



TO:	Brian Brewer, Kimley-Horn and Associates	DATE:	October 14, 2020
FROM:	Keri Pyke, P.E., PTOE Melissa Restrepo	HSH PROJECT NO.:	2020124.00
SUBJECT:	194 Lowland Street, Holliston, MA Responses to Public Traffic Comments		

Overview

This memorandum, prepared by *Howard Stein Hudson (HSH)*, responds to several email comments sent to the Holliston Planning Board by members of the public regarding the 194 Lowland Street development in Holliston, MA. The comments are summarized as follows:

1. Provide a truck turn geometry review of the Route 16/Route 126 intersection.
2. Weight comparison of a loaded tractor trailer to a loaded nine-car carrier and can the streets accommodate this amount of weight?
3. Comment response to car carriers crossing traffic. Is this allowed? Does this conflict with the Complete Streets policy?

Responses

1. Truck Turning Movements at Route 16/Route 126

In order to confirm that a nine-car carrier truck (see **Figure 1**) can safely make the required turning movements at the intersection of Washington Street (Route 16)/Summer Street (Route 126), the study team analyzed the turning movements by using AutoTURN. The turning movements for the nine-car carrier truck are shown in **Figure 2** and **Figure 3**. Based on the turning movement assessment, the truck will encroach over the adjacent travel lane when taking the right turn from Summer Street onto Washington Street as shown in **Figure 2**. When a truck is traveling westbound along Route 16 and turning left onto Summer Street, as shown in **Figure 3**, only the truck's overhang will slightly encroach over the adjacent travel lane, causing little to no impact on travel operations.



