq.m of retail space GFA in 2021 and which brings the cumulative retail space GFA inventory to 9.4 million sq.m. Whilst the recent completions are characterized as of smaller formats such as neighborhood and community centers, bigger format regional centers are expected to be added to the existing supply in 2023, totaling around 477,000 sq.m of retail space GFA, the bulk of which was originally scheduled for completion in 2020 but were delayed due to the pandemic challenges. New project launches in Metro Manila remained muted while the remaining pipeline is expected to deliver only an average of 126,000 sq.m of retail space GFA annually between periods 2024 to 2026, down from an annual average of

roughly 356,000 sq.m between periods 2014 to 2022. The expected completions up to 2026 are in Quezon City (49%), Taguig City (26%), San Juan (12%), and Makati City (11%).

From a footfall of below 20% of the pre-COVID levels at the height of the pandemic in 2020, the significant lifting of the pandemic restrictions has encouraged consumers back to shopping malls which increased footfall to 60% of the pre-pandemic levels by end of 2021 and more than 90% by end of 2022, attributable to return to office of many companies, resumption of face-to-face learning, and the festive season. Whilst the consumer confidence (CI) index remained in the negative territory for the rest of 2022, it has significantly improved to -14.6 in Q4 2022 from -24.0 a year ago. The skyrocketing inflation rate and the persisting business and economic uncertainties as the results of the combination of external factors pose a threat to the sub-sector's growth momentum.

Figure 4. Mid and High-end Shopping Mall Stock in Metro Manila (2013-2024E)



Source: Cushman & Wakefield Research

Industrial Sector

The continued expansion of e-commerce activities has bolstered new industrial developments in regions of CALABA and the Central Luzon area. The latest e-Conomy SEA 2022 report by Google, Temasek and Bain & Company reported that the country's digital economy is expected to increase by 22% in 2022 to USD 20 billion, from USD 16 billion in 2021. The Philippines' overall digital economy is expected to grow by a CARG of 30%

from 2022 to 2025 to reach USD 35 billion. E-commerce is also expected to grow by 17% to USD 14 billion in 2022, from USD 12 billion in 2021. With the positive trajectory of the online economy, the growth across asset types such as cold chain storage, warehouses, distribution centers, fulfillment centers, and data centers will continue to support to the growth of the industrial sub-sector.

The total supply of existing industrial estates in Mega Manila stood at around 5,600 hectares with the addition of around 114 hectares in 2022. The anticipated industrial estate pipeline in Mega Manila up to 2024 will further add around 190 hectares of industrial estates which will be coming from the regions of Central Luzon and CALABA.

3 Construction market update

COMPANY PROFILE

Cushman & Wakefield (NYSE: CWK) is a leading global real estate services firm that delivers exceptional value for real estate occupiers and owners. Cushman & Wakefield is among the largest real estate services firms with approximately 50,000 employees in over 400 offices and approximately 60 countries. In 2022, the firm had revenue of $10.1 billion across core services of property, facilities and project management, leasing, capital markets, and valuation and other services.

C&W in the Philippines headquartered in Bonifacio Global City in Taguig City was established in 2012 as a fully owned entity after operating for 12 years through a local partner/affiliate.

To learn more, visit www.cushmanwakefield.com or follow @CushWake on Twitter.

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GEC Office at Zuellig Building

4 FINANCIAL

PHILIPPINES KEY DATA

POPULATION	
Population (2021)	111.0 M
Population (2022)	113.0 M
Urban Population*	48.00%
Population under 15	29.7%
Population over 65	6.0%
Ave. Annual Growth Rate (2015-2020)	1.6%

GEOGRAPHY	
Land Area	300,000 km^2
Agricultural Area (2016)	41.5%
Capital City	Manila
(population Metropolitan Manila - Census 2015)	12.88M
(population Manila - Census 2015)	1.78M

ECONOMY 2022	
Monetary Unit	Peso
Average Headline Inflation Rate (2018=100) Full Year 2022	8.10%
Gross Domestic Product (GDP) Full Year 2022	Php22,023,278 (in mil)
GDP per Capita (Full Year 2022)	Php 195,035.90

CONSTRUCTION 2022	
Gross Value of Construction Output (Full Year 2022)	Php 3,244,109 (in mil)
Net Value of Construction Output (Full Year 2022)	Php 1,618,295
GNet Value of Construction Output as a proportion of the GDP (Full Year 2022)	7.3%

*Population on Philippine Cities only
*Projection

Source:
National Accounts of the Philippines
Philippine Statistical Yearbook
Philippine Statistics Authority
World Bank

FINANCIAL DEFINITIONS

DISCOUNT RATE

The rate of return a developer expects when investing in a project (i.e. opportunity cost).

INTERNAL RATE OF RETURN (IRR)

The IRR may be defined as the interest rate that equates the percent value of expected future cash flows to the cost of the investment. The IRR can be compared to the Discount Rate.

NET PRESENT VALUE (NPV)

The NPV is the present value of all future cash flows, discounted back to today's values at the Discount Rate. The NPV indicates in today's dollars the profit or loss a developer makes above or below his required profit (based on nominated Discount Rate).

72 RULE

The approximate number of years required to double your capital can be calculated by dividing the interest rate into 72.

e.g.
If interest rate = 10% p.a.
Then 72 / 10 = 7.2 years
It will take approximately 7.2 years to double your capital
if it is invested at 10% p.a.

