Complete Streets Considerations for Freight (and Emergency) Vehicle Operations

An Overview

Caltrans/LA Metro Delivery Support Workshop

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Akiko Yamagami, Transportation Planning Manager, LA Metro

What is a “complete street”?

- “Complete Streets are streets for everyone. They are designed and operated to enable safe access for **all users**, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work. They allow buses to run on time and make it safe for people to walk to and from train stations.”
- A Complete Streets approach integrates people and place in the planning, design, construction, operation, and maintenance of our transportation network. This helps to ensure streets are safe for people of all ages and abilities, balance the needs of different modes, and support local land uses, economies, cultures, and natural environments.

- National Complete Streets Coalition, Smart Growth America

Why consider freight vehicles?

- Freight carriers bring goods essential to supporting quality of life
  - Residential deliveries
  - Local business deliveries: retail, restaurants, groceries, etc.
  - Office supplies
  - Healthcare and hospitality supplies

Why consider freight vehicles?

- Freight carriers remove unwanted materials
  - Household and commercial waste
  - Construction and demolition byproducts

(Some of the) Unintended Consequences of NOT Considering Freight Vehicles

- Congestion and associated emission increase;
- Elevated safety risks for non-motorized and pedestrian collisions;
- Unsafe operating conditions for the freight vehicle drivers;
- Damage to vehicles, goods, infrastructure, roadside property, unacceptable emergency response time, and patients in emergency vehicles.

Curbside Challenges

- Providing adequate space for freight vehicle parking, loading, and emergency response operations
- Providing curb and building access
- Managing demand

Other Common Challenges

- Selecting an appropriate design vehicle
- Providing adequate space for large vehicle turns
- Reducing conflicts with vulnerable roadway users
- Safely reducing speeds
- Providing network connectivity and redundancy

Contents

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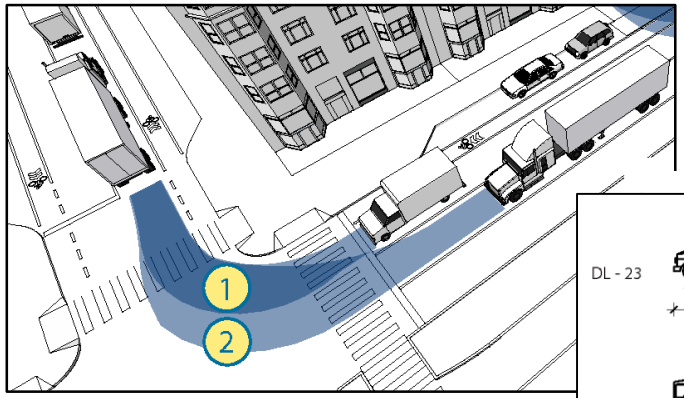
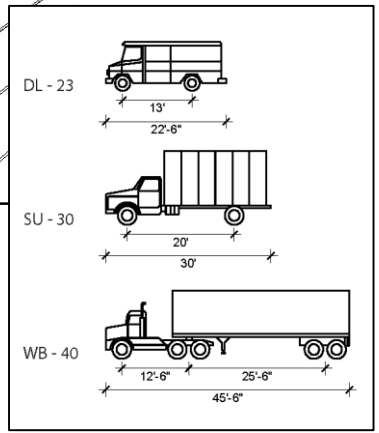
Freight Design/ Control Vehicle Selection

- Current/expected freight trip generating land uses
- Street functional classes and network designations
- Applicable truck size and weight regulations
- Current/expected freight traffic flows
- Historic incident data involving freight vehicles





