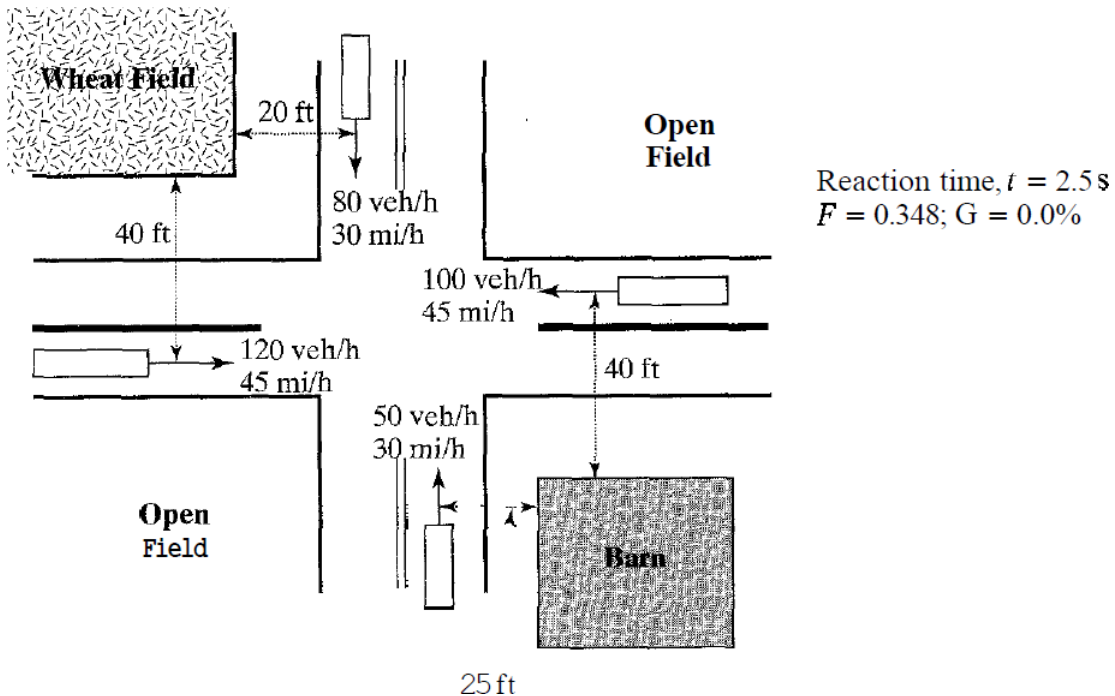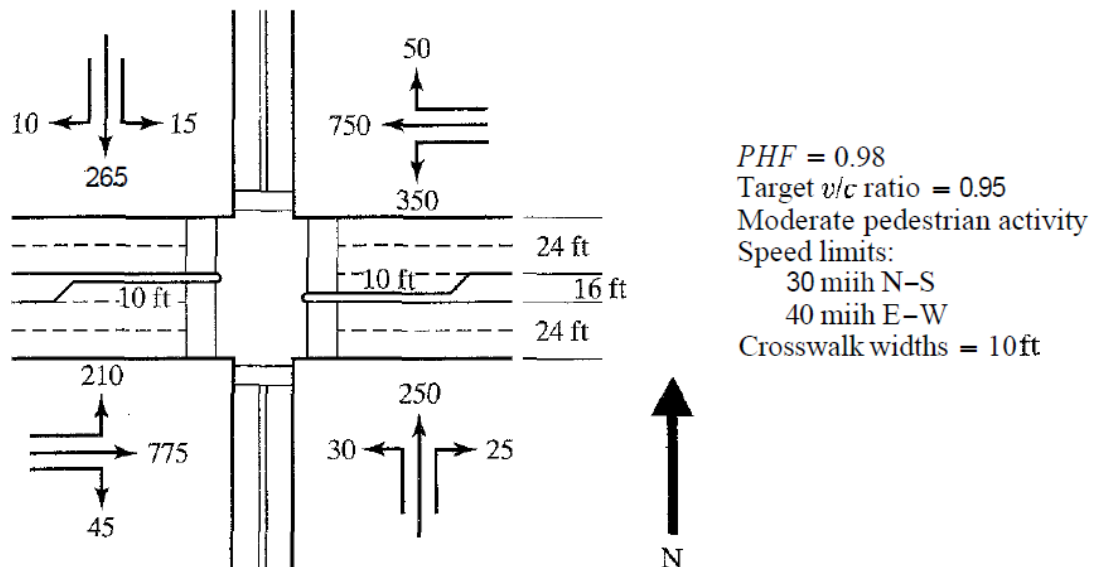# CIVL 4162/6162
## Traffic Engineering
### Assignment-4
### Due: November 5, 2019 (before class)