FINANCIAL FORMULAE

Future value of $1	$FV = PV\ (1+i)^n$
Future value of $1 per period	$FV = PMT\ [((1+i)^n-1), i]$
Singking Fund (the amount required to be put away periodically to realize some future sum)	$PMT = FV\ [i, ((1+i)^n-1)]$
Present value of $1.	$PV = FV[1, (1+i)^n]$
Present value of $1 per period.	$PV = PMT\ [((1+i)^n-1), (i(1+i)^n)]$
Annuity with a PV of $1 (mortgage bond formula)	PMT = PV [i(1+i)n, ((1+i)n-1)]

PV = present value
FV = future value
PMT = payment amount
n = period (e.g. 10 years with monthly payments, n = 10 x 12 = 120)
I = interest rate per period (e.g. 12% p.a. compounded monthly; i = 12% / 12 months = 1% per period)

MORTGAGE REPAYMENT TABLE

Based on:

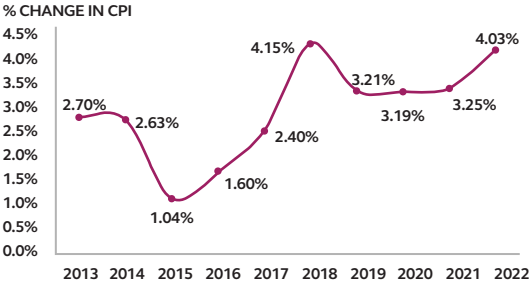
- **1,000 units of currency**
- **Interest compounded monthly**
- **Equal monthly repayments**

Interest p.a.	REPAYMENT YEARS			
	5	10	15	20
5%	18.87	10.61	7.91	6.60
6%	19.33	11.10	8.44	7.16
7%	19.80	11.61	8.99	7.75
8%	20.28	12.13	9.56	8.36
9%	20.76	12.67	10.14	9.00
10%	21.25	13.22	10.75	9.65
11%	21.74	13.78	11.37	10.32
12%	22.24	14.35	12.00	11.01
13%	22.75	14.93	12.65	11.72
14%	23.27	15.53	13.32	12.44
15%	23.79	16.13	14.00	13.17
16%	24.32	16.75	14.69	13.91
17%	24.85	17.38	15.39	14.67
18%	25.39	18.02	16.10	15.43
19%	25.94	18.67	16.83	16.21
20%	26.49	19.33	17.56	16.99
21%	27.05	19.99	18.31	17.78
22%	27.62	20.67	19.06	18.57
23%	28.19	21.35	19.82	19.37
24%	28.77	22.05	20.58	20.17
25%	29.35	22.75	21.36	20.98

Example
Borrow $1,000,000 to be repaid monthly at 10% p.a.
over 10 years.

Repayments = 1,000,000 / 1,000 x $13.22
= $13,220 per month

CONSUMER PRICE INDEX



YEAR	INDEX (AVE)	% CHANGE
2012	100.0	0.00%
2013	102.7	2.70%
2014	105.4	2.63%
2015	106.5	1.04%
2016	108.2	1.60%
2017	110.8	2.40%
2018	115.4	4.15%
2019	119.1	3.21%
2020	122.9	3.19%
2021	126.9	3.25%
2022	132.0	4.03%

Note:
Base Date 2012 = 100
Source: Philippine Statistics Authority

EXCHANGE RATES

March 2023

COUNTRY	CURRENCY	FOREIGN CURRENCY IN PHP	PHP IN FOREIGN CURRENCY	US$ IN FOREIGN CURRENCY
Australia*	dollar	36.53	0.03	1.49
Bahrain*	dinar	144.38	0.01	0.38
Brunei*	dollar	40.85	0.02	1.33
Canada*	dollar	40.25	0.02	1.35
China*	yuan	7.92	0.13	6.87
Denmark+	kroner	7.97	0.13	6.83
European Currency Unit*	euro	59.37	0.02	0.92
Hong Kong*	dollar	6.93	0.14	7.85
India+	rupee	0.66	1.51	82.08
Indonesia*	rupiah	0.004	277.778	15119.167
Japan*	yen	0.41	2.44	132.66
Malaysia+	ringgit	12.31	0.08	4.42
New Zealand+	dollar	34.06	0.03	1.60
Norway	kroner	5.24	0.19	10.38

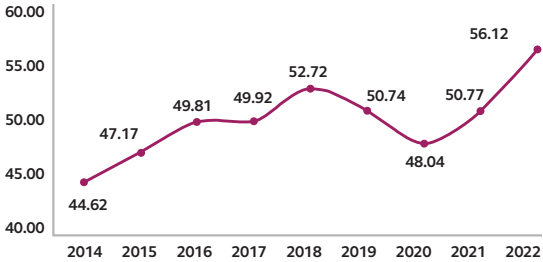
Notes:
* Convertible currencies with BSP
+ Non convertible currencies with BSP

COUNTRY	CURRENCY	FOREIGN CURRENCY IN PHP	PHP IN FOREIGN CURRENCY	US$ IN FOREIGN CURRENCY
Pakistan+	rupee	0.19	5.20	283.19
Saudi Arabia*	rial	14.50	0.07	3.75
Singapore*	dollar	41.00	0.02	1.33
South Africa+	rand	3.06	0.33	17.81
Korea*	won	0.04	23.81	1295.93
Sweden+	kroner	5.26	0.19	10.35
Switzerland*	franc	59.54	0.02	0.91
Taiwan+	NT dollar	1.79	0.56	30.47
Thailand*	baht	1.60	0.63	34.09
United Arab Emirates (UAE)*	dirham	14.82	0.07	3.67
United Kingdom*	pound	67.44	0.01	0.81
United States of America*	dollar	54.43	0.02	1.00