Large Vehicle Turns

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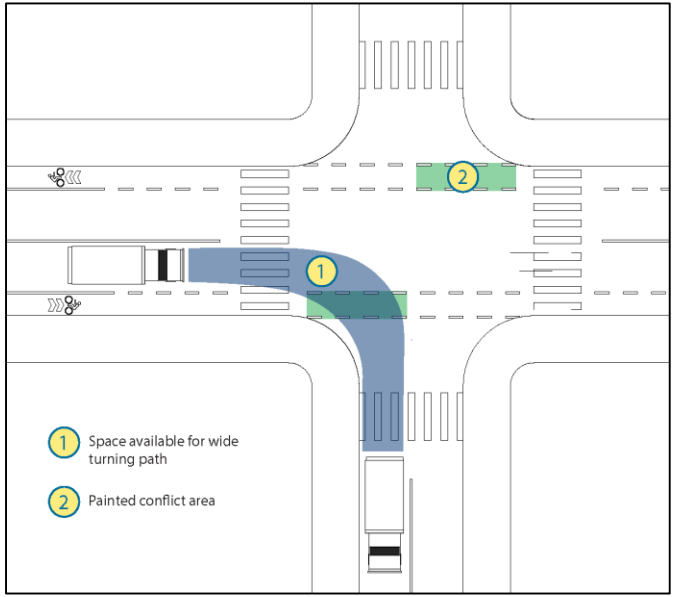
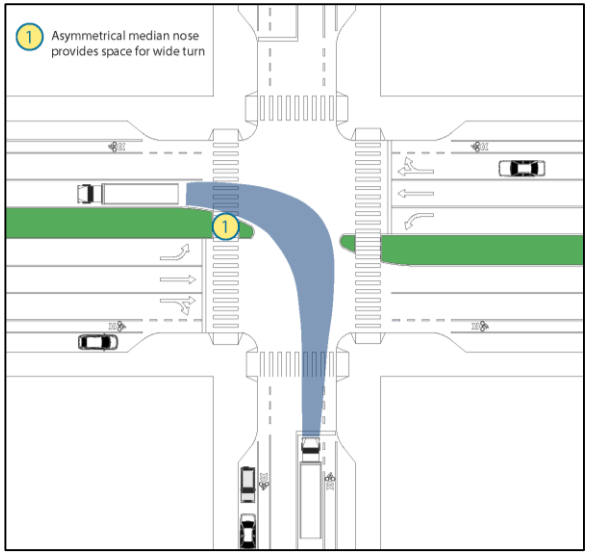
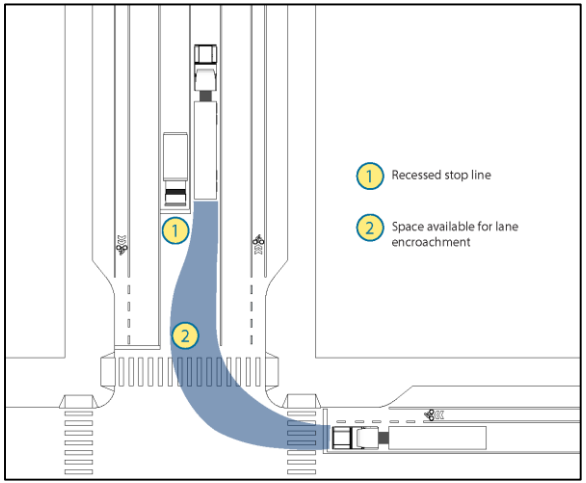
Design Solutions







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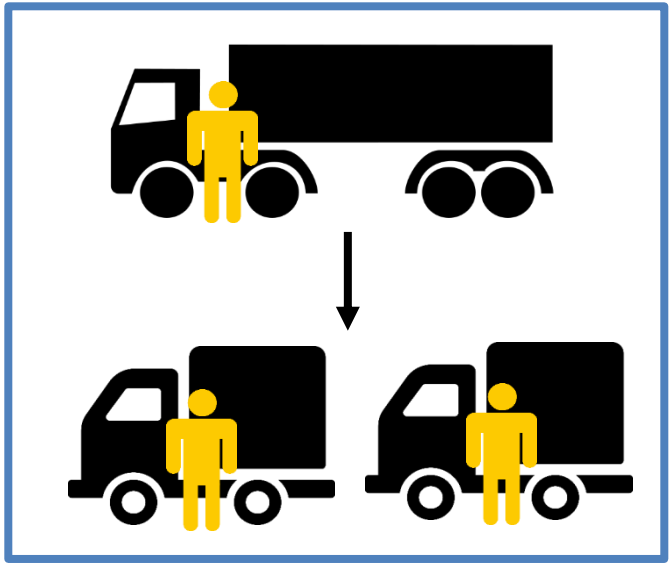
Regulatory Solution: Vehicle Size Restrictions

