

STEEL MODULAR CONSTRUCTION: COST & SCHEDULE ANALYSIS

Affordable Housing

September 2021





Table of Contents

- I. Project Approach
- II. Project Savings Overview
- III. Cost Comparison
- IV. Schedule Comparison
- V. Building Plans & Section
- VI. Rendering
- VII. Modules & Unit Plans
- VIII. Appendix

I. PROJECT APPROACH



With ever-increasing construction costs driven by labor shortages and material cost escalations, developers are evaluating alternative means of construction to enable developments to “pencil”. Modular/offsite/industrialized construction is often considered; however, the question of “what time and cost savings could we achieve by going modular” is typically met with either a range of percentages or “it depends”.

Optimum Modular Solutions, an independent, third-party modular consulting firm, has assembled, coordinated, and collaborated with Steinberg Hart, C.W. Driver and Englekirk to prepare a conceptual design, ROM budget and schedule for an affordable housing project based on a steel volumetric modular system. A separate conceptual ROM budget and schedule was prepared based on conventional Type III construction and the comparison of modular vs. conventional costs and schedule were developed.

Onsite construction costs, building codes and seismic requirements vary per city and state; however, the basis of this study assumes a typically-sized downtown Los Angeles, California site with no significant topography issues or environmental remedial work. The site is assumed to be a vacant lot with minimal demolition requirements.

As is typical for most developments of this type, prevailing wages relating to the onsite work have been applied (prevailing wages do not apply to the modular fabrication completed offsite).

To maximize building height and density, steel volumetric modules have been utilized to allow for seven (7) stories of residential over the concrete podium level (wood volumetric modules cannot exceed five (5) stories; therefore, two extra podium levels would be required, which would increase the amount of onsite work and require one story of conventionally constructed units onsite).

There are several ways to design and construct steel volumetric modular projects and manufacturers have their preferences on chassis design, structural systems and connection details. For the purpose of this study, a non-proprietary system has been utilized. Wherever possible, “double-loaded corridor modules” (modules that include half of a unit either side of a portion of the corridor) have been used and based on the size of the units, the modules are 8’ wide. Alternative designs could reduce onsite work along the mate lines within the units; however, would have potential trade-offs on the lengths of the units, other onsite work and transportation costs and logistics.

Concrete cores are utilized to carry lateral loads, which can be pre-cast or poured-in-place. Steel braced-framed cores are an alternative option; however, require multiple structural, fire proofing and finish trades to complete. Sheer wall steel volumetric systems could be utilized in lieu of structural cores for limited height structures.

This study assumes that a portion of the exterior façade system is site-installed by the general contractor, after the modules have been set. As much of the façade system as possible is installed with the modules.

For optimum efficiency and to greatly reduce the time taken to “dry-in” the building after the last unit modules have been set, prefabricated roof modules with rigid insulation, cover board, membrane and parapet walls are used as a basis for this study. Only minimal mate line and seam work would be required to be completed onsite by the general contractor.

The information contained within this document should be considered a guide to modular design, pricing and scheduling and is not intended to be a definitive solution, as there are multiple factors that impact projects of this type.

II. PROJECT SAVINGS OVERVIEW

	Conventional Type III over Podium	Steel Volumetric Modular over Podium	Savings	Savings %
Total Project Hard Costs	\$34,174,354	\$29,647,258	\$4,527,096	13%
Cost per Unit	\$221,911	\$192,515	\$29,396	13%
Cost per Gross Floor Area (GFA)	\$461	\$399	\$62	13%
Construction Schedule	16 Months	12 Months	4 Months	25%
Speed-To-Market Savings			\$1,032,880*	

TOTAL COST SAVINGS AND REVENUE CAPTURE BY GOING MODULAR

\$4,527,096 + \$1,032,880

\$5,559,976

* represents 4 months of revenue gained from the compressed construction schedule, using the average rental revenue per month for the Los Angeles market.

III. COST COMPARISON

CONVENTIONAL TYPE III OVER PODIUM

Total Hard Cost Budget	\$34,174,354
Total Construction Cost Per Unit	\$221,911

STEEL VOLUMETRIC MODULAR

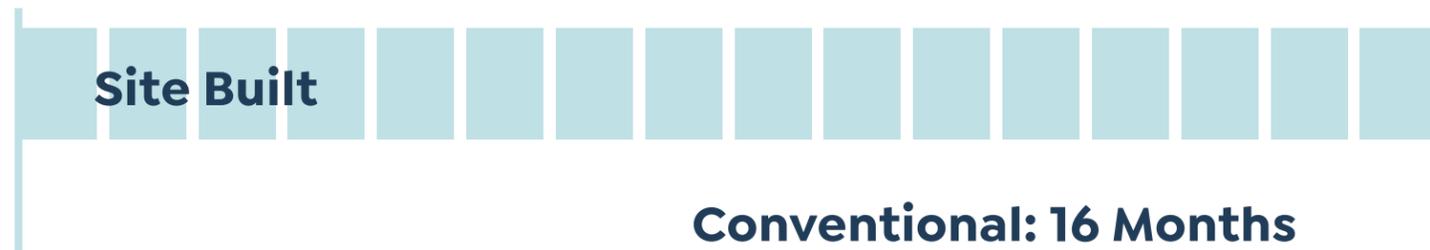
On-Site Budget	\$18,794,458
Off-Site Budget	\$10,852,800
Total Hard Cost Budget	\$29,647,258
Total Construction Cost Per Unit	\$192,515

