



RCDC (SACD) V8.0.1

Release Notes

RCDC V8.0.1 is here with new features enhancing the design and addition of new codes. The newly introduced features are:

No	Module	Description
1	Beam	ACI 318-2011 & ACI 318-2014 with FPS Unit
2	Column	Update Column Design
3	General	Defects



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Beam

ACI 318-2011 & ACI 318-2014 with FPS Unit (US Standard)

The ACI 318-2011 and ACI 318-2014 (FPS Unit System) have been added to the RCDC. Currently these codes are available for Beam design Module. The design and detailing have been updated with option of the rebar reference numbering as per the US standard.

Following are sample design outputs:

For Longitudinal Reinf						
	Beam Bottom			Beam Top		
	Left	Mid	Right	Left	Mid	Right
Critical L/C - RCDC	4	4	-	5	8	4
Mu (kip-ft)	34.32	96.29	-	161.98	7.35	187.62
As (flex) (in2) (C)	0.27	0.76	-	1.29	0.06	1.51
Asc (flex) (in2) (A)	-	-	-	-	-	-
Tu (kip-ft)	11.8	2.95	-	17.7	6.64	17.7
Tcr/4 (kip-ft)	8.91	8.91	-	8.91	8.91	8.91
Al, min(in2)(Tor.) (D)	1.71	-	-	1.65	-	1.65
Al (in2) (Tor.) (E)	0.55	-	-	0.61	-	0.61
Al (Dist) (in2) (D)	0.29	-	-	0.27	-	0.27
Ast (in2)	0.73	1.01	0.98	1.57	0.59	1.78
AstPrv (in2)	0.98	1.37	0.98	1.57	0.98	1.96
Reinforcement	5-#4	5-#4 2-#4	5-#4	5-#4 3-#4	5-#4	5-#4

For Transverse Reinf			
	Left	Mid	Right
Critical L/C - RCDC	1	1	1
PtPrv (%)	0.346	0.303	0.433
Vu (kip)	28.59	19.15	31.59
Mu-Sect (kip-ft)	111.53	21.67	150.82
V ^{D+L} (kip)	24.07	0	23.87
Mh (kip-ft)	268.91	0	331.69
Ms (kip-ft)	171.39	0	171.39
Sway-Right (kip)	3.06	0	44.88
Sway-Left (kip)	42.46	0	5.49
Vu-Sway (kip)	42.46	0	44.88
Vud (kip)	42.46	0	44.88
Φ Vc (kip)	29.78	30.39	29.81
Vs (kip)	-	-	2.96
Av (in2/ft)	0.16	0.16	0.16
Tu (kip-ft)	20.65	10.33	20.65
Aoh (in2)	379.66	379.66	379.66
At (in2/ft)	0.2	0.16	0.2
Legs	2	2	2
Stirrup Rebar	3	3	3
At Torsion (in2/ft)	0.2	0.16	0.2
Av Total Reqd (in2/ft)	0.2	0.16	0.23
Asv Reqd (in2/ft)	0.2	0.16	0.23
S Calc (in)	3	10	3
S Prv (in)	3	10	3
Av Total Prv (in2/ft)	0.87	0.26	0.87



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Maximum Spacing Criteria:

Basic

Spc1	=	16.7	in
Spc2	=	12	in

For Torsion

(X1 = 21.4, Y1 = 33.4)

Spc3	=	12	in
Spc4=(X1+Y1)/4	=	13.7	in

For Ductility (Special Frames)

Left Section, Right Section

Spc5 = 6 x Small Longitudinal Dia	=	3	in
Spc6 = d / 4	=	8.3	in
Spc7	=	5.9	in
Provided Spacing	=	3	in

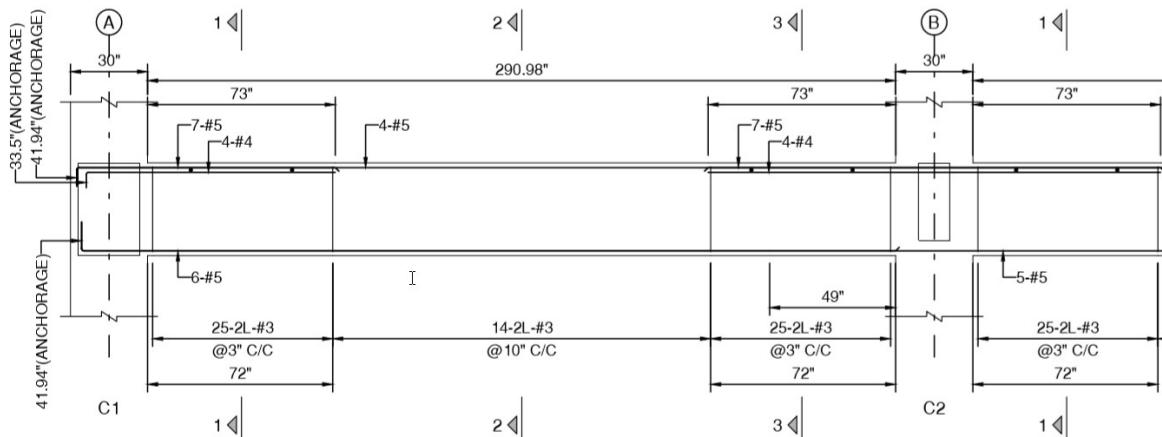
Mid Section

Provided Spacing	=	11.8	in
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BEAM SCHEDULE (C3 Fy60) (LEVEL: 20ft)

