Transportation Planning in the Area Structure Plan Process

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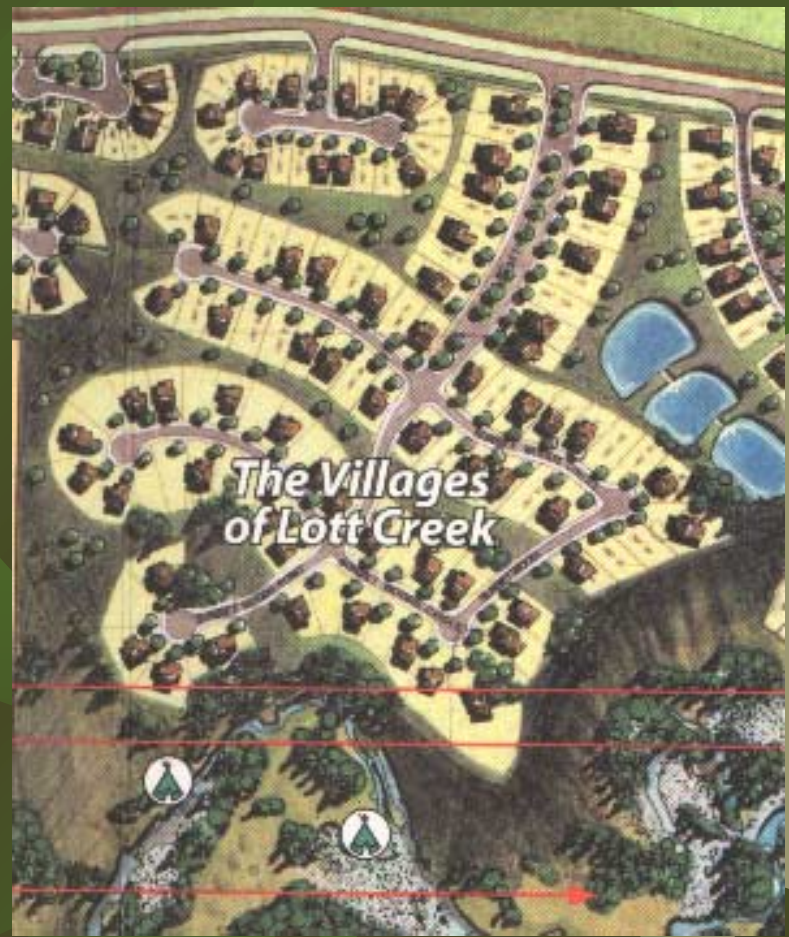
Transportation Planning in Land Development

- The Transportation Engineer is a ***critical*** part of a land development project team.
- Roads are the most expensive element of a development.



Question #1

- Which of the following steps are voted on by City Council in Calgary?
  - ASP
  - Land Use
  - Outline Plan
  - Subdivision

