



0

1 DIVISION 0:

Introduction and Calibration Factors, includes the following:

General introduction and retrofit and repair considerations.
 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.
 284 # USA Location (Calibration) Factors.
 Detailed Design / Engineering / Architectural and CM Fees 51 # Facility Types.
 Union Labor Costs.
 USA and Canada State & Province Sales Tax / GST.
 Inflation Cost Indexes.
 (8) Calibration Tables
 Examples

00

49 DIVISION 00:

Cost Models / Cost Benchmarks (21 Number)

includes cost and quantity data on the following:

Retrofit – Upgrade Isotope / Radiation – Chemo Therapy Formulation Suite.
 Retrofit and upgrade 333 # Apartments.
 UK (Scotland) Facility - Refurbish existing laboratory in existing manufacturing campus.
 Major Construction Activities.
 Estimating Assessment Sheet.
 Petro – Chemical Cost Model.
 High Rise Apartment Building Cost Model.
 Beverage / Candy Production Facility Cost Model.
 Consumer Products Facility.
 Crude Oil Distillation Complex.
 EPCM Home Office Billing Rate Sheet
 Power Station Cost Model.
 Steel Production Cost Model.

Waste Water Treatment Cost Model.
78 # Engineering / Construction Cost Benchmarks.
Class A Office Building
UK Pharmaceutical Facility
Vaccine Facility Expansion and Modification
Food and Beverage Production Facilities
Refurbishment of Shopping Center
Revamp of Shale Gas Facility

01

93

DIVISION 01:

General Requirements / General Conditions / Preliminaries:
includes cost data on the following:

Rules of thumb
Insurance Costs
Protection of Completed Work
Scaffolding
Temporary Utilities, Structures & Fences
Permits
Testing / Inspection
Surveys
Bonds
Site Staff / Field Personnel
Construction Equipment Costs / Rental
Temporary Construction Items

117

02

DIVISION 02:

Site Construction: includes schedule of rates for:

Demolition (including asbestos)
Excavation
Rock removal
Hardcore / Stone
Shoring
Planking & Strutting / Sheet Piling
Foundation Piling
Utilities
Miscellaneous Site Improvements
Paving
Concrete Curbing
Fencing
Site Lighting
Marine Work
Underground Storage Tanks

03

- 145** **DIVISION 03**
Concrete Work: includes schedule of rates for:
Concrete
Formwork
Reinforcement
Precast Concrete
Grouting

04

- 177** **DIVISION 04**
Masonry: includes schedule of rates for:
Brickwork
Masonry
Refractory

05

- 193** **DIVISION 05**
Metals: includes schedule of rates for:
Structural Steel
Metal Joists
Metal Framing
Miscellaneous Iron
Metal Decking

06

- 217** **DIVISION 06**
Wood and Plastics: includes schedule of rates for:
Rough Carpentry
Finish Carpentry
Carpentry Specialties

07

- 231 **DIVISION 07**
Thermal and Moisture Protection: includes schedule of rates for:
Damp proofing and Waterproofing
Thermal Protection
Roofing Systems
Caulking & Sealants

08

- 251 **DIVISION 08**
Doors and Windows: includes schedule of rates for:
Wood and Plastic Doors
Metal Doors and Frames
Windows
Glazing / Glazed Curtain Walls
Hardware

09

- 267 **DIVISION 09**
Finishes: includes schedule of rates for:
Plaster and Gypsum Board
Tile
Terrazzo
Ceilings
Flooring
Wall Finishes
Acoustical Treatment
Painting and Coatings
Other items

10

- 287 **DIVISION 10**
Specialties: includes schedule of rates for:
Visual Display Boards
Compartments and Cubicles
Louvers and Vents
Wall and Corner Guards
Miscellaneous Facility Specialties

11

- 297 **DIVISION 11**
Equipment: includes schedule of rates for:
Maintenance Equipment
Loading Dock Equipment
Industrial and Process Equipment
Laboratory Equipment
Material Handling Equipment

12

- 315 **DIVISION 12**
Furnishings: includes schedule of rates for:
Furniture
Manufactured Casework

13

- 325 **DIVISION 13**
Special Construction: includes schedule of rates for:
Pre-Engineered Buildings & Structures
Radiation Protection
Storage Tanks
Security Access and Surveillance

14

- 339 **DIVISION 14**
Conveying Systems: includes schedule of rates for:
Elevators
Escalators and Moving Walks
Hoists and Cranes

15

- 355** **DIVISION 15**
Mechanical Work: includes schedule of rates for:
Building Services Piping
Plumbing Fixtures
Process Piping
Fire Protection Piping
Heating, Ventilating & Air Conditioning Equipment
Ductwork
Insulation

