

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL =====> FY : 350 [MPa]
CONCRETE =====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 20 [cm]
Height = 30 [cm]

Bar diameter = 15 [mm]
Stirrups dia. = 10 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
2	2	29.33191	26.39872
3	2	42.62982	38.36684
3	3	42.65228	38.38706
4	2	50.6295	45.56655
4	3	50.82191	45.73972
4	4	50.89898	45.80909
5	2	61.88744	55.6987
5	3	62.47275	56.22548
5	4	62.73607	56.46246
5	5	62.86226	56.57603
6	2	72.46135	65.21521
6	3	73.71561	66.34405
6	4	74.33354	66.90019
6	5	74.64599	67.18139
6	6	74.81238	67.33114

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL =====> FY : 350 [MPa]
 CONCRETE =====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 20 [cm] Bar diameter = 15 [mm]
 Height = 40 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr bar	Momen nominal [kNm]	Momen ultimate [kNm]
2	2	41.70193	37.53174
3	2	61.18485	55.06637
3	3	61.20732	55.08658
4	2	75.36954	67.83259
4	3	75.56196	68.00576
4	4	75.63903	68.07512
5	2	92.8125	83.53125
5	3	93.3978	84.05802
5	4	93.66112	84.29501
5	5	93.78731	84.40858
6	2	109.57141	98.61427
6	3	110.82568	99.74311
6	4	111.44361	100.29925
6	5	111.75606	100.58045
6	6	111.92244	100.7302
7	2	124.82879	112.34591
7	3	127.68771	114.91894
7	4	128.87513	115.98761
7	5	129.50791	116.55712
7	6	129.85461	116.86915
7	7	130.0531	117.04779
8	2	138.70575	124.83518
8	3	142.8979	128.60811
8	4	145.82566	131.24309
8	5	146.95195	132.25675
8	6	147.58915	132.83023
8	7	147.95974	133.16377
8	8	148.18365	133.36529

**** DESIGN MOMEN CAPACITY OF BEAM ****

STEEL =====> FY : 350 [MPa]
 CONCRETE =====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 20 [cm] Bar diameter = 15 [mm]
 Height = 45 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr bar	Momen nominal [kNm]	Momen ultimate [kNm]
2	2	47.88694	43.09825
3	2	70.46237	63.41613
3	3	70.48483	63.43635
4	2	87.73956	78.96561
4	3	87.93198	79.13878
4	4	88.00905	79.20814
5	2	108.27502	97.44752
5	3	108.86033	97.9743
5	4	109.12365	98.21128
5	5	109.24983	98.32485
6	2	128.12644	115.3138
6	3	129.38071	116.44264
6	4	129.99864	116.99878
6	5	130.31109	117.27998
6	6	130.47748	117.42973
7	2	146.47633	131.8287
7	3	149.33525	134.40172
7	4	150.52266	135.4704
7	5	151.15545	136.0399
7	6	151.50215	136.35194
7	7	151.70064	136.53057
8	2	163.4458	147.10122
8	3	167.63794	150.87414
8	4	170.5657	153.50913
8	5	171.69199	154.52279
8	6	172.32919	155.09627
8	7	172.69978	155.4298
8	8	172.9237	155.63133
9	2	179.16512	161.24861
9	3	184.55275	166.09748
9	4	188.79716	169.91744
9	5	191.81209	172.63088
9	6	192.88264	173.59438
9	7	193.51785	174.16606
9	8	193.90494	174.51445
9	9	194.14893	174.73403

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL =====> FY : 350 [MPa]
 CONCRETE =====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 20 [cm] Bar diameter = 15 [mm]
 Height = 50 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
3	2	79.73988	71.7659
3	3	79.76235	71.78611
4	2	100.10958	90.09862
4	3	100.302	90.2718
4	4	100.37907	90.34116
5	2	123.73755	111.36379
5	3	124.32286	111.89057
5	4	124.58617	112.12756
5	5	124.71236	112.24113
6	2	146.68147	132.01333
6	3	147.93574	133.14216
6	4	148.55367	133.6983
6	5	148.86612	133.97951
6	6	149.03251	134.12926
7	2	168.12387	151.31148
7	3	170.98278	153.8845
7	4	172.1702	154.95318
7	5	172.80299	155.52269
7	6	173.14969	155.83472
7	7	173.34817	156.01336
8	2	188.18584	169.36725
8	3	192.37798	173.14018
8	4	195.30574	175.77517
8	5	196.43203	176.78883
8	6	197.06923	177.36231
8	7	197.43982	177.69584
8	8	197.66374	177.89736
9	2	206.99767	186.2979
9	3	212.3853	191.14677
9	4	216.6297	194.96673
9	5	219.64464	197.68017
9	6	220.71519	198.64367
9	7	221.3504	199.21536
9	8	221.73749	199.56374
9	9	221.98147	199.78333
10	2	224.55935	202.10342
10	3	231.14248	208.02823
10	4	236.58238	212.92414
10	5	240.87904	216.79113
10	6	243.99566	219.5961
10	7	245.01538	220.51384

10	8	245.64455	221.0801
10	9	246.04278	221.4385
10	10	246.30256	221.6723

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL =====> FY : 350 [MPa]
 CONCRETE =====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 20 [cm] Bar diameter = 15 [mm]
 Height = 60 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
3	2	98.29491	88.46542
3	3	98.31738	88.48564
4	2	124.84963	112.36466
4	3	125.04204	112.53784
4	4	125.11911	112.6072
5	2	154.6626	139.19634
5	3	155.24791	139.72312
5	4	155.51123	139.9601
5	5	155.63741	140.07367
6	2	183.79154	165.41238
6	3	185.0458	166.54122
6	4	185.66373	167.09736
6	5	185.97618	167.37857
6	6	186.14257	167.52831
7	2	211.41894	190.27705
7	3	214.27786	192.85007
7	4	215.46527	193.91875
7	5	216.09806	194.48825
7	6	216.44476	194.80029
7	7	216.64325	194.97892
8	2	237.66592	213.89933
8	3	241.85806	217.67226
8	4	244.78583	220.30724
8	5	245.91212	221.3209
8	6	246.54932	221.89439
8	7	246.91991	222.22792
8	8	247.14382	222.42944
9	2	262.66276	236.39648
9	3	268.0504	241.24536
9	4	272.2948	245.06532
9	5	275.30973	247.77876
9	6	276.38029	248.74226
9	7	277.01549	249.31394
9	8	277.40258	249.66232
9	9	277.64657	249.88191
10	2	286.40946	257.76851
10	3	292.99259	263.69333
10	4	298.43248	268.58923
10	5	302.72914	272.45623
10	6	305.84577	275.26119
10	7	306.86548	276.17893

10	8	307.49466	276.74519
10	9	307.89288	277.1036
10	10	308.15266	277.3374
11	2	308.90601	278.01541
11	3	316.68463	285.01617
11	4	323.32002	290.98802
11	5	328.81218	295.93096
11	6	333.1611	299.84499
11	7	336.36679	302.73011
11	8	337.36454	303.62808
11	9	337.98514	304.18662
11	10	338.39052	304.55147
11	11	338.66267	304.7964
12	2	330.15242	297.13718
12	3	339.12654	305.21388
12	4	346.95742	312.26168
12	5	353.64507	318.28056
12	6	359.18948	323.27054
12	7	363.59067	327.2316
12	8	366.84862	330.16376
12	9	367.87506	331.08755
12	10	368.48548	331.63693
12	11	368.89505	332.00555
12	12	369.1768	332.25912

**** DESIGN MOMEN CAPACITY OF BEAM ****

STEEL ====> FY : 350 [MPa]
 CONCRETE ====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 25 [cm]
 Height = 40 [cm]