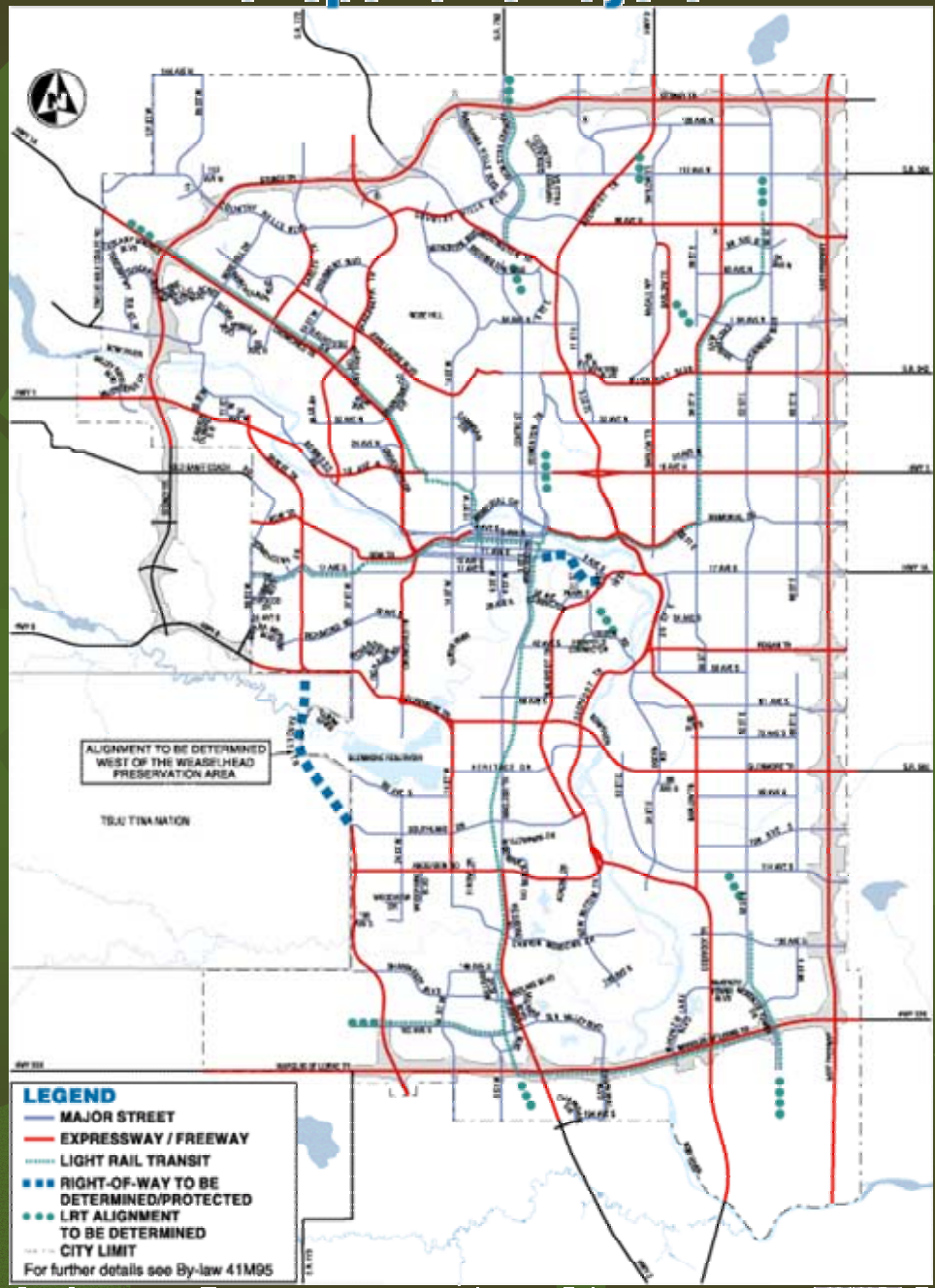
Major Components of Development Cost

- The land
- The plan
- The approvals
- Wet services (water, sewer, sanitary)
- Shallow utilities (power, cable, phone, gas)
- The roads
- Landscaping

The Land

- The land needs to be readily assessable.
- Each development is required to construct adjacent roads.
- If the regional road network is deficient the development may also need to construct off-site roads $$$
- You client needs advice on what the probable requirements will be, alternatives and the cost of the resulting roadways.

Transportation System



Calgary Transportation Plan

FIGURE 5

The Plan

- Most development teams include a transportation specialist. Their job is to prepare the technical reports required in the approvals process.
- They must also advise the team on plan elements that will be difficult to build, operate poorly or unlikely to gain approval.
- On specific projects such as McKenzie Towne the transportation engineers developed a new set of road standards.

