ATKINS

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DRAFT

March 31, 2015

Submitted via e-mail

Tom Green, PE
Beach CRA Design Manager, Public Works Department
City of Fort Lauderdale
100 N Andrews Ave
Fort Lauderdale, FL 33301

Subject: Assessment for Cost Escalation Based on RDC Pricing Back-up Information

Dear Tom,

Atkins has completed the assessment for cost escalation of the Recreational Design and Construction Inc. (RDC) Cost Analysis based on their submitted pricing back-up information. Below is a summary of our findings.

Review Methodology:

- Atkins has reviewed RDC's Back-up Information to verify the validity of the submitted back-up information with respect to the general project scope of work from the Design Development drawings (dated Feb. 2014) which RDC used to present its Escalation & Delay Cost Analysis at the 02/25/15 Special City Commission Meeting and against the Atkins Design Development estimate dated 01/15/15. In addition, Atkins independently reviewed a minimum of (5) major cost drivers for the project using in-house historical cost data from 2012/2013 versus current pricing of similar projects in South Florida to check RDC's pricing. Furthermore, Atkins independently confirmed historical pricing of standard 3000 mix concrete material only costs. This assessment only provides a review of the Back-up information provided and not all subcontractor direct costs. Delay costs were not assessed for verification.

As a result of our review, Atkins has provided Attachment A: Assessment of the Cost Escalation Based on RDC Pricing Back-up Information and Attachment B: Independent Review of Historical Unit Costs for Major Cost Drivers of the project.

Summary of Findings:

1. CEMEX provided Atkins verbal pricing of historical material only pricing for standard 3000 mix concrete. See comparison below.

	RDC Submitted Conc. Mat. Unit Cost (CY)	Atkins Checked Conc. Mat. Unit Cost (CY)
• Aug. 2012	$67	$70
• Aug. 2013	$72	$77
• Jan. 2014	$80	$84
• Jul. 2014	$88	$91
• Jan. 2015	$94	$93

(CEMEX qualified there is the potential estimated escalation of $6/CY after July 2015 for non-committed projects)

Conclusion:

Based on the CEMEX provided information the material cost increase provided by RDC is acceptable and concrete material cost has had an escalation of +40.3% or $27 CY. Based upon cursory review of RSMeans 2015 (see attached sheets) it's noted that on average cast-in-place concrete scope items with substantial reinforcing has a material cost weight of 40% on the total subcontractor price inclusive of overhead & profit. As a result, the cast-in-place material cost increase has had an effective overall increase of +/- 16% to the total cost of cast-in-place scope of work.

2. Back-up information provided included only one (1) subcontractor pricing per trade except for the structural shell which had two (2) subcontractor prices. The provided information was adequate for this assessment but not an updated GMP.

   Conclusion:
   For the approval of an updated GMP now based on Design Development drawings with subcontractor pricing input, Atkins recommends at least three (3) bids are provided for all major scopes of work and that potential subcontractor agreement "buyout" savings be shared with the owner as a contingency to cover project overages. This recommendation should fall under Article 13.10.7 of the Developer's Agreement, which makes reference to an "open book" arrangement relative to the cost of the work and approved subcontract agreements.

3. Noted significant escalation swings up and down on the RDC Escalation & Delay Cost Analysis submitted at the 02/25/15 Special City Commission Meeting.

   Conclusion:
   Atkins is aware the original GMP submittal dated 09/18/12 was prepared by RDC with in-house estimating based on a design criteria package and that the Developer's Agreement contract is a Design/Build GMP with the flexibility of monies being shifted by RDC to maintain an overall GMP budget as long as the design approach is approved by the controlling parties. It's acknowledged that RDC provided escalation swings for cost increases as well as cost reductions. However, from 2012/2013 to present day Atkins has not noted any negative adjustment to the subcontractor scopes referenced as having a negative adjustment. In addition, the scopes referenced as having positive adjustment reaching or going over 100% cannot be defined as all due to escalation. It therefore appears that the overall cost increases to the project are not all attributable to escalation but possibly the result of re-balancing the original estimate direct costs to cover for scope shortages and overages due to design progress and subcontractor pricing input. The increases not attributable to escalation/delay should be taken against the Developer's Contingency and not cause an increase to the GMP.