BEAM NUMBERS	SIZE		BOTTOM REINFORCEMENT			TOP REINFORCEMENT			SHEAR STIRRUPS			SFR	DIAGONAL	REMARKS
	B	D	LEFT	MID SPAN	RIGHT	LEFT	MID SPAN	RIGHT	LEFT	MID SPAN	RIGHT			
B1,B4	24"	36"	6-#5	6-#5	6-#5	7-#5 4-#4	4-#5	7-#5 4-#4	25-2L-#3@3" C/C	14-2L-#3@10" C/C	25-2L-#3@3" C/C	-	-	-
B2,B3	24"	36"	5-#5	5-#5	5-#5	7-#5 4-#4	4-#5	7-#5 4-#4	25-2L-#3@3" C/C	14-2L-#3@10" C/C	25-2L-#3@3" C/C	-	-	-
B19	12"	30"	4-#5 4-#5	4-#5 4-#5	4-#5 4-#5	3-#8 3-#8	2-#8	3-#8 3-#8	21-2L-#4@3" C/C	17-2L-#4@9" C/C	21-2L-#4@3" C/C	-	-	-
B20	24"	36"	7-#4 2-#4	7-#4 2-#4	7-#4 2-#4	6-#6 2-#5	4-#6	6-#6 2-#5	25-2L-#3@3" C/C	14-2L-#3@10" C/C	25-2L-#3@3" C/C	-	-	-
B21	24"	36"	4-#5	6-#5	6-#5	6-#6 2-#5	4-#6	6-#6 2-#5	25-2L-#3@3" C/C	14-2L-#3@10" C/C	25-2L-#3@3" C/C	-	-	-
B22	24"	36"	6-#5	6-#5	6-#5	6-#6 2-#5	4-#6	6-#6 2-#5	25-2L-#3@3" C/C	14-2L-#3@10" C/C	25-2L-#3@3" C/C	-	-	-
B23	24"	36"	7-#4	7-#4 2-#4	7-#4 5-#4	6-#6 2-#5	4-#6	6-#6 6-#5	25-2L-#3@3" C/C	14-2L-#3@10" C/C	25-2L-#3@3" C/C	-	-	-
B24	24"	36"	7-#4 5-#4	7-#4 7-#4	7-#4 4-#4	6-#6 4-#5	4-#6	6-#6 6-#5	25-2L-#3@3" C/C	24-2L-#3@10" C/C	25-2L-#3@3" C/C	-	-	-
B25	24"	36"	7-#4	7-#4 5-#4	5-#4 5-#4	7-#5 5-#5	4-#5	7-#5 5-#5	25-2L-#3@3" C/C	18-2L-#3@10" C/C	25-2L-#3@3" C/C	-	-	-
B26	24"	36"	7-#4	7-#4 4-#4	5-#4 5-#4	7-#5 5-#5	4-#5	7-#5 5-#5	25-2L-#3@3" C/C	18-2L-#3@10" C/C	25-2L-#3@3" C/C	-	-	-
B27	24"	36"	5-#4 5-#4	7-#4 5-#4	7-#4 2-#4	7-#5 5-#5	4-#5	7-#5 4-#5	25-2L-#3@3" C/C	18-2L-#3@10" C/C	25-2L-#3@3" C/C	-	-	-

Beam elevation:



B1:24"x36"
(SCALE: H = 1:48 / V = 1:48)



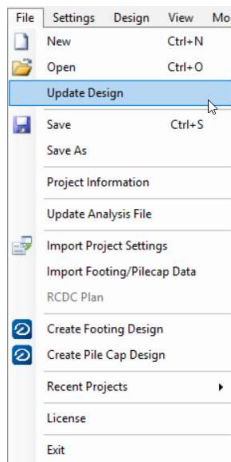
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Column Update Column Design

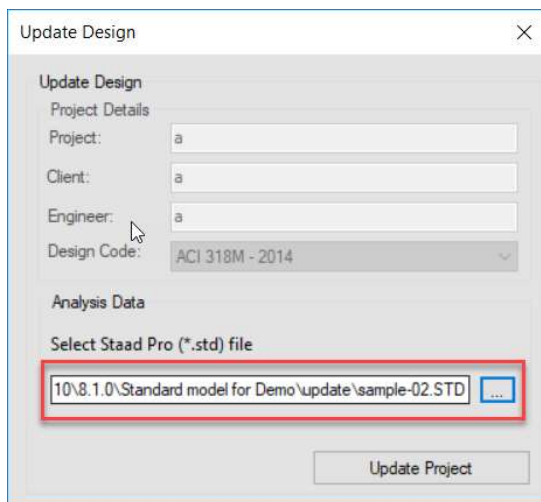
The advantage of the 'Update Design' option is that user can check the existing design (based on earlier analysis file) with the revised analysis file. If the existing design reinforcement is enough or more than the revised design reinforcement, then software will maintain the existing design. If the existing design is less than the required for the new analysis, then software will show the updated design. Currently this option is available only for the column design module.

