



COMPASS

INTERNATIONAL INC.

Sample

2022

**International Infrastructure /
Public Works Construction
Costs & Benchmark Yearbook**

1ST EDITION



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01 INTRODUCTION AND CALIBRATION FACTORS

Includes the following:

- The Estimating Process.
- Location (Calibration) Factors - International values compared to Washington D.C. (Base of 1.00). Calibrations in this application are used to adjust the unit prices / schedule of rates depicted in the following Divisions 1 – 17.
- 188 # International Cities Location / Calibration Factors.
- General Conversion Values - Imperial to Metric Units.
- Import Duties General Sales Tax / Value Added Tax / Consumption Tax.
- 280 # USA Location (Calibration) Factors.
- Detailed Design / Engineering / Architectural and CM Fees 51 # Facility Types.
- Merit Shop Labor Costs.
- USA and Canada State / Province Sales Tax / GST.
- Inflation Cost Index

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27 COST MODELS / COST BENCHMARKS

Includes cost and quantity data on the following:

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- Tunnels / Underground Transit
- Railway Benchmarks
- Airports / EPC Metrics
- Home Office Engineering Costs
- General Civil related Benchmarks

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Includes cost data on the following:

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- Testing / Inspection / Surveys
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- Construction Equipment Costs / Rental
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Includes schedule of rates for:

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COUNTRY	DUTIES ON IMPORTED EQUIPMENT & MATERIALS	GENERAL SALES TAX / VALUE ADDED TAX / CONSUMPTION TAX	GENERAL NOTES
Malawi	In the order of 0% - 10%	16.5%	Refer to Government website for additional information:
Malaysia	In the order of 2.5% - 30%	6% GST	Refer to Government website for additional information:
Maldives	In the order of 0% - 10%	6%	Refer to Government website for additional information:
Mali	In the order of 0% - 10%	16.5%	Refer to Government website for additional information:
Malta	In the order of 2.5% - 10%	18%	Refer to Government website for additional information:
Mauritania	In the order of 2.5% - 16%	16%	Refer to Government website for additional information:
Mauritius	In the order of 2.5% - 10%	15%	Refer to Government website for additional information:
Mexico	In the order of 2.5% - 20%	11% and 16% IVA	Refer to Government website for additional information:
Micronesia	In the order of 0% - 10%	5% Sales Tax	Refer to Government website for additional information:
Moldova	In the order of 0% - 10%	20%	Refer to Government website for additional information:
Monaco	In the order of 2.5% - 10% typically 5%	20%	Same as France: Refer to Government website for additional information:
Mongolia	In the order of 2.5% - 20% information:	10% and 15%	Refer to Government website for additional information:
Montenegro	In the order of 2.5% - 10% typically 5%	17%	Refer to Government website for additional information:
Morocco	In the order of 2.5% - 50% typically 15%	10% and 20%	Refer to Government website for additional information:
Mozambique	In the order of 0% - 10%	10%	Refer to Government website for additional information:
Myanmar	In the order of 0% - 10%	5%	Refer to Government website for additional information:
Namibia	In the order of 2.5% - 10%	15%	Refer to Government website for additional information:
Nepal	In the order of 0% - 10%	13%	Refer to Government website for additional information:
Netherlands	In the order of 2.5% - 20% information:	6% and 21%	Refer to Government website for additional information:
New Caledonia	In the order of 0% - 10%	zero	Refer to Government website for additional information:
New Zealand	In the order of 2.5% - 20%	15%	Refer to Government website for additional information:
Nicaragua	In the order of 0% - 10%	15%	Refer to Government website for additional information:
Niger	In the order of 0% - 10%	19%	Refer to Government website for additional information:
Nigeria	In the order of 0% - 10%	7.5%	Refer to Government website for additional information:

Sample

#	DESCRIPTION	\$ MILLIONS COST PER MILE (LOW)	\$ MILLIONS COST PER MILE (HIGH)	REMARKS
ORDER OF MAGNITUDE % SPLIT RANGE OF RAIL ELEMENTS:		% LOW	% HIGH	REMARKS
10	Demo / Site works / Civil / Piling / Concrete/ Tunnel Boring	15	21	20' – 24' diameter
11	New & re-directed utilities	3	6	
12	Building work scope	3	5	
13	Structural steel / misc. steel	6	9	
14	Rail track (2 tracks)	10	16	
15	Mechanical support systems	15	21	
16	Electrical support systems	7	10	
17	Overhead catenary power line system	4	7	Electrical support stanchions in Structural steel %
18	Signals, communications, monitors / safety systems	6	10	
19	Elevators / Escalators / Ticketing / Turnstiles / Toilets / Admin – Waiting Areas	2	5	
20	Repair Facilities / Maintenance / Workshop / Railcar Depot	3	6	
21	Rolling stock / passenger cars	12	18	
22	Engineering / Detailed Design scope	4	8	
23	Project - Construction Management / Inspection / Site Establishment / Fees	2		