Note: See detailed cost analysis in Appendix

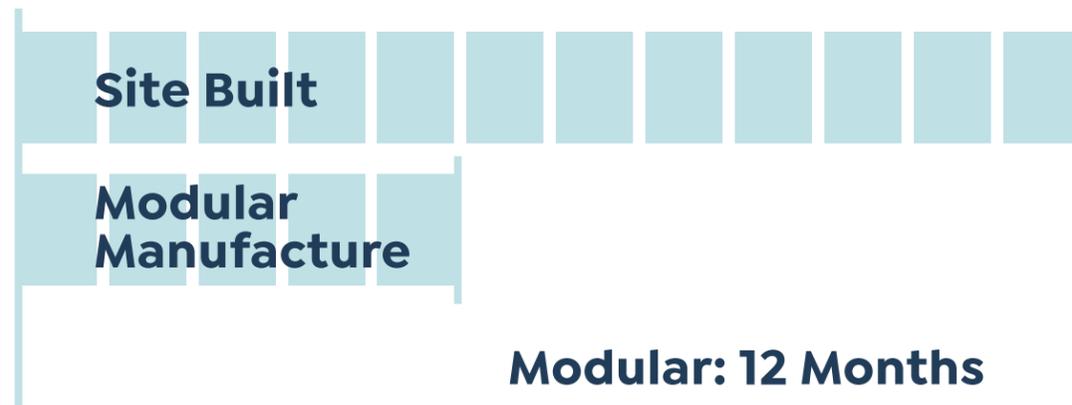


IV. SCHEDULE COMPARISON

CONVENTIONAL CONSTRUCTION DURATION

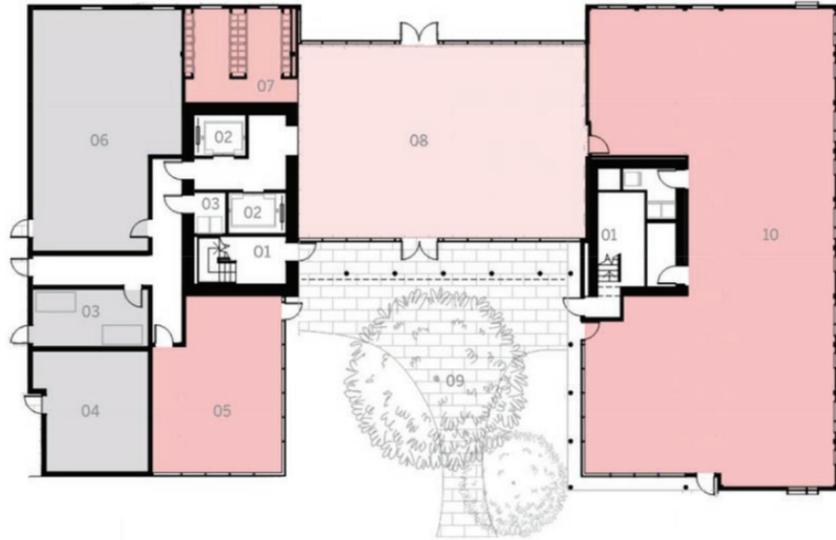


MODULAR CONSTRUCTION DURATION

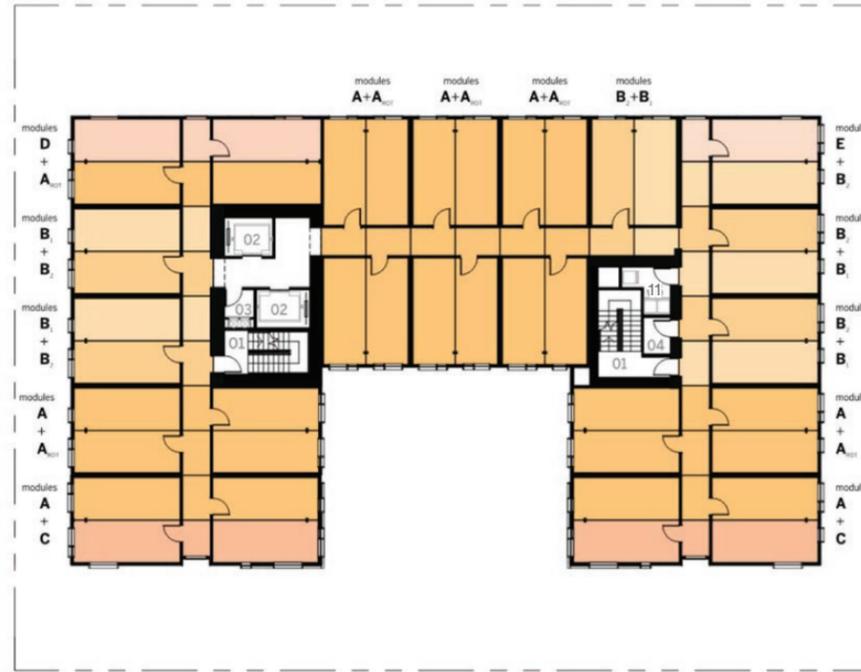


Note: See detailed Milestone Schedules in Appendix

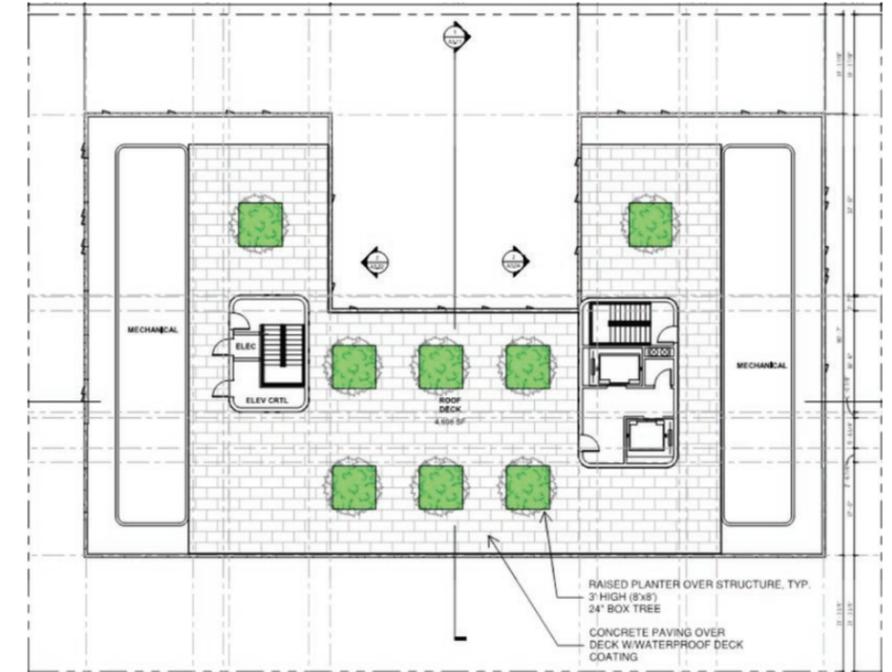
V. BUILDING PLANS & SECTION



Ground Level Plan



Typical Residential Level

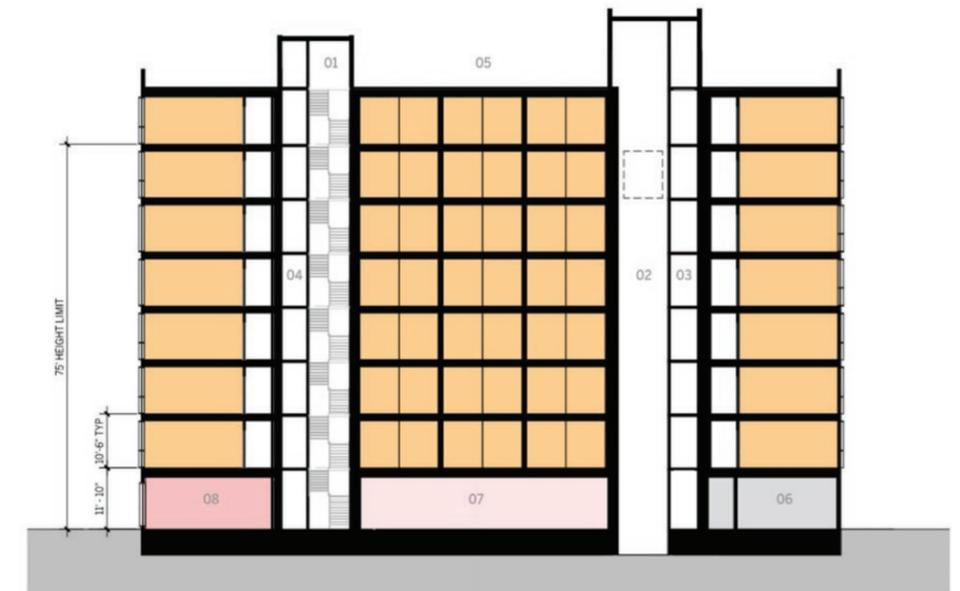


Roof Plan

Building Plan

- 01 Stair
- 02 Resident Elevators
- 03 Trash Room
- 04 Utility
- 05 Amenity Space
- 06 Bike Parking
- 07 Mail Room
- 08 Lobby
- 09 Courtyard
- 10 Supportive Services
- 11 Laundry

	LEVEL	1-BD	TOTAL # OF UNITS	Net Rentable SF (NRSF)	Gross Building Area ¹ (GBA)	Amenity	Efficiency (NRSF/GBA)