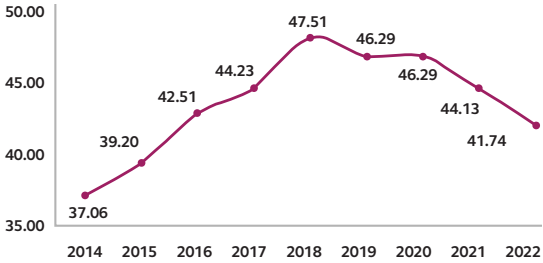
Source: BSP Reference Rate
XE Currency Converter

CURRENCY CHARTS

US DOLLAR
PHP PER US$

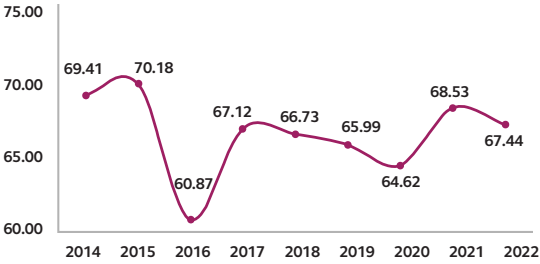


JAPANESE YEN
PHP PER 100 JAPANESE YEN

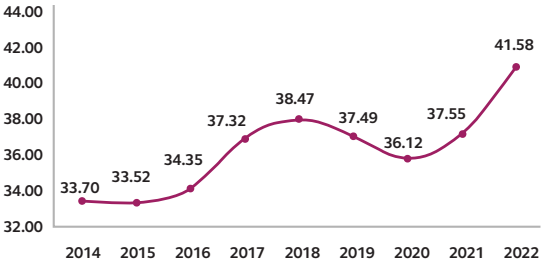


** Data Source: Bangko Sentral ng Pilipinas

STERLING POUND
PHP PER GBP



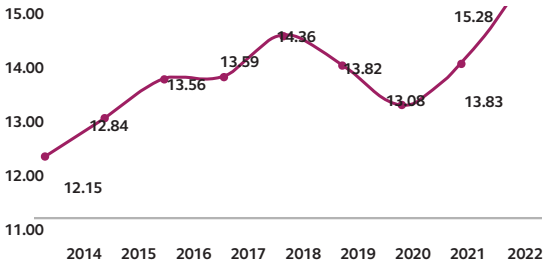
SINGAPOREAN DOLLAR
PHP PER SINGAPOREAN DOLLAR



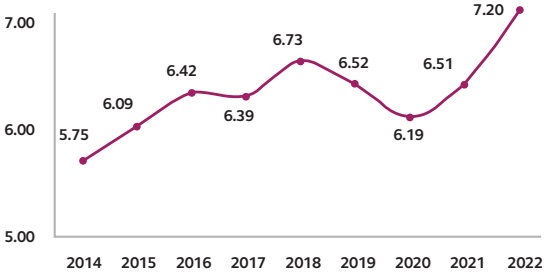
(Cont'd)

CURRENCY CHARTS

DIRHAM
PHP PER DIRHAM

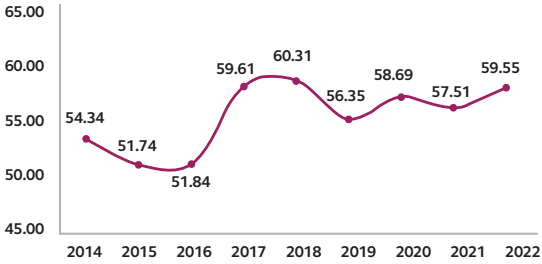


HONG KONG DOLLAR
PHP PER HONG KONG DOLLAR

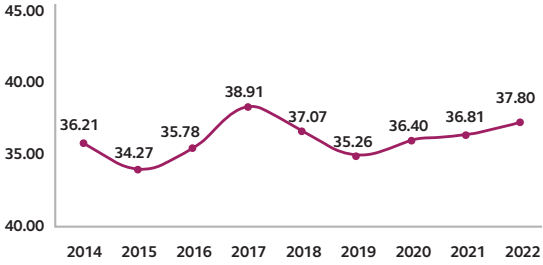


** Data Source: Bangko Sentral ng Pilipinas

EURO
PHP PER EURO

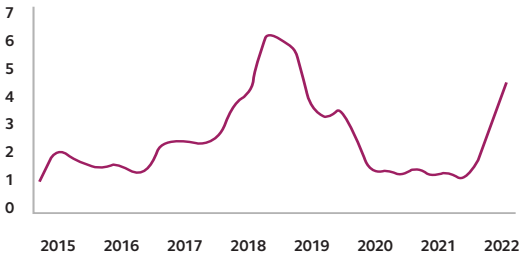


AUSTRALIAN DOLLAR
PHP PER AUSTRALIAN DOLLAR



MANILA REFERENCE RATE

MANILA REFERENCE RATE %



Note:

Based on all maturities

PHILIPPINE CENTRAL BANK MANILA REFERENCE RATE

DATE	%
Mar 2016	1.61
Jun 2016	1.70
Sep 2016	1.51
Dec 2016	1.49
Mar 2017	2.27
Jun 2017	2.50
Sep 2017	2.47
Dec 2017	2.42
Mar 2018	2.80
Jun 2018	3.74
Sep 2018	4.27
Dec 2018	5.99

