

Estimating Costs to Determine Treatment and Flow Control Feasibility

Implementing Stormwater
Requirements in New Development
and Redevelopment Projects
Workshop

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Jim Howell, P.E.

Agenda

- Permit Language
- Purpose of Project
- Elements in Cost Worksheet
- Cost Categories to be considered
- Example Worksheets

Permit Requirements

- “Full implementation of the HMP will be considered impracticable if the combined **construction** cost of both required stormwater treatment and flow control measures¹ exceeds 2% of the project construction cost (**excluding land costs**). If the developer demonstrates that the cost to fully comply with the HMP and other C.3 treatment requirements will exceed this cost threshold, a determination will be made by the reviewing agency that the project may implement controls to the MEP and contribute to an instream or offsite solution, if available, up to the maximum cost of all controls of 2% of project cost.

¹ Costs of control measures should not include other normal site enhancement costs such as landscaping or grading that is required for other purposes.

Permit Requirements

- **Footnote:**

Costs of control measures shall not include land costs, soil disposal fees, hauling, contaminated soil testing, mitigation, disposal, or other normal site enhancement costs such as landscaping or grading that are required for other development purposes.

Purpose of Project

- Develop a consistent cost estimating worksheet for estimating project and control costs, that can be used by developer and the reviewing agency to evaluate request for exemption

Cost Worksheet Elements

- Cost Categories
- Unit Costs
- Quantities

What are construction costs?

Project Phase	Cost category	Yes	No
Land Purchase	Cost of buying land		X
Carrying Costs	Escrow fees, legal fees; local, state, and federal taxes		X
	Interest		X
	Marketing costs and advertising		X
Entitlement and Permitting	Land planning, EIR, hazardous material testing, demolition		X
	Geotechnical soil exploration		X
	Plan checking and grading and building permit fees		X
	Offsite mitigation costs including roads and utilities		X
	Land planning, EIR, hazardous material testing		X
Construction	Engineering, Architecture	X	
	Grading, excavation, backfill, demolition	X	
	Construction staking (surveying)	X	
	Utilities including water, sewer, drainage, electricity, etc.	X	
	Structures including foundation and building	X	
	Landscaping	X	

Construction Divisions

DIVISION	DIVISION TITLE		TOTAL
1	PROJECT OVERHEAD		\$0
2	SITE CONSTRUCTION		\$0
3	CONCRETE		\$0
4	MASONRY		\$0
5	METALS		\$0
6	WOODS/PLASTICS		\$0
7	THERMAL/ MOISTURE PROTECT		\$0
8	DOORS & WINDOWS		\$0
9	FINISHES		\$0
10	SPECIALTIES		\$0
11	EQUIPMENT		\$0
12	FURNISHINGS		\$0
13	SPECIAL CONSTRUCTION		\$0
14	CONVEYING SYSTEMS		\$0
15	MECHANICAL		\$0
16	ELECTRICAL		\$0
PROJECT TOTAL Bare Costs			\$0
	Overhead & Profit	0%	\$0
PROJECT SUBTOTAL			\$0
	State/Local Sales Taxes	0%	\$0
	Bond	0%	\$0
	Estimate Contingency	0%	\$0
PROJECT TOTAL			\$0
Specific Items Excluded:			
1	[list item NOT included in estimate]		
2	[list item NOT included in estimate]		
3	[list item NOT included in estimate]		