RESIDENTIAL LEVELS	L8	22	22	7,203	9,381		77%
	L7	22	22	7,203	9,381		77%
	L6	22	22	7,203	9,381		77%
	L5	22	22	7,203	9,381		77%
	L4	22	22	7,203	9,381		77%
	L3	22	22	7,203	9,381		77%
GROUND FLOOR	L2	22	22	7,203	9,381		77%
	L1	0	0	0	8,481	5,218	
	TOTALS	154	154	50,421	74,148	5,218	68%



Section

VI. RENDERING

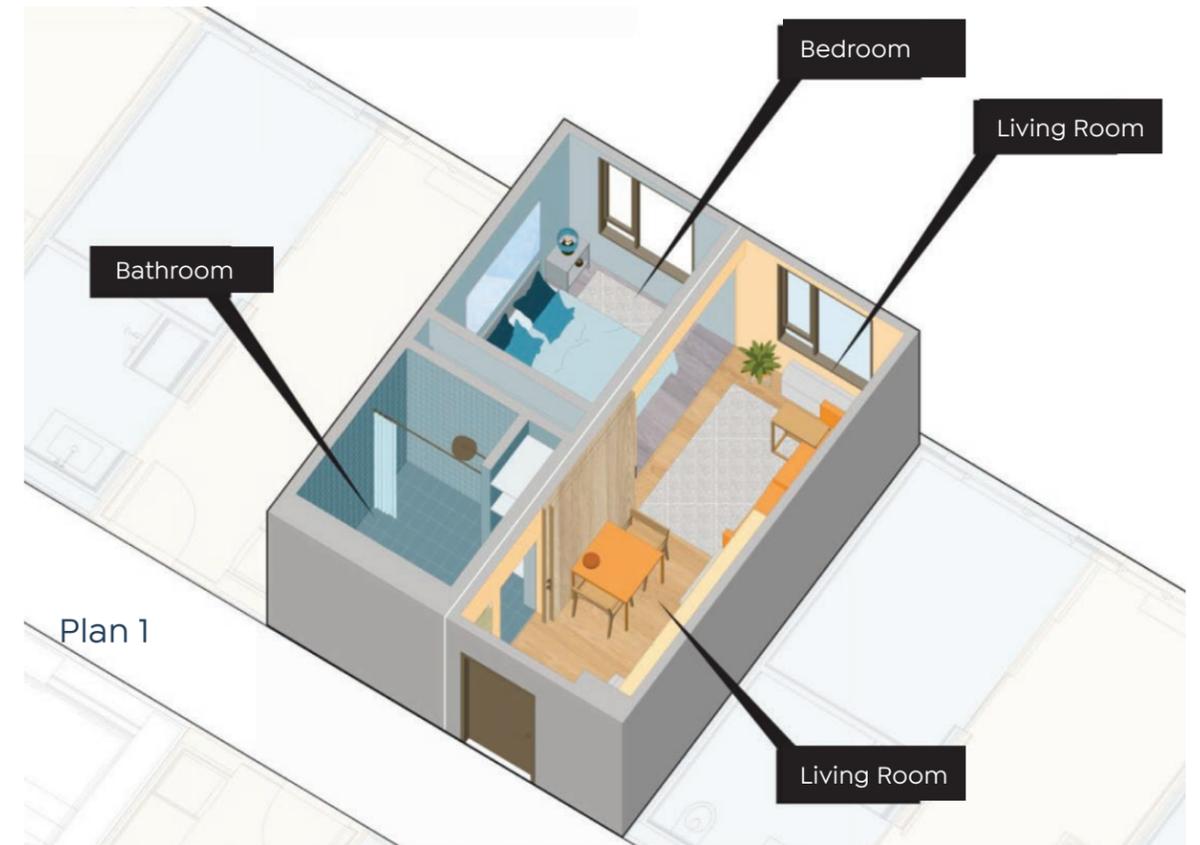


VII. MODULES & UNIT PLANS

Modules



Unit Plans



VIII. APPENDIX

VII. APPENDIX

CONCEPTUAL HARD COST BUDGET – STEEL VOLUMETRIC MODULAR



ONSITE BUDGET: \$18,794,458

OFFSITE BUDGET: \$10,852,800 ¹

TOTAL HARD COST BUDGET: \$29,647,258

¹ Based on an average cost per modular SF of \$190 to include manufacturing, taxes, offsite staging, transportation to the jobsite and the prefabricated roofing system.