16

- 463** **DIVISION 16**
Electrical Work: includes schedule of rates for:
Electrical Equipment / Transformers
Cable / Control wire
Conduit
Cable tray
Communications
Instrumentation and Controls

17

- 515** **DIVISION 17**
Process Equipment / Major Equipment: includes schedule of rates for:
Agitators
Air Handlers
Boilers
Chillers
Compressors
Condensers
Conveyors
Cooling Towers
Ductwork
Heat Exchangers
Pumps
Tanks

- 569** **ABOUT THE FIRM**

(19): FOOD & BEVERAGE PRODUCTION TYPE FACILITIES:

- OOM (+/- 20% Accuracy) US \$ SF & M2 Cost

Values:

- 2017 Cost Basis:

Table 17

FACILITY DESCRIPTION	LOCATION	TYPE OF PROJECT	SF IN 000'S	TOTAL FACILITY \$ COST IN MILLIONS (G)	\$SF	\$M2	SITE % (A)	BLDG. SHELL % (B)	BFO % (C)	PW % (D)	DD % (E)	CM % (F)	COMMENTS
Poultry Products	Pa, USA	Green	165	49	304	3,276	7	12	4	62	11	4	Process Design by equipment vendor, Facility Design by local A&E.
Chocolate / Candy Bars	Ca, USA	Add on	51	14	275	2,959	8	16	14	50	8	4	
Poultry Products	SC, USA	Green	302	75	253	2,723	10	10	9	59	7.5	4.5	
Orange Juice	FL, USA	Add on	252	37	151	1,621	5	14	8	60	9.5	3.5	Client free issued equipment
Pet Food Products	Miss, USA	Green	335	82	252	2,709	7	16	5	58	9.5	4.5	
Breakfast Cereal	Wi, USA	Green	83	22	266	2,862	6	15	11	50	11.5	6.5	
Soup Products	NJ, USA	Add on	60	17	285	3,067	5	18	13	47	11	6	
Pet Food Products	Al, USA	Add on	230	37	165	1,776	4	15	6	63	8	4	
Pet Food Products	Pa, USA	Green	101	26	263	2,834	5	20	11	47	11	6	
Pet Food Products	UK / England	Green	98	28	293	3,154	6	15	11	50	11.5	6.5	
Distillery (Whiskey)	UK / Scotland	Add on	29	9	311	3,346	10	20	12	46	7.5	4.5	
Brewery	Pa, USA	Add on	56	20	374	4,027	3	18	10	53	11	5	2 # lines
Brewery	Co, USA	Green	102	38	381	4,103	5	15	13	51	10.5	5.5	
Brewery	Canada	Add on	86	29	340	3,662	10	21	12	45	7.5	4.5	
Brewery	Brazil	Add on	42	10	253	2,724	5	17	14	51	8	5	Process Equipment Supplier completed Process Design
Dairy / Cheese	Ca, USA	Green	56	19	345	3,717	7	17	14	50	8	4	
Pork Products	Ne, USA	Green	108	27	246	2,647	4	17	10	53	11	5	
Dairy / Cheese	TX, USA	Add on	59	14	242	2,603	3	12	12	60	9	4	Client free issued equipment
Dairy	UK / England	Green	71	28	395	4,249	9	17	14.5	45	9.5	5	
Bakery	Pa, USA	Add on	134	39	288	3,099	6	15	13	50	10	6	
Dairy / Cheese	Id, USA	Add on	56	16	295	3,176	5	19	24	40	8	4	Process Design by equipment vendor, Facility Design by local A&E.

