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Union Square Redevelopment

Peer Review – V02

Prepared for:

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December 12, 2018
Job #: 18627

North America's Construction Economist

Boston New York Toronto San Antonio Denver Los Angeles

December 12, 2018

Sarah Lewis
City of Somerville
93 Highland Avenue
Somerville, MA 02143

Re: Union Square Development – Peer Review – V02

Dear Sarah,

Vermeulens has reviewed the information related to the below grade parking garage premiums in comparison to the above grade parking garage base option. In order to verify these premiums we have completed an independent estimate of the below grade option. We are unable to confirm the base estimate for the above grade option and therefore unable to show the premium costs associated with the below grade option. Our estimate for the below grade parking garage is yielding a \$126,429/space unit price.

Component	Area (sf)		\$
Below Grade Garage Estimate	116,900	\$324/sf	37,928,827
Cost Per Space	300	\$126,429/space	37,928,827

The enclosed estimate for the below grade garage option includes all direct construction costs, hazardous soil removal, general contractor’s overhead and profit, design and construction contingencies. Cost escalation assumes current rates. The following assumptions were used for the estimate:

- Foundations – a deep foundations system using piles or caissons is included. Shallow spread and strip footings appear not viable for this site.
- Excavation – 15’ depth of excavation with a shoring system included 5’ outside the perimeter of the garage. The assumption for disposal of excavated materials is based on 70% urban fill, 20% PCB >1ppm to <50ppm, and 10% PCB >50ppm.
- Structure/Enclosure – it is assumed that the parking garage carries the burden of the cost related to creating elevated slabs for the anticipated above grade structures on the site. The structure is assumed to be concrete.
- Interiors – included are: partitions, doors, traffic topping on garage floor, painting of ceiling and walls, an allowance for upgraded finishes at lobbies, parking control equipment, and three elevator stops.
- Mechanical – a complete garage drainage system, sprinkler coverage, and garage supply & exhaust air system are included
- Electrical – lighting, power, fire alarm, and systems are all included.
- Site work (landscaping) – has been excluded from the estimate.

As an added premium to finish the landscaping on the roof of the garage we would recommend carrying an additional \$30/sf over the 68,900sf of additional roof area totalling approximately \$2M. An additional premium cost if additional depth is required to the garage finished floor level due to landscaping depth requirements we recommend adding \$1M per foot of depth added.



Excluded from the estimate are: loose furnishings and equipment, project contingency, architect's and engineer's fees, moving, administrative and financing costs.

Bidding conditions are expected to reflect one construction manager, open bidding for sub-contractors, open specifications for materials and manufacturers.

The above rates are order-of-magnitude (within 15% of later estimates based on detailed design information) for the purpose of program sizing and prioritization only.

If you have any questions or require further analysis please do not hesitate to contact us.

Yours very truly,

James Vermeulen, PQS, LEED AP
Managing Principal



LEVEL 2 ELEMENTAL SUMMARY	Subelement \$	\$/sf	\$/sf	Element \$	%
GROSS FLOOR AREA				116,900 sf	
A1 SUBSTRUCTURE			138.70	16,213,970	43%
A2 STRUCTURE			65.87	7,700,250	20%
A3 ENCLOSURE			25.74	3,008,900	8%
B1 PARTITIONS & DOORS			1.50	175,350	0%
B2 FINISHES			7.74	904,625	2%
B3 FITTINGS & EQUIPMENT			3.24	378,450	1%
C1 MECHANICAL			9.50	1,110,550	3%
C2 ELECTRICAL			11.50	1,344,350	4%
DIRECT CONSTRUCTION COST			263.78	\$30,836,445	81%
Z1 GENERAL REQUIREMENTS			31.65	3,700,373	10%
Z2 CONTINGENCIES			29.02	3,392,009	9%
Z3 OTHER COSTS			0.00	0	0%
TOTAL CONSTRUCTION COST			324.46	37,928,827	100%

