Accommodating Freight (and Emergency Vehicles) in Complete Streets Design

Alison Conway, City College of New York
Project Motivation

• Limited recognition of freight needs in Complete Streets guidance

• Navigation and loading/unloading challenges
Project Goal

• Develop guidance to communicate to the broader planning/design community:
  – Freight fundamentals
  – Common challenges
  – Methods to address challenges
    • Design
    • Operational
    • Regulatory
    • Management
Project Methodology

- Review of literature and practice
- Expert outreach
- City survey
- Draft text and visualizations
- Expert review
Lessons from Surveying
## Survey Participation

- Distributed with assistance from NACTO

<table>
<thead>
<tr>
<th>City</th>
<th>Population (thousands)</th>
<th>Land Area (sq. miles)</th>
<th>Population Density (p/mi²)</th>
<th>Employment (thousands)</th>
<th>Responder</th>
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<td>New York, NY</td>
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<td>4059</td>
<td>Freight Office</td>
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<td>2653</td>
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<td>547</td>
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<td>325</td>
<td>1836</td>
<td>136</td>
<td>Deputy Director</td>
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Findings from Survey

• Disconnect between design & freight functions
  – Identifying appropriate person to survey difficult
  – Limited knowledge of freight constraints among many “design” respondents (e.g. truck size and weight regulations)

• Widespread demand for guidance addressing freight

• Most challenges common across cities
Stakeholder Engagement

Percent of Cities where Stakeholder Engaged

- Local businesses: 70%
- Internal agency experts: 50%
- Agency freight advisory group: 40%
- Local shippers: 30%
- Local truck/van operators: 20%
- Trucking industry associations: 10%
- None: 0%
Guidebook Content
Freight Fundamentals

- Generators of Freight Demand
- Freight Stakeholders
- Freight Vehicles
- Freight Parking and Loading Infrastructure
- Regulations that Impact Freight Movement
- Common Freight Challenges on Complete Streets
Challenges and Management Approaches

• Selecting an appropriate design vehicle
• Addressing vehicle navigation challenges
• Addressing curbside challenges
• Approaches to manage demand
1. Selecting a Design and Control Vehicle

- Freight trip generating land uses
- Current or expected freight traffic flows
- Truck size and weight regulations
- Street network designations
  - Highway functional classifications
  - Freight-specific functions
- Historic incident data
2. Providing adequate space for safe large vehicle turns
Providing adequate space for safe large vehicle turns – Design (1)
Providing adequate space for safe large vehicle turns – Design (2)
Providing adequate space for safe large vehicle turns – Design (3)
Providing adequate space for safe large vehicle turns – Operations & Regulation

- Dedicated signal phases for turning movements
  - May increase delay

- Vehicle size restrictions
  - May increase costs to industry
  - May increase VMT & related impacts
  - May impact industry structure
3. Reducing the frequency and severity of conflicts between large vehicles and vulnerable roadway users
Reducing the frequency and severity of conflicts between large vehicles and vulnerable roadway users - Design
Reducing the frequency and severity of conflicts between large vehicles and vulnerable roadway users – Operations and Education
Reducing the frequency and severity of conflicts between large vehicles and vulnerable roadway users – Vehicle Technologies and Equipment
4. Reducing speeds without unintended detrimental impacts on operations and safety
5. Providing network connectivity and redundancy

- Redundant networks with high street connectivity
- Reasonable alternative routes
6. Providing adequate space for vehicle parking, loading, and delivery operations
Providing adequate space for vehicle parking, loading, and delivery operations - Design
Providing adequate space for vehicle parking, loading, and delivery operations – Operations and Regulation

- Zoning regulations
- Building delivery management
- Commercial meter pricing
- Time variable curb regulations
- Enforcement
7. Providing safe access to sidewalks and buildings
Providing safe access to sidewalks and buildings
Demand Management Strategies

- Off-hour Deliveries
- Urban Consolidation Centers
- Lockers and Pickup Points
Final Deliverables (1)

• Guidebook (PDF)
• Educational Modules
  – Freight Fundamentals
  – Emergency Vehicle Fundamentals
  – Street Design and Management Approaches

3.7 Providing safe access to sidewalks, buildings, and fire hydrants

Once a driver exits a truck, he or she becomes a pedestrian. Operators must have a safe area to conduct loading and unloading, and a safe path to travel from a loading area to a building destination. When parking and loading do not occur directly at the curbside, operators are often required to cross or even walk in active vehicle or bicycle lanes, where they are at risk for a collision. The walking distance from the vehicle loading area to any building to which drivers or on-board staff will be expected to make deliveries should be considered.

Similarly, emergency vehicle operators must be able to access an incident location. Local fire codes mandate specifications for safe access roads, and for some operations, specific distances between an access road and a building. For example, the International Fire Code requires that at least one access road be located between 15 and 20 feet from a tall building where fire fighters will require an aerial ladder or pipe form apparatus.

Low hanging trees, curbside signage, and lighting can all obstruct freight and emergency vehicle operations at the curbside. At tall building locations, where aerial ladders or platforms may be used, power and other utility lines can also provide an overhead obstruction during fire response. Bikeshare stations, bicycle parking, benches, planters, trees, parking meters, closely spaced security bulletins, or other objects placed on a sidewalk can obstruct delivery operations, including loading activity or travel paths between vehicles and buildings. When streets are repurposed as pedestrian-only zones or alleys are repurposed for "green" use, alternative parking locations and delivery paths that may be used during restricted hours must be identified; particularly if movement of heavy goods is expected, walking distances need to be minimized.

The following roadway elements should be considered to provide safe curb and building access for freight and emergency vehicle operators.
Final Deliverables (2)

- Available on MetroFreight website by the end of the year
  https://www.mettrans.org/metrofreight-education
Thanks!

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