1Introduction University College Location Supervisor Degree Email (Supervisor) Year/Semester Subject Department Duration 1 Background IN.1 Overview Tribhuvan University National College ofEngineering Talchikhel, Lalitpur Er. Satish Paudel Bachelor's Degree inCivil Engineering Insert lV/11 Project 11 (Practical) (C E755) Department ofCivil Engineering June 2018 — August 2018 Seismic forces occur during earthquakes and generate ground movement asseismic waves getto thebuilding. This motion induces vibrations in the structure, requiring it to respond to ground shaking, particularly in three perpendicular directions: vertical (Z)& two horizontal (X & Y) loads. The fact is that structures are worked outtosupport vertical loads such as gravity, but as for horizontal seismic loads assciciated with lateral motion, they pose much more danger. Vertical loads are normally well countered by construction; this is not the case with horizontal loads. Horizontal irregularities, which include building stock story irregularities such as soft and weak stories, affect the seismic performance with the building str›ck possibly collapsing. Considering subsidence irregularity for an earthquake resistant design means that properties including mass, stiffness and height must be addressed adequately, especially where the mass and stiffness distribution is asymmetrical. The assessment of seismic response forregular and irregular reinforced concrete (RC) buildings was undertaken. Comprehensive literature review was conducted to acquire knowledge on the evaluation of seismic behavior of these structures. Appropriate building pa eters, includinga G+7 structure with 3m floor height, were selected for the analysis. Response Spectrum Method(RSM),& Seismic Coefficient Method(SCM) techniques were employed toexamine the structural response. Detailed modeling was carried out in SAP2000V 19software, incorporating material properties, load combinations, and seismic factors as per relevant standards. Natural time periods, base shear forces, displacements, and inter-story drifts were evaluated for both regular and irregular building models. Evaluation of outcomes was done todetermine suitable 3 structure. 1 J.2 ffb,jectives The prime motto of project was to evaluate seismic behaviour of regular& irregular RC buildings. Minor aims were: • To improve seismic functioning between RC structures via seismic evaluation. • To boot theseismic design requirements forRC buildings via modelling inSAP 2000. IN.3 Nature ofWorks l guided theseismic response evaluation of regular and irregular RC buildings.l assisted in data gathering, understanding seismic design theory, and employing finite element mrxleling techniques.l supervised the modeling and analysis process using SAP2000 software.l performed modal analysis, RSM, andcompared theseismic behavior of the two buildingt ypes.l evaluated loads, calculated natural frequencies, and examined mode shapes& base shear.l modeled the structures, defined load combinations, and ran response spectrum analyses.l convened theteam often enough toreview the project's objectives and the next steps needed to address emergent concerns.l allowed all the members tointroduce the possible options foraddressing the problem during meetings. 