Manufacturing and transportation costs will vary significantly depending upon where the modules are fabricated. The \$190 cost is a blended bottom-line rate based on data from both international and domestic U.S. manufacturers. For international manufacturers, production costs are often lower; however, shipping costs are higher and import fees and tariffs will apply.

VII. APPENDIX

C.W. Driver Optimum Modular Prototype - Affordable
 BUILDERS SINCE 1919 Rough Order of Magnitude Estimate
 Los Angeles, California

Gross Residential Area = **68,930** sf
 Total Number of Units = **154** units
 Total Rentable Area = **50,421** sf

Printed: 7/23/21 5:11 PM
 Date Prepared: 19-Jul-21
 Estimate No.: #217049
 Gross Square Feet: 74,148
 Months On-Site: 12.0
 Includes Addenda: N/A
 Estimator: SN, KP

CSI BUDGET SUMMARY
 July 19, 2021

* CSI # 2012	Seq	Description	Notes	Total	Levels 2-8	Level 1	Indoor Amenity	Outdoor Amenity: Roof Deck	Onsite	Cost Rentable Sqft	Cost per Gross Residential Sqft	Cost per Unit	Cost per Overall Gross Sqft
000001	1	Project Data											
010000	2	General Requirements		87,836	3,283	163	261	0	84,128	\$1.74	\$1.27	\$570.36	\$1.18
010530	4	Survey & Layout		99,165	6,567	326	522	0	91,751	\$1.97	\$1.44	\$643.93	\$1.34
015250	6	Temporary Hoists		301,500	249,624	37,801	14,075	0	0	\$5.98	\$4.37	\$1,957.79	\$4.07
015610	11	Progressive Cleanup		100,223	33,239	7,114	11,376	16,166	32,329	\$1.99	\$1.45	\$650.80	\$1.35
015620	12	Dumpsters		42,639	10,692	2,288	3,659	15,600	10,399	\$0.85	\$0.62	\$276.88	\$0.58
015723	13	SWPPP		29,678	0	0	0	0	29,678	\$0.59	\$0.43	\$192.71	\$0.40
017100	16	Final Cleaning		36,895	22,869	4,895	9,132	0	0	\$0.73	\$0.54	\$239.58	\$0.50
032000	47	Concrete Reinforcing		767,227	338,810	132,433	295,984	0	0	\$15.22	\$11.13	\$4,981.99	\$10.35
033000	53	Cast-In-Place Concrete	Includes Precast Stair	1,679,123	801,978	308,474	568,671	0	0	\$33.30	\$24.36	\$10,903.40	\$22.65
033550	56	Sealed Concrete Flooring		23,541	15,582	4,732	3,227	0	0	\$0.47	\$0.34	\$152.86	\$0.32
034100	60	Precast Structural Concrete		190,000	190,000	0	0	0	0	\$3.77	\$2.76	\$1,233.77	\$2.56
042233	84	Brick & Interlocking Pavers		259,653	0	0	0	216,432	43,221	\$5.15	\$3.77	\$1,686.06	\$3.50
051000	93	Structural Steel Framing		132,000	0	132,000	0	0	0	\$2.62	\$1.91	\$857.14	\$1.78
053000	96	Metal Decking		8,770	8,770	0	0	0	0	\$0.17	\$0.13	\$56.95	\$0.12
055000	104	Metal Fabrications		126,507	89,152	28,224	9,132	0	0	\$2.51	\$1.84	\$821.47	\$1.71
055100	105	Metal Stairs		78,060	29,810	48,250	0	0	0	\$1.55	\$1.13	\$506.88	\$1.05
055816	113	Equipment Screens		98,100	98,100	0	0	0	0	\$1.95	\$1.42	\$637.01	\$1.32
061000	118	Rough Carpentry		20,235	20,235	0	0	0	0	\$0.40	\$0.29	\$131.40	\$0.27
064600	134	Finish Carpentry		42,052	27,719	5,514	8,818	0	0	\$0.83	\$0.61	\$273.06	\$0.57
071000	144	Waterproofing		46,162	0	9,792	0	34,678	1,692	\$0.92	\$0.67	\$299.75	\$0.62
072100	149	Thermal Insulation		259,111	197,248	61,863	0	0	0	\$5.14	\$3.76	\$1,682.54	\$3.49
072200	150	Roof & Deck Insulation		2,447	0	2,447	0	0	0	\$0.05	\$0.04	\$15.89	\$0.03
072400	151	Exterior Insulation & Finish Systems (EIFS)	SF Allowance	1,107,424	1,026,150	81,274	0	0	0	\$21.96	\$16.07	\$7,191.06	\$14.94
074213	161	Metal Wall Panels	SF Allowance	661,439	556,028	105,411	0	0	0	\$13.12	\$9.60	\$4,295.06	\$8.92
075000	165	Membrane Roofing		134,730	134,730	0	0	0	0	\$2.67	\$1.95	\$874.87	\$1.82
076000	170	Flashing & Sheet Metal		107,059	95,618	4,402	7,039	0	0	\$2.12	\$1.55	\$695.19	\$1.44
078400	182	Firestopping & Safing		54,041	47,124	6,917	0	0	0	\$1.07	\$0.78	\$350.91	\$0.73
079000	185	Joint Sealants & Caulking		16,487	0	6,343	10,144	0	0	\$0.33	\$0.24	\$107.06	\$0.22
081100	187	Metal Doors & Frames		89,100	63,000	26,100	0	0	0	\$1.77	\$1.29	\$578.57	\$1.20
083300	197	Coiling Doors & Grilles		2,775	0	2,775	0	0	0	\$0.06	\$0.04	\$18.02	\$0.04
083400	199	Elevator Smoke Containment System		129,600	113,400	16,200	0	0	0	\$2.57	\$1.88	\$841.56	\$1.75
084100	205	Entrances & Storefronts		250,140	0	214,940	35,200	0	0	\$4.96	\$3.63	\$1,624.29	\$3.37
085100	214	Metal Windows	Level 1 Only	51,870	0	51,870	0	0	0	\$1.03	\$0.75	\$336.82	\$0.70
087000	224	Finish Door Hardware		42,188	29,438	12,750	0	0	0	\$0.84	\$0.61	\$273.94	\$0.57
092300	238	Gypsum Plastering		556,103	394,180	146,101	0	13,662	2,160	\$11.03	\$8.07	\$3,611.06	\$7.50
092900	245	Gypsum Board		733,505	506,130	126,009	101,366	0	0	\$14.55	\$10.64	\$4,763.02	\$9.89
093000	247	Tiling		63,587	0	0	63,587	0	0	\$1.26	\$0.92	\$412.90	\$0.86
096500	272	Resilient Flooring & Base		116,289	91,673	747	23,869	0	0	\$2.31	\$1.69	\$755.12	\$1.57
099000	295	Painting & Coating		136,710	113,793	12,766	9,550	518	82	\$2.71	\$1.98	\$887.72	\$1.84
099623	298	Graffiti-Resistant Coatings		16,506	0	16,506	0	0	0	\$0.33	\$0.24	\$107.18	\$0.22
101500	309	Interior Signage		50,421	44,654	2,219	3,548	0	0	\$1.00	\$0.73	\$327.41	\$0.68
104400	330	Fire Protection Specialties		5,561	4,925	245	391	0	0	\$0.11	\$0.08	\$36.11	\$0.08
105500	335	Postal Specialties		19,744	19,744	0	0	0	0	\$0.39	\$0.29	\$128.21	\$0.27