ELEMENTAL SUMMARY	Subelement \$	\$/sf	\$/sf	Element \$	%
GROSS FLOOR AREA				116,900 sf	
A1 SUBSTRUCTURE					
A11 Foundations	2,756,000	23.58			
A12 Building Excavation	13,457,970	115.12			
			138.70	16,213,970	43%
A2 STRUCTURE					
A21 Lowest Floor Structure	2,111,300	18.06			
A22 Upper Floor Structure	2,488,450	21.29			
A23 Roof Structure	3,100,500	26.52			
			65.87	7,700,250	20%
A3 ENCLOSURE					
A31 Walls Below Grade	1,286,400	11.00			
A34 Roof Covering	1,722,500	14.73			
			25.74	3,008,900	8%
B1 PARTITIONS & DOORS					
B11 Partitions	146,125	1.25			
B12 Doors	29,225	0.25			
			1.50	175,350	0%
B2 FINISHES					
B21 Floor Finishes	644,500	5.51			
B22 Ceiling Finishes	176,125	1.51			
B23 Wall Finishes	84,000	0.72			
			7.74	904,625	2%
B3 FITTINGS & EQUIPMENT					
B31 Fittings	58,450	0.50			
B32 Equipment	200,000	1.71			
B33 Conveying Systems	120,000	1.03			
			3.24	378,450	1%
C1 MECHANICAL					
C11 Plumbing & Drainage	175,350	1.50			
C12 Fire Protection	584,500	5.00			
C13 HVAC	292,250	2.50			
C14 Controls	58,450	0.50			
			9.50	1,110,550	3%
C2 ELECTRICAL					
C21 Service & Distribution	87,675	0.75			
C22 Lighting & Devices	935,200	8.00			
C23 Systems	321,475	2.75			
			11.50	1,344,350	4%
DIRECT CONSTRUCTION COST				\$30,836,445	
Z1 GENERAL REQUIREMENTS					
Z11 General Requirements	9.0%	2,775,280	23.74		

ELEMENTAL SUMMARY		Subelement \$	\$/sf	\$/sf	Element \$	%
GROSS FLOOR AREA					116,900 sf	
Z12 Fee	3.0%	925,093	7.91			
				31.65	3,700,373	10%
Z2 CONTINGENCIES						
Z21 Design Contingency	8.0%	2,466,916	21.10			
Z22 Escalation Contingency	0.0%	0	0.00			
Z23 Construction Contingency	3.0%	925,093	7.91			
				29.02	3,392,009	9%
Z3 OTHER COSTS						
Z31 Other Costs	0.0%	0	0.00			
				0.00	0	0%
TOTAL CONSTRUCTION COST				324.46	37,928,827	100%

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
GROSS FLOOR AREA				
Parking		116,900	sf	
TOTAL GROSS FLOOR AREA		116,900	sf	

REPORT NOTES

Description	Trade	Quantity	Rate	Amount
A1 SUBSTRUCTURE				
A11 Foundations				
Foundations				
deep foundations - piles/caissons		116,900 sf	40.00	4,676,000
deduct area at building foot prints		-48,000 sf	40.00	-1,920,000
Total Foundations				2,756,000
Total A11 Foundations		116,900 sf	23.58	2,756,000
A12 Building Excavation				
Earthwork				
bulk excavation - allow 15'		+ 64,944 cy	24.00	1,558,656
working space excavation		+ 4,556 cy	24.00	109,344
working space backfill		4,556 cy	45.00	205,020
haul away & disposal (urban fill, 70%)		82,705 tns	40.00	3,308,200
haul away & disposal (PCB >1ppm, <50ppm, 20%)		23,630 tns	100.00	2,363,000
haul away & disposal (PCB >50ppm, 10%)		11,815 tns	250.00	2,953,750
dewatering & obstruction removal		500,000 ls	1.00	500,000
Total Earthwork		69,500 cy	158.24	10,997,970
Retention				
shoring (allow 15' plus 5' toe)		32,800 sf	75.00	2,460,000
Total Retention				2,460,000
Total A12 Building Excavation		116,900 sf	115.12	13,457,970
TOTAL A1 SUBSTRUCTURE				16,213,970