Figure 1. *Vehicle Profile: Nine-Auto Carrier Truck*

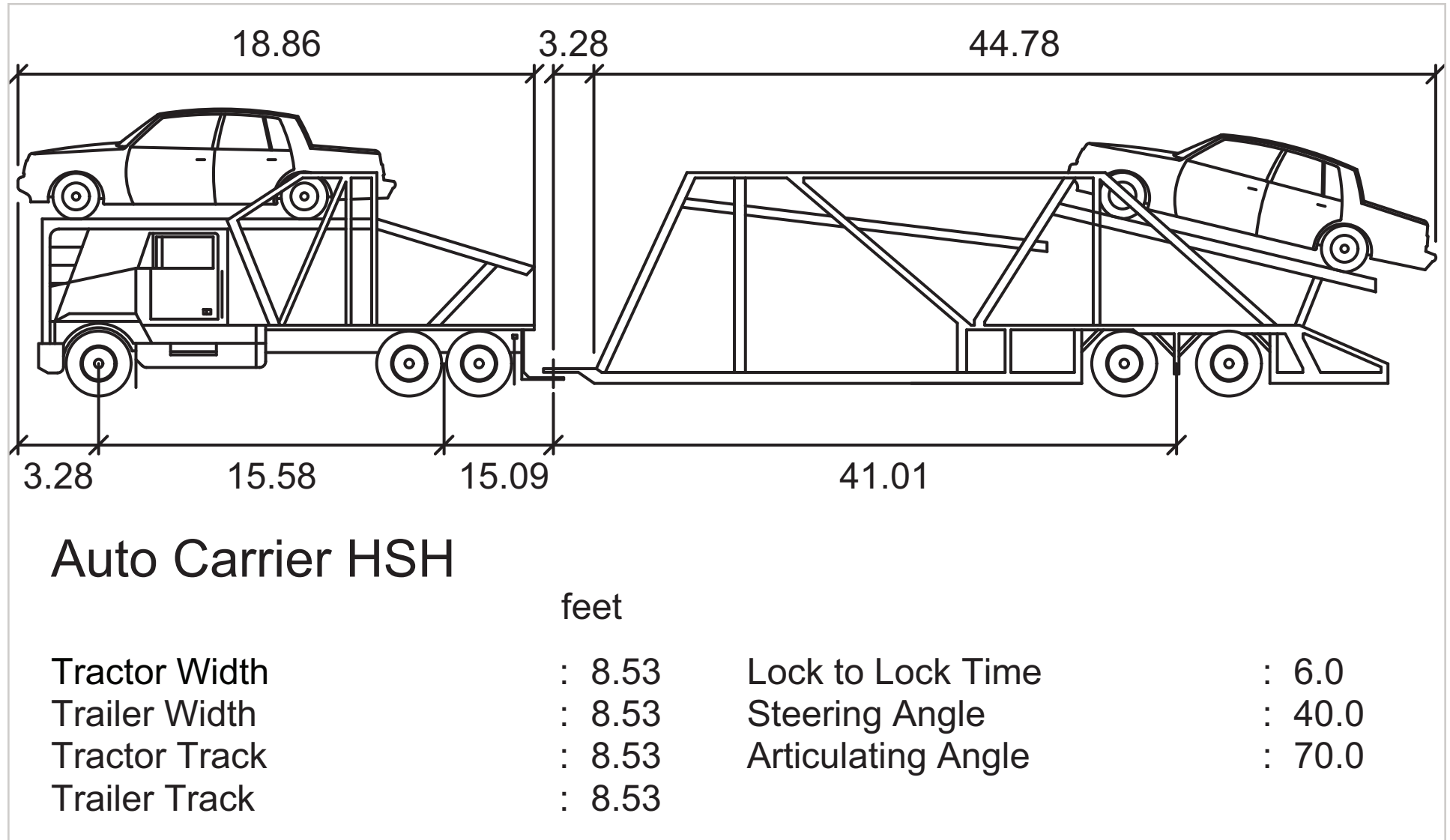




Figure 2. *Washington Street (Route 16) at Summer Street (Route 126) - Nine-Car Carrier Truck Traveling NB Turning Right onto Washington Street*





Figure 3. *Washington Street (Route 16) at Summer Street (Route 126) - Nine-Car Carrier Truck Traveling WB Turning Left onto Summer Street*





2. Truck Weights

The laws governing truck size and weight in the State of Massachusetts are found in Massachusetts General Laws (MGL) Ann. Ch. 85, §§30 et seq. and MGL Ann. Ch. 90, §19 through §19L (available on the State's website at <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXIV/Chapter85> and <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXIV/Chapter90>, respectively).

Additional information about Massachusetts truck weight limits can be found on the Massachusetts Department of Transportation website at <http://www.massdot.state.ma.us>. Massachusetts' permitting procedure and limits are located in Massachusetts Administrative Code Title 700, §§8.00 et seq., which can be found at <https://www.mass.gov/files/documents/2017/10/30/700cmr8.pdf>.

Heavy vehicles are allowed on Massachusetts' roads without special permits within certain weight limits, as given in **Table 1**. The nine-car carrier falls into the five-axle category; therefore, the allowed weight is 99,000 pounds before a special permit is required. An empty nine-car carrier weighs approximately 45,000 pounds, with the empty weight varying slightly depending on the maker. The average personal automobile weighs 3,900 pounds (see attachment for calculations and source), so if the carrier is fully loaded, the pay load would weigh 35,100 pounds. Adding the pay load to the carrier weight gives a total weight of 80,100 pounds, well under the weight limit at which a special permit must be acquired.

Table 1. *Massachusetts Vehicle Weight Limits*

Vehicle Type	Weight Limit (pounds)
Motor Vehicle (2 axles)	46,000
Vehicle or vehicle combination (3 axles)	73,000
Vehicle or vehicle combinations (4 axles)	87,000
Vehicle or vehicle combinations (5+ axles)	99,000



3. Trucks Encroaching During Turns

The streets studied are classified by the Massachusetts Department of Transportation (MassDOT) as shown in **Table 2**. MassDOT guidance as to when encroachment by a vehicle is allowed is based on the functional classification of the roadway. MassDOT's *Project Development and Design Guide (PDDG)* provides the information shown in **Figure 4** as to when encroachment is allowed based on the classification of the roadways to and from which the vehicle is turning.