VII. APPENDIX

* CSI # 2012	Seq	Description	Notes	Total	Levels 2-8	Level I	Indoor Amenity	Outdoor Amenity: Roof Deck	Onsite	Cost Rentable Sqft	Cost per Gross Residential Sqft	Cost per Unit	Cost per Overall Gross Sqft
112423	365	Window Washing Systems		191,875	191,875	0	0	0	0	\$3.81	\$2.78	\$1,245.94	\$2.59
129300	436	Bike Parking		43,000	0	0	43,000	0	0	\$0.85	\$0.62	\$279.22	\$0.58
142100	470	Modular Elevators		848,000	742,000	106,000	0	0	0	\$16.82	\$12.30	\$5,506.49	\$11.44
142700	472	Custom Elevator Cab & Door Finishes		30,000	15,000	15,000	0	0	0	\$0.59	\$0.44	\$194.81	\$0.40
149182	488	Trash Chutes		24,000	21,000	3,000	0	0	0	\$0.48	\$0.35	\$155.84	\$0.32
210000	490	Fire-Suppression Systems		88,976	57,173	12,236	19,568	0	0	\$1.76	\$1.29	\$577.77	\$1.20
220000	501	Plumbing		1,004,285	913,259	49,282	41,744	0	0	\$19.92	\$14.57	\$6,521.33	\$13.54
230000	515	HVAC		793,660	656,670	32,630	104,360	0	0	\$15.74	\$11.51	\$5,153.64	\$10.70
260000	537	Electrical		854,915	627,401	77,496	150,018	0	0	\$16.96	\$12.40	\$5,551.40	\$11.53
265600	551	Misc. Site Lighting		48,422	0	0	0	0	48,422	\$0.96	\$0.70	\$314.43	\$0.65
273000	555	Voice Communications		401,141	355,258	17,653	28,229	0	0	\$7.96	\$5.82	\$2,604.81	\$5.41
281353	563	Security Access Detection		129,759	114,917	5,710	9,132	0	0	\$2.57	\$1.88	\$842.59	\$1.75
283000	565	Facility - Detection & Alarm		234,308	207,508	10,311	16,489	0	0	\$4.65	\$3.40	\$1,521.48	\$3.16
311000	568	Site Clearing/Earthwork		70,769	0	0	0	0	70,769	\$1.40	\$1.03	\$459.54	\$0.95
312500	578	Erosion Control		34,440	0	0	0	0	34,440	\$0.68	\$0.50	\$223.64	\$0.46
321313	610	Site Concrete Sidewalks & Paving		40,061	0	0	0	0	40,061	\$0.79	\$0.58	\$260.14	\$0.54
329000	632	Landscape & Irrigation		220,183	0	0	0	51,260	168,923	\$4.37	\$3.19	\$1,429.76	\$2.97
331116	641	Site Domestic Water		27,235	0	0	0	0	27,235	\$0.54	\$0.40	\$176.85	\$0.37

* CSI # 2012	Seq	Description	Notes	Total	Levels 2-7	Level I	Garage	Indoor Amenity	Outdoor Amenity	Onsite	Cost Rentable Sqft	Cost per Gross Residential Sqft	Cost per Unit	Cost per Overall Gross
321700	618	Paving Specialties, Striping, Bumpers & Signs		8,278	0	0	4,278	0	0	4,000	\$0.05	\$0.04	\$32.34	\$0.03
329000	632	Landscape & Irrigation		174,779	0	0	0	0	164,279	10,500	\$1.09	\$0.83	\$682.73	\$0.68
331116	641	Site Domestic Water		34,493	0	0	0	0	0	34,493	\$0.21	\$0.16	\$134.74	\$0.13
331119	642	Site Fire Protection Water Distribution		27,143	0	0	0	0	0	27,143	\$0.17	\$0.13	\$106.03	\$0.11
331233	644	Water Metering, Vaults & Pads		22,000	0	0	0	0	0	22,000	\$0.14	\$0.10	\$85.94	\$0.09
333000	651	Site Sanitary Sewerage Utilities		73,650	0	0	0	0	0	73,650	\$0.46	\$0.35	\$287.70	\$0.29
334000	654	Site Storm Drainage System		132,025	0	0	0	0	0	132,025	\$0.82	\$0.63	\$515.72	\$0.51
335100	661	Site Natural-Gas Distribution		2,673	0	0	0	0	0	2,673	\$0.02	\$0.01	\$10.44	\$0.01
337000	665	Site Electrical Utilities		128,204	0	0	0	0	0	128,204	\$0.80	\$0.61	\$500.80	\$0.50
412200	690	Cranes		722,500	510,000	85,000	85,000	0	42,500	0	\$4.49	\$3.44	\$2,822.27	\$2.82
481600	705	ABI701 Compliance Oversight		81,555	46,414	5,948	21,847	4,040	3,235	71	\$0.51	\$0.39	\$318.57	\$0.32
999999	706	Mate Lines/Rigging & Setting Allowance		1,150,000	1,150,000	0	0	0	0	0	\$7.14	\$5.48	\$4,492.19	\$4.49
SUBTOTAL				51,490,090	28,428,255	3,611,153	13,269,411	2,496,126	2,324,134	1,361,012	\$319.77	\$245.46	\$201,133.16	\$200.81
010001	709	Contingency	5.00%	2,574,504	1,421,413	180,558	663,471	124,806	116,207	68,051	\$15.99	\$12.37	\$10,056.66	\$10.04
006150	711	SDI, General Conditions, Liability Insurance & Fee	10.03%	5,165,083	2,851,700	362,243	1,331,084	250,392	233,139	136,526	\$32.08	\$24.62	\$20,176.11	\$20.14
Total Estimate				59,229,678	32,701,368	4,153,954	15,263,965	2,871,324	2,673,479	1,565,589	\$367.83	\$282.36	\$231,365.93	\$231.00