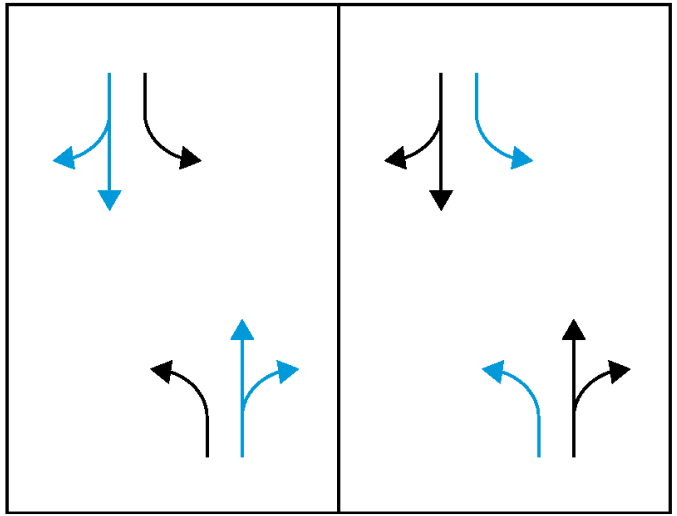
- Fixed
- Time-based

- Safety benefits of size restrictions must be carefully weighed against related impacts
  - VMT and congestion
  - Operator costs and industry participation