4. In conjunction with Item #3, the Developer's risk from the original submittal of the GMP dated 09/18/12 against the updated GMP that is part of the RDC Escalation & Delay Cost Analysis submitted at the 02/25/15 Special City Commission Meeting has been extensively reduced since it's now based on a reduced scope with Design Development drawings and subcontractor pricing input.

   Conclusion:
   The Developer's Fee should be adjusted to reflect the reduced risk.

Sincerely,

Adrian Viera,
Project Controls Manager

Cc: Atkins Team File

CITY OF FT. LAUDERDALE **ATTACHMENT A**

REDEVELOPMENT OF THE AQUATIC CENTER

Assessment for Cost Escalation Based on RDC Pricing Back-up Information

March 31, 2015

	Recreational Design and Construction Inc. (RDC)				
Cost Description	**RDC - Original Budget (09/18/12)**	**RDC - Delay & Escalation Cost (02/25/15)**	**RDC - Escalation as a % of the Original Budget**	**RDC - Adjusted Budget (02/25/15)**	**ATKINS Assessment**
Division 1: Contractor General Conditions	$5,124,695	$201,705	3.94%	$5,326,400	Cost increases associated to Div. 1 have been defined by RDC as delay related and therefore are not part of the ATKINS assessment.
Division 2: Sitework & Demolition, Special Foundations & Sitework Improvements	$2,104,977	$1,008,340	47.90%	$3,113,317	Subcontractor backup provided by HJ Foundations for the "Special Foundations" only. ATKINS can verify as valid the proposal submitted is inclusive of the general scope of the project. Subcontractor backup pricing for "Special Foundations" increased +/- $400 K against an overall division increase of +/- $1 M. Balance of increase is not verifiable without "Sitework" and "Demolition" backup information. Updated GMP cost is attributable not only to escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.

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Division 3: Concrete	$5,311,784	$2,394,966	45.09%	$7,706,750	Subcontractor backup provided by Tilt-Up Plus, JGR Construction Inc. and Structural Prestressed Industries (SPI) for the "Cast-In-Place, Precast Concrete and Masonry". ATKINS can verify as valid the proposals submitted are inclusive of the general scope of the project. Based on the Atkins Design Development estimate dated 01/15/15, there is approximately 13,000 total CY of cast-in-place concrete/grout for the project. As such, applying 13,000 CY at the agreeable material escalation of $27/CY equates a total material increase of +/- $350 K. Applying Attachment B and the agreeable cast-in-place concrete material increase; labor escalation can be calculated as 3% from the result of the delta between material escalation of +/-16% and the total Cast-In-Place Average Escalation of +/- 19%. Therefore, labor cost escalation at 3% for 60% of the original RDC GMP Div. 3 & 4 total costs equates to a total labor increase of +/- $105 K. Lastly, the delta for the precast joist pricing between the original RDC GMP ($969,550) and the updated GMP ($2,613,750) equates a total increase of +/- $1.6 M. The precast joist increase is not substantiable even when applying the SPI provided escalation from 2012 to 2014 of 42% and is an item of concern. Of the total +/- $2.5 M increase for Div. 3 & 4, subcontractor backup substantiates +/- $2.1 M or 85% of the increases. updated GMP cost is attributable not only to escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.
Division 4: Masonry	$565,477	$59,523	10.53%	$625,000	

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Division 5: Metals	$367,900	$552,100	150.07%	$920,000	Backup information not provided. Based on the Atkins DD estimate, it appears the original RDC GMP budget was too low and the updated GMP cost is attributable not only to escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.
Division 6: Wood, Plastics & Composites	$0	$36,110	N/A	$36,110	Backup information not provided. Based on the Atkins DD estimate, it appears the original RDC GMP budget did not account for this scope. The updated GMP cost is not attributable to escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.
Division 7: Thermal & Moisture Protection	$265,769	$228,231	85.88%	$494,000	Backup information not provided. Based on the Atkins DD estimate, it appears the original RDC GMP budget was too low and the updated GMP cost is attributable not only to escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.
Division 8: Openings	$345,300	$292,200	84.62%	$637,500	Backup information not provided. Based on the Atkins DD estimate, it appears the original RDC GMP budget was too low and the updated GMP cost is attributable not only to escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.
Division 9: Finishes	$1,064,836	$0	0.00%	$1,064,836	Backup information not required.