Land Use 2024

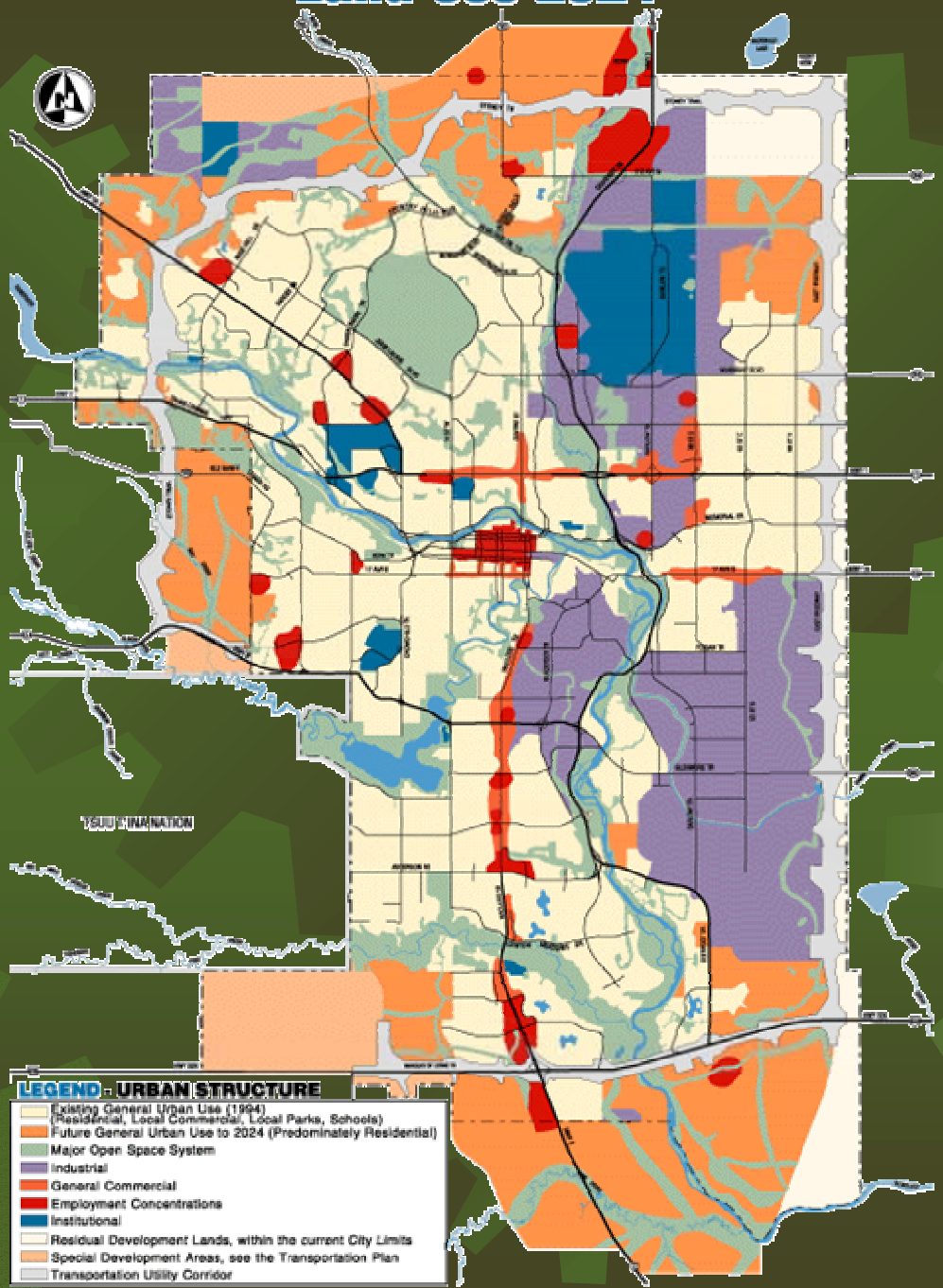


FIGURE 2

The Approval Process

- This is the point you are in the hot seat.
- Your client wants a perfect report, he wants it for nothing, he wants it to say the project is great and he wants the City to sing its praises.
- You have to try and remember you are an PROFESSIONAL engineer.

Traffic Impact Studies

- A traffic impact study is generally required as part of the ASP process.
- Different methods can be used; manual, microsim or regional model assignment

Traffic Impact Study Components

OVERALL

- Determine land uses
- Determine key study periods (AM / PM / weekend)
- Determine study days (weekday / Saturday)
- Determine time horizons (5 yr / 10 yr / 20 yr)
- Set study area boundaries

Step 1 – Trip Generation

- Look at type of trips – different land uses generate different trips.
- Single family house – 10 T/d
- Apartment – 7 T/d
- School – 0.35 T/student
- Retail 70 T/1000 ft^2

Trips can be defined by; area, units, employees etc.