1 1 J.4 Organizational Chart Tribhuvan University National College ofEngineering Department ofCivil Engineering Department Head Supervisor Bibek Khanal(071fBCE/456) (TeamLeader) Sisir Sigdel (071/BCE/455) Firoj Maharjan(071/BCE/460) Madan Pahari(071/BCE/470) Paban Rupakheti(07 l/BCE/456) FigureI: Administrative flow IN.5 Duties • To assess seismic behavior of regular& irregular RC structures through data collection, understanding theory, and finite element modeling. • To opt structural systems with appropriate materials and loads, including regular and irregular 8-story buildings for in-depth analysis. • To perform modal analysis, construct mass/stiffness matrices, and determine natural freq. & shapes forthestructures. • To perform thedead, live,& elevation loads of thetwo models ofbuildings. • To evaluate seismic weights, time periods, base shears, and force distributions using seismic coefficient and response spectrum methods. • To assess response spectra for different load cases and primary structural characteristics such asdeflections and loads. • To compare seismic performance of the building models for determining suitable structure. 1 IN PEAs IJ.1 l gathered data on the assessment of seismic behavior ofboth regular& irregular RC structures.l understood the need toanalyze the behavior of these structures for seismic loading condition.l gained the understanding of the sort of theory that was required, the parameters to set& the requirements that had to be met when conducting project.l learned basics of seismic design for RC buildings. To examine the structural response, l employed finite element modeling techniques forthe analysis.l understood all the specifics of employing theSAP2000 software for modeling and analysis. l collected information on the differences between different code provisions concerning the seismic design.l understood what load combinations were as well as how the y affected the structure. As for the dynamic analysis technique,l investigated into the RSM & SCM to evaluate the seismic response of buildings. l also had to compare the conventional and non-conventional RC structures to see how the evaluation process reflected the levels of seismic resistance.l studied various techniques forpeak response quantity evaluation. 1J.2 l opted toselecta G+7 structure witha height of 3m per floor, as it suited the project's scale and was effective for evaluating seismic response.l picked SAP2000V 19 forfinite element modeling due to its accuracy and user-friendly interface in structural analysis.l resolved to includea regular building design with beams of 450x350mm andcolumns of 350x350mm, paired witha l25mm thick flr›nr slab to ensure structural stability.l chosea I 50mm thick stair slab to support vertical circulation and selected external walls with 230mm thickness and l2mm plaster to add lateral resistance.l preferred M20 grade concrete for its moderate strength and Fe500 steel for reinforcement, providinga balance between cost and durability.l decided on an RCC space frame structurals ystem forits adaptability in commercial use.l suggested an 8 storey configuration, coveringa 393.29m° plinth area, for both regular and irregular building models, making it suitable for in-depth analysis using the RSM, SCM & FEA. l began theanalysis by constructing the lumped mass matrix(LMM) forboth regular& irregular structures, incorporating values such as 224908.3kg(tableI) for the first mass in theregular structure