AICP EXAM REVIEW

Transportation Planning

February 7, 2014
Georgia Tech Student Center
Agenda

- Defining transportation planning
- Transportation stakeholders
- Transportation plan development
- Transportation funding
- Project development process
- Identifying solutions / analyzing impacts
What is Transportation Planning?

• The process of identifying transportation problems and looking for solutions to those problems is called transportation planning.
• With transportation planning, we work out the best ways to get you to . . .
  where you live,
  where you work,
  where you shop,
  where you go to school,
  where you take vacations, and
  . . . anywhere else you need to go.
Who are the players?

- State Departments of Transportation (DOTs)
- Metropolitan Planning Organizations (MPOs)
- Federal Government
- Local Governments
- Transit Agencies
- Other Groups
  - Regional Planning Agencies
  - Community Improvement Districts
  - Port Authorities
  - Airport Authorities
State Departments of Transportation

- Develop statewide transportation goals, plans and projects.
- Work with all of the state's transportation organizations and local governments
- Recipient of Federal Funds
- Subject to federal planning requirements:
  - Statewide Transportation Plan
  - State Transportation Improvement Program (STIP)
  - Air Quality
  - Environmental
  - Other
Metropolitan Planning Organizations

- Federally designated planning agency for urbanized areas - contiguous population of 50,000 people or more.
- Governed by Policy Board of local elected officials
- Address Federal Requirements:
  - Long-Range Transportation Plan (RTP)
  - Transportation Improvement Program (TIP)
  - Air Quality Conformity
  - Congestion Management Process
  - Public Involvement / Social Equity
  - Others
- 16 MPOs in Georgia
Georgia’s MPOs

Cartersville
Federal Government

- The Federal Government (U.S. DOT) oversees the transportation planning and project activities of the MPOs and state DOTs
  - Provides advice and training
  - Supplies critical funding needed for transportation planning and projects
  - Certification of MPOs
  - Environmental approvals on federally funded projects
Local Governments

• Develop local transportation priorities and plans
• Engage in regional and state transportation planning activities
• Conduct studies to identify impacts of new development on the transportation system
• Identify and schedule improvements
• Maintain local streets and roads
• Fund transportation projects
Transit Agencies

- Operate publicly available transportation options including buses, subways, light rail, passenger rail, ferryboats, trolleys
- Quasi-Governmental that receive government subsidies (Federal / State / Local) in addition to generating revenue from private sources such as fares and advertising
- Develop system plans, implement projects and coordinate with state and local governments on regional planning activities
Other Agencies

- Community Improvement Districts (CIDs)
  - Public-Private partnership that leverages dollars from member private entities to implement public projects
  - With approval from local government, private commercial property owners vote to self-tax.
  - Board of Directors makes decisions regarding projects to implement

- Regional Commissions (RCs)
  - Regional planning agency providing support to local governments
Transportation Plans & Programs

• Establish vision, goals, and objectives and based on:
  • Existing transportation needs
  • Future transportation needs based on:
    • Projected Population Growth
    • Projected Economic Changes

• Framework from which to identify and prioritize projects (air, bicycle, bus, rail, roads, pedestrian, and water)
MAP -21 – Federal Surface Transportation Legislation

- Over $105 Billion authorized for FY 2013 and FY 2014
- First long-term authorization since 2005 (SAFETEA-LU)
- Performance-Based Planning Approach
- Rulemaking Underway
MAP -21 Performance Goals

Performance Reporting
- National Highway System performance and key safety issues
- Freight congestion
- Strategic investment in asset management
- Performance measures and targets developed as part of the State’s Transportation Plan
Planning Process

• **Continuing**: Planning must be maintained as an ongoing activity and should address both short-term needs and the long-term vision for the region.

• **Cooperative**: The process must involve a wide variety of interested parties through a public-participation process.