This feature handles changes in analysis like – change in arrangement, changes in levels, changes in floor height, change in sizes, grades of material, loading and so on. There is a well-defined logic in the software to understand the change, making decision about the same and reacting to it accordingly. The workflow for using this feature is as below –

When you open an existing column design file, following command is available in the menu -



Once you click on this, programme will ask you to select the revised analysis file





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The data from the revised analysis is read and if there is change in number of floors in the analysis file, then programme prompts user to map the levels -

Update Design

Level Mapping	Existing Levels			Updated Levels		
	Primary	Description	Level (m)	Primary	Description	Level (m)
Zone Bar Settings	<input checked="" type="checkbox"/>	4.2m	4.2	<input checked="" type="checkbox"/>	4.2m	4.2
Load Cases	<input checked="" type="checkbox"/>	7.858m	7.86	<input checked="" type="checkbox"/>	7.858m	7.86
Load Combinations	<input checked="" type="checkbox"/>	12.058m	12.06	<input checked="" type="checkbox"/>	12.058m	12.06
	<input checked="" type="checkbox"/>	16.258m	16.26	<input checked="" type="checkbox"/>	16.258m	16.26
				<input checked="" type="checkbox"/>	20.458m	20.46
New Level Added						

After the levels are mapped, zone bar settings are available for any new sizes that have been added in the analysis

Update Design

Level Mapping	Edge Length	Equi - Spaced No. of Rebars/Spc		Zonal																			
				Zone Length			No. of Rebars/Spc (EF)																
		Nos	Spc	Z1	Z2	Mid	Z1		Z2		Mid												
Zone Bar Settings																							
Load Cases																							
Load Combinations																							
	300	2	143	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	350	3	96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	500	4	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	600	5	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	700	6	109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	900	7	124	300	0	300	4	83	0	0	1	150											
	1000	8	120	300	0	400	4	83	0	0	1	200											
	2400	19	125	500	0	1400	6	90	0	0	6	200											
	3550	29	121	550	550	1350	7	83	6	92	6	193											
New Column size Added																							

If there are any changes in load cases in the revised analysis file compared to earlier, then user needs to set the additional load cases and move ahead.



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Update Design

Level Mapping

Zone Bar Settings

Load Cases

Load Combinations

Analysis Load Cases	Load Type
LOAD 1: LOAD CASE 1	Dead Load
LOAD 2: LOAD CASE 2	Live Load
LOAD 3: LOAD CASE 3 EQ-X	Earthquake X
LOAD 4: LOAD CASE 4 EQ-Y	Earthquake Z

New Load Cases Added

>>

<<

D++

L++

Σ

Type	Primary Load Cases
DL	LOAD 1: LOAD CASE 1
LL	LOAD 2: LOAD CASE 2

Import Load Cases & Combinations

Cancel < Back Next > Update

If there are any changes in load cases, then user needs redefine set of load combinations

Update Design

Level Mapping

Zone Bar Settings

Load Cases

Load Combinations

Design

Analysis No	LOAD 1: LOAD CASE 1	LOAD 2: LOAD CASE 2	LOAD 3: LOAD CASE 3 EQ-X	LOAD 4: LOAD CASE 4 EQ-Y
<input checked="" type="checkbox"/>	1.4			
<input checked="" type="checkbox"/>	1.2	1.6		
<input checked="" type="checkbox"/>	1.2	1		
<input checked="" type="checkbox"/>	1.2	1	1.4	
<input checked="" type="checkbox"/>	1.2	1	-1.4	
<input checked="" type="checkbox"/>	1.2	1		1.4
<input checked="" type="checkbox"/>	1.2	1		-1.4
<input checked="" type="checkbox"/>	0.9		1.4	
<input checked="" type="checkbox"/>	0.9		-1.4	
<input checked="" type="checkbox"/>	0.9			1.4
<input checked="" type="checkbox"/>	0.9			-1.4

New Load Combinations

1.4(LOAD 1: LOAD CASE 1)

View / Edit Template

Add from Template

Add from Analysis

Export Load Cases & Combinations

Cancel < Back Next > Update

Once these settings are done, programme runs the feature and produces updated design results. User can now compare the existing design with the updated design.



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General

Defects

Following are the Major defects have been resolved in this release.

- Support ID – 5677
Beam stirrups Spacing criteria for IS Code: effective depth has been considered instead of total depth. (0.75xd)
- Support ID – 6523
Importing slab information in Beam design file for a given case has been resolved.
- Support ID – 6577
Footing design with Euro code, values in design calculation report for one-way shear check were incorrectly reported. The correct values are updated.
- Support ID – 6808
Issue in generating combined shear wall has been resolved.
- Support ID – 6816
Issue in designing Ductile Shear wall with Boundary element check, when maintaining the end and mid zone spacing same it was showing issue designing wall. The issue has been resolved in this release.
- Support ID – 6932
Pile-cap re-design issue for single and two piles has been resolved when there is tension in column.