and I 93785.6kg(table6) for the irregular structure. l determined e 2 structure's consistent stiffness matrix(table2& table7), applying Absolute Sum (ABSSUM), Square root of sum of squares (SRSS),& Complete quadratic combination(CQC) modal combination rules to determine the peak responses in all modes.l generated the stiffness matrix for the regular structure with values such as l086669N/m forstiffness between floors. For each model,l determined natural frequencies, obtaining 0.305Hz(table3) for the first mode of theregular structure and 0.328Hz(table8) fortheirregular one.l then computed themode shapes(figure2 & 3) and identified key displacements at each mode. In both models,l performed response spectrum analysis, leading to total base shear values of 53396I .4N(table4) for the regular and 550519.9N(table9) for the irregular structure, ensuring accurate seismic response estimation across bnth structures. RSM for regular structure 0 0 0 0 0 0 TableI: LMM 0 0 4499fi#. 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 0 0 0 construction 0 0 0 0 2 0 0 0-I-l98?a4. 0 0 0 0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 2 Table 2: Tabulating values forstiffness matrix 108666-108666 9 9-108666 0 217333-108666 9 8- 108666 9 0 0 217333-108666 0 0 9 0 8 5 0 0 0- 108666 ?1 7333-108666 9 8- 108666 9 0 0 0 0 217333-108666 0 0 0 S 8- 108666 9 0 0 0 0 0 217333-108666 0 0 0 0 9 8-108666 9 0 0 0 0 0 0 21733:3-108666 0 0 0 0 0 0 0 0 0 Table 3: Freq.evaluation 0.101 0.902 ñ-3 ñ'6 A’7 ñ’8 1.972 2.403 2.741 2.975 3.093 9 0 8-108666 9 9 217333 8 Table 4:Depict of mode shapes fordifferent floors 1st 0.98106 8 0,9243? 4 6^ 0.830J9 9 0.5Jfi2? 8 0.19523 7-0. 1941 —0. 7\* 57 R\*-0.82796-0.98507 0.35144 3 0.83 04 4 0.70769 2 0.?8306 6-0.19619-0.96101-0.5J566-0.70774-0.70647 0.17765 —0.38393 —0.92383 —0.9242l —0.37965 0.5?497 1 0.707H 0.70751 6 0.9802\* 8 3 0.19952 1 5-0.70566-0.70967 0.9310$ 5-0.54019 0. 7 1599 3 o s con-o.Naom\* o.i 937d 0.83150-0.83123-0.15348 0.98133-0.5634l 6 0.92346 9 0.38849-0.9237l 0. 195 29 3-0.55f38 09?405 4-0.382M-0.38295 0.83134 6 0.95075-0.96079 8-0.9232 l 0.5SJ83-0.83178-I-0.19517 Table 5: Base shear analysis 1.2315-0.2971 0.0310 42 6 18 27059J 146583 1431.8 3 .8 0.9063 98 Ql 0.0491 l4 0.0004 8 366823 719817 678206 .6 .9 .8 0.1223-0.1876 0.1701 2 4 20448. 52 0.0068 5 48118. 31 0.0161 18 5 43104. 06 0.0144 3 19752. 4 0.0063 62 0.0956 18582. 6 0.0002 54 38 610477 519239 408005 281058 71638. .9 .5-88509. Q2 9 147045-67528. 6 34732. .2 .5 14 125294 173656 163528 98322. .6 .3 9238.8 Q3 41 36434. 10242. 26 —7094.8 t4227.-67323.-18128. 2-40493. 3617.3 —13055 51525. 87 .5 17075. 8 33 15362. 63 60595.-27884.-71474. 04-55890. Q5 3 72 4 21698. 103317 38 .5 50680.-56640.-38485. 56 6 —32505. 5 53830. —24555. Q7 Q8 SRSS1” 1 366823 .6 52 174391 3 17205. 73 533961 759642 694378 .4 .2 533961 .9 129360 145402 .4 4 1 2 44-62040.-79093. 1 1 27 92923. 09 9 42809. 98 2 109639 99368.-7183d.-19613. 93611.-84317. 35 4 3 46139. —63802.-12972-6t228. 3 86 8 1-57112. 6 627294 555054 465469 .3 .3 .2 74 08-25258 348771 3 —36072. 8-11287 201748 .9 132167 118234 102052 814240 550519 3 9 4 .2 .9 1st mode 2ndmode 30 25 20 15 10 5 0 .4 6 18 ,2 4th mode Sthmode-1 5 0. 10 8th mode 2s S 0-1.-0. 0. 5 5 fn ed 25 1 L-1 1. 5 0 0. n d in Figure 2: M rxlal shape analysis 3rd mode 0.5 0 15 OB O et d-1- 0 0.5 1 1.5 6thmode 7th mode Irregular structure RSM 1 f3 785. 