Bar diameter = 15 [mm]
 Stirrups dia. = 10 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
3	2	61.90246	55.71222
3	3	61.89795	55.70816
4	2	81.26638	73.13974
4	3	81.34266	73.2084
4	4	81.37148	73.23434
5	2	100.27389	90.2465
5	3	100.58299	90.52469
5	4	100.72583	90.65325
5	5	100.79564	90.71608
6	2	111.28572	100.15714
6	3	112.02114	100.81903
6	4	112.39467	101.15521
6	5	112.59091	101.33182
6	6	112.69887	101.42899
7	2	127.91603	115.12443
7	3	129.28651	116.35786
7	4	130.04022	117.0362
7	5	130.45747	117.41172
7	6	130.6955	117.62595
7	7	130.8366	117.75294
8	2	143.33838	129.00454
8	3	146.01856	131.41671
8	4	147.32232	132.59009
8	5	148.08163	133.27347
8	6	148.52885	133.67596
8	7	148.79946	133.91952
8	8	148.96867	134.0718
9	2	157.61224	141.85102
9	3	161.41961	145.27765
9	4	164.14223	147.72801
9	5	165.3851	148.84659
9	6	166.14237	149.52814
9	7	166.61007	149.94907
9	8	166.90611	150.2155
9	9	167.09891	150.38902
10	2	170.88599	153.79739
10	3	175.64975	158.08477
10	4	179.49892	161.54903
10	5	182.28207	164.05386
10	6	183.46925	165.12233
10	7	184.21976	165.79778

10	8	184.70119	166.23107
10	9	185.01704	166.51534
10	10	185.22957	166.70661

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL =====> FY : 350 [MPa]
 CONCRETE =====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 25 [cm] Bar diameter = 15 [mm]
 Height = 45 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr bar	Momen nominal [kNm]	Momen ultimate [kNm]
3	2	71.17998	64.06198
3	3	71.17547	64.05792
4	2	93.6364	84.27276
4	3	93.71268	84.34142
4	4	93.74151	84.36736
5	2	115.73642	104.16278
5	3	116.04552	104.44096
5	4	116.18836	104.56952
5	5	116.25817	104.63235
6	2	129.84075	116.85667
6	3	130.57617	117.51855
6	4	130.94971	117.85474
6	5	131.14594	118.03135
6	6	131.25391	118.12851
7	2	149.56357	134.60721
7	3	150.93405	135.84064
7	4	151.68776	136.51898
7	5	152.10501	136.89451
7	6	152.34304	137.10873
7	7	152.48414	137.23572
8	2	168.07842	151.27058
8	3	170.7586	153.68274
8	4	172.06237	154.85613
8	5	172.82167	155.5395
8	6	173.26889	155.942
8	7	173.53951	156.18556
8	8	173.70871	156.33784
9	2	185.44479	166.90031
9	3	189.25215	170.32694
9	4	191.97478	172.7773
9	5	193.21764	173.89588
9	6	193.97492	174.57743
9	7	194.44262	174.99836
9	8	194.73865	175.26479
9	9	194.93145	175.43831
10	2	201.81104	181.62994
10	3	206.5748	185.91732
10	4	210.42397	189.38158
10	5	213.20712	191.88641
10	6	214.39431	192.95487
10	7	215.14481	193.63033

10	8	215.62625	194.06362
10	9	215.9421	194.34789
10	10	216.15462	194.53916
11	2	217.17718	195.45946
11	3	222.89734	200.6076
11	4	227.7029	204.93261
11	5	231.59388	208.43449
11	6	234.45217	211.00696
11	7	235.58831	212.02948
11	8	236.32906	212.69615
11	9	236.81932	213.13739
11	10	237.15058	213.43552
11	11	237.37955	213.6416

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL =====> FY : 350 [MPa]
 CONCRETE =====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 25 [cm] Bar diameter = 15 [mm]
 Height = 50 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr bar	Momen nominal [kNm]	Momen ultimate [kNm]
3	2	80.4575	72.41175
3	3	80.45299	72.40769
4	2	106.00642	95.40578
4	3	106.08271	95.47444
4	4	106.11153	95.50037
5	2	131.19894	118.07905
5	3	131.50804	118.35724
5	4	131.65089	118.4858
5	5	131.7207	118.54863
6	2	148.39578	133.5562
6	3	149.1312	134.21808
6	4	149.50474	134.55426
6	5	149.70098	134.73088
6	6	149.80894	134.82804
7	2	171.21111	154.09
7	3	172.58159	155.32343
7	4	173.33529	156.00176
7	5	173.75254	156.37729
7	6	173.99057	156.59152
7	7	174.13168	156.71851
8	2	192.81846	173.53662
8	3	195.49865	175.94878
8	4	196.80241	177.12217
8	5	197.56171	177.80554
8	6	198.00893	178.20804
8	7	198.27955	178.45159
8	8	198.44875	178.60388
9	2	213.27734	191.9496
9	3	217.0847	195.37623
9	4	219.80733	197.82659
9	5	221.05019	198.94517
9	6	221.80747	199.62672
9	7	222.27517	200.04765
9	8	222.5712	200.31408
9	9	222.764	200.4876
10	2	232.73609	209.46249
10	3	237.49985	213.74987
10	4	241.34903	217.21412
10	5	244.13218	219.71896
10	6	245.31936	220.78742
10	7	246.06987	221.46288

10	8	246.5513	221.89617
10	9	246.86715	222.18043
10	10	247.07967	222.37171
11	2	251.19474	226.07527
11	3	256.91489	231.2234
11	4	261.72046	235.54841
11	5	265.61144	239.0503
11	6	268.46973	241.62276
11	7	269.60586	242.64528
11	8	270.34662	243.31196
11	9	270.83688	243.75319
11	10	271.16814	244.05132
11	11	271.39711	244.2574
12	2	268.65327	241.78794
12	3	275.32982	247.79684
12	4	281.09178	252.9826
12	5	285.93916	257.34524
12	6	289.87194	260.88475
12	7	292.81748	263.53573
12	8	293.90669	264.51602
12	9	294.63582	265.17223
12	10	295.13126	265.61813
12	11	295.47444	265.927
12	12	295.7171	266.14539

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL ====> FY : 350 [MPa]
 CONCRETE ====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 30 [cm] Bar diameter = 15 [mm]
 Height = 45 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr bar	Momen nominal [kNm]	Momen ultimate [kNm]
3	2	71.8367	64.6530
3	3	71.8304	64.6474
4	2	94.4254	84.9829
4	3	94.4433	84.9990
4	4	94.4465	85.0019
5	2	116.7425	105.0683
5	3	116.8942	105.2048
5	4	116.9635	105.2671
5	5	116.9962	105.2966
6	2	138.6770	124.8093
6	3	139.1056	125.1950
6	4	139.3264	125.3937
6	5	139.4443	125.4999
6	6	139.5098	125.5588
7	2	151.3797	136.2417
7	3	152.2449	137.0204
7	4	152.7275	137.4548
7	5	153.0011	137.7010
7	6	153.1609	137.8448
7	7	153.2575	137.9317
8	2	171.0053	153.9048
8	3	172.4658	155.2192
8	4	173.3376	156.0039
8	5	173.8565	156.4709
8	6	174.1704	156.7534
8	7	174.3654	156.9288
8	8	174.4899	157.0409
9	2	189.6312	170.6681
9	3	192.1897	172.9707
9	4	193.5849	174.2264
9	5	194.4546	175.0091
9	6	194.9980	175.4982
9	7	195.3429	175.8086
9	8	195.5670	176.0103
9	9	195.7162	176.1446
10	2	207.2622	186.5360
10	3	210.8131	189.7318