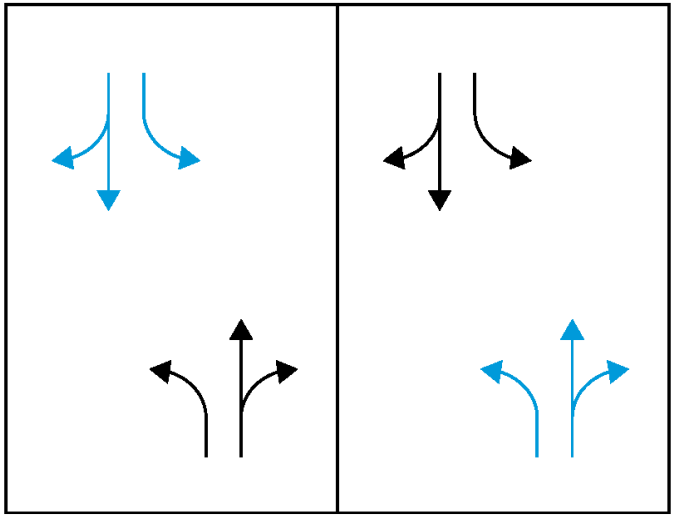


Operational Solution: Dedicated Signal Phases

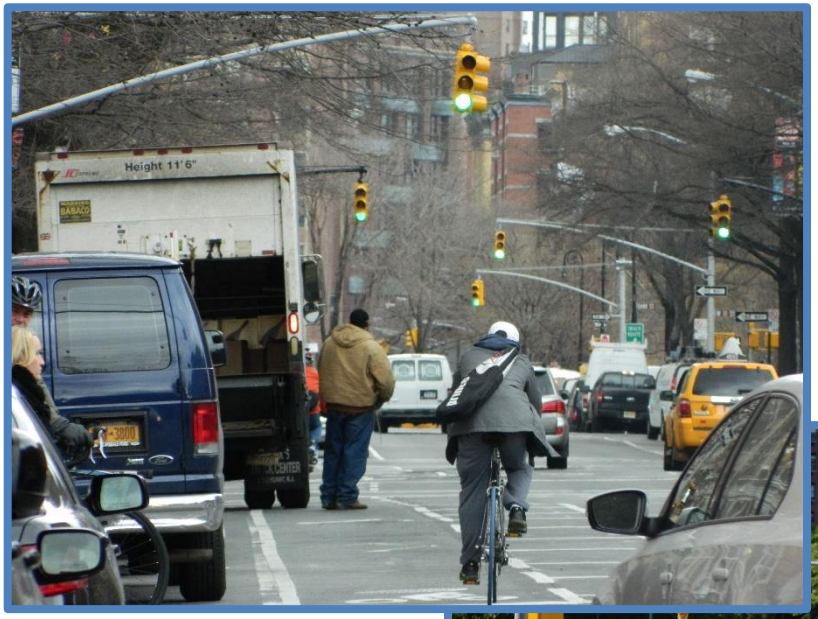
1 Separated turn phases



2 Separated directional movement phases



Conflicts with vulnerable road users



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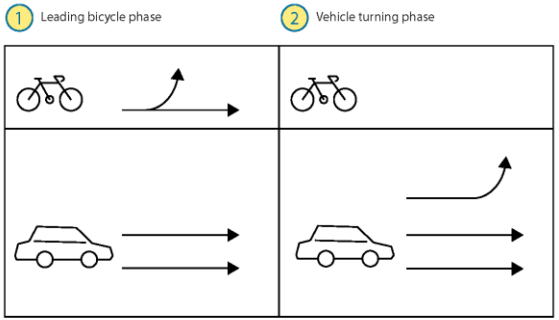
Design Solutions:

Bike Infrastructure, Clear Identification of Conflict Zones

Operational Solutions:

Dedicated Signal Phases and Roadside Mirrors



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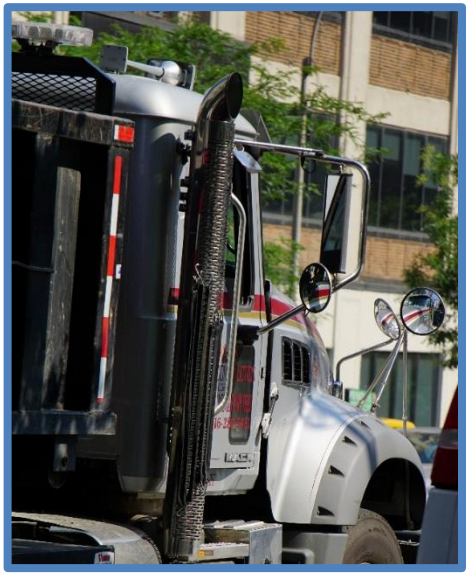
Vehicle-Based Solutions