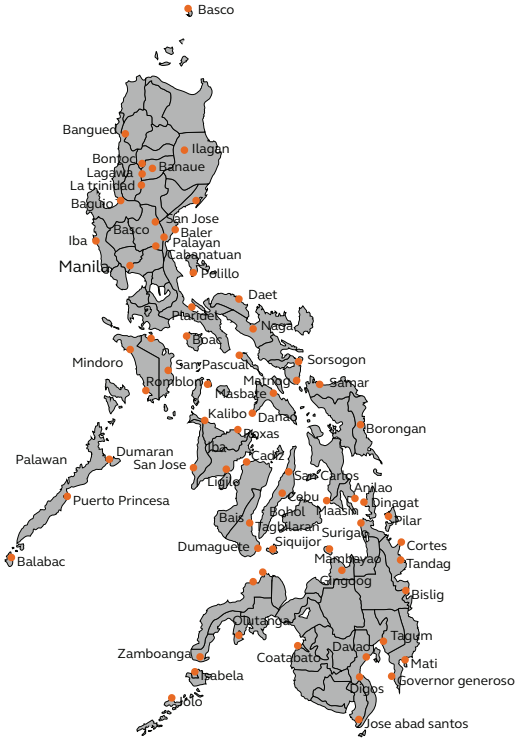
PHILIPPINE CENTRAL BANK MANILA REFERENCE RATE
(cont'd)

DATE	%
Mar 2019	5.93
Jun 2019	5.49
Sep 2019	3.75
Dec 2019	3.31
Mar 2020	3.50
Jun 2020	2.55
Sep 2020	1.55
Dec 2020	1.49
Mar 2021	1.39
Jun 2021	1.56
Sep 2021	1.36
Dec 2021	1.42
Mar 2022	1.28
Jun 2022	1.74
Sep 2022	3.00
Dec 2022	4.48

20MLD Cordova Desalination
Owner - Vivant Hydrocore Holdings Inc.

5 OTHER INFORMATION

Philippine map



Public Holidays

Philippines	2023
A. Regular Holidays	
New Year's Day	01 Jan
Maundy Thursday	06 Apr
Good Friday	07 Apr
Araw ng Kagitingan	10 Apr
Labor Day	01 May
Independence Day	12 Jun
National Heroes Day	28 Aug
Bonifacio Day	27 Nov
Christmas Day	25 Dec
Rizal Day	30 Dec
B. Special Non-Working Holidays	
EDSA People Power Revolution (Additional)	24 Feb
Black Saturday (Additional)	08 Apr
Ninoy Aquino Day	21 Aug
All Saint's Day	01 Nov
Feast of the Imacculate Conception of Mary	08 Dec
Last Day of the Year	31 Dec
Additional Special (Non-working) Day	02 Jan
Additional Special (Non-working) Day	02 Nov

5 Other Information

IDD CODES & TIME DIFFERENCES

Location	Idd country code	Area code	Time difference
Australia:			
Melbourne	61	3	3
Perth	61	8	0
Sydney	61	2	3
Bahrain	973	-	-5
Bangladesh (Dhaka)	880	2	-2
Butan (Thimphu)	975	2	-2
Brunei:			
Bandar Seri Begawan	673	2	0
Kuala Nelait	673	3	0
Cambodia (Phnom Penh)	855	23	-1
Canada:			
Toronto (Metropolitan)	1	416	-13
Vancouver	1	604	-16
China:			
Beijing	86	10	0
Guangzhou	86	20	0
Hong Kong	852	-	0
Macau	853	-	0
Shanghai	86	21	0
Shenzhen	86	755	0
France (Paris)	33	1	-7
India:			
Bangalore	91	80	-2.5
Chennai	91	44	-2.5
New Delhi	91	11	-2.5
Mumbai	91	22	-2.5
Indonesia:			
Bali	62	36	0
Jakarta	62	21	-1
Ireland:			
Cork	353	21	-8
Dublin	353	1	-8
Japan:			
Tokyo	81	3	1
Osaka	81	6	1
Korea (Seoul)	82	2	1
Korea (Pyongyang)	850	2	1
Laos (Vientiane)	856	21	0.5

Location	Idd country code	Area code	Time difference
Malaysia			
Johor Bahru	60	7	0
Kota Kinabalu	60	88	0
Kuala Lumpur	60	3	0
Kuching	60	82	0
Penang	60	4	0
Mongolia (Ulaanbaatar)	976	11	0
Myanmar (Yangon)	95	1	-1.5
Nepal (Kathmandu)	977	1	-2.25
Netherlands:			
Amsterdam	31	20	-7
New Zealand:			
Aucland	64	9	5
Wellington	64	4	5
Pakistan (Karachi)	92	21	-3
Philippines (Manila)	63	2	0
Qatar	974	-	-5
Singapore	65	-	0
South Africa:			
Johannesburg	27	11	-6
Cape Town	27	21	-6
Sri Lanka (Colombo)	94	11	-2.5
Russia (Moscow)	7	495	-5
Taiwan (Taipei)	886	2	0
Thailand:			
Bangkok	66	2	-1
Phuket	66	76	-1
United Arab Emirates:			
Abu Dhabi	971	2	-4
Dubai	971	4	-4
United Kingdom			
London	44	20	-8
Edinburgh	44	131	-8
USA:			
Los Angeles	1	213	-16
New York	1	212	-13
Vietnam			
Ho Chi Minh City	84	8	-1
Hanoi	84	4	-1