10	4	213.3943	192.0549
10	5	214.7299	193.2569
10	6	215.5921	194.0329
10	7	216.1518	194.5366
10	8	216.5207	194.8687
10	9	216.7689	195.0920
10	10	216.9396	195.2457
11	2	224.0598	201.6538
11	3	228.4076	205.5668
11	4	231.9933	208.7939
11	5	234.6150	211.1535
11	6	235.8958	212.3062
11	7	236.7472	213.0725
11	8	237.3174	213.5856
11	9	237.7048	213.9343
11	10	237.9730	214.1757
11	11	238.1623	214.3461
12	2	240.0239	216.0215
12	3	245.1687	220.6518
12	4	249.5514	224.5962
12	5	253.1719	227.8547
12	6	255.8486	230.2637
12	7	257.0790	231.3711
12	8	257.9175	232.1258
12	9	258.4938	232.6444
12	10	258.8954	233.0059
12	11	259.1801	233.2621
12	12	259.3855	233.4470
13	2	255.1545	229.6391
13	3	261.0964	234.9867
13	4	266.2761	239.6485
13	5	270.6936	243.6242
13	6	274.3489	246.9140
13	7	277.0927	249.3834
13	8	278.2765	250.4489
13	9	279.1009	251.1908
13	10	279.6801	251.7121
13	11	280.0926	252.0834
13	12	280.3910	252.3519
13	13	280.6103	252.5493

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL ==> FY : 350 [MPa]
 CONCRETE ==> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 30 [cm] Bar diameter = 15 [mm]
 Height = 50 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
4	2	106.7954	96.1159
4	3	106.8133	96.1320
4	4	106.8165	96.1349
5	2	132.2051	118.9846
5	3	132.3567	119.1211
5	4	132.4260	119.1834
5	5	132.4587	119.2128
6	2	157.2321	141.5089
6	3	157.6606	141.8946
6	4	157.8814	142.0933
6	5	157.9993	142.1994
6	6	158.0648	142.2584
7	2	173.0272	155.7245
7	3	173.8925	156.5032
7	4	174.3751	156.9375
7	5	174.6486	157.1837
7	6	174.8084	157.3276
7	7	174.9050	157.4145
8	2	195.7454	176.1708
8	3	197.2058	177.4852
8	4	198.0777	178.2699
8	5	198.5966	178.7369
8	6	198.9105	179.0194
8	7	199.1054	179.1949
8	8	199.2300	179.3070
9	2	217.4638	195.7174
9	3	220.0222	198.0200
9	4	221.4174	199.2757
9	5	222.2871	200.0584
9	6	222.8305	200.5475
9	7	223.1755	200.8579
9	8	223.3995	201.0596
9	9	223.5488	201.1939
10	2	238.1873	214.3685
10	3	241.7381	217.5643
10	4	244.3194	219.8874
10	5	245.6549	221.0894
10	6	246.5172	221.8655
10	7	247.0769	222.3692

10	8	247.4458	222.7012
10	9	247.6940	222.9246
10	10	247.8647	223.0782
11	2	258.0773	232.2696
11	3	262.4251	236.1826
11	4	266.0108	239.4098
11	5	268.6325	241.7693
11	6	269.9134	242.9220
11	7	270.7648	243.6883
11	8	271.3349	244.2014
11	9	271.7224	244.5501
11	10	271.9905	244.7915
11	11	272.1799	244.9619
12	2	277.1339	249.4205
12	3	282.2788	254.0509
12	4	286.6614	257.9953
12	5	290.2820	261.2538
12	6	292.9586	263.6628
12	7	294.1890	264.7701
12	8	295.0276	265.5248
12	9	295.6039	266.0435
12	10	296.0055	266.4050
12	11	296.2902	266.6612
12	12	296.4956	266.8461
13	2	295.3571	265.8214
13	3	301.2989	271.1691
13	4	306.4786	275.8308
13	5	310.8961	279.8065
13	6	314.5515	283.0964
13	7	317.2953	285.5657
13	8	318.4791	286.6312
13	9	319.3035	287.3731
13	10	319.8827	287.8944
13	11	320.2952	288.2657
13	12	320.5936	288.5342
13	13	320.8129	288.7316
14	2	312.7469	281.4722
14	3	319.4857	287.5371
14	4	325.4624	292.9161
14	5	330.6769	297.6092
14	6	335.1293	301.6163
14	7	338.8195	304.9375
14	8	341.6407	307.4766
14	9	342.7814	308.5032
14	10	343.5908	309.2317
14	11	344.1706	309.7536
14	12	344.5913	310.1322
14	13	344.9009	310.4108
14	14	345.1321	310.6189

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL =====> FY : 350 [MPa]
 CONCRETE =====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 30 [cm] Bar diameter = 15 [mm]
 Height = 55 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
4	2	119.16543	107.24889
4	3	119.18334	107.26501
4	4	119.18654	107.26788
5	2	147.66759	132.90083
5	3	147.81927	133.03734
5	4	147.8885	133.09965
5	5	147.92123	133.1291
6	2	175.78711	158.2084
6	3	176.21564	158.59408
6	4	176.43644	158.79279
6	5	176.55437	158.89893
6	6	176.61987	158.95788
7	2	194.67475	175.20728
7	3	195.53998	175.98599
7	4	196.02258	176.42033
7	5	196.29614	176.66652
7	6	196.45597	176.81038
7	7	196.55256	176.89731
8	2	220.48542	198.43687
8	3	221.94585	199.75127
8	4	222.81769	200.53592
8	5	223.3366	201.00294
8	6	223.65051	201.28546
8	7	223.84544	201.4609
8	8	223.97002	201.57302
9	2	245.29633	220.7667
9	3	247.85476	223.06928
9	4	249.24994	224.32495
9	5	250.11966	225.10769
9	6	250.66305	225.59675
9	7	251.00802	225.90722
9	8	251.23209	226.10888
9	9	251.38131	226.24318
10	2	269.11231	242.20108
10	3	272.66316	245.39684
10	4	275.24442	247.71998
10	5	276.57996	248.92197
10	6	277.44222	249.69799
10	7	278.00191	250.20172
10	8	278.37083	250.53375
10	9	278.61904	250.75713

10	10	278.78974	250.91076
11	2	292.09486	262.88537
11	3	296.4427	266.79843
11	4	300.02839	270.02555
11	5	302.6501	272.38509
11	6	303.93091	273.53782
11	7	304.78236	274.30412
11	8	305.35249	274.81724
11	9	305.73991	275.16592
11	10	306.00809	275.40728
11	11	306.1974	275.57766
12	2	314.24398	282.81959
12	3	319.38882	287.44994
12	4	323.7715	291.39435
12	5	327.39203	294.65282
12	6	330.06868	297.06181
12	7	331.29909	298.16918
12	8	332.13763	298.92387
12	9	332.71391	299.44252
12	10	333.11556	299.804
12	11	333.40026	300.06023
12	12	333.60567	300.2451
13	2	335.55968	302.00371
13	3	341.50151	307.35136
13	4	346.68119	312.01307
13	5	351.09871	315.98884
13	6	354.75407	319.27867
13	7	357.49782	321.74804
13	8	358.68166	322.81349
13	9	359.50603	323.55543
13	10	360.08528	324.07675
13	11	360.49777	324.44799
13	12	360.79612	324.7165
13	13	361.01542	324.91388
14	2	356.04194	320.43775
14	3	362.78077	326.5027
14	4	368.75744	331.8817
14	5	373.97196	336.57477
14	6	378.42432	340.58189
14	7	382.11453	343.90308
14	8	384.93574	346.44217
14	9	386.07643	347.46879
14	10	386.8859	348.19731
14	11	387.46571	348.71914
14	12	387.88635	349.09772
14	13	388.19595	349.37635
14	14	388.42721	349.58449
15	2	375.69078	338.1217
15	3	383.22661	344.90395
15	4	390.00027	351.00025
15	5	396.01179	356.41061
15	6	401.26114	361.13503
15	7	405.74834	365.17351
15	8	409.47339	368.52605