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Division 10: Specialties	$1,006,699	($336,000)	-33.38%	$670,699	Backup information not provided. Based on the Atkins DD estimate, it appears the original RDC GMP budget was too high and the updated GMP cost is not attributable to negative adjustment escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.
Division 11: Equipment	$1,626,873	($228,750)	-14.06%	$1,398,123	Backup information not provided. Based on the Atkins DD estimate, it appears the original RDC GMP budget was too high and the updated GMP cost is not attributable to negative adjustment escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.
Division 12: Furnishings	$940,840	($158,340)	-16.83%	$782,500	Backup information not provided. Based on the Atkins DD estimate, it appears the original RDC GMP budget was too high and the updated GMP cost is not attributable to negative adjustment escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.
Division 13: Special Construction	$3,716,580	($418,357)	-11.26%	$3,298,223	Backup information not provided. Based on the Atkins DD estimate, it appears the original RDC GMP budget was too high and the updated GMP cost is not attributable to negative adjustment escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.
Division 14: Conveying Systems	$544,700	($164,500)	-30.20%	$380,200	Backup information not provided. Based on the Atkins DD estimate, it appears the original RDC GMP budget was too high and the updated GMP cost is not attributable to negative adjustment escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.

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Division 15: Mechanical	$974,676	$652,774	66.97%	$1,627,450	Subcontractor backup provided by Falcon Fire Protection, Inc., Sunshine State Air Conditioning Inc. and E & M Plumbing, Inc. for the "Fire Protection, HVAC and Plumbing". ATKINS can verify as valid the proposals submitted are inclusive of the general scope of the project. Comparing the original RDC estimate for the Fire Protection ($214,600) between the updated GMP ($539,000) equates to a delta increase of +/- $325 K. Comparing the original RDC estimate for HVAC ($289,650) between the updated GMP ($244,000) equates to a delta decrease of +/- $45 K. Comparing the original RDC estimate for the Building Plumbing ($199,500) between the updated GMP ($417,300) equates to a delta increase of +/- $218 K. Comparing the original RDC estimate for the Building Plumbing ($199,500) between the updated GMP ($417,300) equates to a delta increase of +/- $218 K. Of the total +/- $653 K increase for Div. 15, subcontractor backup substantiates +/- $498 K or 76% of the increases. The balance of the increase might be in the RDC self-perform plumbing for pool equipment which Atkins DD estimate included in Div. 13. Updated GMP cost is attributable not only to escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.

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Division 16: Electrical	$2,397,887	($525,887)	-21.93%	$1,872,000	Backup information not provided. Based on the Atkins DD estimate, it appears the original RDC GMP budget was too high and the updated GMP cost is not attributable to negative adjustment escalation but re-balancing of direct costs due to design progress and subcontractor pricing input.
Subtotal	**$26,358,993**	**$3,594,115**	13.64%	**$29,953,108**	
Permits (Allowance)	$142,545	$0	0.00%	$142,545	
Bonds & Insurance)	$519,550	$0	0.00%	$519,550	
Developers Contingency	$455,769	$0	0.00%	$455,769	
Project Contingency	$250,000	$0	0.00%	$250,000	
Developer's Fee	$4,710,578	$0	0.00%	$4,710,578	
Subtotal	**$6,078,442**	**$0**	**0.00%**	**$6,078,442**	
Total Costs	**$32,437,435**	**$3,594,115**	**11.08%**	**$36,031,550**	

Qualifications: 1. Assessment of escalation based on the RDC Analysis of Escalation Costs report dated March 23, 2015.
2. RDC Original Budget direct costs subtotal appears to have a rounding error of $1.00 when compared to the sum of the actual raw costs.
3. Excludes any analysis/review outside of the Escalation Assessment. (e.g. delay costs)