VII. APPENDIX

CONCEPTUAL HARD COST BUDGET – CONVENTIONAL TYPE III OVER PODIUM



TOTAL HARD COST BUDGET: \$34,174,354

VII. APPENDIX

Gross Residential Area = **68,930** sf
 Total Number of Units = **154** units
 Total Rentable Area = **50,421** sf

Printed: 7/23/21 5:12 PM
 Date Prepared: 19-Jul-21
 Estimate No.: #217049
 Gross Square Feet: 74,148
 Months On-Site: 16.0
 Includes Addenda: N/A
 Estimator: SN, KP

CSI BUDGET SUMMARY
 July 19, 2021

* CSI # 2012	Seq	Description	Notes	Total	Levels 4-8	Levels 1-3	Indoor Amenity	Outdoor Amenity: Roof Deck	Onsite	Cost Rentable Sqft	Cost per Gross Residential Sqft	Cost per Unit	Cost per Overall Gross Sqft
000001	1	Project Data											
010000	2	General Requirements		191,686	2,345	1,101	261	0	187,978	\$3.80	\$2.78	\$1,244.71	\$2.59
010530	4	Survey & Layout		104,263	4,691	2,203	522	0	96,848	\$2.07	\$1.51	\$677.03	\$1.41
015250	6	Temporary Hoists		401,500	262,276	118,112	21,112	0	0	\$7.96	\$5.82	\$2,607.14	\$5.41
015610	11	Progressive Cleanup		242,970	110,562	67,614	16,019	16,259	32,516	\$4.82	\$3.52	\$1,577.73	\$3.28
015620	12	Dumpsters		103,707	35,360	21,624	5,123	31,200	10,399	\$2.06	\$1.50	\$673.42	\$1.40
015723	13	SWPPP		34,478	0	0	0	0	34,478	\$0.68	\$0.50	\$223.88	\$0.46
017100	16	Final Cleaning		120,090	75,760	35,198	9,132	0	0	\$2.38	\$1.74	\$779.80	\$1.62
032000	47	Concrete Reinforcing		986,061	119,795	574,718	291,548	0	0	\$19.56	\$14.31	\$6,402.99	\$13.30
033000	53	Cast-in-Place Concrete		1,952,326	373,789	1,009,867	568,671	0	0	\$38.72	\$28.32	\$12,677.44	\$26.33
033550	56	Sealed Concrete Flooring		40,575	23,710	13,638	3,227	0	0	\$0.80	\$0.59	\$263.47	\$0.55
035413	68	Gypsum Cement Underlayment		108,045	108,045	0	0	0	0	\$2.14	\$1.57	\$701.59	\$1.46
042233	84	Brick & Interlocking Pavers		259,653	0	0	0	216,432	43,221	\$5.15	\$3.77	\$1,686.06	\$3.50
051000	93	Structural Steel Framing		237,412	82,084	155,328	0	0	0	\$4.71	\$3.44	\$1,541.63	\$3.20
055000	104	Metal Fabrications		198,639	108,650	80,857	9,132	0	0	\$3.94	\$2.88	\$1,289.87	\$2.68
055100	105	Metal Stairs		434,250	289,500	144,750	0	0	0	\$8.61	\$6.30	\$2,819.81	\$5.86
055816	113	Equipment Screens		98,100	98,100	0	0	0	0	\$1.95	\$1.42	\$637.01	\$1.32
061000	118	Rough Carpentry		1,905,755	1,905,755	0	0	0	0	\$37.80	\$27.65	\$12,375.03	\$25.70
061733	121	Wood I-joists		1,219,530	1,219,530	0	0	0	0	\$24.19	\$17.69	\$7,919.03	\$16.45
064100	130	Architectural Wood Casework		43,890	31,350	12,540	0	0	0	\$0.87	\$0.64	\$285.00	\$0.59
064600	134	Finish Carpentry		424,903	279,538	137,538	7,827	0	0	\$8.43	\$6.16	\$2,759.11	\$5.73
071000	144	Waterproofing		370,662	52,822	30,921	0	285,228	1,692	\$7.35	\$5.38	\$2,406.90	\$5.00
072100	149	Thermal Insulation		259,841	73,336	186,505	0	0	0	\$5.15	\$3.77	\$1,687.28	\$3.50
072200	150	Roof & Deck Insulation		23,555	7,036	16,519	0	0	0	\$0.47	\$0.34	\$152.95	\$0.32
072400	151	Exterior Insulation & Finish Systems (EIFS)	SF Allowance	1,107,424	824,338	283,085	0	0	0	\$21.96	\$16.07	\$7,191.06	\$14.94
074213	161	Metal Wall Panels	SF Allowance	661,439	373,958	287,481	0	0	0	\$13.12	\$9.60	\$4,295.06	\$8.92
075000	165	Membrane Roofing		212,701	212,701	0	0	0	0	\$4.22	\$3.09	\$1,381.18	\$2.87
076000	170	Flashing & Sheet Metal		107,059	70,310	29,710	7,039	0	0	\$2.12	\$1.55	\$695.19	\$1.44
078400	182	Firestopping & Safing		40,577	33,660	6,917	0	0	0	\$0.80	\$0.59	\$263.49	\$0.55
079000	185	Joint Sealants & Caulking		25,952	16,417	7,709	1,826	0	0	\$0.51	\$0.38	\$168.52	\$0.35
081100	187	Metal Doors & Frames		139,150	83,750	55,400	0	0	0	\$2.76	\$2.02	\$903.57	\$1.88
081400	190	Wood Doors		573,188	409,420	163,768	0	0	0	\$11.37	\$8.32	\$3,722.00	\$7.73
083300	197	Coiling Doors & Grilles		2,775	0	2,775	0	0	0	\$0.06	\$0.04	\$18.02	\$0.04
083400	199	Elevator Smoke Containment System		129,600	81,000	48,600	0	0	0	\$2.57	\$1.88	\$841.56	\$1.75
084100	205	Entrances & Storefronts		250,140	0	214,940	35,200	0	0	\$4.96	\$3.63	\$1,624.29	\$3.37
085100	214	Aluminum Windows	Level 1 Only	51,870	0	51,870	0	0	0	\$1.03	\$0.75	\$336.82	\$0.70
085200	215	Vinyl Windows		694,228	503,020	191,208	0	0	0	\$13.77	\$10.07	\$4,507.97	\$9.36
087000	224	Finish Door Hardware		189,038	122,113	66,925	0	0	0	\$3.75	\$2.74	\$1,227.52	\$2.55
092300	238	Gypsum Plastering		666,623	281,474	369,327	0	13,662	2,160	\$13.22	\$9.67	\$4,328.72	\$8.99
092900	245	Gypsum Board & Metal Framing		1,667,831	516,375	1,050,090	101,366	0	0	\$33.08	\$24.20	\$10,830.07	\$22.49
093000	247	Tiling		63,587	0	0	63,587	0	0	\$1.26	\$0.92	\$412.90	\$0.86
096500	272	Resilient Flooring & Base		494,107	336,031	134,208	23,869	0	0	\$9.80	\$7.17	\$3,208.49	\$6.66
099000	295	Painting & Coating		743,233	514,881	208,292	19,460	518	82	\$14.74	\$10.78	\$4,826.19	\$10.02
099623	298	Graffiti-Resistant Coatings		16,506	0	16,506	0	0	0	\$0.33	\$0.24	\$107.18	\$0.22
101500	309	Interior Signage		50,421	31,895	14,977	3,548	0	0	\$1.00	\$0.73	\$327.41	\$0.68