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
A2 STRUCTURE				
A21 Lowest Floor Structure				
On Grade				
slab on grade		+ 116,900 sf	8.00	935,200
underslab backfill		4,330 cy	45.00	194,850
underslab waterproofing (preprufe)		116,900 sf	12.00	1,402,800
pits, pads & details		116,900 sf	0.50	58,450
deduct area at building foot prints		-48,000 sf	10.00	-480,000
Total On Grade		116,900 sf	18.06	2,111,300
Total A21 Lowest Floor Structure		116,900 sf	18.06	2,111,300
A22 Upper Floor Structure				
Floor Structure				
add structural slabs at above grade buildings		48,000 sf	50.00	2,400,000
Total Floor Structure				2,400,000
Stairs, Miscellaneous				
stairs		3 no	10,000.00	30,000
misc metals		+ 116,900 sf	0.25	29,225
sealing, firesafing		116,900 sf	0.25	29,225
Total Stairs, Miscellaneous		116,900 sf	0.76	88,450
Total A22 Upper Floor Structure		116,900 sf	21.29	2,488,450
A23 Roof Structure				
Roof Structure				
roof structure		116,900 sf	45.00	5,260,500
deduct area at building foot prints		-48,000 sf	45.00	-2,160,000

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
Total Roof Structure				3,100,500
Total A23 Roof Structure		116,900 sf	26.52	3,100,500
TOTAL A2 STRUCTURE				7,700,250

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
A3 ENCLOSURE				
A31 Walls Below Grade				
Basement Walls				
garage walls		+ 19,200 sf	55.00	1,056,000
waterproofing (preprufe)		19,200 sf	12.00	230,400
Total Basement Walls		19,200 sf	67.00	1,286,400
Total A31 Walls Below Grade		116,900 sf	11.00	1,286,400
A34 Roof Covering				
Roofing				
waterproofing membrane over roof		116,900 sf	25.00	2,922,500
deduct area at building foot prints		-48,000 sf	25.00	-1,200,000
Total Roofing				1,722,500
Total A34 Roof Covering		116,900 sf	14.73	1,722,500
TOTAL A3 ENCLOSURE				3,008,900

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
B1 PARTITIONS & DOORS				
B11 Partitions				
Partitions				
partitions		116,900 sf	1.00	116,900
Total Partitions				116,900
Railings				
railings		116,900 sf	0.25	29,225
Total Railings				29,225
Total B11 Partitions		116,900 sf	1.25	146,125
B12 Doors				
Doors, Frames, Hardware				
doors		116,900 sf	0.25	29,225
Total Doors, Frames, Hardware				29,225
Total B12 Doors		116,900 sf	0.25	29,225
TOTAL B1 PARTITIONS & DOORS				175,350

ELEMENTAL ESTIMATE

Description	Trade	Quantity		Rate	Amount
B2 FINISHES					
B21 Floor Finishes					
Flooring					
traffic coating		116,900	sf	5.00	584,500
extra for lobby finishes		3	no	20,000.00	60,000
Total Flooring					644,500
Total B21 Floor Finishes		116,900	sf	5.51	644,500
B22 Ceiling Finishes					
Ceilings					
ceilings - paint		116,900	sf	1.25	146,125
extra for lobby finishes		3	no	10,000.00	30,000
Total Ceilings					176,125
Total B22 Ceiling Finishes		116,900	sf	1.51	176,125
B23 Wall Finishes					
Wall Finishes					
walls - paint		19,200	sf	1.25	24,000
extra for lobby finishes		3	no	20,000.00	60,000
Total Wall Finishes					84,000
Total B23 Wall Finishes		116,900	sf	0.72	84,000
TOTAL B2 FINISHES					904,625