6 0 0 0 0 0 0 0 387571. 3 193751 Table 6: LMM 0 6 0 0 0 0 0 0 0 387571. 3 0 0 0 0 0 0 387571. 3 Construction 0 0 0 0 0 0 0 0 387571. 3 0 0 0 0 0 0 38 7571. 3 0 0 0 0 0 0 0 0 0 0 0 0 38717î. 1 0 0 0 0 0 0 0 0 587?71. Table 7: Stiffness Matrix Value Calculation 105666-108666 9 9 — 105666 0 217333 —108666 9 0 0 0 8- 108666 9 0 0 9 217333-105666 8 —108666 9 0 0 0 9 0 0 0 217333 —108666 8- 108666 9 217333-105666-108666 0 0 0 0 0 0 0 0 217333-108666 0 0 0 0 9 S —108666 9 0 0 0 0 0 0 217J33 —108666 0 0 0 0 0 0 0 0 Table 8: Frequency Assessment '\\ :! V'7 9 8-105666 9 9 217333 8 Table 9: Mode Shape Representation Across Floors 1st 0.980?8 1 0.92353 3 64t 0.?'i689 0.83114 9 0.1976\* 2 7/3-0.1934-0.55904-0.82909-0.97595 0.38221 4 0.53105 3 0.70666 3 0.35519 6 0.38240-0.92381 —0.19551 —0.95056-0.7071§-0.7077\* 0.l9Ul-0.98084 6 0.19494 3 0-0.5555 0 0.92370 0.37928-0.35142-0.92303-0.92445-0.37938 0.?54\*4 —0.5 71 0.70606 6 7 0.70780 4 0.55021 1 7 0.19809 8-0.7088-0.7068? 0.83208 9 6 0.53159 8 0 7-0.382-0.38314-0.55086 0.98115-0.83106-0.19334 4 0.92343-0.92342 0.55073 9 0-0.83181 0 0.5? 06 7 0 0.52050 1 —0.82775 0.7033I G-0.55223 0.38020 8-0.15378 0 Table 10:Base Shear Evaluation 4 1J323-0.2964 0.0318 0.1229-0.1873 0.1701-0.1092 0.0835 02 18 SU 77 2 28 1 1 233082 125710 1298.4 17808. 41404. 37127. 17050. 15050. 9 .1 DU Contribution Ql 0.9063 Il 0.0188 91 t7 0.0005 05 II 0.0069 26 8'i 0.0161 03 9b 0.0144 4 48 0.0062 79 7B 0.0003 32 316309 620333 384245 325739 447060 331227 241917 61662. .3 .5-76079. 3 8165.8 12465 .6-58157. 1 .7 .6 .3 .4 37 \*97t7. 107d\*8 tJ9242 110só6 8JS24. 91 .9 .5 .4 12 9093.1-6229.2-16014.-11358. 3175.1 15085. 13581. 75 31360. 73 Q5 3 41 2 3 9 99 74 45 12474.-58263.-33165. 44367. 32322.-24112.-61913. l9 18615. 27 3 3 88980. —53376. 29 6 93-68128 436ól.-48817.-33128. 83593.-618a. 63-28028. 2 9 21 d 57 79991. 74-16883 6 4 36878. —94398. 13 7 8Oó37.-3lllS. 21 6 46476.-21261.-11104. 39736.-55000. 31764.-8306.0 7 47 8 8 316309 148956 13038.-52248. Q8 SRSS Çt .3 .3 .1 39 J 08-6769d 9 3 51-21313. 4 3-830ó.3 160393 6143II 598207 S40I93 477704 400@S 300140 1?80SS .4 .2 SRSSI” .5 .1 .9 .9 .6 460393 111470 171291 225310 273080 313133 343150 338953 H 5 2 S 9 í 2 8 1stmode 2ndmode O. fin /" ’;’q\* ^,° 3rd mode 15 I CS 0 05 A 15 \*5 05 4thmode Sthmode 8thmode 5 0. ss 6thmode 25 15 09 fined-.-J5 0 0.5 : 45 Figure 3: Modal Shape Study 7th mode IJ.4 l calculated the self-weight of beams forthe irregular building usinga formula based on perimeter, yielding7 I 8.83kN(tableII ).l then calculated the dead load of the slab, which resulted in 1229.02kN, and added thefloor finish load of 393.28kN.l combined these to reacha total dead load of 2341.l3kN.l computed live load based on area, which totaled I 179.86kN.l calculated column weights by considering all columns, reaching2 II .278kN.l noted wall loads contributed 2393.36kN, bringing the total elevation load to 2604.638kN. For theeighth story,l analyzed each component load, which gavea total of 4945.72kN(tableII ). Similarly, for the regular building, l performed the same steps and found the beam self-weight to be 888.06kN(table12).l determined dead load from slabs was I 100.76kN, and floor finish added 352.24kN, totaling 2341 .06kN in dead load.l calculateda live load of 1056.73kN.l found column and wall weights as 330.75kN and 2956.83kN, respectively, bringing