15	9	412.38107	371.14296
15	10	413.48165	372.13348
15	11	414.27585	372.84826
15	12	414.85441	373.36897
15	13	415.28103	373.75293
15	14	415.59986	374.03987
15	15	415.84141	374.25727
16	2	394.50619	355.05557
16	3	402.83901	362.55511
16	4	410.40967	369.36871
16	5	417.21818	375.49636
16	6	423.26454	380.93808
16	7	428.54873	385.69386
16	8	433.07077	389.7637
16	9	436.83066	393.14759
16	10	439.82839	395.84555
16	11	440.8959	396.80631
16	12	441.67472	397.50725
16	13	442.25064	398.02557
16	14	442.68147	398.41332
16	15	443.00784	398.70705
16	16	443.25823	398.93241

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL ==> FY : 350 [MPa]
 CONCRETE ==> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 30 [cm] Bar diameter = 15 [mm]
 Height = 60 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr bar	Momen nominal [kNm]	Momen ultimate [kNm]
4	2	131.5355	118.3819
4	3	131.5534	118.3980
4	4	131.5566	118.4009
5	2	163.1301	146.8171
5	3	163.2818	146.9536
5	4	163.3510	147.0159
5	5	163.3838	147.0454
6	2	194.3421	174.9079
6	3	194.7707	175.2936
6	4	194.9915	175.4923
6	5	195.1094	175.5985
6	6	195.1749	175.6574
7	2	216.3223	194.6901
7	3	217.1875	195.4688
7	4	217.6701	195.9031
7	5	217.9437	196.1493
7	6	218.1035	196.2932
7	7	218.2001	196.3801
8	2	245.2255	220.7029
8	3	246.6859	222.0173
8	4	247.5577	222.8020
8	5	248.0766	223.2690
8	6	248.3906	223.5515
8	7	248.5855	223.7269
8	8	248.7101	223.8391
9	2	273.1289	245.8160
9	3	275.6873	248.1186
9	4	277.0825	249.3742
9	5	277.9522	250.1570
9	6	278.4956	250.6460
9	7	278.8406	250.9565
9	8	279.0646	251.1582
9	9	279.2139	251.2925
10	2	300.0374	270.0336
10	3	303.5882	273.2294
10	4	306.1695	275.5525
10	5	307.5050	276.7545

10	6	308.3673	277.5305
10	7	308.9270	278.0343
10	8	309.2959	278.3663
10	9	309.5441	278.5897
10	10	309.7148	278.7433
11	2	326.1124	293.5012
11	3	330.4603	297.4142
11	4	334.0460	300.6414
11	5	336.6677	303.0009
11	6	337.9485	304.1536
11	7	338.7999	304.9199
11	8	339.3700	305.4330
11	9	339.7575	305.7817
11	10	340.0256	306.0231
11	11	340.2150	306.1935
12	2	351.3541	316.2186
12	3	356.4989	320.8490
12	4	360.8816	324.7934
12	5	364.5021	328.0519
12	6	367.1787	330.4609
12	7	368.4092	331.5682
12	8	369.2477	332.3229
12	9	369.8240	332.8416
12	10	370.2256	333.2031
12	11	370.5103	333.4593
12	12	370.7157	333.6442
13	2	375.7623	338.1860
13	3	381.7041	343.5337
13	4	386.8838	348.1954
13	5	391.3013	352.1712
13	6	394.9566	355.4610
13	7	397.7004	357.9304
13	8	398.8842	358.9958
13	9	399.7086	359.7377
13	10	400.2879	360.2591
13	11	400.7003	360.6303
13	12	400.9987	360.8988
13	13	401.2180	361.0962
14	2	399.3370	359.4033
14	3	406.0759	365.4683
14	4	412.0525	370.8473
14	5	417.2670	375.5403
14	6	421.7194	379.5475
14	7	425.4096	382.8686
14	8	428.2308	385.4077
14	9	429.3715	386.4344
14	10	430.1810	387.1629
14	11	430.7608	387.6847
14	12	431.1814	388.0633
14	13	431.4910	388.3419
14	14	431.7223	388.5501

15	2	422.0784	379.8705
15	3	429.6142	386.6528
15	4	436.3879	392.7491
15	5	442.3994	398.1594
15	6	447.6487	402.8839
15	7	452.1359	406.9223
15	8	455.8610	410.2749
15	9	458.7687	412.8918
15	10	459.8692	413.8823
15	11	460.6634	414.5971
15	12	461.2420	415.1178
15	13	461.6686	415.5018
15	14	461.9874	415.7887
15	15	462.2290	416.0061
16	2	443.9863	399.5877
16	3	452.3191	407.0872
16	4	459.8898	413.9008
16	5	466.6983	420.0284
16	6	472.7446	425.4702
16	7	478.0288	430.2259
16	8	482.5509	434.2958
16	9	486.3107	437.6797
16	10	489.3085	440.3776
16	11	490.3760	441.3384
16	12	491.1548	442.0393
16	13	491.7307	442.5577
16	14	492.1616	442.9454
16	15	492.4879	443.2391
16	16	492.7383	443.4645
17	2	465.0608	418.5547
17	3	474.1906	426.7715
17	4	482.5582	434.3024
17	5	490.1637	441.1474
17	6	497.0071	447.3064
17	7	503.0883	452.7795
17	8	508.4073	457.5666
17	9	512.9642	461.6678
17	10	516.7589	465.0830
17	11	519.7915	467.8124
17	12	520.8906	468.8016
17	13	521.6541	469.4887
17	14	522.2263	470.0037
17	15	522.6599	470.3939
17	16	522.9924	470.6932
17	17	523.2504	470.9253

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL =====> FY : 350 [MPa]
 CONCRETE =====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 30 [cm] Bar diameter = 15 [mm]
 Height = 65 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr bar	Momen nominal [kNm]	Momen ultimate [kNm]
5	2	178.59264	160.73337
5	3	178.74432	160.86989
5	4	178.81355	160.9322
5	5	178.84628	160.96165
6	2	212.89717	191.60745
6	3	213.3257	191.99313
6	4	213.5465	192.19185
6	5	213.66443	192.29799
6	6	213.72993	192.35694
7	2	237.96983	214.17284
7	3	238.83506	214.95155
7	4	239.31766	215.38589
7	5	239.59121	215.63209
7	6	239.75105	215.77594
7	7	239.84764	215.86287
8	2	269.9655	242.96895
8	3	271.42594	244.28334
8	4	272.29778	245.068
8	5	272.81668	245.53501
8	6	273.1306	245.81754
8	7	273.32553	245.99297
8	8	273.4501	246.10509
9	2	300.96143	270.86528
9	3	303.51985	273.16787
9	4	304.91504	274.42353
9	5	305.78476	275.20628
9	6	306.32815	275.69533
9	7	306.67311	276.0058
9	8	306.89718	276.20746
9	9	307.0464	276.34176
10	2	330.96242	297.86617
10	3	334.51326	301.06193
10	4	337.09453	303.38508
10	5	338.43007	304.58706
10	6	339.29232	305.36309
10	7	339.85201	305.86681
10	8	340.22094	306.19884
10	9	340.46914	306.42223
10	10	340.63984	306.57586
11	2	360.12998	324.11698
11	3	364.47782	328.03004