(E) 2022 UNDERGROUND / SUBWAY STATION

These facilities can cost between \$10 million and \$25 million and in some situations can be as high as \$125 million.

	2022 Division 1 - General Requirements / Preliminaries - Merit Shop Labor	Unit	Material	Labor	Construction Equipment	Total
	Fix fee (Optional) Some Contractors and Construction Managers charge a fixed fee on the pass thru value of the construction contract cost (Adjust profit margin above if applicable)					
75	Project Size \$1 - \$5 million	%				7.5% - 10%
76	Project Size \$5 - \$25 million	%				5% - 6.5%
77	Project Size \$25 - \$100 million	%				2.5% - 5%
	Bid / Performance Bonds					
78	Bid / Labor & Material Payment Performance Bond Minimum - Maximum percentage of total project cost	%				0.35% - 2.00%
	Field Construction Staff					
79	Site Manager / Project Manger (Maximum)	MONTH		14,339		14,339
80	Site Manager / Project Manger (Minimum)	MONTH		11,199		11,199
81	Superintendent (Maximum)	MONTH		13,460		13,460
82	Superintendent (Minimum)	MONTH		10,540		10,540
83	Trade Foreman	MONTH		8,168		8,168
84	Civil Engineer / Field Engineer	MONTH		8,432		8,432
85	Cost Engineer / Estimator / Planner	MONTH		8,827		8,827
86	Purchaser / Expediter	MONTH		7,641		7,641
87	Office Engineer / QA - QC Engineer	MONTH		11,330		11,330
88	Field Inspector	MONTH		8,827		8,827
89	Safety Manager	MONTH		7,510		7,510
90	General Laborer / Runner / Clean up	MONTH		3,373		3,373
91	Security / Watchman	MONTH		4,611		4,611
92	Administrator / Secretary / Document	MONTH		3,953		3,953
	Equipment Mob - Demob Travel and set up costs (On to Site - Off Site) - 2 Events Order of Magnitude Costs					
93	Bulldozer / Scraper / Front End Loader (Minimum)	EACH			335	335
94	Bulldozer / Scraper / Front End Loader (Maximum)	EACH			890	890
95	Back Hoe / JCB (Minimum)	EACH			130	130
96	Back Hoe / JCB (Maximum)	EACH			325	325
97	Crane 100 Ton Crawler (Minimum)	EACH			3,755	3,755
98	Crane 100 Ton Crawler (Maximum)	EACH			9,330	9,330
99	Tower Crane 250' high (Minimum)	EACH			18,675	18,675
100	Tower Crane 250' high (Maximum)	EACH			31,440	31,440
101	500 Ton Heavy Lift Crane (Minimum)	EACH			33,250	33,250
102	500 Ton Heavy Lift Crane (Maximum)	EACH			88,500	88,500
103	Concrete Mix batching plant c/w with cement silo (Minimum)	EACH			2,500	2,500
104	Concrete Mix batching plant c/w with cement silo (Maximum)	EACH			14,500	14,500