CITY OF FT. LAUDERDALE
REDEVELOPMENT OF THE AQUATIC CENTER

ATTACHMENT B

Independent Review of Unit Costs for Major Project Cost Drivers

March 31, 2015

DIV	SCOPE OF WORK - DESCRIPTION	UNIT	2012/2013 UNIT COST	2015 UNIT COST	UNIT COST INCREASE (%)	Escalation to 1st Qt. of 2016 (Const. Mid-Pt)	Total Adjusted Escalation to 1st Qt. of 2016 (Const. Mid-Pt)	Average Escalation (Proportional to Scope)	Comments
03	**Concrete**								
	Cast-In-Place Concrete								
	6" Slab on Grade	CY	$272.18	$280.00	2.87%	2.00%	2.93%		Based on FIU Parkview Student Housing Permit Submittal Cost Estimate
	Columns	CY	$777.00	$840.00	8.11%	2.00%	8.27%		Based on FIU Parkview Student Housing Permit Submittal Cost Estimate
	Isolated Beams	CY	$840.00	$1,000.00	19.05%	2.00%	19.43%	18.72%	Based on FIU Parkview Student Housing Permit Submittal Cost Estimate
	Elevated Slabs & Beams (Cast-In-Place Components over Precast Keystone Joist System incl. Rebar System)	CY	$500.00	$585.00	17.00%	2.00%	17.34%		ATKINS Pricing Data
	Elevated Pool Base Slabs - 12" and 18" thick	CY	$455.55	$585.00	28.42%	2.00%	28.98%		Based on FIU Parkview Student Housing Permit Submittal Cost Estimate
	Precast Concrete								
	Precast Keystone Joist System (inc forms and pcc beam soffits)								
	System with 8" joists	SF	$7.00	$9.00	28.57%	2.00%	29.14%		ATKINS Pricing Data
	System with 16" joists	SF	$9.00	$11.00	22.22%	2.00%	22.67%	19.21%	ATKINS Pricing Data
	System with 24" joists	SF	$11.00	$13.00	18.18%	2.00%	18.55%		ATKINS Pricing Data

Qualifications:

1. Florida International University (FIU) Parkview Student Housing project is similar project with an estimated cost of +/- $46 M and a scope of work involving two (2) multistory housing buildings with a parking garage and sitework.
2. ATKINS Pricing Data is based on in-house pricing information based on RSMeans, past project experience, project conditions and market current market trends.
3. Average Escalation for Cast-In-Place and Precast Joist Concrete is proportional to the weight of each unit cost assessed against its total cost value to the project in order to accurately provide an Average Escalation.
4. Average Escalation weight for the assessed Cast-In-Place Concrete with a total cost value of $3,334,650 (based on Atkins DD estimate) is as follows: SOG = 3%, Columns = 14%, Beams = 8%, Slabs Over Precast Joist = 50% and Elevated Slabs = 25%.
5. Average Escalation weight for the assessed Precast Joist Concrete with a total cost value of $2,876,290 (based on Atkins DD estimate) is as follows: 8" Joist = 1%, 16" Joist = 9% and 24" Joist = 91%.
6. Construction Mid-point of 1st Quarter 2016, is based on a 5 month design completion schedule plus 30 days of permitting and a construction schedule of 331 business days from April 2015 NTP.

03 24 Fibrous Reinforcing

03 24 05 – Reinforcing Fibers

	03 24 05.70 Steel Fibers		Crew	Daily Output	Labor-Hours	Unit	2015 Bare Costs Material	Labor	Equipment	Total	Total Incl O&P
0230	30 lb. per C.Y.	G				C.Y.	34			34	37.50
0235	35 lb. per C.Y.	G					39.50			39.50	43.50
0240	40 lb. per C.Y.	G					45			45	49.50
0250	50 lb. per C.Y.	G					56.50			56.50	62
0275	75 lb. per C.Y.	G					85			85	93
0300	100 lb. per C.Y.	G					113			113	124