11	4	368.0635	331.25715
11	5	370.68522	333.6167
11	6	371.96603	334.76943
11	7	372.81747	335.53572
11	8	373.3876	336.04884
11	9	373.77502	336.39752
11	10	374.0432	336.63888
11	11	374.23252	336.80927
12	2	388.46411	349.6177
12	3	393.60895	354.24805
12	4	397.99163	358.19247
12	5	401.61215	361.45094
12	6	404.2888	363.85992
12	7	405.51921	364.96729
12	8	406.35776	365.72198
12	9	406.93404	366.24064
12	10	407.33568	366.60212
12	11	407.62038	366.85834
12	12	407.8258	367.04322
13	2	415.96482	374.36833
13	3	421.90665	379.71598
13	4	427.08632	384.37769
13	5	431.50385	388.35346
13	6	435.15921	391.64329
13	7	437.90295	394.11266
13	8	439.08679	395.17812
13	9	439.91117	395.92005
13	10	440.49042	396.44137
13	11	440.90291	396.81262
13	12	441.20125	397.08113
13	13	441.42056	397.2785
14	2	442.63209	398.36888
14	3	449.37092	404.43383
14	4	455.34759	409.81283
14	5	460.56211	414.5059
14	6	465.01447	418.51302
14	7	468.70468	421.83421
14	8	471.52589	424.3733
14	9	472.66658	425.39992
14	10	473.47605	426.12844
14	11	474.05586	426.65027
14	12	474.4765	427.02885
14	13	474.78609	427.30749
14	14	475.01736	427.51562
15	2	468.46594	421.61935
15	3	476.00176	428.40159
15	4	482.77543	434.49789
15	5	488.78694	439.90825
15	6	494.0363	444.63267
15	7	498.5235	448.67115
15	8	502.24855	452.02369
15	9	505.15623	454.64061
15	10	506.25681	455.63112
15	11	507.05101	456.34591

15	12	507.62957	456.86661
15	13	508.05619	457.25057
15	14	508.37501	457.53751
15	15	508.61657	457.75491
16	2	493.46636	444.11973
16	3	501.79918	451.61926
16	4	509.36984	458.43286
16	5	516.17835	464.56052
16	6	522.2247	470.00223
16	7	527.5089	474.75801
16	8	532.03094	478.82785
16	9	535.79083	482.21175
16	10	538.78856	484.9097
16	11	539.85607	485.87046
16	12	540.63489	486.5714
16	13	541.21081	487.08973
16	14	541.64164	487.47748
16	15	541.968	487.7712
16	16	542.2184	487.99656
17	2	517.63335	465.87002
17	3	526.76317	474.08685
17	4	535.13083	481.61774
17	5	542.73633	488.4627
17	6	549.57968	494.62171
17	7	555.66087	500.09478
17	8	560.97991	504.88192
17	9	565.53679	508.98311
17	10	569.33152	512.39836
17	11	572.36409	515.12768
17	12	573.4632	516.11688
17	13	574.2267	516.80403
17	14	574.79892	517.31903
17	15	575.23253	517.70927
17	16	575.565	518.0085
17	17	575.82296	518.24066
18	2	540.96692	486.87023
18	3	550.89373	495.80435
18	4	560.05838	504.05254
18	5	568.46088	511.61479
18	6	576.10122	518.4911
18	7	582.97941	524.68147
18	8	589.09544	530.1859
18	9	594.44932	535.00439
18	10	599.04104	539.13694
18	11	602.87061	542.58355
18	12	605.93802	545.34422
18	13	607.07725	546.36953
18	14	607.82561	547.04305
18	15	608.39331	547.55398
18	16	608.82852	547.94566
18	17	609.16587	548.24928
18	18	609.4303	548.48727
19	2	563.46705	507.12035
19	3	574.19086	516.77177

19	4	584.15251	525.73726
19	5	593.352	534.0168
19	6	601.78934	541.61041
19	7	609.46453	548.51807
19	8	616.37755	554.7398
19	9	622.52843	560.27558
19	10	627.91714	565.12543
19	11	632.54371	569.28933
19	12	636.40811	572.7673
19	13	639.51036	575.55933
19	14	640.6974	576.62766
19	15	641.43089	577.2878
19	16	641.99346	577.79411
19	17	642.42929	578.18636
19	18	642.77049	578.49344
19	19	643.04042	578.73637

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL ==> FY : 350 [MPa]
 CONCRETE ==> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 30 [cm] Bar diameter = 15 [mm]
 Height = 70 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr bar	Momen nominal [kNm]	Momen ultimate [kNm]
5	2	194.05516	174.64965
5	3	194.20684	174.78616
5	4	194.27608	174.84847
5	5	194.30881	174.87793
6	2	231.4522	208.30698
6	3	231.88073	208.69266
6	4	232.10153	208.89138
6	5	232.21947	208.99752
6	6	232.28496	209.05647
7	2	259.61736	233.65563
7	3	260.4826	234.43434
7	4	260.9652	234.86868
7	5	261.23875	235.11487
7	6	261.39858	235.25873
7	7	261.49517	235.34566
8	2	294.70554	265.23499
8	3	296.16598	266.54938
8	4	297.03782	267.33404
8	5	297.55672	267.80105
8	6	297.87064	268.08357
8	7	298.06557	268.25901
8	8	298.19014	268.37113
9	2	328.79397	295.91458
9	3	331.3524	298.21716
9	4	332.74758	299.47282
9	5	333.6173	300.25557
9	6	334.1607	300.74463
9	7	334.50566	301.05509
9	8	334.72973	301.25676
9	9	334.87895	301.39106
10	2	361.88747	325.69872
10	3	365.43831	328.89448
10	4	368.01958	331.21762
10	5	369.35512	332.41961
10	6	370.21737	333.19564
10	7	370.77707	333.69936
10	8	371.14599	334.03139

10	9	371.3942	334.25478
10	10	371.5649	334.40841
11	2	394.14753	354.73278
11	3	398.49538	358.64584
11	4	402.08106	361.87296
11	5	404.70278	364.2325
11	6	405.98359	365.38523
11	7	406.83503	366.15153
11	8	407.40516	366.66464
11	9	407.79258	367.01332
11	10	408.06076	367.25468
11	11	408.25008	367.42507
12	2	425.57417	383.01676
12	3	430.71901	387.64711
12	4	435.10169	391.59152
12	5	438.72222	394.85
12	6	441.39887	397.25898
12	7	442.62928	398.36635
12	8	443.46782	399.12104
12	9	444.0441	399.63969
12	10	444.44575	400.00117
12	11	444.73045	400.2574
12	12	444.93586	400.44227
13	2	456.16738	410.55065
13	3	462.10922	415.89829
13	4	467.28889	420.56
13	5	471.70641	424.53577
13	6	475.36178	427.8256
13	7	478.10552	430.29497
13	8	479.28936	431.36043
13	9	480.11374	432.10236
13	10	480.69298	432.62369
13	11	481.10548	432.99493
13	12	481.40382	433.26344
13	13	481.62312	433.46081
14	2	485.92717	437.33445
14	3	492.66599	443.39939
14	4	498.64267	448.7784
14	5	503.85718	453.47146
14	6	508.30954	457.47859
14	7	511.99975	460.79978
14	8	514.82097	463.33887
14	9	515.96165	464.36548
14	10	516.77112	465.09401
14	11	517.35093	465.61584
14	12	517.77158	465.99442
14	13	518.08117	466.27305
14	14	518.31243	466.48119
15	2	514.85352	463.36817
15	3	522.38934	470.15041
15	4	529.16301	476.24671