Construction Division Components

DIVISION 1- PROJECT OVERHEAD		DIVISION 2 - SITE CONSTRUCTION		DIVISION 3- CONCRETE	
00890	Permits/Fees	02105	Chemical Sampling and Analysis	03050	Basic Concrete Materials
01310	Project Superintendent	02110	Excavation, Removal Hazardous Ma	03110	Cast-in-Place Concrete Forms
01310	Project Meetings	02115	Underground Storage Tank Remova	03150	Concrete Accessories
01310	Mobilization/ Demobilization	02210	Subsurface Investigation	03210	Reinforcing Steel
01320	Progress Schedules	02220	Site Demolition	03220	Welded Wire Fabric
01320	Construction Photographs	02220	Building Demolition	03310	Structural Concrete
01330	Submittals	02220	Selective Site Demolition	03340	Low Density Concrete
01450	Testing Lab Services	02230	Site Clearing	03350	Concrete Finishing
01450	Quality Control	02240	Dewatering	03390	Concrete Curing
01510	Temporary Power	02250	Shoring and Underpinning	03470	Tilt-Up Precast Concrete
01510	Temporary Telephone/ Fax	02260	Excavation Support	03510	Cementitious Roof Deck
01510	Temporary Lighting	02310	Grading	03530	Concrete Topping
01510	Temporary Fire Protection	02315	Excavation	03910	Concrete Cleaning
01520	Temporary Toilet	02315	Backfill	DIVISION 4 - MASONRY	
01520	Field Offices	02315	Compaction	04060	Masonry Mortar
01530	Temporary Construction	02335	Subgrade	04070	Masonry Grout
01540	Construction Elevator	02340	Soil Stabilization	04090	Masonry Accessories
01540	Scaffolding/ Swing Staging	02360	Soil Treatment	04210	Clay Masonry Units
01550	Temporary Roads/ Parking	02370	Erosion Control	04220	Concrete Masonry Units
01550	Traffic Flagperson	02390	Shoreline Protection	04270	Glass Masonry Units
01560	Barricades/ Temp Fencing	02455	Driven Piles	04410	Stone Materials
01560	Security	02465	Bored Piles	04550	Flue Liners
01560	Site Dust Control	02510	Water Distribution	04710	Simulated Brick
01560	Site Dumpster				

Example Bidsheet

				Engineer's	1		2		3	
				Estimate						
				Total	Rancho Cucamonga, CA		Ontario, CA		Corona, CA	
No.	Bid Item	Units	Qty.	Bid Amount	Unit Price	Total Bid Amount	Total Bid Amount	Total Bid Amount	Total Bid Amount	Total Bid Amount
1	Mobilization	LS	1	\$110,999	\$113,000	\$113,000	\$100,000	\$100,000	\$52,000	\$52,000
2	Demobilization	LS	1	\$74,000	\$22,000	\$22,000	\$20,000	\$20,000	\$24,000	\$24,000
3	SWPPP	LS	1	\$13,211	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
4	Permitting	LS	1	\$24,020	\$30,000	\$30,000	\$1,000	\$1,000	\$4,500	\$4,500
5	O&M Manuals, Startup and Testing	LS	1	\$21,018	\$7,000	\$7,000	\$40,000	\$40,000	\$3,000	\$3,000
6	Media Matrix Cell System	LS	1	\$548,098	\$247,000	\$247,000	\$982,891	\$982,891	\$855,000	\$855,000
7	Intake System	LS	1	\$218,951	\$20,000	\$20,000	\$258,941	\$258,941	\$203,000	\$203,000
8	Return Flow System	LS	1	\$18,754	\$36,000	\$36,000	\$29,349	\$29,349	\$20,000	\$20,000
9	Process Area System	LS	1	\$245,399	\$44,000	\$44,000	\$214,268	\$214,268	\$365,000	\$365,000
10	Oxygenation System	LS	1	\$129,193	\$12,000	\$12,000	\$156,823	\$156,823	\$147,000	\$147,000
11	Yard Piping	LS	1	\$109,660	\$516,000	\$516,000	\$83,304	\$83,304	\$88,000	\$88,000
12	Site Earthwork and Site Civil Work	LS	1	\$342,014	\$718,000	\$718,000	\$158,300	\$158,300	\$127,000	\$127,000
13	Water Connection	LS	1	\$18,899	\$5,000	\$5,000	\$29,385	\$29,385	\$27,000	\$27,000
14	On-Site Electrical	LS	1	\$23,179	\$214,000	\$214,000	\$154,750	\$154,750	\$203,000	\$203,000
15	Off-Site Electrical	LS	1	\$23,179	\$14,000	\$14,000	\$15,000	\$15,000	\$95,000	\$95,000
16	Communication and Control System	LS	1	\$40,234	\$213,000	\$213,000	\$170,000	\$170,000	\$216,000	\$216,000
17	As-built Drawings Preparation	LS	1	\$9,008	\$5,000	\$5,000	\$1,000	\$1,000	\$1,500	\$1,500
18	Health and Safety	LS	1	\$12,010	\$10,000	\$10,000	\$1,000	\$1,000	\$1,000	\$1,000
Subtotal Base Bid Items				\$1,981,826		\$2,231,000		\$2,421,011		\$2,437,000
Alternative Bid Item										
1.A.	Builder's All Risk Insurance	LS	1	\$10,000	\$8,000	\$8,000		\$5,000	\$10,567	\$10,567
Total Base Bid Items and Alternative Bid Item				\$1,991,826		\$2,239,000	\$0	\$2,426,011	\$10,567	\$2,447,567
Addition (+) or Deduction (-)				\$0		\$0	\$0	\$0	\$0	\$4,269
TOTAL AMOUNT OF BID				\$1,991,826		\$2,239,000	\$0	\$2,426,011	\$10,567	\$2,451,836