	2022 Division 1 - General Requirements / Preliminaries - Merit Shop Labor	Unit	Material	Labor	Construction Equipment	Total
612	Office trailer, 24' x 60', rental	MONTH			670.00	670.00
613	Walki-talkie radios	MONTH				180 - 280
614	For delivery of above trailers use \$3 - \$5 per mile from supplier to jobsite	MILE				\$3.00 - \$5.25
615	Lockable Temporary tool box, 4' x 8' (Buy)	EACH	555.00			555.00
616	Temporay barricades 3 rails 4" x 1/2" - 4' high on 3" x 3" postes @ 10' centers	LF				21.85
617	Temp chain link fence 6' high (Install and Remove)	LF				8.50 - 10.70
618	Temp Plywood fence 8' high on 4" x 2" timbers (Install and Remove)	LF				15.00 - 18.50
619	Temporary road 6" thick stone (Install and Remove)	SY				5.00 - 7.50
620	Temp plywood barriers 8' high bolted to ground	LF				15.00 - 18.50
621	Temp tents / partitions to minimize dust / noise inside operating facility (Install and Remove)	SF				1.00 - 2.85
	Temporary Utilities (Based on \$10 million Bridge / Highway Project)					
622	Water (Minimum - Maximum) per month	MONTH				150 - 500
623	Electricity (Minimum - Maximum) per	MONTH				150 - 550
624	Site Telephones / Internet (Minimum-Maximum) per month	MONTH				150 - 500.
	Field Office Supplies / Furniture					
625	Express Mail / Postage	MONTH				150 - 500.
626	Copy machines	MONTH				200 - 400.
627	Computers / overhead projectors	MONTH				150 - 600.
628	Paper / Toner / Office Supplies / Files / Binders	MONTH				250 - 650.
629	Coffee / Tea / Water	MONTH				100 - 400.
630	Desks / chairs / filing cabinets (Rental)	MONTH				125 - 450.
631	Field Office Cleaning services	MONTH				150 - 450.
	Personnel Protection Equipment					
632	Safety nets	SF				0.75 - 1.35
633	Throwaway face masks	100				6.50 - 12.00
634	Full face masks (Buy)	EACH				245 - 345
635	Goggles	EACH				1.35 - 3.75
636	Hardhats	EACH				4.50 - 7.70
637	Work gloves	EACH				25 - 40
638	Overalls	EACH				35 - 55
639	Safety shoes	EACH				65 - 145
640	Ear plugs	EACH				1.50 - 2.50
641	Beard / hairnet covers	EACH				1.50 - 3.50
642	First Aid Supplies (Box)	EACH				250 - 400
	Scaffolding					
643	Exterior 1 - 6 Floors	CSF	incl	incl	100	100

244	Engineered fill from offsite borrow pit n/e 10,000 CY 5 miles round trip	CY	15.41	1.18	0.07	16.66
245	Engineered fill from offsite borrow pit n/e 25,000 CY 2.5 miles round trip	CY	12.06	1.33	0.08	13.48
246	Engineered fill from offsite borrow pit n/e 25,000 CY 5 miles round trip	CY	16.46	1.33	0.08	17.87
247	Compact by sheep's foot	CY	1.47	2.19	0.14	3.79
248	Compact by roller	CY	1.12	1.67	0.11	2.90
249	Backfill, by dozer, no compaction	CY	2.57	18.04	1.08	21.68
250	Backfill, by dozer, machine compaction	CY	2.57	18.04	2.67	23.27
251	Backfill, hand, machine compaction	CY	8.82	51.74	3.28	63.85
252	Backfill and compacted engineered fill (excludes fill material)	CY	4.96	18.30	1.16	24.43
253	Backfill site excavated and compacted in 12" layers	CY	2.75	16.23	1.17	20.14
254	Sand / Borrow fill from offsite pit n/e 5 miles (Maximum)	CY				52.40
255	Ditto (Minimum)	CY				36.80
256	Sand / Borrow fill from offsite pit 5 to 10 miles (Maximum)	CY				58.40
257	Ditto (Minimum)	CY				42.80
258	Fill material to make-up levels include initial consolidation- Site excavated material from spoil heap (Maximum)	CY				6.65
259	Ditto (Minimum)	CY				4.28
260	Ditto imported sand (Maximum)	CY				46.55
261	Ditto (Minimum)	CY				33.76
262	Ditto imported hardcore (Maximum)	CY				41.25
263	Ditto (Minimum)	CY				29.65
264	Ditto crusher run / bank barrow (Maximum)	CY				42.14
265	Ditto (Minimum)	CY				30.76
266	Ditto Engineered Fill (Maximum)	CY				48.42
267	Ditto (Minimum)	CY				36.05
268	Hay spreading over excavated areas (Maximum)	ACF				500.00
269	Ditto (minimum)	CFE				250.00
Road / Bridge Excavation						
270	Site cut & fill excavation over 500,000 CY	CY				2.75
271	Ditto less than 500,000 CY	CY				3.25
272	Roadway cut & fill excavation over 500,000 CY	CY				2.95
273	Ditto less than 500,000 CY	CY				3.45
274	Excavation (difficult) to spoil heap	CY				5.65
275	Excavation (less difficult) ditto	CY				3.76
276	Remove excavated material offsite n/e 5 miles	CY				6.23
277	Excavation Rock (difficult)	CY				8.95
278	Ditto (less difficult)	CY				5.65
279	Excavation in Wet Lands / Marsh area	CY				7.82