15	5	535.17452	481.65707
15	6	540.42388	486.38149
15	7	544.91108	490.41997
15	8	548.63613	493.77252
15	9	551.54381	496.38943
15	10	552.64438	497.37995
15	11	553.43859	498.09473
15	12	554.01715	498.61543
15	13	554.44377	498.99939
15	14	554.76259	499.28633
15	15	555.00415	499.50374
16	2	542.94645	488.6518
16	3	551.27926	496.15134
16	4	558.84993	502.96493
16	5	565.65844	509.09259
16	6	571.70479	514.53431
16	7	576.98898	519.29009
16	8	581.51103	523.35992
16	9	585.27091	526.74382
16	10	588.26864	529.44178
16	11	589.33615	530.40254
16	12	590.11497	531.10347
16	13	590.69089	531.6218
16	14	591.12172	532.00955
16	15	591.44809	532.30328
16	16	591.69848	532.52864
17	2	570.20594	513.18535
17	3	579.33576	521.40218
17	4	587.70342	528.93307
17	5	595.30892	535.77803
17	6	602.15227	541.93704
17	7	608.23346	547.41011
17	8	613.5525	552.19725
17	9	618.10938	556.29844
17	10	621.90411	559.71369
17	11	624.93668	562.44301
17	12	626.03579	563.43221
17	13	626.79929	564.11936
17	14	627.37151	564.63436
17	15	627.80512	565.0246
17	16	628.13759	565.32383
17	17	628.39555	565.556
18	2	596.63201	536.96881
18	3	606.55882	545.90294
18	4	615.72348	554.15113
18	5	624.12598	561.71338
18	6	631.76632	568.58969
18	7	638.64451	574.78006
18	8	644.76054	580.28449
18	9	650.11442	585.10297
18	10	654.70614	589.23552

18	11	658.5357	592.68213
18	12	661.60312	595.4428
18	13	662.74235	596.46811
18	14	663.49071	597.14164
18	15	664.05841	597.65257
18	16	664.49361	598.04425
18	17	664.83097	598.34787
18	18	665.09539	598.58585
19	2	622.22465	560.00219
19	3	632.94846	569.65361
19	4	642.91011	578.6191
19	5	652.1096	586.89864
19	6	660.54694	594.49225
19	7	668.22213	601.39991
19	8	675.13515	607.62164
19	9	681.28603	613.15742
19	10	686.67474	618.00727
19	11	691.30131	622.17117
19	12	695.16571	625.64914
19	13	698.26796	628.44117
19	14	699.455	629.5095
19	15	700.18849	630.16964
19	16	700.75106	630.67595
19	17	701.18689	631.0682
19	18	701.52809	631.37528
19	19	701.79802	631.61821
20	2	646.98387	582.28548
20	3	658.50467	592.6542
20	4	669.26331	602.33698
20	5	679.2598	611.33382
20	6	688.49414	619.64472
20	7	696.96632	627.26968
20	8	704.67634	634.20871
20	9	711.62421	640.46179
20	10	717.80992	646.02893
20	11	723.23348	650.91013
20	12	727.89488	655.10539
20	13	731.79413	658.61471
20	14	734.93122	661.4381
20	15	736.17309	662.55578
20	16	736.89202	663.20282
20	17	737.44899	663.70409
20	18	737.88464	664.09618
20	19	738.22881	664.40592
20	20	738.50338	664.65304

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL =====> FY : 350 [MPa]
 CONCRETE =====> F'C : 18 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 30 [cm] Bar diameter = 15 [mm]
 Height = 80 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr bar	Momen nominal [kNm]	Momen ultimate [kNm]
6	2	268.56226	241.70604
6	3	268.9908	242.09172
6	4	269.21159	242.29043
6	5	269.32953	242.39658
6	6	269.39503	242.45552
7	2	302.91244	272.62119
7	3	303.77767	273.3999
7	4	304.26027	273.83424
7	5	304.53382	274.08044
7	6	304.69366	274.22429
7	7	304.79025	274.31122
8	2	344.18563	309.76706
8	3	345.64606	311.08146
8	4	346.5179	311.86611
8	5	347.03681	312.33313
8	6	347.35072	312.61565
8	7	347.54565	312.79109
8	8	347.67023	312.9032
9	2	384.45907	346.01316
9	3	387.0175	348.31575
9	4	388.41268	349.57141
9	5	389.2824	350.35416
9	6	389.82579	350.84321
9	7	390.17076	351.15368
9	8	390.39482	351.35534
9	9	390.54405	351.48964
10	2	423.73757	381.36382
10	3	427.28842	384.55958
10	4	429.86969	386.88272
10	5	431.20523	388.0847
10	6	432.06748	388.86073
10	7	432.62717	389.36445
10	8	432.9961	389.69649
10	9	433.2443	389.91987
10	10	433.415	390.0735
11	2	462.18265	415.96439
11	3	466.53049	419.87744
11	4	470.11618	423.10456
11	5	472.73789	425.4641
11	6	474.0187	426.61683
11	7	474.87015	427.38313

11	8	475.44028	427.89625
11	9	475.8277	428.24493
11	10	476.09588	428.48629
11	11	476.28519	428.65668
12	2	499.7943	449.81487
12	3	504.93914	454.44522
12	4	509.32182	458.38964
12	5	512.94234	461.64811
12	6	515.61899	464.05709
12	7	516.8494	465.16446
12	8	517.68795	465.91915
12	9	518.26423	466.43781
12	10	518.66587	466.79929
12	11	518.95057	467.05552
12	12	519.15599	467.24039
13	2	536.57252	482.91527
13	3	542.51435	488.26292
13	4	547.69403	492.92463
13	5	552.11155	496.9004
13	6	555.76692	500.19023
13	7	558.51066	502.65959
13	8	559.6945	503.72505
13	9	560.51887	504.46699
13	10	561.09812	504.98831
13	11	561.51061	505.35955
13	12	561.80896	505.62806
13	13	562.02826	505.82543
14	2	572.51731	515.26558
14	3	579.25614	521.33053
14	4	585.23281	526.70953
14	5	590.44733	531.4026
14	6	594.89969	535.40972
14	7	598.5899	538.73091
14	8	601.41111	541.27
14	9	602.5518	542.29662
14	10	603.36127	543.02514
14	11	603.94108	543.54697
14	12	604.36172	543.92555
14	13	604.67132	544.20418
14	14	604.90258	544.41232
15	2	607.62868	546.86581
15	3	615.1645	553.64805
15	4	621.93817	559.74435
15	5	627.94968	565.15471
15	6	633.19904	569.87913
15	7	637.68624	573.91762
15	8	641.41129	577.27016
15	9	644.31897	579.88707
15	10	645.41954	580.87759
15	11	646.21374	581.59237
15	12	646.7923	582.11307
15	13	647.21892	582.49703
15	14	647.53775	582.78398
15	15	647.77931	583.00138

16	2	641.90661	577.71595
16	3	650.23943	585.21549
16	4	657.8101	592.02909
16	5	664.6186	598.15674
16	6	670.66496	603.59846
16	7	675.94915	608.35424
16	8	680.4712	612.42408
16	9	684.23108	615.80797
16	10	687.22881	618.50593
16	11	688.29632	619.46669
16	12	689.07514	620.16763
16	13	689.65106	620.68595
16	14	690.08189	621.0737
16	15	690.40826	621.36743
16	16	690.65865	621.59279
17	2	675.35112	607.81601
17	3	684.48094	616.03284
17	4	692.8486	623.56374
17	5	700.4541	630.40869
17	6	707.29745	636.5677
17	7	713.37864	642.04078
17	8	718.69768	646.82791
17	9	723.25456	650.9291
17	10	727.04928	654.34436
17	11	730.08186	657.07367
17	12	731.18097	658.06287
17	13	731.94447	658.75002
17	14	732.51669	659.26502
17	15	732.9503	659.65527
17	16	733.28276	659.95449
17	17	733.54073	660.18666
18	2	707.9622	637.16598
18	3	717.88901	646.10011
18	4	727.05367	654.3483
18	5	735.45616	661.91055
18	6	743.09651	668.78686
18	7	749.9747	674.97723
18	8	756.09073	680.48166
18	9	761.44461	685.30015
18	10	766.03633	689.4327
18	11	769.86589	692.8793
18	12	772.93331	695.63997
18	13	774.07253	696.66528
18	14	774.8209	697.33881
18	15	775.3886	697.84974
18	16	775.8238	698.24142
18	17	776.16116	698.54504
19	2	739.73985	665.76587
19	3	750.46366	675.41729
19	4	760.42531	684.38278
19	5	769.6248	692.66232
19	6	778.06214	700.25593
19	7	785.73733	707.16359
19	8	792.65035	713.38532