Sample Worksheet - Project

Development Project Cost Estimation Worksheet

Table 1: Development Project Construction Cost Calculation Sheet				Construction Cost	
ITEM No.	DESCRIPTION	UNITS	UNIT COST (c)	Qty (Q)	COST (C = c x Q)
1.0 GRADING					
1.1	DEMOLITION	LS			
1.2	ROUGH AND FINISH GRADING	SY			
1.3	EXCAVATION AND BACKFILL	CY			
1.4	CONSTRUCTION STAKING (SURVEYING)	LS			
2.0 UTILITIES					
2.1	STORM DRAINS / SEWER / WATER	LF			
2.2	PHONE /GAS/ELECTRICITY/ CABLE	LF			
3.0 BUILDING UNITS					
3.1	SINGLE FAMILY RESIDENTIAL	SF			
3.2	MULTI FAMILY RESIDENTIAL	SF			
3.3	SCHOOLS	SF			
3.4	OFFICE BUILDINGS	SF			
3.5	RESORTS / HOTELS	SF			
3.6	GOLF COURSES	AC			
3.7	COMMERCIAL / RETAIL SPACE	SF			
4.0 LANDSCAPING					
4.1	LANDSCAPING	SY			
UNITS - AC - acres, CY - Cubic Yards, LS - Lump Sum, SY - Square Yards				Sub-Total (ST) :	
10% Technical Services (Eng. & Arch) and Administration (AC):				AC = 0.1 x (ST)	
DEVELOPMENT PROJECT CONSTRUCTION COSTS TOTAL (PT) :				PT = AC + ST	

Apply approved unit costs

Fill in quantities of applicable line items

Calculate costs of line items as:

Unit price x quantity

Sample Worksheet - BMP

BMP Construction Cost Estimation Worksheet

Table 2: Water Quality Treatment Facility Construction Cost Calculation Sheet				Construction Cost	
ITEM No.	DESCRIPTION	UNITS	UNIT COST (c)	Qty (Q)	COST (TC = c x Q)
1.0 GRADING					
1.3	EXCAVATION AND BACKFILL	CY			
1.4	CONSTRUCTION STAKING (SURVEYING)	LS			
2.0 STRUCTURAL ELEMENTS					
2.1	FLOW SPLITTERS	EA			
2.2	INLET / OUTLET STRUCTURES (INCL. HEADWALL / WING WALL)	EA			
2.3	INLET / OUTLET PIPING	LF			
2.4	OVERFLOW SPILLWAY	SY			
2.5	ACCESS ROAD	SY			
2.6	BERMS	CY			
2.7	RIPRAP / ENERGY DISSIPATION	CY			
3.0 MICELLANEOUS					
3.1	GEOSYNTHETIC FABRIC / IMPERVIOUS LINER	SY			
3.2	LANDSCAPING	SY			
				Sub-Total (ST) :	
				10% Technical Services (Eng. & Arch) and Administration (AC):	AC = 0.1 x (ST)
				BMP PROJECT CONSTRUCTION COSTS TOTAL (PT) :	PT = AC + ST

UNITS - CY - Cubic Yards, EA - Each, LS - Lump Sum, SF - Square Feet, SY - Square Yards

Apply approved unit costs

Fill in quantities of applicable line items

Calculate costs of line items as:

Unit price x quantity

Sources of Unit Costs

- RS Means
- ENR On Line Estimator
- San Jose and other municipal agencies
- (Unit costs can be provided by agency, but applicant can request changes if supportable.)

