

The time and energy consumption information about roads in the transportation system, as shown in the Fig. 1(b), is presented in table 1. This sample transportation network is a reduced version of a realistic transportation network of the city Sioux Falls, South Dakota, as shown in the Fig. 1(a), whose data is readily available [1].

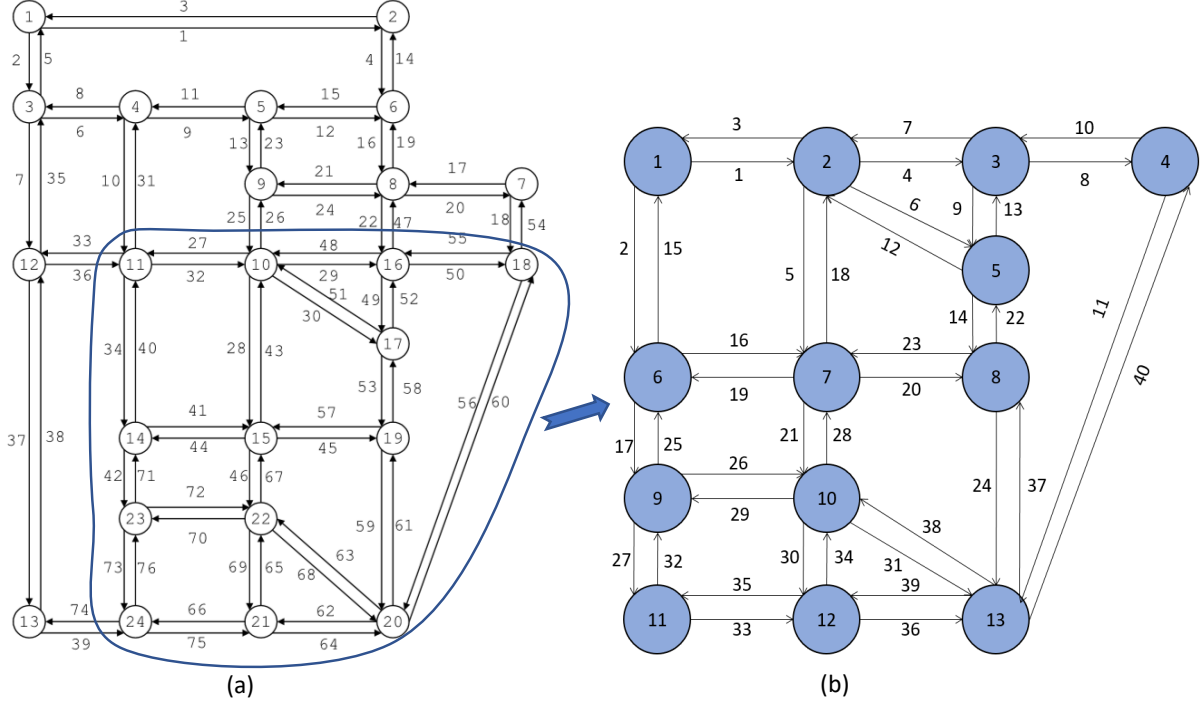


Figure 1: Transportation nodes topology networks, (a) original Sioux Falls network, (b) reduced Sioux Falls network

Table 1: Road and Traffic Information for Case Study

Road	Time consumption (min)	Energy consumption (kWh)
L1	5.05	1.59
L2	4.66	1.27
L3	5.05	1.59
L4	4.675	1.27
L5	6.02	1.9
L6	5.07	4.65
L7	4.675	1.27
L8	3	0.95
L9	2.25	0.63
L10	3	0.95

Road	Time consumption (min)	Energy consumption (kWh)
L11	2.27	4.38
L12	5.07	2.54
L13	2.25	0.63
L14	2.35	0.63
L15	4.66	1.27
L16	5.68	1.59
L17	4.64	1.27
L18	6.02	1.9
L19	5.68	1.59
L20	3.01	0.95
L21	3.03	0.95
L22	2.35	0.63
L23	3.01	0.95
L24	4.6	1.27
L25	4.64	1.27
L26	4.6	1.27
L27	2.28	0.63
L28	3.03	0.95
L29	4.6	1.27
L30	2.25	0.63
L31	5.71	1.65
L32	2.28	0.63
L33	3.49	0.95
L34	2.25	0.63
L35	3.49	0.95
L36	6.86	1.9
L37	4.6	1.27
L38	5.71	1.65
L39	6.86	1.9
L40	4	1.27

[1] Q. Meng, H. Yang, Benefit distribution and equity in road network design, Transportation ResearchPart B: Methodological 36 (1) (2002) 19–35.