Civil Engineering Research Topics for Students

Building Strong Structures - Making Things That Last

1. Build homes that don’t fall down during earthquakes.
2. Make bridges stronger using ropes made from special materials.
3. Make concrete that fixes its own cracks like a band-aid.
4. Design tall buildings that bend in storms but don’t break.
5. Use old tires to build roads that stay strong longer.
6. Build walls that keep homes cool without air conditioning.
7. Make roofs that collect rainwater and clean it to drink.
8. Build strong house bases that float on soft ground.
9. Use plastic bottles to make very strong concrete blocks.
10. Design buildings that can twist and not fall during earthquakes.
11. Make bricks from old newspapers and glue that work well.
12. Build houses that fold up and move to new places.
13. Make walls that change color when something is wrong.
14. Use bamboo to build strong houses like steel.
15. Make concrete that shines in the dark to stay safe.
16. Build structures that can grow taller by adding pieces.
17. Make stuff that gets stronger when it gets really hot.
18. Use car parts to build fun playgrounds for kids.
19. Make buildings bend like rubber bands without breaking.

20. Design buildings that clean dirty air while people use them.
21. Build houses that float on water during floods.
22. Make concrete that eats pollution and makes air better.
23. Use old paper to make building parts stronger than wood.
24. Make buildings that change shape when the weather changes.
25. Build safe schools with cheap and simple local materials.

Roads and Transportation - Moving People and Things

26. Make roads that charge electric cars while driving.
27. Build bike paths that light up at night using sunlight.
28. Make sidewalks that make power when people walk on them.
29. Build roads that don’t freeze in winter.
30. Make tunnels that clean car smoke before it gets out.
31. Build parking lots that collect rainwater and stop floods.
32. Create roads that tell drivers to slow down.
33. Build bridges that open and close for boats.
34. Use old tires to make roads that don’t get holes.
35. Make highways that make electricity from moving cars.
36. Create crosswalks that play music when people walk.
37. Build roads that change color when danger is ahead.
38. Make tunnels that use mirrors to bring in sunlight.
39. Create bike lanes that protect people using safe walls.
40. Build roads that melt snow by heating themselves.
41. Make smart lights that count cars and change on time.
42. Build highways that collect wind energy from cars.

43. Make roads that fix tiny holes all by themselves.
44. Build bridges that stretch longer when more cars use them.
45. Create parking that stacks cars on top of each other.
46. Build roads that keep neighborhoods quiet by absorbing sound.
47. Make sidewalks that know when someone falls and needs help.
48. Build tunnels that clean the air and make it fresh.
49. Create roads that twist and bend without breaking.
50. Make transport work well even in big storms.

Water Management - Keeping Water Clean and Safe

51. Build machines that turn dirty water into clean drinking water.
52. Make gardens that stop floods during big rains.
53. Create pipes that don’t break even when the ground moves.
54. Build dams that let fish swim safely through them.
55. Make water plants that work only with sunlight.
56. Collect fog and turn it into clean water.
57. Build canals that carry water uphill without power.
58. Store water underground to save space.
59. Use sand to make filters that clean germs from water.
60. Build systems that warn people before floods happen.
61. Make water pipes that stretch like rubber hoses.
62. Use wind to power water pumps.
63. Clean dirty rivers using floating plants.
64. Build tanks that don’t leak or rust over time.
65. Give plants just the right amount of water to grow.

66. Make water cleaning plants that also make electricity.
67. Turn salty water into fresh water easily.
68. Fix pipes by themselves when they break.
69. Collect rainwater from every roof in the city.
70. Clean water without using any moving parts.
71. Build dams that store power and let it out when needed.
72. Make canals that stop land from washing away.
73. Keep water systems working even when the lights go out.
74. Remove tiny plastic pieces from drinking water.
75. Find and fix water pollution right away.