Unit Cost Examples

Cost comparisons per square foot in select metro markets

	Office, 2-4 story			Office, 5-10 story			Office, 11-20 story			Medical office		
	'06	'05	% chg.	'06	'05	% chg.	'06	'05	% chg.	'06	'05	% chg.
Atlanta	123.24	110.72	11.3	115.06	102.64	12.1	104.96	94.11	11.5	142.41	130.84	8.8
Baltimore	128.06	114.3	12	119.56	105.96	12.8	109.06	97.15	12.3	147.99	135.06	9.6
Boston	159.35	142.29	12	148.78	131.9	12.8	135.71	120.94	12.2	184.15	168.14	9.5
Chicago	153.98	137.6	11.9	143.76	127.56	12.7	131.14	116.96	12.1	177.94	162.6	9.4
Cleveland	138.4	124.66	11	129.21	115.56	11.8	117.87	105.95	11.2	159.94	147.3	8.6
Dallas	116.35	103.94	11.9	108.62	96.35	12.7	99.09	88.35	12.2	134.45	122.83	9.5
Denver	132.06	118.12	11.8	123.29	109.5	12.6	112.47	100.4	12	152.61	139.58	9.3
Detroit	147.91	131.93	12.1	138.1	122.3	12.9	125.97	112.14	12.3	170.93	155.9	9.6
Houston	120.89	107.52	12.4	112.87	99.67	13.2	102.96	91.39	12.7	139.71	127.05	10
Kansas City	142.67	127.49	11.9	133.2	118.19	12.7	121.51	108.36	12.1	164.88	150.65	9.4
Los Angeles	147.22	131.68	11.8	137.45	122.07	12.6	125.38	111.93	12	170.13	155.61	9.3
Miami	119.38	107.27	11.3	111.45	99.44	12.1	101.67	91.18	11.5	137.95	126.76	8.8
Minneapolis	154.67	138.84	11.4	144.4	128.7	12.2	131.72	118	11.6	178.73	164.06	8.9
New Orleans	119.1	106.53	11.8	111.2	98.76	12.6	101.43	90.55	12	137.64	125.88	9.3
New York City	181.82	163.25	11.4	169.76	151.33	12.2	154.85	138.76	11.6	210.12	192.91	8.9
Philadelphia	157.7	140.07	12.6	147.23	129.84	13.4	134.31	119.05	12.8	182.24	165.52	10.1
Phoenix	120.76	108.13	11.7	112.74	100.24	12.5	102.84	91.91	11.9	139.55	127.78	9.2
Pittsburgh	138.13	123.18	12.1	128.96	114.19	12.9	117.63	104.7	12.4	159.62	145.55	9.7
Portland, Ore.	142.4	127.86	11.4	132.95	118.53	12.2	121.27	108.68	11.6	164.56	151.09	8.9
St. Louis	141.02	125.89	12	131.66	116.7	12.8	120.1	107	12.2	162.96	148.76	9.5
San Diego	143.36	128.73	11.4	133.85	119.33	12.2	122.1	109.41	11.6	165.67	152.11	8.9
San Francisco	167.76	150.67	11.3	156.63	139.67	12.1	142.88	128.07	11.6	193.87	178.05	8.9
Seattle	143.64	129.47	10.9	134.11	120.02	11.7	122.33	110.04	11.2	165.99	152.99	8.5
Washington, D.C.	134.4	119.48	12.5	125.48	110.76	13.3	114.47	101.55	12.7	155.32	141.18	10
Winston-Salem, N.C.	105.59	93.34	13.1	98.58	86.53	13.9	89.93	79.33	13.4	122.02	110.29	10.6

For more data, visit R.S. Means at www.rsmeans.com, or call (800) 448-8182.