03 30 Cast-In-Place Concrete

03 30 53 – Miscellaneous Cast-In-Place Concrete

03 30 53.40 Concrete In Place

0010	**CONCRETE IN PLACE**	R033105-20									
0020	Including forms (4 uses), Grade 60 rebar, concrete (Portland cement	R033105-70									
0050	Type I), placement and finishing unless otherwise indicated	R033105-80									
0300	Beams (3500 psi), 5 kip per L.F., 10' span		C-14A	15.62	12.804	C.Y.	320	605	48	973	1,400
0350	25' span		"	18.55	10.782		335	510	40.50	885.50	1,250
0500	Chimney foundations (5000 psi), over 5 C.Y.		C-14C	32.22	3.476		150	157	.97	307.97	420
0510	(3500 psi), under 5 C.Y.		"	23.71	4.724		177	213	1.32	391.32	545
0700	Columns, square (4000 psi), 12" x 12", less than 2% reinforcing		C-14A	11.96	16.722		365	790	63	1,218	1,775
0720	2% to 3% reinforcing			10.13	19.743		565	935	74	1,574	2,225
0740	Over 3% reinforcing			9.03	22.148		840	1,050	83.50	1,973.50	2,700
0800	16" x 16", less than 2% reinforcing			16.22	12.330		286	585	46.50	917.50	1,325
0820	2% to 3% reinforcing			12.57	15.911		480	750	60	1,290	1,825
0840	Over 3% reinforcing			10.25	19.512		735	920	73.50	1,728.50	2,375
0900	24" x 24", less than 2% reinforcing			23.66	8.453		241	400	32	673	950
0920	2% to 3% reinforcing			17.71	11.293		425	535	42.50	1,002.50	1,375
0940	Over 3% reinforcing			14.15	14.134		670	670	53	1,393	1,900
1000	36" x 36", less than 2% reinforcing			33.69	5.936		212	281	22.50	515.50	720
1020	2% to 3% reinforcing			23.32	8.576		370	405	32.50	807.50	1,100
1040	Over 3% reinforcing			17.82	11.223		625	530	42	1,197	1,600
1100	Columns, round (4000 psi), tied, 12" diameter, less than 2% reinforcing			20.97	9.537		315	450	36	801	1,125
1120	2% to 3% reinforcing			15.27	13.098		515	620	49.50	1,184.50	1,625
1140	Over 3% reinforcing			12.11	16.515		780	780	62	1,622	2,200
1200	16" diameter, less than 2% reinforcing			31.49	6.351		289	300	24	613	830
1220	2% to 3% reinforcing			19.12	10.460		490	495	39.50	1,024.50	1,400
1240	Over 3% reinforcing			13.77	14.524		735	685	54.50	1,474.50	2,000
1300	20" diameter, less than 2% reinforcing			41.04	4.873		289	230	18.30	537.30	710
1320	2% to 3% reinforcing			24.05	8.316		475	395	31.50	901.50	1,200
1340	Over 3% reinforcing			17.01	11.758		735	555	44	1,334	1,750
1400	24" diameter, less than 2% reinforcing			51.85	3.857		269	182	14.50	465.50	610
1420	2% to 3% reinforcing			27.06	7.391		470	350	28	848	1,125
1440	Over 3% reinforcing			18.29	10.935		715	515	41	1,271	1,675
1500	36" diameter, less than 2% reinforcing			75.04	2.665		266	126	10	402	510
1520	2% to 3% reinforcing			37.49	5.335		445	252	20	717	920
1540	Over 3% reinforcing			22.84	8.757		695	415	33	1,143	1,475
1900	Elevated slab (4000 psi), flat slab with drops, 125 psf Sup. Load, 20' span		C-14B	38.45	5.410		261	255	19.55	535.55	725
1950	30' span			50.99	4.079		276	192	14.75	482.75	635
2100	Flat plate, 125 psf Sup. Load, 15' span			30.24	6.878		240	325	25	590	820
2150	25' span			49.60	4.194		249	198	15.15	462.15	615
2300	Waffle const., 30" domes, 125 psf Sup. Load, 20' span			37.07	5.611		259	265	20.50	544.50	740
2350	30' span			44.07	4.720		241	223	17.05	481.05	650
2500	One way joists, 30" pans, 125 psf Sup. Load, 15' span			27.38	7.597		310	360	27.50	697.50	955