2020 - Division 2 - Site Construction - Union Site	Unit	Factor # 1 Material Uplift M+5 (1.05)	Factor # 1 Labor Uplift L+30 (1.30)	Factor # 1 CE Uplift	Total Factor # 1	Factor # 2 Material Uplift M+20 (1.20)	Factor # 2 Labor Uplift L+65 (1.65)	Factor # 2 CE Uplift	Total Factor # 2
283	4" dia, single hub, n/e 5' deep	19.56	25.60	4.50	49.66	22.07	32.59	5.73	60.39
284	6" dia, single hub, n/e 5' deep	33.82	34.59	6.08	74.49	38.15	44.03	7.74	89.93
285	8" dia, single hub, n/e 5' deep	65.12	39.77	7.00	111.89	73.47	50.63	8.90	133.00
286	4" dia, no hub - welded, n/e 5' deep	18.92	28.21	4.96	52.09	21.34	35.91	6.32	63.57
287	6" dia, no hub - welded, n/e 5' deep	34.72	37.96	6.68	79.36	39.18	48.33	8.50	96.00
288	8" dia, no hub - welded, n/e 5' deep	62.34	43.77	7.70	113.81	70.33	55.72	9.80	135.85
Pipe, Concrete non-reinforced, includes excavation, removal, of and material, stone bed.									
289	4" dia, n/e 5' deep	12.26	28.24	4.97	45.46	13.83	35.95	6.32	56.10
290	6" dia, n/e 5' deep	14.09	28.72	5.05	47.86	15.89	36.57	6.43	58.89
291	8" dia, n/e 5' deep	15.42	30.10	5.29	50.81	17.39	38.31	6.74	62.44
292	10" dia, n/e 5' deep	17.73	31.32	5.51	54.55	20.00	39.86	7.01	66.88
293	12" dia, n/e 10' deep	19.79	32.69	6.41	58.89	22.33	41.61	8.15	72.09
294	15" dia, n/e 10' deep	24.64	37.85	7.42	69.91	27.80	48.18	9.44	85.42
295	18" dia, n/e 10' deep	29.46	48.34	9.47	87.27	33.23	61.54	12.06	106.83
296	20" dia, n/e 10' deep	34.27	53.66	10.52	98.45	38.66	68.31	13.39	120.36
297	24" dia, n/e 10' deep	39.06	61.41	12.04	112.50	44.06	78.17	15.32	137.56
Pipe, Concrete reinforced, includes excavation, removal, of and material, stone bed.									
298	4" dia, n/e 5' deep	18.49	27.70	4.87	51.06	20.92	35.26	6.20	62.38
299	6" dia, n/e 5' deep	20.73	28.72	5.05	54.50	23.44	36.57	6.43	66.44
300	8" dia, n/e 5' deep	21.75	30.10	5.29	57.14	24.61	38.31	6.74	69.66
301	10" dia, n/e 5' deep	25.68	31.32	5.51	62.50	29.05	39.86	7.01	75.92
302	12" dia, n/e 10' deep	29.83	32.69	6.41	68.93	33.75	41.61	8.15	83.51
303	15" dia, n/e 10' deep	35.93	37.85	7.42	81.19	40.64	48.18	9.44	98.26
304	18" dia, n/e 10' deep	40.25	48.34	9.47	98.07	45.54	61.54	12.06	119.14
305	20" dia, n/e 10' deep	45.31	53.66	10.52	109.48	51.26	68.31	13.39	132.95
306	24" dia, n/e 10' deep	52.42	61.41	12.04	125.86	59.30	78.17	15.32	152.79
307	30" dia, n/e 15' deep	90.10	75.17	20.79	186.07	101.93	95.69	26.47	224.09
308	36" dia, n/e 15' deep	109.64	90.95	25.15	225.74	124.03	115.77	32.02	271.82
309	48" dia, n/e 15' deep	150.05	106.53	29.47	286.04	169.74	135.61	37.51	342.86
310	60" dia, n/e 20' deep	187.72	123.50	34.16	345.37	212.35	157.21	43.48	413.04