• **Comprehensive**: The process must cover all transportation modes and be consistent with regional and local land-use and economic-development plans.
Planning Inputs and Tools

• Current Data and Data Forecasts
• Geographic Information Systems
• Travel Demand Models
• Microsimulation Models
• Stakeholder Engagement
Planning Documents

Local Plans:
- Comprehensive Transportation Plans (CTPs)

Regional Plans*:
- Regional Transportation Plans (RTP)
  - 30-Year Time Horizon
  - Fiscally Constrained
- Transportation Improvement Program (TIP)
  - Short-range Time Horizon
  - Programmed Funding

State Plans*:
- Statewide Transportation Improvement Program (STIP)
- Statewide Transportation Plan
  - Modal Plans (e.g. Freight, Transit, Aviation)

*-Federally Mandated
Planning Considerations / Special Requirements

• Air Quality
  • Plans must comply with Environmental Protection Agency (EPA) limits on emissions. Modeling used to demonstrate air quality \textit{conformity}.

• Environmental Justice
  • U.S. Executive Order 12898 defines environmental justice as the fair treatment and meaningful involvement of all people – regardless of race, ethnicity, income, or education level – in transportation decision-making.
Project Development Process

• To proceed to implementation, projects must:
  • appear in the TIP and/or STIP w/funding source;
  • consider citizen input; and
  • have approval by transportation officials.

• Steps include: planning, environmental analysis, design, right-of-way acquisition, permitting, and construction.
Environmental Analysis

• The National Environmental Policy Act of 1969 (NEPA) enunciated for the first time a broad national policy to prevent or eliminate damage to the environment.
  • Environmental impact analysis must be performed for any project receiving federal funds.
  • Required to proceed with ROW acquisition and construction.

• All alternatives consistent with the objective of each project must be evaluated to find the best transportation solution that helps preserve and protect the value of environmental and community resources.
The NEPA Process

• Evaluation to determine project impacts to the community, the natural environment, and our health and welfare.

• Before any project can move advance to ROW and construction, the Federal agencies require compliance with more than 40 laws related to safety and the environment.
Transportation Funding

- States and MPOs must identify project funds that will be readily available over the life of the Transportation improvement Program (TIP).
Transportation Funding 101

- Federal Apportionments
- Highway Trust Fund
- State Funds
  - General Fund
  - State Motor Fuel Tax
  - Bonds
- Local Funds
  - Special Purpose Local Option Sales Tax (SPLOST)
  - General Fund
Identifying Transportation Solutions

- Considerations:
  - Future Demand
  - Safety
  - Roadway Operations
  - Preservation
  - Land Use Linkage
Complementary Approaches

Conventional Approach

- More Lanes
- More Roads
- System Management
- ITS

More Pavement

More Efficiency

More Cars

AND YET TRAFFIC STILL SEEMS NOT TO BE MOVING. WITH CANADA AND MEXICO WE COULD ADD A FEW MORE LINES IN EACH DIRECTION.
Complementary Approaches

- More Pavement
- More Cars
- Move Less People, Fewer Miles
- Move More People, Not Cars
- Improve Quality of Travel
- Manage, Not “Solve”
- Lateral Approach

- Conventional
- ITS
- More Roads
- More Lanes
- More Efficiency

- Transit
- Bicycling
- Walking
- HOV/HOT Lanes

- User View and Comfort
- Context-Sensitive Design
- Traffic Calming
- Personal Security

- Mixture of Uses
- Road Network
- Pedestrian-Oriented
- Compact Development

- Lane Limits
- Change Standards
Functional Classification

- Interstates
- Freeways
- Principal arterials
- Minor arterials
- Collector roads
- Local roads

Figure II-3
Schematic of a Portion of an Urban Street Network

Legend
- Arterial street
- Collector street
- Commercial
- Public

Source: FHWA
Travel Forecasting Process

• Four technical phases:
  • Collection of data – counts, surveys, etc.
  • Analysis of data - socioeconomic sources
  • Forecasts of activity and travel – future projections
  • Evaluation of alternatives - application of tools

• Evaluation approaches:
  • Demand Analysis
    • Travel Demand Modeling
  • Operational Analysis
    • Microsimulation
Travel Forecasting: Traditional Trip-Based Four Step Model

- **Trip generation** - estimates the number of trips generated by different types of land use
- **Trip distribution** - estimates where the generated trips will go
- **Mode split** - estimates which trips will use transit and which will use auto
- **Trip assignment** - assigns trips by each mode to the roadway network
Travel Forecasting: Tour / Activity-Based Models