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
B3 FITTINGS & EQUIPMENT				
B31 Fittings				
Fittings - Misc				
fittings		116,900 sf	0.50	58,450
Total Fittings - Misc				58,450
Total B31 Fittings		116,900 sf	0.50	58,450
B32 Equipment				
Equipment - Other				
parking equipment		200,000 ls	1.00	200,000
Total Equipment - Other				200,000
Total B32 Equipment		116,900 sf	1.71	200,000
B33 Conveying Systems				
Elevators				
elevator stops (additional)	*	3 stp	40,000.00	120,000
Total Elevators				120,000
Total B33 Conveying Systems		116,900 sf	1.03	120,000
TOTAL B3 FITTINGS & EQUIPMENT				378,450

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
C1 MECHANICAL				
C11 Plumbing & Drainage				
Equipment				
plumbing		116,900 sf	1.50	175,350
Total Equipment				175,350
Total C11 Plumbing & Drainage		116,900 sf	1.50	175,350
C12 Fire Protection				
Sprinklers				
fire protection		116,900 sf	5.00	584,500
Total Sprinklers				584,500
Total C12 Fire Protection		116,900 sf	5.00	584,500
C13 HVAC				
Miscellaneous				
HVAC		116,900 sf	2.50	292,250
Total Miscellaneous				292,250
Total C13 HVAC		116,900 sf	2.50	292,250
C14 Controls				
Controls				
controls		116,900 sf	0.50	58,450
Total Controls				58,450
Total C14 Controls		116,900 sf	0.50	58,450
TOTAL C1 MECHANICAL				1,110,550

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
C2 ELECTRICAL				
C21 Service & Distribution				
Normal Service & Distribution				
service & distribution		116,900 sf	0.75	87,675
Total Normal Service & Distribution				87,675
Total C21 Service & Distribution		116,900 sf	0.75	87,675
C22 Lighting & Devices				
Lighting				
lighting		116,900 sf	7.00	818,300
Total Lighting				818,300
Devices				
devices		116,900 sf	1.00	116,900
Total Devices				116,900
Total C22 Lighting & Devices		116,900 sf	8.00	935,200
C23 Systems				
Fire Alarm				
fire alarm		116,900 sf	1.50	175,350
Total Fire Alarm				175,350
Tel/Data				
telecom		116,900 sf	0.25	29,225
Total Tel/Data				29,225
Security Systems				

ELEMENTAL ESTIMATE

Description	Trade	Quantity		Rate	Amount
security		116,900	sf	0.50	58,450
Total Security Systems					58,450
Other Systems					
miscellaneous electrical		116,900	sf	0.50	58,450
Total Other Systems					58,450
Total C23 Systems		116,900	sf	2.75	321,475
TOTAL C2 ELECTRICAL					1,344,350

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
DIRECT CONSTRUCTION COST				30,836,445
Z1 GENERAL REQUIREMENTS				
Z11 General Requirements				
General Requirements				
<p>Z111 Supervision & Labour Expenses Supervision & Site Staff: Supervision, site staff, superintendent, engineers, watchman and security, attendance on architect or clerk of works, attendance on subcontractors, scheduling, coordination.</p> <p>Labour Expenses: premium time, overtime, miscellaneous travel and lodging, wage increases; Remote site transportation and accommodations.</p> <p>Z112 Temporary Facilities Access: Temporary roads, staging, storage and parking areas, signage and traffic control.</p> <p>Accommodation: Temporary offices and sheds, temporary toilets, telephone, office and first aid supplies, camp facilities, mobilization and maintenance.</p> <p>Expenses, Reimbursables: Layout and preparation, documents and photographs, mockups and samples, printing and duplication.</p> <p>Protection: Temporary fences, hoardings and barricades; Scaffolding, ramps and runways, guard rails, stairs and ladders, temporary partitions and dust screens, wind bracing, temporary fire protection, site protection including sidewalks, curbs, trees, etc.</p> <p>Temporary Services: Water, power, heat, site drainage.</p> <p>Equipment: mobile and tower cranes, hoists and temporary elevators, forklifts, trucking, buggies, disposal chutes, other equipment rental and associated costs such as fuel, oil and consumables.</p> <p>Winter Conditions: Winter concrete premium, snow and ice clearing, tarpaulins, insulation mats, enclosures, etc.</p> <p>Clean-up: Daily and final cleanup, glass cleaning, dumpster rental and dumping charges.</p> <p>Z113 Permits, Insurance, Bonds & Other Expenses Fire, liability and theft insurance, all risk insurance, performance and bid bonds, building permit, miscellaneous permits, taxes and fees, testing and inspection.</p>				
General Requirements	+	9.0%	Is	2,775,280
Total General Requirements			Is	2,775,280