19	9	798.80123	718.9211
19	10	804.18994	723.77095
19	11	808.81651	727.93486
19	12	812.68091	731.41282
19	13	815.78316	734.20485
19	14	816.9702	735.27318
19	15	817.70369	735.93332
19	16	818.26626	736.43963
19	17	818.70209	736.83188
19	18	819.04329	737.13896
19	19	819.31322	737.38189
20	2	770.68408	693.61567
20	3	782.20488	703.98439
20	4	792.96352	713.66717
20	5	802.96001	722.66401
20	6	812.19435	730.97491
20	7	820.66653	738.59987
20	8	828.37655	745.5389
20	9	835.32442	751.79198
20	10	841.51013	757.35912
20	11	846.93369	762.24032
20	12	851.59509	766.43558
20	13	855.49434	769.9449
20	14	858.63143	772.76829
20	15	859.8733	773.88597
20	16	860.59223	774.53301
20	17	861.1492	775.03428
20	18	861.58485	775.42637
20	19	861.92902	775.73611
20	20	862.20359	775.98323
21	2	800.79487	720.71539
21	3	813.11267	731.8014
21	4	824.66831	742.20148
21	5	835.46179	751.91562
21	6	845.49312	760.94381
21	7	854.7623	769.28607
21	8	863.26932	776.94239
21	9	871.01418	783.91276
21	10	877.99689	790.1972
21	11	884.21744	795.7957
21	12	889.67584	800.70826
21	13	894.37208	804.93487
21	14	898.30617	808.47555
21	15	901.4781	811.33029
21	16	902.78124	812.50312
21	17	903.48597	813.13737
21	18	904.03699	813.63329
21	19	904.47181	814.02463
21	20	904.81817	814.33636
21	21	905.09665	814.58699
22	2	830.07224	747.06502
22	3	843.18703	758.86833
22	4	855.53967	769.9857
22	5	867.13015	780.41713

22	6	877.95847	790.16263
22	7	888.02464	799.22218
22	8	897.32866	807.59579
22	9	905.87052	815.28347
22	10	913.65022	822.2852
22	11	920.66777	828.60099
22	12	926.92316	834.23085
22	13	932.4164	839.17476
22	14	937.14748	843.43273
22	15	941.11641	847.00477
22	16	944.32318	849.89086
22	17	945.69353	851.12418
22	18	946.38443	851.74599
22	19	946.92926	852.23633
22	20	947.36269	852.62642
22	21	947.7106	852.93954
22	22	947.99234	853.1931
23	2	858.51618	772.66456
23	3	872.42797	785.18517
23	4	885.5776	797.01984
23	5	897.96507	808.16857
23	6	909.59039	818.63135
23	7	920.45356	828.4082
23	8	930.55457	837.49911
23	9	939.89342	845.90408
23	10	948.47012	853.62311
23	11	956.28467	860.6562
23	12	963.33706	867.00335
23	13	969.62729	872.66456
23	14	975.15537	877.63983
23	15	979.92129	881.92916
23	16	983.92506	885.53255
23	17	987.16667	888.45
23	18	988.60974	889.74876
23	19	989.2872	890.35848
23	20	989.82565	890.84309
23	21	990.25725	891.23152
23	22	990.60614	891.54553
23	23	990.89056	891.8015

**** DESIGN MOMEN CAPACITY OF BEAM ****

STEEL =====> FY : 400 [MPa]
 CONCRETE =====> F'C : 15 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 13 [cm]
 Height = 50 [cm]

Bar diameter = 13 [mm]
 Stirrups dia. = 8 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
2	2	45.93588	41.34229
two layers [every layer maks. : 2 bars]			
3	2	64.94966	58.45470
3	3	65.13887	58.62498
4	2	85.39465	76.85518
4	3	86.08715	77.47843
4	4	86.35410	77.71869
5	2	104.83892	94.35503
5	3	106.51722	95.86550
5	4	107.24183	96.51765
5	5	107.56356	96.80720
6	2	122.00281	109.80253
6	3	126.06947	113.46252
6	4	127.67626	114.90864
6	5	128.41421	115.57279
6	6	128.77487	115.89738
7	2	137.40739	123.66666
7	3	143.17915	128.86124
7	4	147.29835	132.56851
7	5	148.86213	133.97592
7	6	149.60258	134.64232
7	7	149.99106	134.99196

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL ==> FY : 400 [MPa]
 CONCRETE ==> F'C : 15 [MPa]

BEAM DATA : REINFORCEMENT DATA :

Width = 13 [cm] Bar diameter = 13 [mm]
 Height = 30 [cm] Stirrups dia. = 8 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
2	2	24.7451	22.2706
two layers [every layer maks. : 2 bars]			
3	2	33.1570	29.8413
3	3	33.3330	29.9997
4	2	43.0250	38.7225
4	3	43.6766	39.3089
4	4	43.9307	39.5376

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL ==> FY : 400 [MPa]
CONCRETE ==> F'C : 15 [MPa]

BEAM DATA : REINFORCEMENT DATA :

Width = 13 [cm Bar diameter = 13 [mm
Height = 40 [cm Stirrups dia. = 8 [mm

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
2	2	52.44219	47.19797
3	2	72.28655	65.05789
3	3	72.83793	65.55414
4	2	93.99446	84.59502
4	3	95.90146	86.31131
4	4	96.55417	86.89875

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL =====> FY : 400 [MPa]
 CONCRETE =====> F'C : 15 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 20 [cm] Bar diameter = 13 [mm]
 Height = 40 [cm] Stirrups dia. = 8 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
2	2	36.00400	32.40360
3	2	52.97753	47.67978
3	3	53.02798	47.72518
4	2	69.60655	62.64590
4	3	69.87547	62.88792
4	4	69.99021	62.99119
two layers [every layer maks. : 4 bars]			
5	2	80.59010	72.531090
5	3	81.31353	73.182180
5	4	81.65835	73.492510
5	5	81.82888	73.645990
6	2	94.91568	85.424110
6	3	96.35648	86.720830
6	4	97.11718	87.405470
6	5	97.51682	87.765130
6	6	97.73353	87.960170
7	2	108.13024	97.317220
7	3	110.76336	99.687020
7	4	112.15736	100.941630
7	5	112.93948	101.645530
7	6	113.37944	102.041500
7	7	113.63399	102.270590

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL ====> FY : 400 [MPa]
 CONCRETE ====> F'C : 15 [MPa]

BEAM DATA :

Width = 20 [cm]
 Height = 50 [cm]

REINFORCEMENT DATA :