- Mirrors
- Fresnel safety lenses
- Cameras
- Direct vision
- Side guards

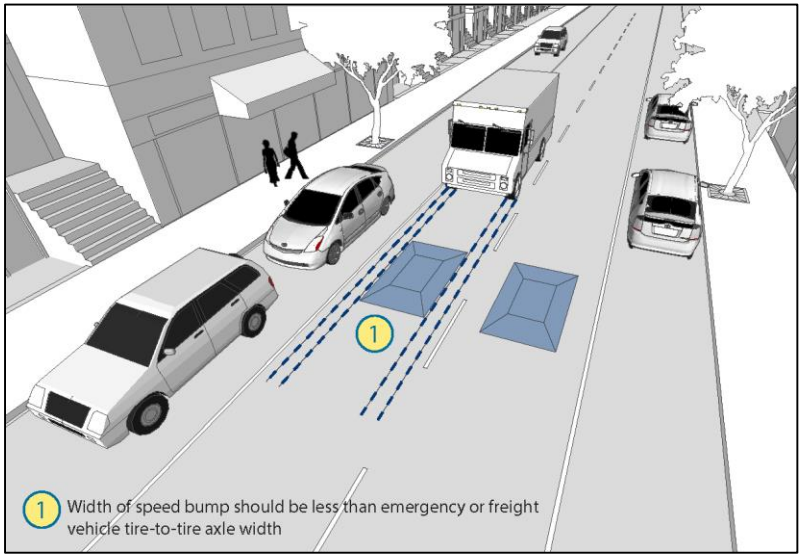


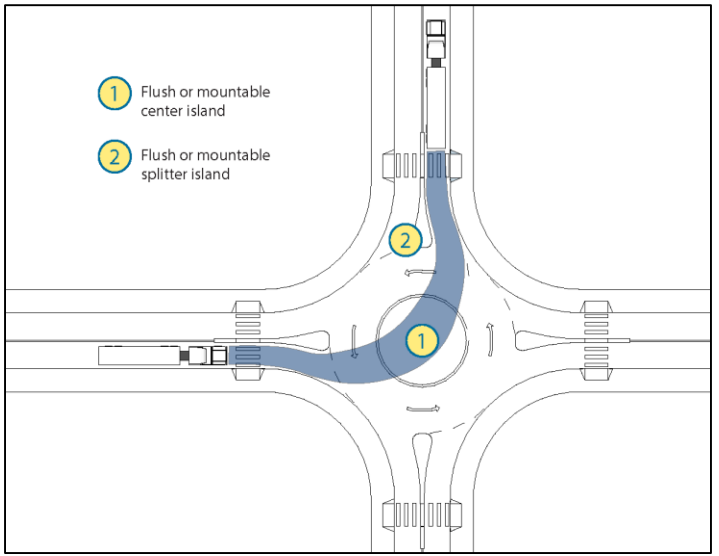
Experiential Education

- Drivers
- Non-motorized travelers
- General public

Speed Reducers

Design Solutions





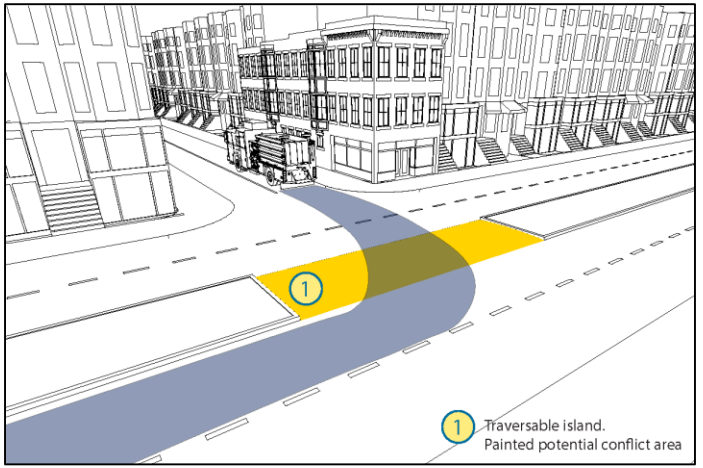
Network connectivity/ redundancy

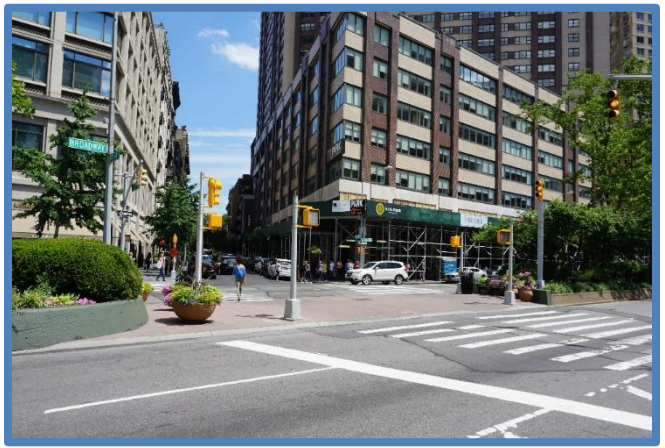
- Change in street direction
- Non-traversable median
- Removal of bypass lane (e.g. two-way left turn)
- Difficult to navigate street infrastructure