Environmental Protection - Taking Care of Our Planet

76. Build walls that clean the air and make fresh oxygen.
77. Make roads that catch bad car gases.
78. Build strong buildings that can handle big storms.
79. Turn trash into useful building parts.
80. Make concrete that keeps bad gases inside.
81. Grow food on top of roofs and cool down cities.
82. Clean oil spills in water using smart machines.
83. Make parts that break down safely when old.
84. Stop landslides before they happen.
85. Build buildings that don’t burn down in wildfires.
86. Make streets that soak up rainwater to stop flooding.
87. Clean dirty soil using helpful bacteria.
88. Build noise walls that also clean air and look nice.

89. Catch and save rainwater for later use.

90. Turn plastic trash into strong building blocks.

91. Build strong buildings that bend in heavy winds.

92. Grow plants on concrete walls.

93. Stop dirt from washing away before it starts.

94. Make building blocks that change color with dirty air.

95. Catch ocean wave energy to make power.

96. Make buildings that stand strong in bad weather.

97. Turn old food into new building stuff.

98. Soak up city noise with quiet building parts.

99. Clean dirty water under the ground using nature.

100. Build homes that can rise with sea levels.

Smart Cities and Technology - Using Computers to Help People

101. Build traffic lights that talk to cars to stop crashes.

102. Make streetlights that see when people need help.

103. Create parking meters that find empty spots for drivers.

104. Watch bridges with tiny computers to keep them safe.

105. Make sidewalks that charge phones when people walk.

106. Build homes that change heat or cold by the weather.

107. Tell when roads need fixing before they break.

108. Use pipes that find leaks and fix them on their own.

109. Change traffic lights based on how many people are there.

110. Make elevators that know when they might break.

111. Count how many people use parks and play areas.

112. Build homes that talk to emergency helpers in disasters.
113. Use power better in whole towns with smart systems.
114. Make roads that see accidents and call for help fast.
115. Watch air quality and warn people when it’s bad.
116. Build homes that get stronger in bad weather.
117. Stop waste in cities by tracking it all the time.
118. Get energy from people walking inside buildings.
119. Stop power cuts before they even happen.
120. Make buildings that change shape when used in different ways.
121. Watch and clean water right away.
122. Make old buildings work like brand-new ones.
123. Run all city services together smoothly.
124. Build smart buildings that learn what people need.
125. Make cities safer and nicer for everyone.

Disaster Management - Staying Safe When Bad Things Happen

126. Build shelters that pop up fast after earthquakes.
127. Make bridges that tell people if they are broken.
128. Know where floods will go before they start.
129. Build homes that stay standing in tornadoes.
130. Make roads quickly after a big disaster.
131. Build homes that float in floods and stay dry.
132. Give clean water right after a big storm.
133. Build homes that bend in quakes but don’t fall.
134. Make shelters from things you can find anywhere.

135. Clear broken roads fast after disasters.
136. Build homes that don’t break in strong winds.
137. Keep buildings working when there’s no power.
138. Move people away from danger quickly and safely.
139. Build roofs that stop stuff from falling on people.
140. Find damage in buildings using sound and shaking.
141. Make bridges fast to cross over broken roads.
142. Build homes that don’t break in volcano ash.
143. Give families a place to stay right away.
144. Keep people safe from flying things in storms.
145. Bring back power and water fast after disasters.
146. Make schools and halls that turn into shelters.
147. Know when landslides will happen and warn people.
148. Keep buildings running with no power for a long time.
149. Help many places at once during a big disaster.
150. Build smart homes that change in every kind of emergency.

Construction Materials - Making Better Building Blocks

151. Make bendy concrete that doesn’t crack.
152. Use old bottles to make stronger bricks.
153. Make blocks that change with hot or cold air.
154. Build steel that never rusts near the sea.
155. Create concrete that carries power for smart buildings.
156. Make blocks that fix cracks by themselves.
157. Build bricks that hold floodwater and let it go later.