5 Other Information

CONVERSION FACTORS

Unit					
Length					
10 mm	=	1 cm	12 in	=	1 ft
100 cm	=	1 m	3 ft	=	1 yd
1,000 m	=	1 km	1,760 yd	=	1 mile
Area					
10,000 m^2	=	1 ha	9 ft^2	=	1 yd^2
100 ha	=	1 km2	4,840 yd^2	=	1 acre
			640 acre	=	1 $mile^2$
Volume					
1,000 ml	=	1 L	0.83 gal. (UK)	=	1 gal. (US)
1,000 L	=	1 m^3	8 pt. (US)	=	1 gal. (US
1,000 cm3	=	1 L	4 qt. (US)	=	1 gal. (US)
Mass/force					
9.806 N	=	1 kg	1,000 lbs.	=	1 kip
1,000 g	=	1 kg	16 oz	=	1 lb
1,000 kg	=	1 tonne	2,224 lb	=	1 ton
'16 tael	=	1 catty			
Pressure					
1 Pa	=	1 N/m^2	0.068 atm	=	1 psi
1,000 Pa	=	1 KPa	14.5 psi	=	1 bar
1 Mpa	=	1 N/mm^2	0.491 psi	=	1 in. Hg
0.01 kg/cm2	=	1 Kpa			
Power					
1,000 w	=	1 kw	550 ft-lb/sec	=	1 hp
1 w	=	1 VA x pf*			
Temperature					
COOLING LOAD					
12,000 BTU/hr	=	1 TR			
3,024 kcal/hr	=	1 TR			
1.5 hp	=	1 TR			

To imperial (approx)	To metric (approx)
1 in = 25.400 mm	1 cm = 0.394 in.
1 ft = 30.480 cm	1 m = 3.281 ft.
1 yd = 0.914 m	1 m = 1.094 yd
1 mile = 1.609 km	1 km = 0.621 mile
Area	
1 ft^2 = 0.093 m^2	1 m^2 = 10.764 ft^2
1 yd^2 = 0.836 m^2	1 m^2 = 1.196 yd^2
1 acre = 0.405 ha	1 ha = 2.471 acres
1 $mile^2$ = 2.590 km^2	1 km^2 = 0.386 $mile^2$
Volume	
1 pt. (UK) = 0.568 L	1 L (UK) = 1.760 pt.
1 pt. (US) = 0.473 L	1 L (US) = 2.113 pt.
1 gal. (UK) = 4.546 L	1 L (UK) = 0.220 gal.
1 gal (US) = 3.785 L	1 L (US) = 0.264 gal.
Mass/force	
1 oz. = 28.350 g	1 gram = 0.035 oz.
1 lb. = 0.454 kg	1 kg = 2.205 lb.
1 ton = 1.016 tonne	1 tonne = 0.984 ton
1 catty = 0.605 kg	
Pressure	
1 bar = 100 KPa	1 MPa = 145 psi
1 psf = 47.88 Pa	1 kg/cm^2 = 14.22 psi
1 psi = 6.895 KPa	1 KPa = 0.295 in. Hg
1 atm. = 101.3 KPa	1 KPa = 20.89 psf
Power	
1 hp = 0.746 kw	1 kw = 1.340 hp
Temperature	
(ºF - 32) x 5/9	(ºC x 9/5) + 32

ARCADIS PROFESSIONAL SERVICES COST AND COMMERCIAL MANAGEMENT

- Preliminary cost advice and cost planning
- Advice on the type of contractual arrangements to be used
- Advice on obtaining tenders
- Preparation of tendering documents
- Negotiation with contractors
- Visiting site and valuation of works in progress
- Assessing the cost of proposed variations
- Attending site and other meetings
- Preparation of financial statements
- Settlement of final cost with contractors and sub-contractors
- Advice on contractor's claims
- Cost engineering
- Evaluation and operation of serial (maintenance) contracts
- Financial evaluation of "package' bid contracts
- Cost and contract research
- Advice on litigation
- Life Cycle Costing
- Lender's Technical Advisory
- Procurement Advisory
- Reinstatement Valuation
- Due Diligence
- 5D BIM Management

ARCADIS PROFESSIONAL SERVICES
COST AND COMMERCIAL MANAGEMENT

Budget Formulation

- Construction Feasibility Studies
- Budget Formulation
- Analysis of cost/design options
- Cost Planning
- Value engineering
- Cash flow evaluations
- Cost monitoring and/or cost control of construction works
- Project management or coordination
- Reinstatement assessments for fire insurance
- Quantifying mechanical and electrical installation works
- Quantifying civil engineering works
- Definition and operation of plant procurement programmes
- Tax treatment of construction expenditure
- Research and consultancy in all aspects of construction economics
- Interior decoration and fitting-out works
- Preparations of fixed asset registers
- Environmental certification

ENVIRONMENTAL SUSTAINABILITY

Overview of Leadership in Energy & Environmental Design (LEED)

The U.S. based Leadership in Energy & Environmental Design (LEED) Green Building System is a voluntary third-party rating system in which credits are earned for satisfying specified green building criteria. Projects are evaluated within six environmental categories, as follows:

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Innovation & Design

Certified, Silver, Gold and Platinum levels of green building certification are awarded based on the total points earned.

Pre Design

Sustainable design solutions is more efficient and economical if identified and integrated into the project at an early stage.

- Assist in team selection
- Evaluate sustainable concepts and technologies that are applicable to the project.
- Conduct a LEED Design Charette
- Register the project to LEED Onlin

ENVIRONMENTAL SUSTAINABILITY

Design

Establishing clear LEED goals during this stage will ensure that requirements are accounted for in the project cost.

- Manage the LEED process by monitoring team responsibilities.
- Conduct plan reviews to check if all LEED requirements are incorporated.
- Develop Green Specifications.
- Perform cost analysis when recommending high-cost strategies.
- Liaise with USGBC and GBCI.
- Manage the preparaton of LEED documentation for Design Phase Review and ensure these are according to the criteria.
- Develop a whole building simulation to demonstrate the projected annual energy savings of the project.
- Provide technical support (including calculation methodologies and advise in benefits and implications of sustainable measurer) to the team.