Design Solutions

- Redundant Networks
  - Short blocks/frequent intersections
  - Reasonable alternative routes

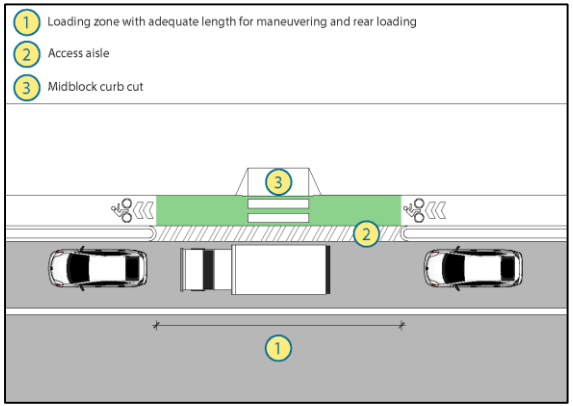
- Mountable medians

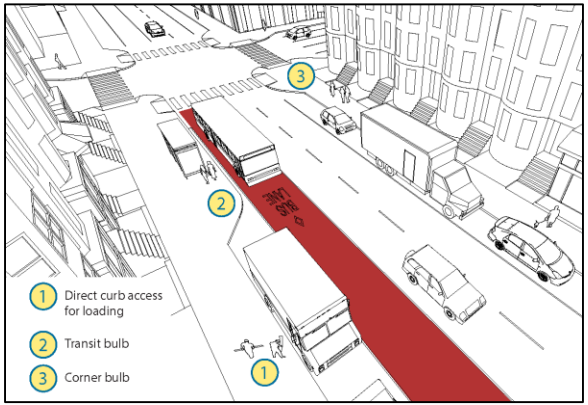




Space for parking, loading, and delivery

Design Solutions





Regulatory Solutions

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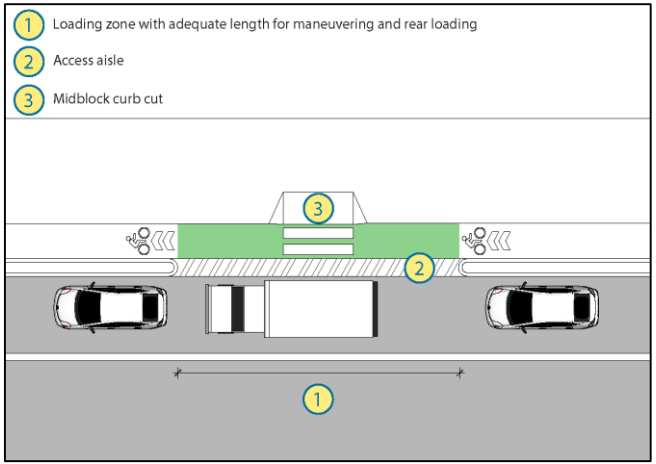
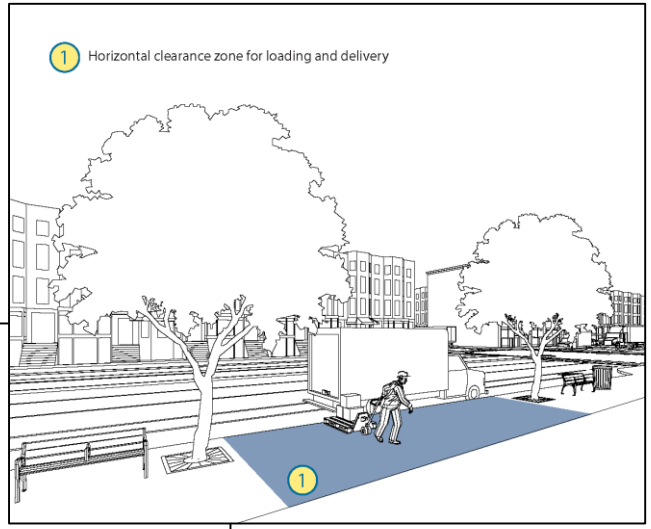
Operational Solutions