158. Make glowing blocks to keep people safe at night.
159. Stick building blocks together without glue.
160. Use stuff that gets stronger as it gets older.
161. Clean air using special concrete.
162. Show building health with color-changing walls.
163. Hold heat in bricks for night use.
164. Soak up noise using soft materials.
165. Carry internet through special building blocks.
166. Stop fires with never-burning materials.
167. Make concrete that holds power like a battery.
168. Know when walls are weak with smart blocks.
169. Clean water using bricks as it passes through.
170. Stretch and shrink blocks without breaking them.
171. Use sunlight to power buildings with smart blocks.
172. Trap bad air chemicals inside materials.
173. Build with super-strong concrete for heavy loads.
174. Use weather-friendly materials that change as needed.
175. Build blocks that last hundreds of years.

Sustainable Engineering - Building Without Hurting Nature

176. Build homes that make more energy than they use.
177. Build with zero waste during building time.
178. Use plants instead of steel or concrete.
179. Recycle all waste into new building stuff.
180. Use sun, rain, and wind for building power.

181. Grow food on rooftops of homes.
182. Clean dirty air while giving people shelter.
183. Make stuff that breaks down when buildings are old.
184. Build using only clean power.
185. Store bad gases inside buildings to keep air clean.
186. Turn food and plants into building things.
187. Make buildings ready for big climate changes.
188. Grow your own bricks and walls.
189. Protect nature while building.
190. Catch rain and clean it for people to use.
191. Make floors that give power when people walk.
192. Reuse materials again and again.
193. Build without using gas or oil.
194. Help fix nature while building.
195. Cool down cities with special roofs and walls.
196. Catch more bad gas than you make.
197. Work with nature, not against it.
198. Use local, natural things to build.
199. Use less power in every season.
200. Build homes for people and animals together.

Geotechnical Engineering - Working with Soil and Rock

201. Make house bases that work in any kind of soil.
202. Know when hills might fall down.
203. Make weak dirt strong like rock.

204. Watch water underground and change building plans.
205. Stop sinkholes from forming.
206. Make deep or shallow bases based on soil.
207. Work with soils that grow or shrink.
208. Stop hills from falling without big walls.
209. Build on soft, muddy ground safely.
210. Keep water from hurting the ground below buildings.
211. Stop erosion under the ground.
212. Make dirt stronger using natural things.
213. Build on frozen ground that melts sometimes.
214. Keep buildings safe in sandy soil.
215. Use strong rock under buildings the right way.
216. Stop loose sand from shaking too much in quakes.
217. Find empty spots underground and fill them.
218. Build safely on slopes.
219. Work with springs and water under the ground.
220. Use trash and waste to make soil stronger.
221. Stop buildings from sinking or leaning.
222. Clean dirty soil and build on it.
223. Watch underground changes before they hurt buildings.
224. Move heavy building weight to safe ground.
225. Build safely on rocky and bumpy land.

Urban Planning - Making Cities Better for Everyone

226. Make places where people can walk to everything.

227. Grow cities without making traffic worse.

228. Grow food in the city for everyone.

229. Build cities that welcome more people easily.

230. Make travel in cities fast and easy.

231. Cool cities during hot days.

232. Plan for big rains with no floods.

233. Make neighborhoods that use their own clean power.

234. Give jobs to all city people.

235. Make cities that don’t make garbage.

236. Build places where people feel together and safe.

237. Save nature and animals in city spaces.

238. Move around without making the air dirty.

239. Make cheap homes for everyone.

240. Plan cities for changing weather.

241. Build quiet, peaceful city places.

242. Keep cities working during blackouts.

243. Give clean water to all people.

244. Make cities pretty and useful too.

245. Help people fast in emergencies.

246. Build for people with all abilities.

247. Save old buildings and build new ones too.

248. Give everyone good schools and doctors.

249. Grow cities with smart new tech.

250. Work together to fix big city problems.