Construction

Normally, a third of the target points are assigned to the Construction team. Proper monitoring and implementation of the agreed green building measures are key in earning/ achieving these targets.

- Provide pre-bid conferences and contractor training
- Evaluate compliance and progress through submittals and reports from contractor.
- Inspect site condition if according to approved guidelines.
- Liaise with USGBC and GBCI
- Manage the preparation of LEED documentation for Construction Phase (final) Review.

5 Other Information

Operations

Perform post-occupancy project audits - lessons

Being part of LEED

Global Linkage and Credentials

Arcadis Philippines Inc. is a member of US Green Building Council (USGBC) and the Philippine Green Building Council (PhilGBC).

Our environmental sustainability team composed of highly skilled architects and engineers, has the most number green professional accrediatation than any other company - a combination of LEED AP's, LEED GA's and Certified BERDE Professionals. The team is further strengthened by a group of building energy analysts.

Building energy analysis includes:

- Identification of energy reduction and cost saving measures for new and existing buildings
- Development of final models for use in LEED NC / green building certification
- Our simulation service includes: whole building simulation, artificial light simulation, daylight simulation.

ENVIRONMENTAL SUSTAINABILITY

Energy Modeling

An energy model is a computer simulation based on building design, envelope, orientation, schedule, controls and energy-using systems to predict comparative consumption and expenditures.

BERDE Consultancy

The rating schemes include the minimum requirements and the attainable points for BERDE. You can achieve a BERDE Certificate upon completion of the formal BERDE Assessment and Certification process, complying with the requirements, and achieving the minimum cumulative score.

WELL Consultancy

WELL is composed of over one hundred Features that are applied to each building project, and each WELL Feature is designed to address issues that impact the health, comfort, or knowledge of occupants through design, operations and behavior.

5 Other Information

ENVIRONMENTAL SUSTAINABILITY

Green Building Facts

An up-front investment of 5-7% in green building design, on average, results in life cycle savings of 20%of the total construction cost.

Source: The Costs and Financial Benefits of Green Buildings: A report to California's sustainable Building Task Force, October 2003.

- Operating cost decrease by 9%
- Decreased Operating Costs Over Five
- Years:13%-14%
- Increased Building Value for Green versus
- Non-Green Projects: 7%-8%
- Increased Asset Value for Green versus
- Non-Green
- Projects 7%
- Payback Time for Green Investments –
- 6%-8% Years

Source: World Green Building Trends 2016 Developing Markets Accelerate Global Green Growth SmartMarket Report, 2016

- By reducing potable water use consumption inside
- and outside, green buildings can reduce up to 40%
- of water use.

Source: Poplar Network

- The emissions savings potential of green buildings is said to be as much as 84 gigatonnes of CO2 (GtCO2) by 2050, through direct measures in buildings such as energy efficiency, fuel switching and the use of renewable energy
- The building sector has the potential to make energy savings of 50% or more in 2050, in support of limiting global temperature rises to 2°C (above pre-industrial levels)

Source: World Green Building Council

- Green buildings reduce energy use by an average of 15-20%

PROJECT & PROGRAMME MANAGEMENT

Our approach

We provide advice and consulting services at strategic, policy and operational levels, concentrating on three key areas:

· Project Feasibility
· Project Set-up
· Project Delivery

Our multidisciplinary team is skilled in change management, process improvement, procurement, sustainability, economics, market analysis and research.
In everything we do, we are committed to creating value for our clients by:

· Working collaboratively with them
· Developing a deep understanding of their needs and aspirations
· Providing tailor-made solutions
· Being accessible and responsive

Project management

Integrated Project Management is based on four distinctive phases in the project life cycle:

1. Business Needs and Project Inception

In the early stages of a project, Arcadis Philippines Inc. creates the conditions for success by defining a set of value drivers based on an understanding of all stakeholder interests and requirements.

We consider needs, identify risk and can assist with business planning. Where appropriate, we assist with the development of master plans, option appraisals, overseeing of site acquisitions, management of planning consents and advice on funding strategies. We work with clients to manage the appointment of suitable consultants, including the agreement of services

PROJECT & PROGRAMME MANAGEMENT

and fees.

2. Project Strategy & Development

At the early development stage we compile strategic and design briefs and produce an overall project execution plan. We oversee the production of costs to agree budgets and provide a detailed master programme for project delivery. We recommend the most appropriate procurement strategy and manage the selection of the best value construction team. We provide a single point of contact for the client when dealing with third parties, contractors and suppliers.

3. Project Control & Delivery

Prior to commencing, we make sure that a commercially viable solution has been agreed, that all contracts are administered in the correct form and that necessary management procedures are in place. We set up systems and processes to enable the sharing of information, management of change and identification of potential risks to successful project delivery. We monitor quality, time and costs and provide leadership to the team, resolving issues, liaising with third parties, and reporting on progress as agreed with the client.

4. Commissioning & Asset Management

In the final stages of the project, we monitor commissioning, agree completion, settle final accounts and enable the smooth transition of the asset through to ongoing management.

Post-handover, we instigate project reviews and feed lessons learned to the client.

Planning

The planning and programming team is a multifunctional group of professionals who are dedicated to the primary management requirement of planning and programming. Our approach is to assist in controlling progress, not simply monitoring it.