461	7,500 gallon capacity	EACH	25,658.64	2,028.20	128.81	27,815.65
462	10,000 gallon capacity	EACH	31,101.63	2,363.99	150.14	33,615.76
463	25,000 gallon capacity	EACH	55,669.11	2,898.38	184.08	58,751.57
464	Lean / encasing concrete 1,500 PSI	CY	146.45	29.75	1.89	178.09
	PVC conduit includes excavation, removal of surplus, and concrete / stone bedding					
465	2" dia - 1 pipe	LF	19.32	6.38	0.41	26.10
466	2" dia - 2 pipes	LF	23.77	7.91	0.50	32.19
467	2" dia - 4 pipes	LF	24.64	10.59	0.67	35.90
468	4" dia - 1 pipe	LF	24.76	14.17	0.90	39.83
469	4" dia - 2 pipe	LF	30.08	18.37	1.17	49.62
470	4" dia - 4 pipe	LF	38.87	23.23	1.48	63.57
471	6" dia - 1 pipe	LF	36.99	16.97	1.08	55.04
472	6" dia - 2 pipe	LF	43.12	23.47	1.49	68.07
473	6" dia - 4 pipe	LF	66.23	35.97	2.28	104.49
474	Conduit in concrete slab, galv rigid steel 1" dia	LF	4.55	4.69	0.30	9.53
475	Ditto 1.5" dia	LF	7.16	5.87	0.37	13.41
476	Ditto 2" dia	LF	9.28	8.11	0.50	18.03
477	Ditto 4" dia	LF	12.51	10.17	0.65	23.33
478	Ditto 6" dia	LF	15.57	10.17	0.65	26.39
	General Site Work / Paving items					
479	Slope protection - gabions 4" thick including mesh cage	SY	26.66	11.76	1.65	49.07
480	Ditto 6" thick	SY	36.65	16.65	12.75	64.05
481	Ditto 9" thick	SY	48.77	19.65	18.83	87.36
482	Ditto 12" thick	SY	66.65	26.87	27.85	115.37
483	Asphalt blacktop (Maximum)	Ton				105
484	Ditto (Minimum)	Ton				60
485	Asphalt blacktop (Maximum)	CY				175
486	Ditto (Minimum)	CY				95
487	Asphalt blacktop 3" in areas less than 400 SF (Maximum)	SY				25.75
488	Ditto (Minimum)	SY				11.55
489	Asphalt cement (Maximum)	Ton				480
490	Ditto (Minimum)	Ton				310
491	Asphalt tack coat (Maximum)	SY				3.25
492	Ditto (Minimum)	SY				1.75
493	2" pavement topping on existing stone	SY	11.29	7.32	0.46	19.07
494	3" pavement topping on existing stone	SY	14.54	9.45	0.60	24.59
495	Asphaltic concrete, 2" thick, on 4" stone base, includes excavate to 2" of soil and consolidate	SY	14.58	20.06	1.27	35.92
496	Asphaltic concrete, 3" thick, on 4" stone base ditto	SY	18.96	26.06	1.65	46.67
497	Asphaltic concrete, 4" thick, on 6" stone base ditto	SY	24.57	33.59	2.13	60.30
498	Saw cut pavement, asphaltic concrete for expansion joint 2" deep	LF	0.19	0.77	0.05	1.00
499	Ditto 3" deep	LF	0.18	0.92	0.06	1.16
500	Ditto 3" deep	LF	0.22	1.08	0.07	1.36