the elevation total to 3287.58kN. l noted eighth-story load total came to 6684.9I kN(table12) with similar calculations done forother stories. Irregular building analysis Self-weight of beam Dead load ofslab Dead load offlcinr finish Total Dead Load Live load ELEVATION Weight ofcolumn =\*B\*D\*L (perimeter) = 25\*0.35\*0.45\*I 82.56 =7 I 8.83 KN = \*V olume = 23”(29.673”7.8”0.123) +23”(I 3.32” I2.I 3”0.123) =I 229.02 KN = / 2/ Area =I \*(29.673\*7.8)+ I\*(I 3.32\* 12.15) = 393.28 KN =7I 8.83 KN + I 229.02 KN + 393.28 = 2341 .l 3KN = 3 KN/ 2 Area = 3\*(29.673\*7.8) +3\*(I 3.32\*1 2.15\*) = 1179.86 \*L\*B\*H\*no. of column = 25\*0.35\*0.35\*3\*23 =2 II .278 KN Weight ofwall Total elevation = \*L\*T\*H = 19\*I 82.56\*0.23\*3 = 2393.36 KN =2 II .278 KN + 2393.36 KN = 2604.638 KN TableII: 8"' story load(irregular structure) Component Height Length Breadth/Depth Vol. 0.4i 3 Slab Lize F-loor fuiisli 1"all 0.125 3 Regular building analysis 182.56 0.35 29.673 T 3.3\* \*9.673 T 3.1? \*9.673 18?.56 Self-weight of beam Dead load ofslab 7.S 7.8 12.5 7.8 I 2.5 0.23 49.IC l2ñ.97 =\*B\*D\*L (perimeter) = 25\*0.35\*0.45\*225.54 = \*V olume = 25\*19.8\*l7.79\*0.l 25 fiO l 0.37 3 93.28 1 3 93.28 1 1 Load Unit weight 2f 3 1 19 Total 718.75 I 179.54 393? 8. \*393.36 494a.72 =I 100.76 KN Dead load offlcinr finish Total Dead Load = / 2/Area = l\*l9.8\*l7.79 = 352.24 KN = 888.06 KN + I 100.76 KN + 352.24KN = 2341 .06KN Live load ELEVATION Weight ofcolumn =3 KN/ 2 Area = 3”I9.8”I 7.79 = 1056.73 KN =\*L\*B\*H\*no. of column = 25\*0.35\*0.35\*3\*36 = 330.73 KN Weight ofwall = \*L\*T\*H = I9”223.34”0.23”3 = 2956.83 KN Total elevation= 330.75 KN + 2956.83 KN = 3287.58 KN Table1 2: 8"' story load(regular structure) Component Height Length Breadth/Depth Vol. Area No Col«inn Slab Live Load Ploor Finish 0367 440? 19.8 19.8 0.35 0.35 17.79 17.79 17.79 0.2? 1??6\* 1 Unit u eight 19 Toial Load 10J6.72 29 6.83 6654.91 l determined total seismic weight fortheirregular building as 57798.43kN(table13)using SCM. l evaluated the seismic weight fortheregular building as 76489.l9kN(table14).l calculated the fundamental time period as 0.62s, using the structural height and dimensions.l found thedesign horizontal acceleration spectrum value (Sa/g) to be 2.5 based on medium soil conditions.l determined thezone factor (Z) as 0.36, and response factor (R) was taken as5 for the building's moment-resisting frame.l calculated the base shear (Vb) as 520 I.86kN fortheirregular building. l obtained the design seismic coefficient (Cd) as 0.4.l determined the shear force distribution across the storeys with values like 234.99kN(table15)forthetop storey and 7.34kN forthebase storey.l evaluated the lateral load distribution, finding 4917.658kN(table18)foreighth storey in the regular building.l concluded that the horizontal seismic shear acting at the base was approximately 23119.37kN. Table 13:Analysis forearthquake weight on irregular struct. Total Lump 4945.72 7550.39 6° 3•\* 9 nd 7550.39 7550.39 7fi50.39 7550.39 7550.39 7550.39 fi7798,43 l" Total Table 14: Analysis forearthquake weight on regular struct. Floor 8\* 7° 6\* rd l' Total Total Lump Mass (KN) 668491 997104 9972.04 997?.04 997104 9972.04 997?.04 9972.04 76489.19 Table 15:Evaluation of SF on irregular structure (+’i)x fO79.?6 8 7 2159.11 (Vi)y \*4 62I g\*6.?6 ?J4.99\*3?g I69.7T 1989 \*34.99\*?