Bar diameter = 13 [mm]
 Stirrups dia. = 8 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
3	2	68.9839	62.0855
3	3	69.0269	62.1242
4	2	90.9525	81.8572
4	3	91.1975	82.0777
4	4	91.3026	82.1723
two layers [every layer maks. : 2 bars]			
5	2	107.3006	96.5705
5	3	107.9709	97.1738
5	4	108.2925	97.4633
5	5	108.4528	97.6075
6	2	127.0233	114.3210
6	3	128.3693	115.5324
6	4	129.0833	116.1749
6	5	129.4611	116.5150
6	6	129.6676	116.7008
7	2	145.7762	131.1985
7	3	148.1592	133.3433
7	4	149.4719	134.5247
7	5	150.2127	135.1915
7	6	150.6326	135.5693
7	7	150.8772	135.7895
8	2	163.0557	146.7501
8	3	166.9967	150.2971
8	4	169.3227	152.3904
8	5	170.6013	153.5412
8	6	171.3582	154.2224
8	7	171.8097	154.6288
8	8	172.0859	154.8774
9	2	179.2298	161.3068
9	3	184.2411	165.8169
9	4	188.2162	169.3946
9	5	190.5078	171.4570
9	6	191.7525	172.5772
9	7	192.5181	173.2663
9	8	192.9937	173.6944
9	9	193.2960	173.9664
10	2	194.2985	174.8686
10	3	200.3799	180.3419
10	4	205.4253	184.8828
10	5	209.4346	188.4911
10	6	211.7103	190.5392
10	7	212.9217	191.6295
10	8	213.6910	192.3219
10	9	214.1849	192.7664
10	10	214.5088	193.0579

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL ====> FY : 400 [MPa]
 CONCRETE ====> F'C : 15 [MPa]

BEAM DATA : REINFORCEMENT DATA :

Width = 20 [cm] Bar diameter = 13 [mm]
 Height = 60 [cm] Stirrups dia. = 8 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
3	2	84.912	76.421
3	3	84.955	76.459
4	2	112.190	100.971
4	3	112.435	101.191
4	4	112.540	101.286
two layers [every layer maks. : 2 bars]			
5	2	133.847	120.462
5	3	134.517	121.066
5	4	134.839	121.355
5	5	134.999	121.499
6	2	158.879	142.991
6	3	160.225	144.203
6	4	160.939	144.845
6	5	161.317	145.185
6	6	161.523	145.371
7	2	182.941	164.647
7	3	185.324	166.792
7	4	186.637	167.973
7	5	187.378	168.640
7	6	187.798	169.018
7	7	188.042	169.238
8	2	205.530	184.977
8	3	209.471	188.524
8	4	211.797	190.617
8	5	213.076	191.768
8	6	213.833	192.449
8	7	214.284	192.856
8	8	214.560	193.104
9	2	227.013	204.312
9	3	232.025	208.822
9	4	236.000	212.400
9	5	238.291	214.462
9	6	239.536	215.582
9	7	240.302	216.272
9	8	240.777	216.700
9	9	241.07965	216.97168

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL ====> FY : 400 [MPa]
 CONCRETE ====> F'C : 21 [MPa]

BEAM DATA : REINFORCEMENT DATA :

Width = 30 [cm] Bar diameter = 16 [mm]
 Height = 50 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
3	2	104.83	94.35
3	3	104.82	94.34
4	2	138.02	124.22
4	3	138.09	124.28
4	4	138.12	124.31
5	2	170.73	153.65
5	3	171.06	153.96
5	4	171.23	154.11
5	5	171.32	154.19
6	2	202.78	182.50
6	3	203.60	183.24
6	4	204.06	183.66
6	5	204.32	183.89
6	6	204.47	184.03
7	2	222.38	200.14
7	3	223.91	201.52
7	4	224.84	202.35
7	5	225.39	202.85

7	6	225.73	203.15
7	7	225.94	203.34
8	2	251.05	225.94
8	3	253.50	228.15
8	4	255.08	229.57
8	5	256.07	230.47
8	6	256.70	231.03
8	7	257.11	231.40
8	8	257.37	231.64

****** DESIGN MOMEN CAPACITY OF BEAM ******

STEEL ==> FY : 400 [MPa]
 CONCRETE ==> F'C : 21 [MPa]

BEAM DATA :

REINFORCEMENT DATA :

Width = 35 [cm]
 Height = 60 [cm]

Bar diameter = 16 [mm]
 Stirrups dia. = 10 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
4	2	171.11	154.00
4	3	171.13	154.01
4	4	171.13	154.02
5	2	212.13	190.92
5	3	212.30	191.07
5	4	212.39	191.15
5	5	212.43	191.19
6	2	252.63	227.37
6	3	253.13	227.82
6	4	253.41	228.07
6	5	253.57	228.21
6	6	253.66	228.29
7	2	292.48	263.23
7	3	293.49	264.14
7	4	294.10	264.69
7	5	294.47	265.03
7	6	294.70	265.23
7	7	294.85	265.37
8	2	318.26	286.44
8	3	319.96	287.97
8	4	321.06	288.95
8	5	321.75	289.58
8	6	322.20	289.98
8	7	322.50	290.25
8	8	322.69	290.42
9	2	354.88	319.39
9	3	357.42	321.67
9	4	359.14	323.23
9	5	360.30	324.27
9	6	361.07	324.96
9	7	361.58	325.42
9	8	361.93	325.74
9	9	362.17	325.96

**** DESIGN MOMEN CAPACITY OF BEAM ****

STEEL ====> FY : 400 [MPa]
 CONCRETE ====> F'C : 21 [MPa]

BEAM DATA : **REINFORCEMENT DATA :**

Width = 35 [cm] Bar diameter = 16 [mm]
 Height = 65 [cm] Stirrups dia. = 10 [mm]

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
4	2	187.20	168.48
4	3	187.21	168.49
4	4	187.21	168.49
5	2	232.24	209.02
5	3	232.41	209.17
5	4	232.49	209.24
5	5	232.53	209.28
6	2	276.76	249.08
6	3	277.26	249.53
6	4	277.53	249.78
6	5	277.69	249.92
6	6	277.79	250.01
7	2	320.63	288.57
7	3	321.64	289.48
7	4	322.25	290.03
7	5	322.62	290.36
7	6	322.85	290.57
7	7	323.00	290.70

8	2	350.43	315.39
8	3	352.13	316.92
8	4	353.23	317.90
8	5	353.92	318.53
8	6	354.37	318.94
8	7	354.67	319.20
8	8	354.86	319.38
9	2	391.07	351.96
9	3	393.61	354.25
9	4	395.33	355.80
9	5	396.49	356.84
9	6	397.26	357.53
9	7	397.77	357.99
9	8	398.12	358.31
9	9	398.37	358.53

**** DESIGN MOMEN CAPACITY OF BEAM

STEEL ====> FY : 390 [MPa]
 CONCRETE ====> F'C : 21 [MPa]

BEAM DATA :

Width = 30 cm
 Height = 100 cm

REINFORCEMENT DATA :

Bar diameter = 22 cm
 Stirrups dia = 10 cm

Tens. bar	Compr. bar	Momen nominal [kNm]	Momen ultimate [kNm]
3	2	400.37229	360.33506
3	3	400.44181	360.39763
4	2	529.44559	476.50103
4	3	530.0949	477.08541
4	4	530.37711	477.3394
two layers (every layer maks : 4 bars)			
5	2	639.15629	575.24066
5	3	641.13022	577.01719
5	4	642.09459	577.88513
5	5	642.58742	578.32868
6	2	760.48717	684.43845
6	3	764.65414	688.18873
6	4	766.88626	690.19764
6	5	768.09541	691.28587
6	6	768.77423	691.8968
7	2	878.86798	790.98118
7	3	886.07275	797.46548
7	4	890.27501	801.24751
7	5	892.68525	803.41672
7	6	894.08549	804.67694
7	7	894.92357	805.43121
8	2	992.15077	892.93569
8	3	1004.89352	904.40417
8	4	1011.79819	910.61837
8	5	1015.99879	914.39891
8	6	1018.53384	916.68045
8	7	1020.08444	918.076
8	8	1021.05763	918.95187