1. Determine if the following intersection can be safely operated under basic rules of the road.



Wheat Field

20 ft

Open Field

Reaction time, $t = 2.5\,\text{s}$
$F = 0.348;\ G = 0.0\%$

80 veh/h
30 mi/h

40 ft

100 veh/h
45 mi/h

120 veh/h
45 mi/h

40 ft

50 veh/h
30 mi/h

Open Field

Barn

25 ft

2. What should be your recommended phasing and cycle length for the following intersection?



50

10 ◄   ► 15       750 ◄

265

350

24 ft

10 ft

16 ft

210          24 ft

250

775       30 ◄   ► 25

45

N

$PHF = 0.98$
Target $v/c$ ratio $= 0.95$
Moderate pedestrian activity
Speed limits:
    30 miih N–S
    40 miih E–W
Crosswalk widths $= 10\,\text{ft}$

3. How many possible conflicting points are there in a typical conventional T-intersection. Show your answer with drawings.

4. For the arterial shown below develop signal progression. Use a desired platoon speed of 50 ft/sec. For simplicity the volumes shown in the figure below are already corrected for turning and PHF.
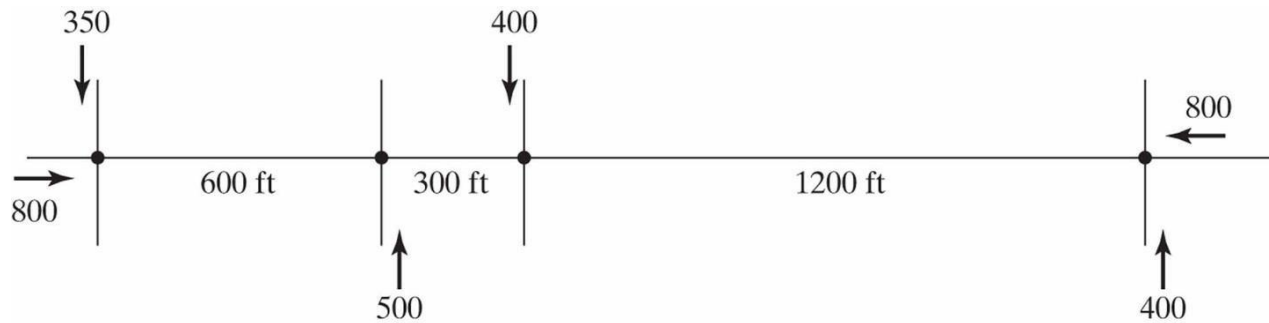


5. An arterial with two lanes in each direction has six signalized intersections. All signals are two-phase and block lengths are 1200 ft.

   a) Construct a time space diagram when the offsets are as shown below.

   b) Estimate northbound bandwidth and efficiency for platoons going at 50ft/sec.

   c) Estimate number of platooned vehicles that can be handled nonstop northbound and southbound.

| Signal # | Offset (sec) | Cycle length (sec) | Split |
|----------|--------------|--------------------|-------|
| 6 | 16 | 60 | 50:50 |
| 5 | 16 | 60 | 60:40 |
| 4 | 28 | 60 | 60:40 |
| 3 | 28 | 60 | 60:40 |
| 2 | 24 | 60 | 50:50 |
| 1 |  | 60 | 60:40 |