\*8 f69.7I?989 21 952167.51 359.530333 259.S7M04 594.822663 429.592393 6 21?911 18 699\*?1 64 \*64 36 144 1909?9603 8\*9.157807 620 21996 5 2159 II 15 485799.75 IS3.586906 13\* 590002 1042 77471 753.111998 4 2159.11 3 21?911 12 310911.84 117.49J62 54.857601J 1160.27033 537.969599 9 174687 91 66.0912861 47,73?4007 1226 36162 883 70\* 3 2 2159 II 6 77727.96 29.3739449 21.21N003 1255 73552 906.9164 1 2159.11 19431.99 7.34347623 \*.30360008 1263.079 Table 16:Evaluation of SF on regular structure Storey \V,(KN) H, \* “'— S 1159.756 (Q,), (Q,), (V,), 912.22 (4",), 24 668019.4J6 2?2 449878 18?.32532? 252.M9878 1S2.32?325 7 2319.ñl6 21 l0\*?906.ñ6 386 ñ6-4ñ4\* \*79.186136 639.01442 461.511461 6 \*319.J16 IS 7 1523.154 284.006602 \*0\* 11634? 923.021023 666.627806 \* \*319.?16 4 \*319.?16 3 2319.J16 2 2319.516 1 2319.516 1? \*21891.1 197.226807 142.441906 11\*0.24783 809.06971\* 12 334010.30-1 126.22\*1\*7 91.1628195 1246.47299 900.232?3\* 9 6 3 157880.796 71.0016J06 51.2790562 1317.474M 9J1.511618 53502.576 31.\*562892 22.790705 1349.03093 974.302323 20875.641 7.88907229 5.69767624 1356.92 979.999999 Table 17: Depict of lateral load distribution (Irregular structure) Storey 6 4 ? Total Hi ?1 16 1? 9 6 7 6 4 C 23115.3 2 US.1 38863.9 4334.87 7 23I 19.3 7 23119.3 7 1 2159.1 1 2159.1 1 6 2?S09.3 19431.9 9 23I 19.3 2I 59.1 l 29ñ4.6 7 1 23l 19.3 ? 159.1 7 1 6 6477 33 207274. 7 9 2167.44 1444.96 722 479 9 Table 18: Depict of lateral load distribution (regular structure) Storey 8 6 3 Totol Hi 24 IS 15 9 V 30595.6 8 30595.6 8 30595.6 8 30595.6 8 305f5.6 3059a6 S 30595.6 8 305956 8 \Vi 6654.1 9 9972.0 9972.0 4 9972.0 4 9f72.0 9f720 4 9f72.0 4 99720 4 IViHi 160-120. 6 209412. 8 179496. 7 149580. 6 Qi 4917.65 8 6419.50 6 5\*02.-t3 3 4555.36 1 11966-1. 3 665.2S 897483 6 J9832.2 4 ?99161 \* 9f807l. 9 2 73l,?1 7 1834, 14 4 917 072 2 IJ.7 l found that the natural time period for regular building was 0.8I s, while for the irregular building it was 0.8 I 3s(table20).I noticed that irregular building's slight increase in time reflected greater stiffness in the structure.l observed that base shear for regular building under seismic cciefficient in EQx+ was 1778.455kN and in EQy- was 1750.283kN, while under response spectrum analysis, RSX yielded 1773.452kN in FX & RSY provided 1751.629kN in FY(table2I ).l noticed the irregular building's base shear values under EQx+ were 1030.5I kN and EQy- were 1048.457kN, with RSX at 1033.582kN and RSY at 1044.938kN(table22).l observed that displacements were higher in the irregular building across both seismic cciefficient(figures 11, 13,& 15) and RSM(figures 10, 12& 14).l noticed that inter-storey drift was highest between thesecond and third storeys in both buildings using the seismic coefficient method inEQx and at the second storey for response spectrum in EQx and EQy.l found the regular building model tobe superior in terms of stabilit y and structural response.l considered the regular building model tobe thebest choice forthis seismic zone. Table 20: Evaluation ofTime Pericd between Regular and Irregular RCC Buildings S.No. 1 Output Case Text KSX RS Y Building Regular building Irregular building TimePeriod (s) 0.81 0.513 Table2 I: Rxnsat base(Regular) OutputCase Text Lin. Static Lin. Static. Lin. Resp. Spec. L in. Resp. Spec. 0 Output Case 1778.455 0 1773.452 Output Case 0 0 1751.629 problem. Looking at the design,l pointed