- If the data is limited or unavailable you conduct a count at a similar land use. Might need to break it down to first principles. (eg. movie theatres and hockey game)

Step 2 – Trip Distribution

- What is the market area of the land use?

Retail – competition

School – catchment

Office – city wide

Home – job locations

- How will the population and market shift over time?

New mall?

New school?

Long commute?

Step 3 (2) – Mode Split

Basic modes

1. Auto
2. Passenger
3. Bus / taxi / HandiBus
4. Walk
5. Cycle, Blade

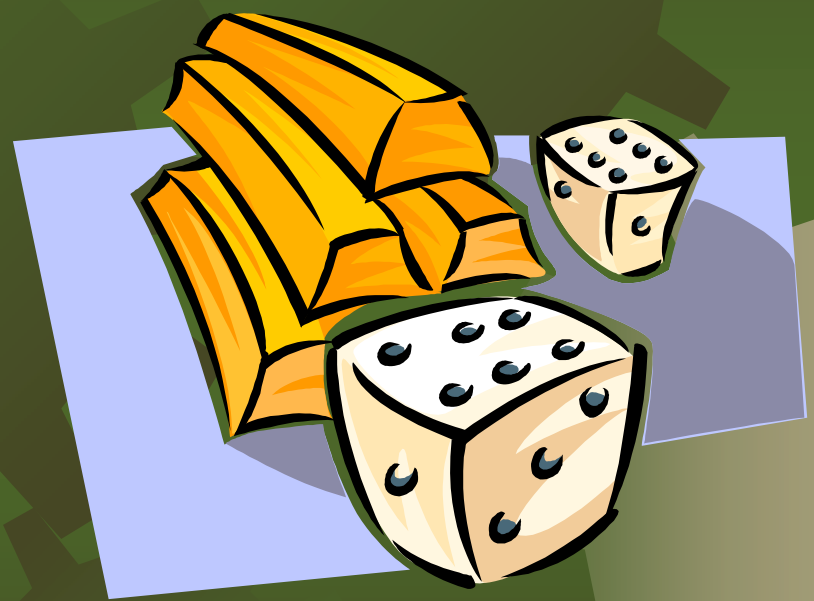
Varies by use and user group eg. Univ.

- Trip length may affect choice of destination

Eg. Taking the bus to a movie.

Step 4 – Traffic Assignment

- A bit of a black art or educated guess.
- Local knowledge helps a lot.
- Look at ease of access, delays, short cuts
- Can use a model to assign the traffic.



Analysis

- Traffic volumes on community streets determine the standard of road.
- ***Environmental capacity*** is the limiting factor.
- Peak hour and 24 hour flows are considered. 24 Hour flows are the determining factor for road standards.

- Intersection analysis
  - Unsignalized
  - Signal warrant
  - Signalized
  - Corridor

Step 6 - Recommendations

- Can the roads standards handle the projected traffic?
- Are traffic control devices required?
- When are they required?
- How much and who pays?
- Need a noise wall?
- Will the roads be upgraded or closed in the future?
- Is additional land required for a future interchange?

Step 7 – Repeat!

- Land use planning is seldom static while you are doing your TIA.
- The land owner is likely to change their land use, road layout etc. and now you have to update everything!
- The reviewing authority is likely to think of a few questions you didn’t contemplate so you can tackle those as well.
- Better budget well!

Transit Service Statements

- Each development is required to assess how all transportation modes will access the site.
- Transit is a special case where you will be asked to indicate the closest service, closest bus stop, ped access, need for a shelter.
- Target 100% of homes within 350 metres walking distance to a transit stop.
- Are there transit intensive uses?
- Buses are only permitted on certain classifications of roads.
- This factor will shape a community.

The Unpredictable Stuff

- You will be part of a team
- Your ground will be less than ideal
- Other team members will be fighting for their issues

  Eg: Ravines & wetlands!

  Utilities

  Property lines

  City plans

The end result

Question #2

- What are the 4 main modes of transportation that need to be incorporated into a plan?

Summary

- Transportation planning is a critical component of land development planning.
- The Transportation Engineer is a very influential member of the team.
- Always involves intuition, compromise and judgment.
- Many areas of subspecialties.