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
Total Z11 General Requirements		116,900	sf	2,775,280
Z12 Fee				
Profit/Fee/Risk				
Z121 Profit/Fee: Head office overhead, construction manager's fee, general contractors profit.				
Z122 Risk: Warranties, guarantees and liquidated damages. Labour restrictions & requirements; Strike or lockout delays. Bidding restrictions and requirements.				
Profit/Fee/Risk		+	3.0% ls	925,093
Total Profit/Fee/Risk			ls	925,093
Total Z12 Fee		116,900	sf	925,093
TOTAL Z1 GENERAL REQUIREMENTS				3,700,373

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
Z2 CONTINGENCIES				
Z21 Design Contingency				
Design Stage Contingency				
Design contingency covers unanticipated changes during design and is absorbed as design progresses and more detailed information becomes available and is normally reduced to zero for final documents.				
Z211 Documentation Covers errors and omissions in design documents, definition of lump sum allocations (unmeasured items), development and definition of measured elements, development and definition of details and assemblies.				
Z212 Estimating Covers estimating errors and omissions.				
Z213 Program Covers unforeseen site conditions, program and user scope changes, owner directed design changes, design changes caused by regulatory bodies (excluded - typically with project contingency).				
Design Stage Contingency		+	8.0% Is	2,466,916
Total Design Stage Contingency			Is	2,466,916
Total Z21 Design Contingency		116,900	sf	2,466,916
Z22 Escalation Contingency				
Escalation Contingency				
Escalation contingency covers rate increases from the present to the start of construction and is normally reduced to zero for final documents.				
Z221 Inflation: Covers increases due to inflation (labour and materials) until start of construction.				
Z222 Bidding: Covers increases due to lack of bidders or busy market conditions, variance between actual bid amounts and averages used in estimating.				
During periods of unstable market conditions and price volatility, we recommend a bidding contingency (usually 5 - 10 percent) be included to reflect both the sudden upward or downward shifts in the market and the greater spread to be expected in the range of bids.				
Escalation Contingency		+	0.0% Is	0
Total Escalation Contingency			Is	0

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
Total Z22 Escalation Contingency		116,900	sf	0
Z23 Construction Contingency				
Construction Contingency				
Construction contingency covers changes during construction.				
Z231 Documentation Covers extra costs during construction due to unforeseen site conditions, errors and omissions in documentation or construction management, etc. (typically included).				
Z232 Program Covers extra costs during construction due to program and user scope modifications, changes caused by regulatory bodies, overrun of cash allowances, etc (excluded - typically with project contingency).				
Construction Contingency		+	3.0% ls	925,093
Total Construction Contingency			ls	925,093
Total Z23 Construction Contingency		116,900	sf	925,093
TOTAL Z2 CONTINGENCIES				3,392,009

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
Z3 OTHER COSTS				
Z31 Other Costs				
Ancillary Costs				
(1) Development charges & special taxes – NIC.				
(2) Payments to other agencies – NIC,				
(3) Hazardous waste removal – NIC,				
(4) Occupancy Costs: loose furnishing and equipment – NIC, moving costs – NIC,				
(5) Design: preconstruction services – NIC, architects, engineers, and other consultants fees – NIC.				
(6) Administrative and financing costs – NIC				
(7) Land acquisition – NIC, survey and legal fees – NIC.				
Ancillary Costs		+ 0.0%	ls	0
Total Ancillary Costs			ls	0
Total Z31 Other Costs		116,900	sf	0
TOTAL Z3 OTHER COSTS				0

ELEMENTAL ESTIMATE

Description	Trade	Quantity	Rate	Amount
INDIRECT CONSTRUCTION COST				7,092,382
TOTAL COSTS				37,928,827