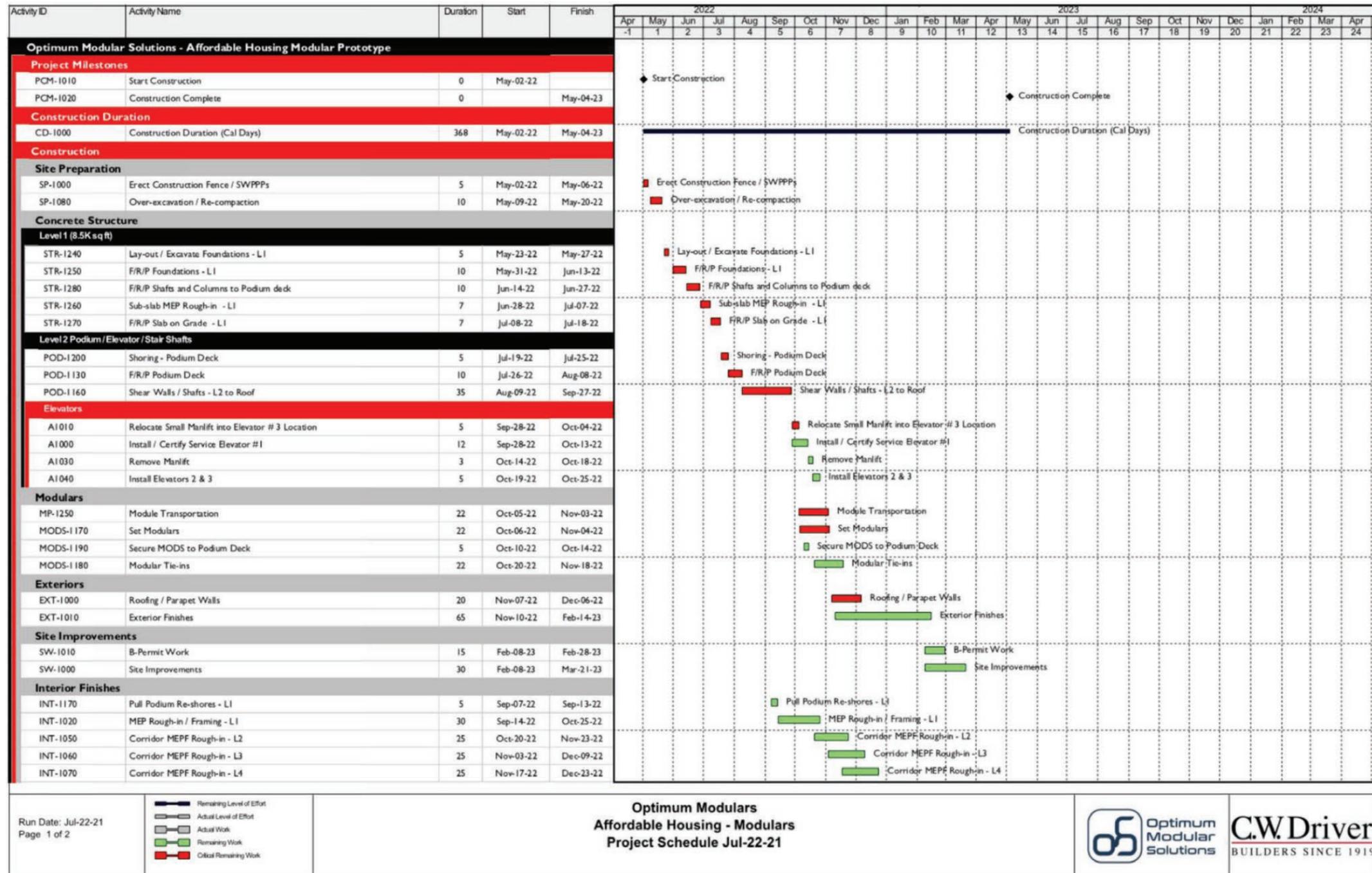
VII. APPENDIX

* CSI # 2012	Seq	Description	Notes	Total	Levels 4-8	Levels 1-3	Indoor Amenity	Outdoor Amenity: Roof Deck	Onsite	Cost Rentable Sqft	Cost per Gross Residential Sqft	Cost per Unit	Cost per Overall Gross Sqft
102813	322	Toilet Accessories		28,529	20,378	8,151	0	0	0	\$0.57	\$0.41	\$185.25	\$0.38
102818	323	Metal Framed Mirrors		15,554	11,110	4,444	0	0	0	\$0.31	\$0.23	\$101.00	\$0.21
104400	330	Fire Protection Specialties		5,561	3,518	1,652	391	0	0	\$0.11	\$0.08	\$36.11	\$0.08
105500	335	Postal Specialties		19,744	14,103	5,641	0	0	0	\$0.39	\$0.29	\$128.21	\$0.27
105700	337	Wardrobe & Closet Specialties		17,787	12,705	5,082	0	0	0	\$0.35	\$0.26	\$115.50	\$0.24
112423	365	Window Washing Systems		191,875	191,875	0	0	0	0	\$3.81	\$2.78	\$1,245.94	\$2.59
113100	371	Residential Appliances & Equipment		739,200	528,000	211,200	0	0	0	\$14.66	\$10.72	\$4,800.00	\$9.97
122200	408	Roller Window Shades		45,335	32,382	12,953	0	0	0	\$0.90	\$0.66	\$294.38	\$0.61
123530	415	Residential Kitchen/Bath Casework		843,150	602,250	240,900	0	0	0	\$16.72	\$12.23	\$5,475.00	\$11.37
129300	436	Bike Parking		43,000	0	0	43,000	0	0	\$0.85	\$0.62	\$279.22	\$0.58
142100	470	Elevators		720,000	450,000	270,000	0	0	0	\$14.28	\$10.45	\$4,675.32	\$9.71
142700	472	Custom Elevator Cab & Door Finishes		30,000	15,000	15,000	0	0	0	\$0.59	\$0.44	\$194.81	\$0.40
149182	488	Trash Chutes		24,000	15,000	9,000	0	0	0	\$0.48	\$0.35	\$155.84	\$0.32
210000	490	Fire-Suppression Systems		278,055	175,894	82,594	19,568	0	0	\$5.51	\$4.03	\$1,805.55	\$3.75
220000	501	Plumbing		2,205,605	1,509,108	654,754	41,744	0	0	\$43.74	\$32.00	\$14,322.11	\$29.75
230000	515	HVAC		1,582,526	964,935	513,231	104,360	0	0	\$31.39	\$22.96	\$10,276.14	\$21.34
260000	537	Electrical		1,901,958	1,275,337	508,276	118,344	0	0	\$37.72	\$27.59	\$12,350.37	\$25.65

* CSI # 2012	Seq	Description	Notes	Total	Levels 4-8	Levels 1-3	Indoor Amenity	Outdoor Amenity: Roof Deck	Onsite	Cost Rentable Sqft	Cost per Gross Residential Sqft	Cost per Unit	Cost per Overall Gross Sqft
265600	551	Misc. Site Lighting		48,422	0	0	0	0	48,422	\$0.96	\$0.70	\$314.43	\$0.65