	03 30 53.40 Concrete In Place	Crew	Daily Output	Labor-Hours	Unit	2015 Bare Costs Material	Labor	Equipment	Total	Total Incl O&P
2550	25′ span	C-14B	31.15	6.677	C.Y.	292	315	24	631	860
2700	One way beam & slab, 125 psf Sup. Load, 15′ span		20.59	10.102		259	475	36.50	770.50	1,100
2750	25′ span		28.36	7.334		245	345	26.50	616.50	865
2900	Two way beam & slab, 125 psf Sup. Load, 15′ span		24.04	8.652		250	410	31	691	975
2950	25′ span		35.87	5.799		216	273	21	510	705
3100	Elevated slabs, flat plate, including finish, not									
3110	including forms or reinforcing									
3150	Regular concrete (4000 psi), 4″ slab	C-8	2613	.021	S.F.	1.43	.90	.28	2.61	3.33
3200	6″ slab		2585	.022		2.09	.91	.28	3.28	4.07
3250	2-1/2″ thick floor fill		2685	.021		.94	.87	.27	2.08	2.74
3300	Lightweight, 110# per C.F., 2-1/2″ thick floor fill		2585	.022		1.46	.91	.28	2.65	3.38
3400	Cellular concrete, 1-5/8″ fill, under 5000 S.F.		2000	.028		.99	1.17	.36	2.52	3.38
3450	Over 10,000 S.F.		2200	.025		.94	1.07	.33	2.34	3.12
3500	Add per floor for 3 to 6 stories high		31800	.002			.07	.02	.09	.14
3520	For 7 to 20 stories high		21200	.003			.11	.03	.14	.22
3540	Equipment pad (3000 psi), 3′ x 3′ x 6″ thick	C-14H	45	1.067	Ea.	47	49.50	.69	97.19	133
3550	4′ x 4′ x 6″ thick		30	1.600		69.50	74	1.04	144.54	198
3560	5′ x 5′ x 8″ thick		18	2.667		122	124	1.73	247.73	335
3570	6′ x 6′ x 8″ thick		14	3.429		164	159	2.23	325.23	440
3580	8′ x 8′ x 10″ thick		8	6		350	278	3.90	631.90	845
3590	10′ x 10′ x 12″ thick		5	9.600		595	445	6.25	1,046.25	1,375
3800	Footings (3000 psi), spread under 1 C.Y.	C-14C	28	4	C.Y.	166	180	1.12	347.12	480
3825	1 C.Y. to 5 C.Y.		43	2.605		201	117	.73	318.73	415
3850	Over 5 C.Y.		75	1.493		185	67.50	.42	252.92	315
3900	Footings, strip (3000 psi), 18″ x 9″, unreinforced	C-14L	40	2.400		125	105	.79	230.79	310
3920	18″ x 9″, reinforced	C-14C	35	3.200		148	144	.90	292.90	400
3925	20″ x 10″, unreinforced	C-14L	45	2.133		122	93.50	.70	216.20	288
3930	20″ x 10″, reinforced	C-14C	40	2.800		140	126	.78	266.78	360
3935	24″ x 12″, unreinforced	C-14L	55	1.745		120	76.50	.58	197.08	258
3940	24″ x 12″, reinforced	C-14C	48	2.333		139	105	.65	244.65	325
3945	36″ x 12″, unreinforced	C-14L	70	1.371		116	60	.45	176.45	226
3950	36″ x 12″, reinforced	C-14C	60	1.867		133	84	.52	217.52	285
4000	Foundation mat (3000 psi), under 10 C.Y.		38.67	2.896		204	131	.81	335.81	440
4050	Over 20 C.Y.		56.40	1.986		178	89.50	.56	268.06	345
4200	Wall, free-standing (3000 psi), 8″ thick, 8′ high	C-14D	45.83	4.364		160	204	16.40	380.40	530
4250	14′ high		27.26	7.337		190	345	27.50	562.50	800
4260	12″ thick, 8′ high		64.32	3.109		145	146	11.70	302.70	410
4270	14′ high		40.01	4.999		154	234	18.80	406.80	570
4300	15″ thick, 8′ high		80.02	2.499		139	117	9.40	265.40	355
4350	12′ high		51.26	3.902		139	183	14.65	336.65	465
4500	18′ high		48.85	4.094		157	192	15.40	364.40	505
4520	Handicap access ramp (4000 psi), railing both sides, 3′ wide	C-14H	14.58	3.292	L.F.	320	153	2.14	475.14	600
4525	5′ wide		12.22	3.928		330	182	2.55	514.55	665
4530	With 6″ curb and rails both sides, 3′ wide		8.55	5.614		330	260	3.65	593.65	790
4535	5′ wide		7.31	6.566		335	305	4.27	644.27	870
4650	Slab on grade (3500 psi), not including finish, 4″ thick	C-14E	60.75	1.449	C.Y.	124	67.50	.51	192.01	248
4700	6″ thick	"	92	.957	"	119	44.50	.33	163.83	204
4701	Thickened slab edge (3500 psi), for slab on grade poured									
4702	monolithically with slab; depth is in addition to slab thickness;									
4703	formed vertical outside edge, earthen bottom and inside slope									
4705	8″ deep x 8″ wide bottom, unreinforced	C-14L	2190	.044	L.F.	3.47	1.92	.01	5.40	7
4710	8″ x 8″, reinforced	C-14C	1670	.067		5.75	3.02	.02	8.79	11.25
4715	12″ deep x 12″ wide bottom, unreinforced	C-14L	1800	.053		7.05	2.34	.02	9.41	11.60