Benefits

Professional planning and programming

PROJECT & PROGRAMME MANAGEMENT

Enhances management's understanding of progress

- Enhances management's understanding of progress and assists trade-offs and decision making
- Reduces uncertainty in project completion deadlines
- Avoids costly time overruns
- Provides expert advice that designers and clients understand
- Gives high quality clear outputs that make a real contribution to project success
- Enables corrective action advice to mitigate programme slippages and variations

Our approach

Having acquired and consolidated a number of major international consulting firms, Arcadis now has a technical and managerial resource unmatched in the Philippines. These resources, include the world leaders in Flood Management, Seismic Engineering, and Climate Change Adaption, all areas of concerns becoming increasingly high-profile in the Philippines.

Our resources and pedigree differentiate us in our capacity to provide comprehensive environmental engineering and management consulting services to solve our client's increasingly complex water challenges, and enable us to go beyond individual projects, or even programs, and fill the roles of trusted advisor and business partner.

We can create solutions that endure at every phase of the water cycle, however some of our specialized services include:

Water Supply and Treatment

Providing safe water to meet growing demand and increasingly stringent water quality standards, while protecting the environment by providing wastewater treatment systems against a backdrop of ever intensifying population densities.
The planning and programming team is a multifunctional group of professionals who are dedicated to the primary management requirement of planning and programming. Our approach is to assist in controlling progress, not simply monitoring it.

WATER CONSULTANCY

Conveyance

Planning, design and construction services for new and rehabilitated trunk sewers, force mains, interceptors, pumping stations and tunnels.

Water Management

Philippines is not only prone to natural calamity and perennial flooding, but is also now recognized as vulnerable to consequences of climate change that will affect water and food security. With our experts in water management, having lead projects such as New Orleans and New York flood defenses, Arcadis aims to enhance the quality, safety and adaptibility of urban and coastal, river and ecosystems of the Philippines.

Water for Industry

Our industrial specialists have a thorough understanding of facility operations and waste generating practices. For a company planning new production operations or updating existing plant, we strive to develop water/wastewater management strategies that meet regulatory and production objectives.

WATER CONSULTANCY

Business Advisory

To optimize our clients' ability to manage critical infrastructure by driving better business outcomes, through:

- Asset Valuation
- Regulatory Compliance Review
- Capital Improvement Planning
- Water Demand Projections
- Social and Environmental Feasibility Studies

PPP and Infrastructure Consultancy

Here at Arcadis Philippines, we understand that major infrastructure projects are by nature complicated in more ways than one. Being marred with uncertainties and prone to risks, these types of developments require solutions that are cost-effective, sustainable, efficient and delivered where risks are identified at the onset and effectively managed throughout the project's life cycle.

Being a strong player in the infrastructure industry with significant and in-depth positions in roads, rail, ports and airports, Arcadis can help both the public and private sector to lay the foundations for a better future.

5 Other Information

BIM MANAGEMENT

Arcadis' mission of "improving quality of life" extends beyond the traditional construction consultancy scope,
and our BIM experience and capabilities have allowed us to deliver value in the Digital Age.

Arcadis Philippines is an established construction consultant that has supported private sector clients in the Philippines since 1982. We work across a range of sectors supporting local and foreign companies with technically viable solutions that manage quality, time, cost and health and safety. We lead our projects from the Philippines but work collaboratively with our partner offices to bring the world's best to each project as required. We aim to work alongside our clients as partners, bringing not only a quality 'service', but also knowledge and expertise that help make informed decisions.

Arcadis Philippines has supported high profile clients deliver successful projects and realize benefits from their investments. Whether straightforward or complex, we have the necessary expertise to provide advisory and
consultancy for clients with unique requirements.

As BIM Advisors and Digital Solutions experts, we bring global capabilities to the Philippine market, ensuring that our clients are always within reach of the very best construction digital solutions and have the industry best
practices in their arsenal.

DIGITAL SOLUTIONS

Many companies know that digital tools and platforms can help their business but need guidance on the best ways to unlock their full potential. Our team understand digital technologies and help our clients leverage them to Vgenerate value.

Immersive Data Visualization (Holobuilder):
360° Reality Capture is our Virtual Reality & Augmented Reality toolset for Project Management & Construction Management, Virtual Asset Data Models, and Operational and Health & Safety Training.

Holobuilder provides enhanced visualization of construction project progress and can be an optional add-on to our core service where you can:

• Capture: Capture your jobsite in the most and efficient way possible.
• View: See your jobsite in 360 degrees from anywhere, anytime. Photos become available instantly. Your project is fully documented and recorded for photographic proof of progress.
• Control: Easily compare photos side by side with your historical photos to make sure project progress is going as planned.

ADDITIONAL DIGITAL OFFERINGS
• Facade Inspections - using infrared technology and drones
• Road Maintenance Inspections - visual recognition and AI
• Digital Scanning & 3D modelling.

5 Other Information

OUR LOCAL SERVICES:

- Cost Management
- Environmental Accreditation
- Development Management
- Project Management
- Construction Management
- Water Consultancy
- Conveyance and Network Consultancy
- BIM Management
- Digital Solutions

QUALITY SYSTEM
ISO 9001:2015

Arcadis Philippines Inc. recognises the importance of Quality Assurance especially in a country where Quantity Surveying is not a well recognized profession and quality service is of paramount importance.The establishment of a standard quality control system for all aspects of the services being provided, coupled with our in-house staff training programmes, ensures that Arcadis Philippines Inc. continues to provide the best services available to our clients.