323	Ditto - 24 g	SF	2.68	2.84	0.42	5.93	3.06	3.60	0.53	7.19								
324	Ditto - 22 g	SF	2.83	2.84	0.42	6.08	3.23	3.60	0.53	7.37								
325	Metal sandwich siding with 1.5" thick insulation, colored on both external and internal faces - 24 g	SF	6.59	6.24	1.20	14.04	7.53	7.92	1.53	16.98								
	Metal Holding Down Bolts																	
326	H.D. bolt J type c/w nut and washer 1/2" dia 6" long	EACH	1.56	12.18	0.90	14.64	1.78	15.46	1.14	18.39								
327	Ditto 9" long	EACH	1.83	13.80	1.02	16.66	2.09	17.52	1.30	20.91								
328	Ditto 12" long	EACH	2.10	15.43	1.14	18.67	2.40	19.58	1.45	23.44								
329	H.D. bolt J type c/w nut and washer 3/4" dia 9" long	EACH	2.37	12.18	0.90	15.46	2.71	15.46	1.14	19.32								
330	Ditto 12" long	EACH	2.65	13.80	1.02	17.47	3.02	17.52	1.30	21.84								
331	Ditto 18" long	EACH	3.19	15.43	1.14	19.76	3.64	19.58	1.45	24.68								
332	H.D. bolt J type c/w nut and washer 1" dia 12" long	EACH	5.56	15.43	1.14	22.13	6.36	19.58	1.45	27.39								
333	Ditto 18" long	EACH	6.58	17.05	1.26	24.90	7.52	21.64	1.60	30.77								
334	Ditto 24" long	EACH	9.29	18.68	1.38	29.35	10.62	23.70	1.76	36.08								
335	Expansion bolt 1/2" dia	EACH	1.64	24.22	1.55	27.42	1.88	30.75	1.97	34.60								
336	Ditto, 3/4" dia	EACH	3.37	26.60	1.71	31.68	3.85	33.76	2.17	39.78								
337	Ditto, 1" dia	EACH	6.84	30.81	1.98	39.63	7.82	39.11	2.51	49.43								
338	Chemical anchor bolts 3/4" dia x 12" long	EACH	21.03	35.73	5.82	62.58	24.04	45.35	7.39	76.77								
339	Ditto 1" dia, 12" long	EACH	40.03	38.98	6.35	85.35	45.75	49.47	8.06	103.28								
340	ditto 1 1/2" dia, 15" long	EACH	61.74	45.47	7.41	114.62	70.56	57.71	9.40	137.68								
341	Self drilling snap-off anchors 1/4" dia	EACH	1.49	20.30	1.30	23.10	1.71	25.77	1.65	29.13								
342	Ditto 3/8" dia	EACH	1.97	23.55	1.51	27.03	2.25	29.89	1.92	34.05								
343	Ditto 1/2" dia	EACH	2.58	26.80	1.72	31.09	2.95	34.01	2.18	39.14								
344	Ditto 5/8" dia	EACH	3.32	30.04	1.93	35.30	3.80	38.13	2.45	44.38								
345	Ditto 3/4" dia	EACH	4.21	33.29	2.14	39.64	4.81	42.26	2.71	49.77								
346	High strength anchor bolts, c/w bolt, nut and washer 1/2" dia 2" long	EACH	0.61	3.90	0.25	4.76	0.70	4.95	0.32	5.96								
347	Ditto 3" long	EACH	0.79	4.22	0.27	5.28	0.90	5.36	0.34	6.60								
348	Ditto 4" long	EACH	0.88	4.55	0.29	5.72	1.01	5.77	0.37	7.15								

2020 Division 16 - Electrical: Union	Unit	Factor # 1 Material Uplift M+5 (1.05)	Factor # 1 Labor Uplift L+30 (1.30)	Factor # 1 CE Uplift	Total Factor # 1	Factor # 2 Material Uplift M+20 (1.20)	Factor # 2 Labor Uplift L+65 (1.65)	Factor # 2 CE Uplift	Total Factor # 2	
901	Bench check per device				0.50 - 0.75 hours per loop				0.50 - 0.75 hours per loop	
902	Loop check				1.50 - 3.00 hours per loop				1.50 - 3.00 hours per loop	
	Telephone / Communication systems									
903	Primary telephone signal terminal	EACH	368.68	420.11	27.21	816.01	454.09	533.22	34.54	1,021.85
904	Ditto auxiliary terminal	EACH	126.90	280.15	18.15	425.19	156.29	355.57	23.03	534.89
905	Telephone raceway PVC 2" dia	LF	12.78	20.37	1.32	34.47	15.74	25.85	1.67	43.27
906	Telephone riser sleeve ditto	LF	22.15	28.76	1.86	52.78	27.29	36.51	2.36	66.16
907	Telephone wall outlet	EACH	25.21	44.74	2.90	72.85	31.04	56.79	3.68	91.51
908	Telephone floor outlet box	EACH	121.48	69.99	4.53	196.01	149.62	88.84	5.75	244.21
909	Computer J - box	EACH	80.92	57.53	3.73	142.18	99.67	73.02	4.73	177.42
910	Computer raceway PVC 2" dia	LF	12.78	20.37	1.32	34.47	15.74	25.85	1.67	43.27
911	Computer riser sleeve ditto	LF	22.15	28.76	1.86	52.78	27.29	36.51	2.36	66.16
912	Computer wall outlet	EACH	28.52	51.14	3.31	82.97	35.13	64.90	4.20	104.24
913	Microphone wall outlet	EACH	16.19	49.11	3.18	68.48	19.94	62.33	4.04	86.31
914	Microphone floor outlet	EACH	47.25	69.99	4.53	121.77	58.19	88.84	5.75	152.79
	Fire Alarm (FA) systems									
915	FA - Manual pull station - non haz	EACH	402.19	194.96	12.63	609.77	497.68	247.45	16.03	761.16
916	FA - Manual pull station - Class 1 Div 1	EACH	931.38	207.74	13.46	1,152.58	1,152.53	263.67	17.08	1,433.28
917	FA - Manual pull station - Class 1 Div 2	EACH	957.84	223.72	14.49	1,196.05	1,185.27	283.96	18.39	1,487.62
918	FA - Main alarm control panel (Maximum)	EACH	31,354.71	1,917.62	124.21	33,396.54	38,799.55	2,433.91	157.65	41,391.10