	03 30 53.40 Concrete In Place	Crew	Daily Output	Labor-Hours	Unit	2015 Bare Costs Material	Labor	Equipment	Total	Total Incl O&P
4720	12" x 12", reinforced	C-14C	1310	.086	L.F.	11.20	3.85	.02	15.07	18.65
4725	16" deep x 16" wide bottom, unreinforced	C-14L	1440	.067		11.85	2.92	.02	14.79	17.80
4730	16" x 16", reinforced	C-14C	1120	.100		16.80	4.51	.03	21.34	26
4735	20" deep x 20" wide bottom, unreinforced	C-14L	1150	.083		17.90	3.66	.03	21.59	25.50
4740	20" x 20", reinforced	C-14C	920	.122		24	5.50	.03	29.53	35.50
4745	24" deep x 24" wide bottom, unreinforced	C-14L	930	.103		25	4.53	.03	29.56	35.50
4750	24" x 24", reinforced	C-14C	740	.151		33.50	6.80	.04	40.34	47.50
4751	Slab on grade (3500 psi), incl. troweled finish, not incl. forms									
4760	or reinforcing, over 10,000 S.F., 4" thick	C-14F	3425	.021	S.F.	1.35	.90	.01	2.26	2.94
4820	6" thick		3350	.021		1.98	.92	.01	2.91	3.66
4840	8" thick		3184	.023		2.71	.97	.01	3.69	4.54
4900	12" thick		2734	.026		4.06	1.13	.01	5.20	6.30
4950	15" thick		2505	.029		5.10	1.23	.01	6.34	7.55
5000	Slab on grade (3000 psi), incl. broom finish, not incl. forms									
5001	or reinforcing, 4" thick	C-14G	2873	.019	S.F.	1.32	.82	.01	2.15	2.78
5010	6" thick		2590	.022		2.07	.91	.01	2.99	3.74
5020	8" thick		2320	.024		2.70	1.02	.01	3.73	4.60
5200	Lift slab in place above the foundation, incl. forms, reinforcing,									
5210	concrete (4000 psi) and columns, over 20,000 S.F. per floor	C-14B	2113	.098	S.F.	6.90	4.64	.36	11.90	15.55
5250	10,000 S.F. to 20,000 S.F. per floor		1650	.126		7.55	5.95	.46	13.96	18.50
5300	Under 10,000 S.F. per floor		1500	.139		8.20	6.55	.50	15.25	20.50
5500	Lightweight, ready mix, including screed finish only,									
5510	not including forms or reinforcing									
5550	1:4 (2500 psi) for structural roof decks	C-14B	260	.800	C.Y.	166	37.50	2.89	206.39	248
5600	1:6 (3000 psi) for ground slab with radiant heat	C-14F	92	.783		168	33.50	.34	201.84	239
5650	1:3:2 (2000 psi) with sand aggregate, roof deck	C-14B	260	.800		164	37.50	2.89	204.39	246
5700	Ground slab (2000 psi)	C-14F	107	.673		164	29	.29	193.29	227
5900	Pile caps (3000 psi), incl. forms and reinf., sq. or rect., under 10 C.Y.	C-14C	54.14	2.069		168	93.50	.58	262.08	340
5950	Over 10 C.Y.		75	1.493		157	67.50	.42	224.92	283
6000	Triangular or hexagonal, under 10 C.Y.		53	2.113		123	95.50	.59	219.09	292
6050	Over 10 C.Y.		85	1.318		138	59.50	.37	197.87	249
6200	Retaining walls (3000 psi), gravity, 4' high see Section 32 32	C-14D	66.20	3.021		140	141	11.35	292.35	400
6250	10' high		125	1.600		134	75	6	215	276
6300	Cantilever, level backfill loading, 8' high		70	2.857		150	134	10.75	294.75	395
6350	16' high		91	2.198		145	103	8.25	256.25	335
6800	Stairs (3500 psi), not including safety treads, free standing, 3'-6" wide	C-14H	83	.578	LF Nose	5.60	27	.38	32.98	50
6850	Cast on ground		125	.384	"	4.63	17.80	.25	22.68	34.50
7000	Stair landings, free standing		200	.240	S.F.	4.52	11.10	.16	15.78	23
7050	Cast on ground		475	.101	"	3.52	4.68	.07	8.27	11.55
9000	Minimum labor/equipment charge	2 Carp	1	16	Job		750		750	1,225