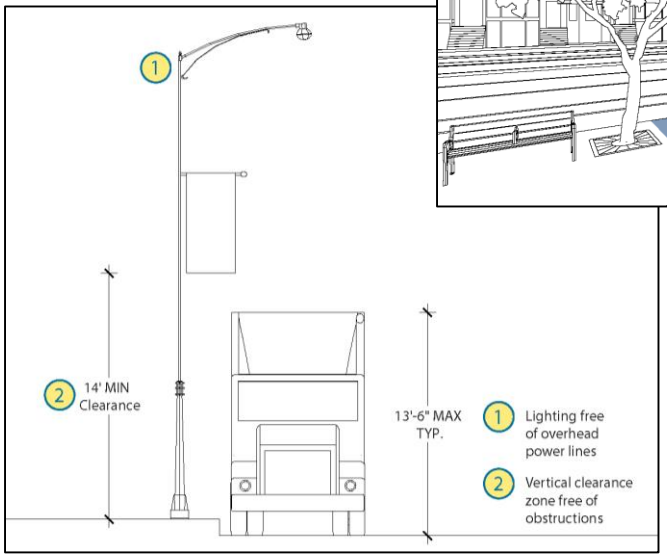
- Building Delivery Management
  - Centralized delivery location
  - Secure storage room
  - Lockers
  - Loading dock appointment system
- Enforcement
  - Commercial vehicles
  - Loading zone obstructions

Curb and building access

Design Solutions







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Demand Management

- Change the volume, spatial, or temporal distribution of demands
- May require policy change, infrastructure investment, and/or behavior change by multiple stakeholders
- Will only be implemented if costs are acceptable to decision-makers

Off-Hour Deliveries

Method	Benefits	Challenges/Concerns
Shift deliveries to non-peak hours • Early morning • Late evening • Overnight	For operator: • Reduce travel time delays, fuel costs, and parking fines	For operator: • Increase driver labor costs • Increase safety risk
	For business: • Receive deliveries when few customers present	For business: • Additional staff costs for off-hour receipt
	For neighborhood: • Reduce congestion impacts • Reduce demand for shared curb space	For neighborhood • Generate delivery noise at night

Consolidation Center

Method	Benefits	Challenges/Concerns
Transfer goods from large freight vehicles to small, green vehicles for final delivery Consolidate goods from multiple carriers onto shared vehicles	For operator: • Avoid expensive last mile costs	For operator: • Increase costs for transloading • Lose final delivery visibility
	For business: • May provide value added services • May improve reliability	For business: • May have to pay premium for services
	For neighborhood: • Reduce large vehicle trips • Reduce demand for parking • Reduce emissions	For neighborhood • May increase local VMT • May require public subsidy for start-up, operations

Lockers and Pickup Points

Method	Benefits	Challenges/Concerns
Lockers: Secure locker where package can be accessed via security code; may be located in residential area, public space, or local business **Pick-up Points:** Staffed delivery points at local businesses (e.g. pharmacy, grocery store)	For operator: • Avoid expensive failed deliveries, repeat trips	For operator: • Difficult to identify host business
	For residents: • Provide secure location to leave package	For residents: • May be at risk during pickup
	For neighborhood: • Reduce delivery trips	For neighborhood: • May need public space
	For host business: • Generate foot traffic	For host business: • May use floor space

For more information

Go to METRANS.org

- The Complete Streets Considerations for Freight and Emergency Vehicles Guidebook
- Module 1 – Intro to Freight
- Module 2 – Intro to Emergency Services
- Module 3 – Street Design and Management Approaches

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Thank you!

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