	2022 - Division 3 - Concrete - Merit Shop Labor	Unit	Material	Labor	Construction Equipment	Total
461	Scarrifying / grinding existing concrete floor / top surface 3" deep and resurfacing with new concrete surface greater than 2,500 SF	SF	5.62	3.67	0.83	10.13
462	Repairs to existing reinforced concrete foundations including, excavation, backfill and removal of concrete and rebar and marrying in new concrete and rebar to existing concrete foundation (Maximum)	CY	256.57	445.13	94.37	796.08
463	Repairs to existing reinforced concrete foundations including, excavation, backfill and removal of concrete and rebar and marrying in new concrete and rebar to existing concrete foundation (Minimum)	CY	187.12	273.33	57.95	518.39
464	Repairs to existing reinforced concrete flatwork, beams and coumns inside existing facility including removal of existing concrete and rebar / wire mesh and marrying in new concrete and rebar / wire mesh to existing concrete structure (Maximum)	CY	319.86	799.84	149.01	1171.71
465	Repairs to existing reinforced concrete flatwork, beams and coumns inside existing facility including removal of existing concrete and rebar / wire mesh and marrying in new concrete and rebar / wire mesh to existing concrete structure (Minimum)	CY	251.64	507.61	107.62	866.86
466	Epoxy concrete / repairs patching 1/4" thick	SF	6.16	6.05	1.38	13.59
467	Repair & patch exposed concrete edge / wall 6" wide	LF	3.44	5.24	1.20	9.88
468	Ditto 9" wide	LF	4.76	6.85	1.57	13.18
469	Ditto 12" wide	LF	6.08	8.47	1.94	16.49
470	Concrete soffit repair 6" wide X 1" deep, cut out existing concrete and remove from site	LF	4.71	10.62	2.43	17.76
471	Ditto 12" wide X 2" deep	LF	10.13	13.74	3.14	27.02
472	Ditto 18" wide X 2" deep	LF	13.50	19.37	4.43	37.29
473	Ditto 24" wide X 2" deep	LF	16.62	26.02	5.95	48.59
474	Epoxy injection 6" deep x 1/4" wide	LF	4.43	16.93	3.87	25.24

	2022 Division 16 - Electrical Work - Merit Shop	Unit	Material	Labor	Construct Equip	Total
247	Emergency generator 25 kw c/w controls	EACH	31,386	5,226	327.36	36,939
248	Emergency generator 50 kw ditto	EACH	38,990	7,838	491.04	47,319
249	Emergency generator 100 kw ditto	EACH	56,891	10,774	674.93	68,340
250	Emergency generator 250 kw ditto	EACH	93,653	16,906	1,059.10	111,618
251	Emergency generator 500 kw ditto	EACH	159,974	27,665	1,733.07	189,372
252	Emergency generator 1,000 kw ditto	EACH	282,342	32,327	2,025.16	316,695
253	Combination starter unit - Size # 1	EACH	1,242	707	38.38	1,987
254	Ditto Size # 2	EACH	1,547	1,014	55.07	2,616
255	Ditto Size # 3	EACH	2,093	1,675	90.3	3,859
256	Ditto Size # 4	EACH	3,796	2,674	145.79	6,615
257	Ditto Size # 5	EACH	7,612	4,238	22.81	12,133
	Cable					
258	15 kv copper 1/C # 2 - shielded	LF	5.14	0.11	0.14	7.39
259	15 kv copper 1/C 1/0 - shielded	LF	5.45	2.66	0.17	8.28
260	15 kv copper 1/C 2/0 - shielded	LF	8.85	0.5	0.19	11.08
261	15 kv copper 1/C 4/0 - shielded	LF	6.2	4.04	0.26	13.92
262	15 kv copper 1/C 250 MCM - shielded	LF	12.82	4.41	0.28	17.51
263	15 kv copper 1/C 350 MCM - shielded	LF	13.19	5.51	0.35	19.05
264	15 kv copper 1/C 500 MCM - shielded	LF	15.92	6.43	0.41	22.76
265	15 kv copper 1/C 750 MCM - shielded	LF	27.01	7.34	0.47	34.83
266	5 kv copper 1/C # 6	LF	3.72	0.95	0.06	4.74
267	5 kv copper 1/C # 4	LF	3.85	1.21	0.08	5.14
268	5 kv copper 1/C # 2	LF	4.18	1.73	0.11	6.02
269	5 kv copper 1/C # 1	LF	4.82	1.99	0.13	6.95
270	5 kv copper 1/C 1/0	LF	5.42	2.34	0.15	7.91
271	5 kv copper 1/C 2/0	LF	6.15	2.60	0.17	8.92
272	5 kv copper 1/C 4/0	LF	7.46	3.47	0.22	11.15
273	5 kv copper 1/C 250 MCM - shielded	LF	9.14	3.73	0.24	13.11
274	5 kv copper 1/C 350 MCM - shielded	LF	11.19	4.77	0.31	16.27
275	5 kv copper 1/C 500 MCM - shielded	LF	14.49	5.20	0.33	20.02
276	5 kv copper 1/C 750 MCM - shielded	LF	20.65	6.33	0.41	27.39