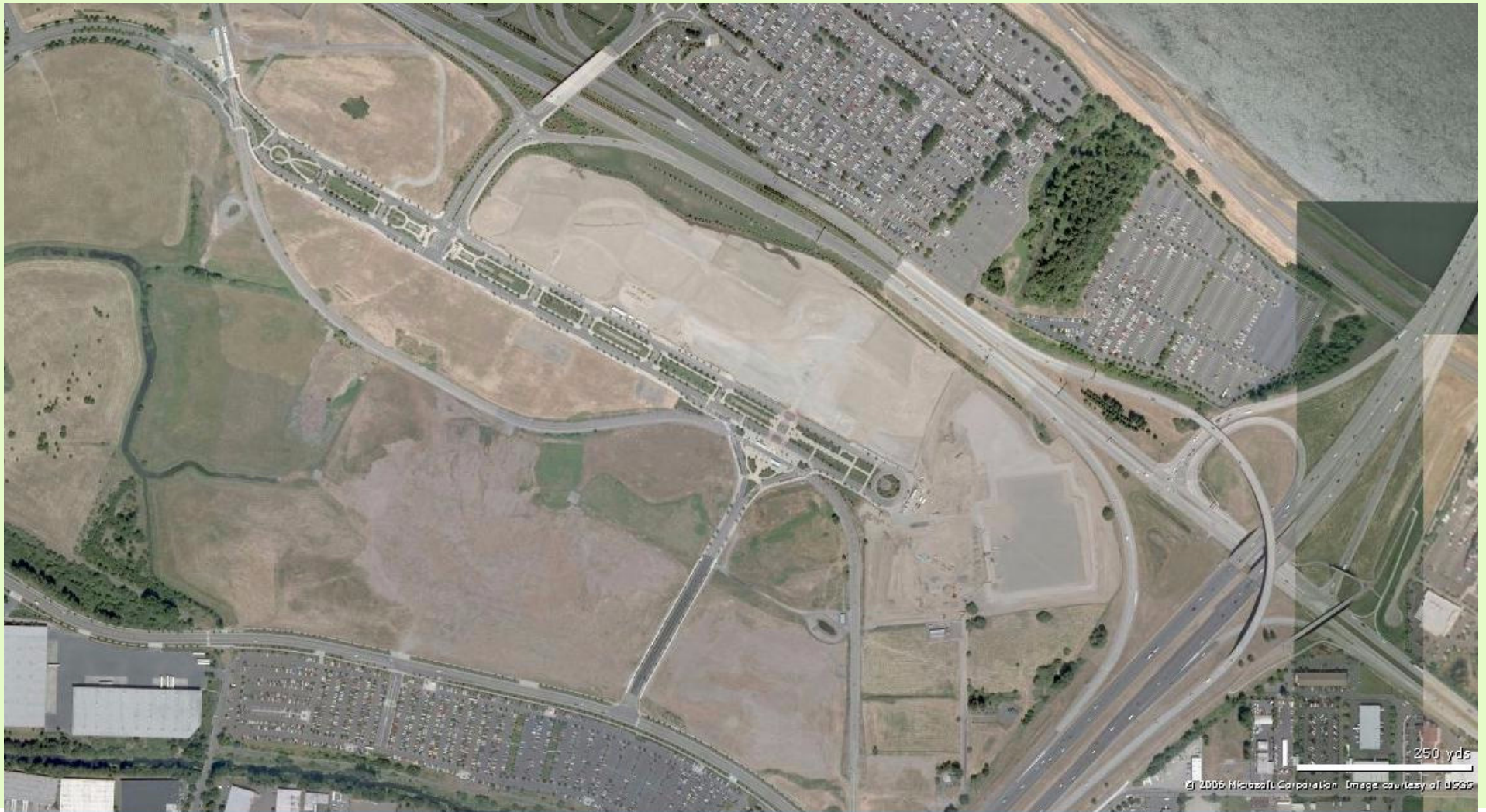
Quantities

- Quantities to be provided by applicant

Example Project Site 1



Example Project Site 2



Example Project Site 2B



Example Project 3



Work in Progress

- So comments would be welcome!