out the fact that it required finer tuning forstability.l read articles to know similar incidences and realized that the size of the column we have used of 205mmx205mm could be small.l went to my supervisor and proceeded to share with my concerns regarding unstable design.l understood that the increase of columns' dimensions could minimize displacement. As for the column sizel suggested Column: 450mmx 350mm& discussed with my team theneed to make this change, and then we altered the design.l re evaluated the structures in SAP2000 once more and concluded that increasing the size of columns actually reduced displacement& hence thestructure became stable. 1 Creative Wrirks l created structural 3D’s of regular& irregular structure featuring SAP 2000.l used column of 450mmx350mm forcontrolling displacement in designs.l examined thestructures employing RSM and SCM techniques. 1.fi Team Management l looked into giv'ing constant updates and ensure that the communication was well and correct throughout the project.l recalled the group often to deliberate goals and any emerging concerns at that particular stage in the project. To foster idea generation,l arranged for meetings where members could forward solutions that they thought would be effective.l had to report to the supervisor ona daily basis which meant informing him of new developments and challenges. To maximize time and resources,l set out the responsibilities of each of the members.l defined roles for each member and asneededl assisted and guided them through the tasks.l also consulted with the project guide of our team regarding current problems and togetsome insights regarding our strategies. To maintain thiss ynergy,l always guided and reminded people abnut the project objectives and time frames, thereby fosteringa positive work environment and moving theproject forward. 1.7 Codes l followed lS 1893 (PartI )-2002 (BIS, 2002)& NBC 105: 1994 forunderstanding design criteria for earthquake resistant structures. IN Summary Thestudy on seismic response evaluation of regular& irregular RC buildings was completed. Extensive review was carried to gain understanding into the assessment of seismic behavior of regular and irregular done concrete structures. Appropriate building parameters were selected, includinga G+7 structure witha 3m floor height. The Response Spectrum Methcd, Seismic Coefficient Method, and Finite Element Analysis techniques were employed to analyze the structures. Detailed modeling was carried out in SAP2000 V 19, incorporating material properties, load combinations, and seismic factors. Comprehensive evaluation of natural time periods, base shear forces, displacements, and inter-story drifts was performed. The regular building model demonstrated superior stabilit y and structural response compared totheirregular counterpart, making it the preferred choice forthe given seismic zone. The secondary objectives were achieved by completing FEM and Analysis using SAP2000 software, and evaluatinga variety of cedes and analysis such asRSM aswell as SCM. IN.2 l developed confidence indecision making by seeking ways ofsolving such project problems.l also was able to increase my levels of leadership sincel was appointed toarrange the work ina team.l also gained in communication skills asl ensured thatl update the supervisor and also liaise with other members.