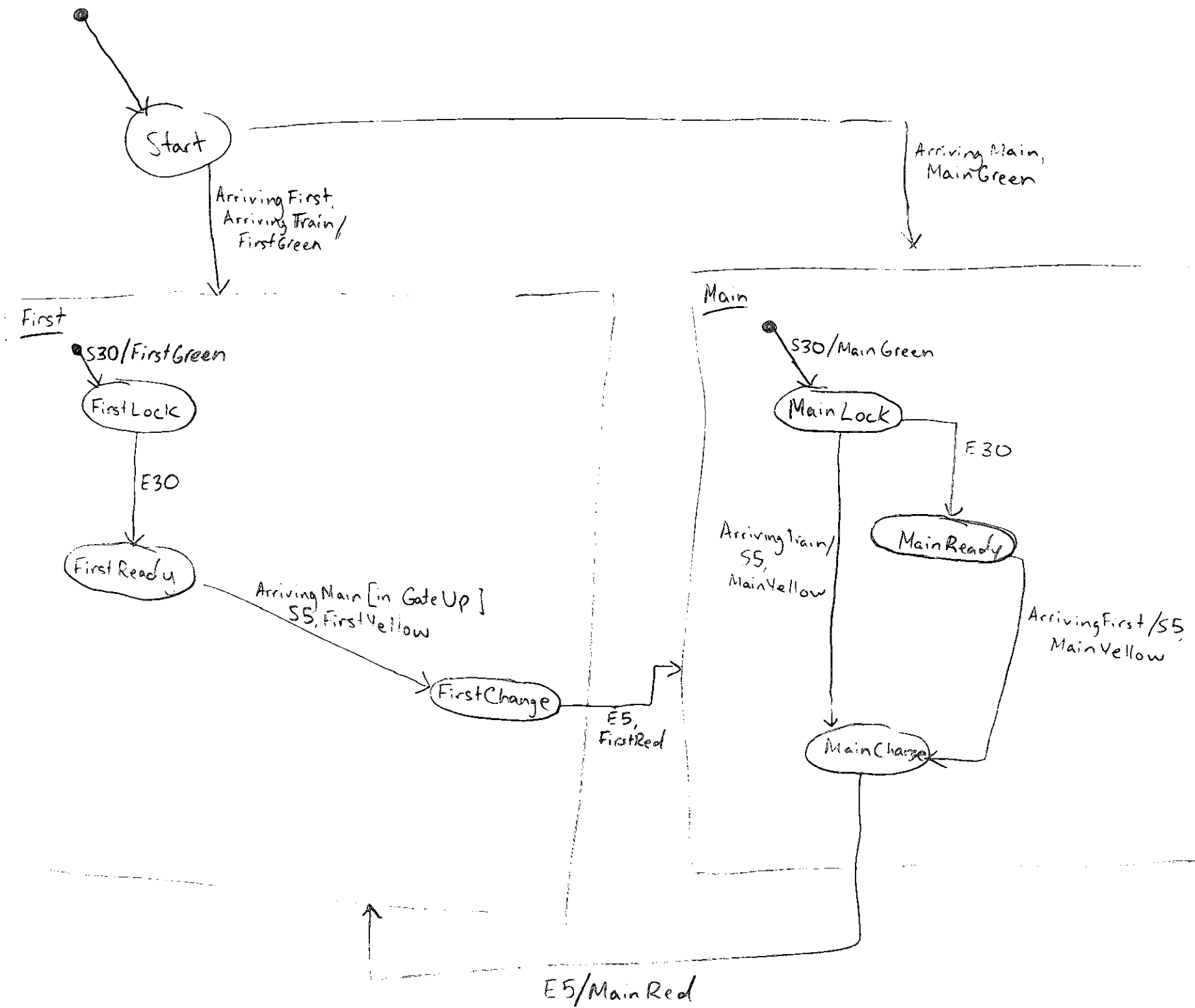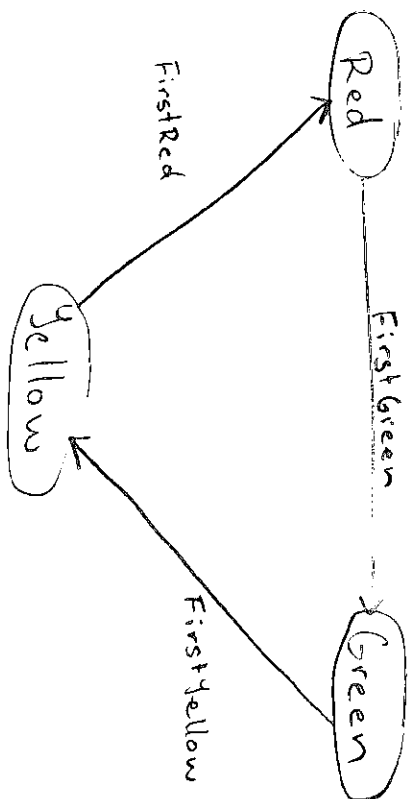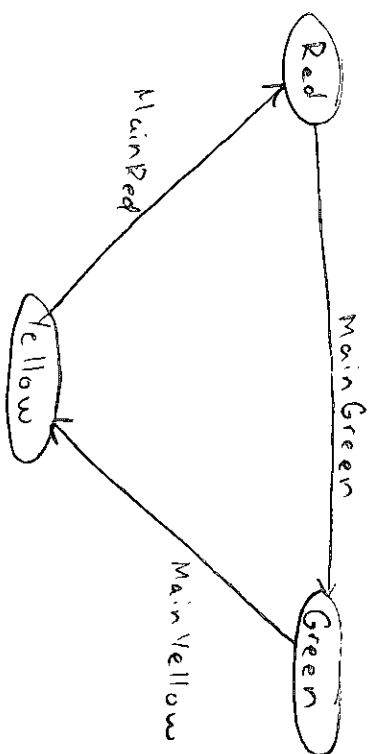My state machine ensures that the traffic light signals will prevent collisions (assuming they are obeyed) because it ensures that in order for one light to be green, the other must be red. When one street light changes from red to green, the other light must change from yellow to red. It also ensures that if a train arrives, the lights on Main street are Red and the lights on First street are green, since First street runs parallel to Main street. My state machine also ensures that the lights will only change if there are cars waiting at the other light and after 30 seconds. This is ensured by the lock state, which will only change after 30 seconds, once the 30 seconds has passed it moves into the Ready state, where a car arriving at the other light will cause the light to transition.

Start

Arriving First,
Arriving Train/
FirstGreen

Arriving Main,
MainGreen

First

S30/FirstGreen

First Lock

E30

First Ready

Arriving Main [in GateUp]
S5, FirstYellow

FirstChange

E5,
FirstRed

Main

S30/MainGreen

MainLock

E30

MainReady

Arriving Train/
S5,
MainYellow

ArrivingFirst/S5,
MainYellow

MainChange

E5/MainRed

First

Red

FirstRed

FirstGreen

Yellow

FirstYellow

Green

Main

Red

MainRed

MainGreen

Yellow

MainYellow

Green

Gate

Up

Arriving Train /SS

ES

Moving Down

Moving Up

ES

Down

Leaving Train /SS