- Factors in how people make travel decisions:
  - whether to travel
  - where to travel to
  - when to travel
  - how to travel

- Person-level considerations:
  - interactions / connections throughout the day
  - demographics
  - time

- Inputs are more complex – enabled by data collection improvements
Sample Model Output

Legend

Volume/Capacity Ratio | LOS

- Green: Less than 0.60 | LOS A
- Yellow: 0.61 - 0.70 | LOS B
- Orange: 0.71 - 0.80 | LOS C
- Light Orange: 0.81 - 0.90 | LOS D
- Light Red: 0.91 - 0.99 | LOS E
- Red: Greater than 1.00 | LOS F

- Interstate Highway
- Green: US Highway
- Blue: Sam Houston South Tollway
- Light Blue: State Highway
- Red: Regional/County Tollway
- Dark Red: Local Streets
- Red: Railroad
- Light Red: Study Focus Area
- Red: City Limits
- Red: County Line
**Capacity Analysis**

- **Volume (Average Daily Traffic) to Capacity Ratio**
- **Level of Service (LOS)**
  - Measure of Traffic Flow Used to Describe Operating Conditions from the Perspective of Travelers
Balancing Transportation and Land Use

- Hierarchy of facilities based on access requirements
- Coordinate with plans for future land use and development

Source: FHWA
Traffic Impact Analysis

• Understanding the demands placed on the community’s transportation network by new development

• Goals
  • Forecast additional traffic associated with new development, based on accepted practices
  • Determine the improvements that are necessary to accommodate the new development
  • Assist communities in land use decision-making
  • Consider alternative modes
Balancing Development Impacts

• Parking considerations
• Higher densities to support alternative modes
  • Streetscape, building facade
  • Bus stop and rail station design
• Trip capture / mixed-use development
  • Internal site trips
Block Size = Walkability

- Blocks: 400’ x 500’
- Blocks: 340’ x 660’
- Blocks: 300’ x 310’
Planning for All Users

- “Complete Streets”
- Variety of Modes
- Variety of Ages and Trip Types
Planning for All Users

Suburban Low Speed Thoroughfare Design

Typical Section

In some suburban contexts, land use patterns and spacing of intersecting streets and driveways suggest that speeds will be lower.

The diagrams on the opposite page illustrate street design components that are likely to land use patterns and spacing of intersecting streets and driveways suggest that speeds will be lower.

<table>
<thead>
<tr>
<th>DESIGN ELEMENT</th>
<th>STANDARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right-of-Way</td>
<td>70'</td>
</tr>
<tr>
<td>Number of Lanes</td>
<td>3 or 5, depends on capacity need</td>
</tr>
<tr>
<td>Intersection Control</td>
<td>Signals most common, roundabouts may be used on 3-lane sections</td>
</tr>
<tr>
<td>Median</td>
<td>8-10', to fit within 10' two-way left turn lane</td>
</tr>
<tr>
<td>Lane Widths</td>
<td>10' maximum</td>
</tr>
<tr>
<td>Turn Lanes</td>
<td>To be used at intersections as needed</td>
</tr>
<tr>
<td>Clear Zone</td>
<td>Minimum 1.5' from back of curb</td>
</tr>
<tr>
<td>On-Street Parking</td>
<td>7.5' when used (see diagram on opposite page)</td>
</tr>
<tr>
<td>Sidewalk</td>
<td>5' minimum width required</td>
</tr>
<tr>
<td>Bicycle Lane</td>
<td>5' minimum when used (not including gutter)</td>
</tr>
<tr>
<td>Utilities</td>
<td>Underground or within landscape width</td>
</tr>
<tr>
<td>Landscaping</td>
<td>5' minimum width when used, either for tree wells or parkway strip</td>
</tr>
<tr>
<td>Lighting</td>
<td>Within landscape width</td>
</tr>
</tbody>
</table>
Resources

• Atlanta Regional Commission
  www.atlantaregional.com

• Federal Highway Administration
  www.fhwa.dot.gov/planning

• Transportation Research Board
  www.trb.org
QUESTIONS?