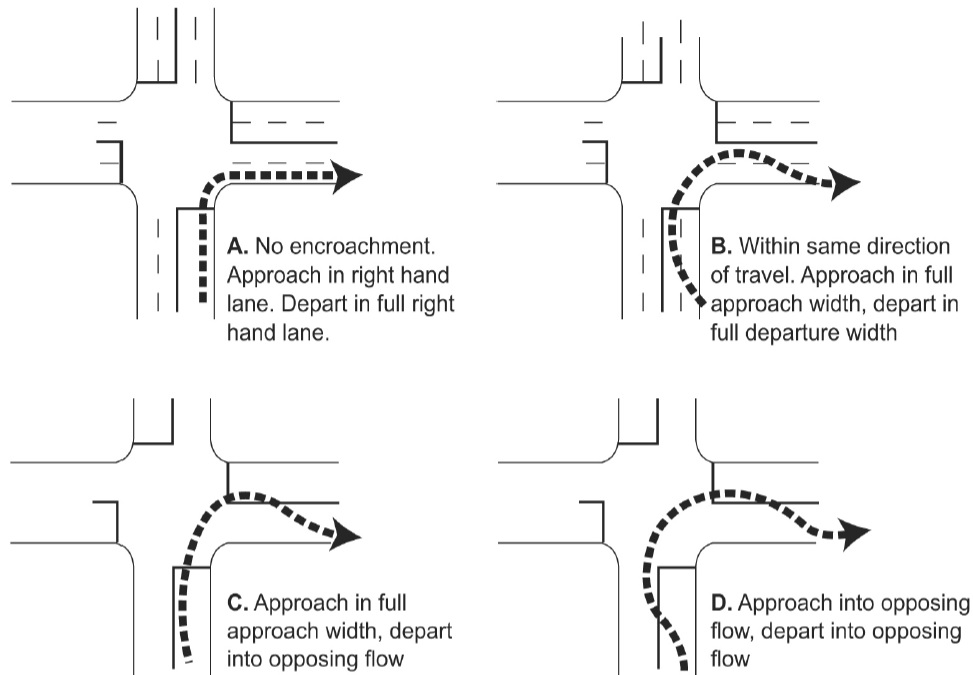
Table 2. *Study Area Roadway Functional Classifications*

Roadway Name	Functional Classification
Lowland Street	Local road
Jeffrey Avenue	Local road
Whitney Street	Local road
Western Avenue	Rural minor collector
Washington Street (Route 16)	Rural minor arterial
Concord Street (Route 126)	Rural minor arterial
Summer Street (Route 126)	Rural minor arterial



Figure 4. MassDOT PDDG Design Vehicle Encroachment Guidance

Exhibit 6-15
Typical Encroachment by Design Vehicle



		To (Departure Street)								
		For Tractor/Trailer (WB 50)			For Single-Unit Truck (SU)			For Passenger Car (P)		
		Arterial	Collector	Local	Arterial	Collector	Local	Arterial	Collector	Local
From (Approach Street)	Arterial (Art)	A	B	C	A	B	C	A	A	A
	Collector (Col)	B	B	C	B	B	C	A	A	A
	Local (Loc)	B	D	D	C	C	D	A	B	B

A, B, C, D defined in above diagrams.

Note: Cases C and D are generally not desirable at signal controlled intersections because traffic on stopped street has nowhere to go.

Source: Adapted from ITE Arterial Street Design Guidelines.



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Based on the projected truck movements and routing for the nine-car carrier, the conditions shown in **Table 3** apply.

Table 3. Turning Encroachment Conditions on Study Area Roadways

From Street (Classification)	To Street (Classification)	Encroachment Condition	Meets Standard?
Washington St EB (rural minor arterial)	Whitney Street SEB (local road)	C	Yes
Whitney St NWB (local road)	Washington St WB (rural minor arterial)	B	Yes
Washington St WB (rural minor arterial)	Whitney St SEB (local road)	C	Yes
Whitney St NWB (local road)	Washington St EB (rural minor arterial)	B	No
Jeffrey Ave SB (local road)	Lowland St EB (local road)	D	Yes
Lowland St WB (local road)	Jeffrey Ave NB (local Road)	D	Yes
Washington St WB (rural minor arterial)	Summer St SB (rural minor arterial)	A	Yes
Summer St NB (rural minor arterial)	Washington St EB (rural minor arterial)	A	No

There are two locations where a heavy vehicle would be required to encroach upon opposing lanes in order to complete turns: Washington Street at Summer Street and Washington Street at Whitney Street. These are existing conditions; other large trucks, which are not prohibited from using these streets, must make similar maneuvers to complete turns at these intersections. The number of trucks related to the development will not substantially impair this condition, and it should make no impact on the Town's Complete Streets policy.

Large trucks turning across travel lanes at intersections is a usual condition in Massachusetts, where many roadways were former paths that were paved prior to the need to accommodate larger vehicles. These types of movements are likely to occur more frequently if the as-of-right industrial use is developed on the Site because it would generate more trucks than the proposed use.