Complete Streets: Freight Component

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In establishing design parameters for a Complete Streets application, commercial truck traffic and the presence of other freight modes, such as railroads and rail grade crossings, needs to be considered. In any street environment, there will be numerous businesses along the route, from restaurants and light retail to wholesale distribution and manufacturing. The movements of their commodities and supplies are absolutely essential to their survival and profitability, and in turn, the sustainability of the street environment and the traffic that is partially the reason for the enhancements.

Designs may need to be modified to allow wider turning radiuses for commercial trucks, many of which are approaching maximum lengths and widths. Railroad grade crossings and commercially active intersections need to be laid out with expanded sight lines and enhanced bike and pedestrian protection. Business access alternatives including loading zones, alleys, and shared loading docks can allow good transportation options and flexibility for operations and growth while not compromising the basic enhancements. All of this work can be done intentionally with adequate outreach to the business community and a good understanding of the context of all the street's residents.

Geometric Considerations in Statute

Adequate lane width: The following maximum dimensions may be operated on Minnesota's highways without special permit:

- Height: 13'6"
- Width: 8'6", exclusive of rear view mirrors or load securement devices, which may extend an additional 3" on each side.
- Length (includes any front/rear overhang):
    - Single vehicle = 45'
    - Mobile crane = 48'
    - Trailer, of two-vehicle combination = 45'
    - Semi-trailer, of two-vehicle combination = 48' *(or 53' if kingpin to center of rear axle group distance is 43' or less)
    - Truck-tractor with semitrailer combination 75', longer on designated routes
    - 2-Vehicle combination other than truck-tractor & semitrailer = 75'
    - Each trailer or semi-trailer of a twin-trailer combination on designated routes = 28'6"
- Weight: All paved routes in Minnesota are 10-ton routes unless posted with a sign indicating a lesser axle weight limit.

Functional/Operational Considerations

Lane width: It is recommended that 12-foot lanes are used in truck intensive areas. 11-foot lanes may be adequate in physically-restrictive areas. 10-foot lanes are not adequate.

Adequate turning radii: It is recommended that the WB-67 design vehicle be adopted for truck-intensive areas to minimize off-tracking.

- This should include easing of intersection dimensions in lane width and turning radii from the major to secondary travel route for trucks, determined by traffic analysis focused on commercial traffic. Note that 53' vans and "conventional" (forward-engine) tractors in a semi-tractor-trailer configuration are the most common and economically most preferred delivery vehicle in many areas, as opposed to single vehicles or short (bobtail) trailers.

Adequate lane width for transport and delivery of goods

Commercial areas are of special concern, above and beyond retail outlets and residential areas

Truck loading zones in front/back, integrated into designs and signed usage of curbs or driveways

Truck route designations

Over-Sized/Over-Weight permitted loads

Access to freight terminals and through routes for truck traffic

Rail crossings: At-grade railroad crossings may require special attention to become consistent with Complete Streets goals. Besides controlling vehicular traffic with established design applications, bike and pedestrian safety factors and ancillary treatments need to be considered. Some of the considerations may include:

- Safety warnings, including gates and fencing, to warn and control pedestrian crossings at rail grade crossings, and tied to existing signals and circuits
- Preserving adequate sight lines for vehicles and pedestrians to see approaching trains.
- Preventing trespassing and non-controlled crossing of rail lines away from controlled crossings
- Signal synchronization and supplemental signals, such as queue cutters, to prevent intersection blockage and gridlock during trains passing in crossing

Parallel corridors: If truck traffic on the targeted Complete Street becomes restrictive, alternate approaches to businesses for commercial trucking needs to be provided for. This may include expanded parking lots, shared loading dock areas, alleys, and driveway extensions from parallel streets.

Noteworthy considerations

http://www.rcocweb.org/Lists/Publications/Attachments/143/Final%20report.pdf

Commercial Vehicles' Needs: Commercial vehicles, including trucks and emergency vehicles, require special considerations when designing roads. These can include loading and unloading areas, a wider turning radius than what would normally be specified, route designations and all-weather roads. Commercial vehicles need to have minimal delays along their routes.

http://www.cityofnewhaven.com/TrafficParking/pdfs/CS-Manual-04-05-10.pdf

Likewise, industrial areas with large volumes of truck traffic generally need wider travel lanes and larger curb radii, elements which should be avoided in commercial and residential areas. In such locations, however, speed reducers and other engineering treatments can be employed while accommodating the needs of large vehicles. For example, the speed humps on River Street (below) slow traffic without impeding truck access. In all cases, streets should be designed with safety of all users as a priority.

http://www.tdot.state.tn.us/bikeped/CompleteStreets.pdf

Design and Control Vehicle: The design vehicle plays a very important role in the complete street design process. The selection of key design criteria such as lane width and curb return radii are directly influenced by the design vehicle. Complete street design should employ careful thought and common sense when selecting a design vehicle.

In urban and suburban areas it is not always practical or desirable to choose the largest design vehicle that might occasionally use the street being designed, because of the impacts to pedestrian crossing distances, speed of turning vehicles, etc. In contrast, selection of a small design vehicle in the design of a facility regularly used by large vehicles can invite serious operational problems with possible safety implications to all types of users.

The designer should select the largest design vehicle that will use the facility with considerable frequency (for example, bus on bus routes, semi-tractor trailer on primary freight routes or accessing loading docks, etc.). In general, consideration must be given to:

- Design vehicle: a vehicle that must be regularly accommodated without encroaching into the roadside or opposing traffic lanes, and

- Control vehicle: an infrequent vehicle that must be accommodated, but encroachment into the opposing traffic lanes, multiple-point turns, or minor encroachment into the roadside is considered acceptable.

If the control vehicle is larger than the design vehicle, and it often is on urban streets, the designer should carefully consider the potential ramifications to the street design and other element of design. An example is the use of local residential streets by large moving vans. These vehicles must somehow be

accommodated in neighborhoods on an occasional basis, but using this vehicle as the design vehicle would result in local streets and intersections that are much too wide for neighborhood conditions.

The choice of design and control vehicles is particularly important in intersection design where vehicles, pedestrians and bicyclists routinely share the same space. Special consideration must also be given to design vehicle choices in the design of modern