The Certification for ISO 9001:2015 and ISO 14001:2015 was issued by BSI (British Standard Institution). BSI is the business standards company that helps over 80 clients worldwide adopt standards of best practice and turn them into habits of excellence. BSI was appointed by Royal Charter as the world's first national Standards Body to develop standards for the UK and was a founding member of the International Organization for Standardization (ISO). BSI is responsible for originating many of the world's most commonly used standards incl. ISO 9001 and publishes over 2,500 product specification and business process standards annually. These standards address today's issues from sustainable events to nano-technology; spanning sectors including aerospace, construction, healthcare and IT.

bsi.

ARCADIS GLOBAL BUSINESS AREAS

MOBILITY

We partner with our clients across the globe to design thriving and connected cities and communities that enable opportunities for all and keep the world moving.

We design connected, sustainable solutions that integrate existing infrastructure with new technologies, and optimize the mobility of people and goods.

MOBILITY SOLUTIONS:

New Mobility
We partner with clients across the world to deliver solutions that help make sustainable, efficient, integrated and human-centric mobility ecosystems possible through the latest in mobility technology innovation

Intelligent Rail and Transit
We deliver cost-effective, sustainable and safe mobility and logistics solutions throughout the lifecycle of rail and urban transport assets

Connected Highways
Every journey matters. Our connected highway solutions help create a net zero future that drives an improved quality of life.

In working with our clients across the globe, we rethink how infrastructure is built and future demand is met. Our teams harness digital advances to create sustainable, data-led and connected highway solutions. In doing so, we improve the way highways are designed, built, operated and used.

Integrated Airports
We work with the world's leading airports and global airport operators to create sustainable solutions that help further the industry's commitment to a net-zero future.

ARCADIS GLOBAL BUSINESS AREAS

PLACES

We work with our clients around the world to create, support and enhance smart, safe and sustainable places where people live, learn and thrive. By bringing together innovative future-facing solutions – alongside our expertise in Design and Engineering, Program, Project, and Cost and Commercial Management – we consider the whole asset lifecycle to create vibrant, healthy and successful places for owners, investors, users, communities and visitors to enjoy.

PLACES SOLUTIONS

Future Workplace
The way we work is changing. As the priorities, needs and expectations of people evolve, we recognize that the workplace must be reshaped and reimagined to help our clients, their businesses, and their people thrive.

Industry 4.0 - Facilities of the Future
The next phase of industrial progress is setting new benchmarks for productivity and efficiency. Unlocking and connecting the potential of big data, people and skills, sustainability, services and systems, we help clients transform their assets to meet customer demand.

LifeCycle Think
Our data-rich digital products and tools provide valuable insights that help inform sustainable investment planning and decision making at every stage of a project lifecycle.

Net Zero Facilities and Sustainable Communities
With the clock ticking on climate change, we can help organizations, asset owners and communities reach their net zero goals, designing and delivering a sustainable future in a way that improves quality of life for all.

PlaceTech
Whether planning, creating, redefining or recycling a place, our suite of digital tools use data to provide greater control and visibility of our buildings and spaces.

ARCADIS GLOBAL BUSINESS AREAS

RESILIENCE

We work to protect our natural environment and water resources, while powering our world for future generations. Around the world, we're feeling the effects climate change, rapid urbanization, loss of biodiversity. The rate at which we're seeing large-scale, unforeseen events such as floods and wildfires, is becoming more frequent.

We need to help our cities and communities. To create healthier lives, thriving nature a more resilient future. We are here to protect our natural environment and water resources, while powering our world for future generations. The result: stronger communities, a more sustainable planet, and improved quality of life.

RESILIENCE SOLUTIONS

Energy Transition

We reduce global warming by helping our clients transition towards low-carbon and renewable sources of energy, including spatial energy strategies, energy transmission, distribution and storage. Solutions include smart energy networks for Electric Vehicles and local production. Our focus is on planning and designing for energy efficiency, helping our clients develop their carbon capture strategies or reduce their carbon footprint.

Climate Adaptation

Ensuring our communities continue to thrive in the face of climate uncertainty by providing full climate adaptation measures across the life-cycle of any asset – from risk mapping, vulnerability assessments, and community-based resilience plans to the design and engineering of flood defense systems and stormwater infrastructure.

Water Optimization

Managing water resources in a sustainable way by offering a full-breadth of services throughout the entire water cycle, from water supply to water resource planning, treatment, and systems optimization.

ARCADIS GLOBAL BUSINESS AREAS

We help create intelligent water networks and advanced asset management strategies, as well as advising on water re-use and desalination for both public and private clients.

Enviro Socio Permitting
Ensuring capital projects and the use of resources are protective of the environment, public safety and social risks, both today and for future generations. We work with our clients to protect natural resources and assess and reduce risks. Providing social and environmental licenses to construct and operate, we are committed to unlocking the value of Natural Capital for today and tomorrow.

Sustainability Advisory
We shape a more sustainable future through our environmental, social and governance advisory services for our clients' operations, products, and supply chain. Our services include circular economy, product stewardship, footprinting services, non-financial reporting, advising on sustainability goals & roadmaps, ESG digital transformation & reporting

Environmental Restoration
Restoring the environment and protecting communities, we bring cutting-edge science and technology to help our clients across every aspect of their project, from site characterization to cleanup, closure and redevelopment, including for PFAS and other emerging contaminants. Our work includes liability advisory and the management of large portfolios, as well as Operations and Maintenance, and construction services.

Sustainable Operations
We ensure safe, compliant and sustainable operations to manage risk and meet social and environmental needs for future generations. Our focus is on non-financial risk management across EHS and sustainability functions. This includes Environmental Consulting Services and EHS&S across air, stormwater, surface water, hazard and solid waste management.

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