273000	555	Voice Communications		326,993	206,851	97,130	23,011	0	0	\$6.49	\$4.74	\$2,123.33	\$4.41
281353	563	Security Access Detection		129,759	82,084	38,544	9,132	0	0	\$2.57	\$1.88	\$842.59	\$1.75
283000	565	Facility - Detection & Alarm		196,492	124,298	58,366	13,828	0	0	\$3.90	\$2.85	\$1,275.92	\$2.65
311000	568	Site Clearing/Earthwork		75,769	0	0	0	0	75,769	\$1.50	\$1.10	\$492.01	\$1.02
312500	578	Erosion Control		34,440	0	0	0	0	34,440	\$0.68	\$0.50	\$223.64	\$0.46
321313	610	Site Concrete Sidewalks & Paving		40,061	0	0	0	0	40,061	\$0.79	\$0.58	\$260.14	\$0.54
329000	632	Landscape & Irrigation		220,183	0	0	0	51,260	168,923	\$4.37	\$3.19	\$1,429.76	\$2.97
331116	641	Site Domestic Water		27,235	0	0	0	0	27,235	\$0.54	\$0.40	\$176.85	\$0.37
331119	642	Site Fire Protection Water Distribution		19,885	0	0	0	0	19,885	\$0.39	\$0.29	\$129.13	\$0.27
331233	644	Water Metering, Vaults & Pads		22,000	0	0	0	0	22,000	\$0.44	\$0.32	\$142.86	\$0.30
333000	651	Site Sanitary Sewerage Utilities		48,275	0	0	0	0	48,275	\$0.96	\$0.70	\$313.47	\$0.65
334000	654	Site Storm Drainage System		147,980	0	0	0	0	147,980	\$2.93	\$2.15	\$960.91	\$2.00
335100	661	Site Natural-Gas Distribution		2,673	0	0	0	0	2,673	\$0.05	\$0.04	\$17.36	\$0.04
337000	665	Site Electrical Utilities		22,244	0	0	0	0	22,244	\$0.44	\$0.32	\$144.44	\$0.30
412200	690	Cranes		765,000	425,000	255,000	0	85,000	0	\$15.17	\$11.10	\$4,967.53	\$10.32
481600	705	AB1701 Compliance Oversight		60,300	36,314	19,143	3,302	1,447	93	\$1.20	\$0.87	\$391.56	\$0.81
****End Of Survey - Do Not Erase****													
SUBTOTAL				28,528,925	16,371,517	8,823,882	1,565,146	701,006	1,067,374	\$565.81	\$413.88	\$185,252.76	\$384.76
010001	709	Contingency	5.00%	1,426,446	818,576	441,194	78,257	35,050	53,369	\$28.29	\$20.69	\$9,262.64	\$19.24
006150	711	SDI, General Conditions, Liability Insurance & Fee	14.79%	4,218,983	2,421,092	1,304,914	231,461	103,668	157,848	\$83.68	\$61.21	\$27,395.99	\$56.90
Total Estimate				34,174,354	19,611,184	10,569,990	1,874,864	839,724	1,278,591	\$677.78	\$495.78	\$221,911.39	\$460.89

VII. APPENDIX

CONCEPTUAL CONSTRUCTION SCHEDULE - MODULAR



VII. APPENDIX

CONCEPTUAL CONSTRUCTION SCHEDULE - CONVENTIONAL

