SEH MEMORANDUM

TO: Scott Pedersen – Pedersen Development Company

FROM: Jon Larson, PE

DATE: March 7, 2011

RE: Boulder Transit Village – Trip Generation & Distribution Analysis
SEH No. 113832-REGTD

Short Elliott Hendrickson Inc. (SEH) is pleased to provide this trip generation and distribution analysis for the proposed Boulder Transit Village in Boulder, Colorado. This traffic assessment was performed consistent with the requirements in sections 2.03(J) *Trip Generation* and 2.03(K) *Trip Distribution/Assignment and Modal Split* of the City of Boulder Design and Construction Standards (November 2009).

Project Description

The proposed Boulder Transit Village is located on the northeast corner of 30th Street and Pearl Street adjacent to the railroad tracks. The overall site is approximately 3.2 acres. The current site is an undeveloped parcel except for the historic Boulder Railroad Depot which is situated on the north end of the project site. A vicinity map showing the site location in relation to Boulder is provided in **Figure 1**. The proposed development consists of the following land uses:

- Residential Condominium/Townhouse;
- Hotel;
- Park and Ride;
- Restaurant; and
- RTD transit terminal.

Site Access

Access to the site is provided on the south by Pearl Parkway and on the north by 33rd Street via the future Junction Place. The future roadway connection of Junction Place begins on the north at 33rd Street, extends south over the canal, continues adjacent to the Boulder Transit Village site and terminates at Pearl Parkway. The intersection of Pearl Parkway and Junction Place is expected to be a 4-legged signalized intersection with the south leg constructed in the future as part of a mixed-use residential/commercial development.

Trip Generation

In order to determine the traffic impacts associated with the development of the Boulder Transit Village, the amount of commuter vehicle traffic generated by the proposed development was estimated using trip generation rates contained in the Institute of Transportation Engineers (ITE) Trip Generation manual[1]. The amount of bus traffic was estimated by referencing the routes and schedules available from the Boulder Transit/Transfer Station located on 14th Street/Walnut Street. The existing Boulder Transit/Transfer station currently accommodates regional and local transit buses via internal terminal

[1] Trip Generation. Institute of Transportation Engineers. 8th Edition. 2008.

bays as well as on-street bus stop locations. This is the major transit hub for the City of Boulder. Though the Regional Transportation District (RTD) has yet to determine the number of transit routes and schedules for the Boulder Transit Village RTD station, it will accommodate both regional and local routes similar to the Boulder Transit/Transfer station. It was assumed, that because of the number of bus terminals and size of the Boulder Transit Village RTD station, the trip generation rates will be similar. Therefore, all of the schedules for all of the routes utilizing the Boulder Transit/Transfer station were evaluated and all of the arrivals/departures were counted to derive the daily trip estimate as well as the morning and evening peak hour estimates. The morning peak hour was assumed to be one hour between 7:00am and 9:00am and the evening peak hour was assumed to one hour between 4:00pm and 6:00pm. At that time when the traffic impact study is performed, we will coordinate with RTD to gather information regarding the expected transit routes and schedules and adjust the trip generation estimates accordingly.

Due to the transit oriented development, the RTD transit station, and the nearby bicycle and pedestrian connection, multi-use or multi-modal trips will occur within the development. As a result, the number of commuter vehicles from a transit oriented development of this type will be reduced. For the Boulder Transit Village, existing and future commuter vehicle reduction factors due to bike, pedestrian and local transit were calculated at 40%. Therefore, the modal split factor used in the trip generation estimates is 0.60.

Table 1 contains the estimated commuter vehicle and bus weekday trip generation for the Boulder Transit Village. The Boulder Transit Village is expected to generate approximately 2,022 trips during an average weekday with 164 trips in the morning peak period and 177 trips in the evening peak period.

Trip Distribution and Assignment

Trip distribution percentages for the development were based on current and future land use and traffic patterns in the vicinity of the site and are consistent with previous traffic impact studies submitted for adjacent parcels. The overall distribution of trips to and from the site is illustrated in **Figure 2**. The site-generated traffic was assigned to the vehicle and bus site accesses as well as the Pearl Parkway/Junction Place intersection based on the distribution. **Figure 3** contains the estimated trip assignment for the Boulder Transit Village development. As Figure 3 illustrates, the volume of buses accessing the underground bus terminal through the Bus Access does not match the total number of estimated bus trips. All bus traffic has been accounted for as it is expected that a percentage of the buses will utilize the bus pull-outs along Junction Place.

The trip generation and distribution analysis contained in this memorandum will be utilized to establish the study area for the full traffic impact study. At that stage in the project development, additional intersections will be identified for analysis to determine the project impacts.

Please feel free to contact Jon at 303.441.5417 with any questions or comments.

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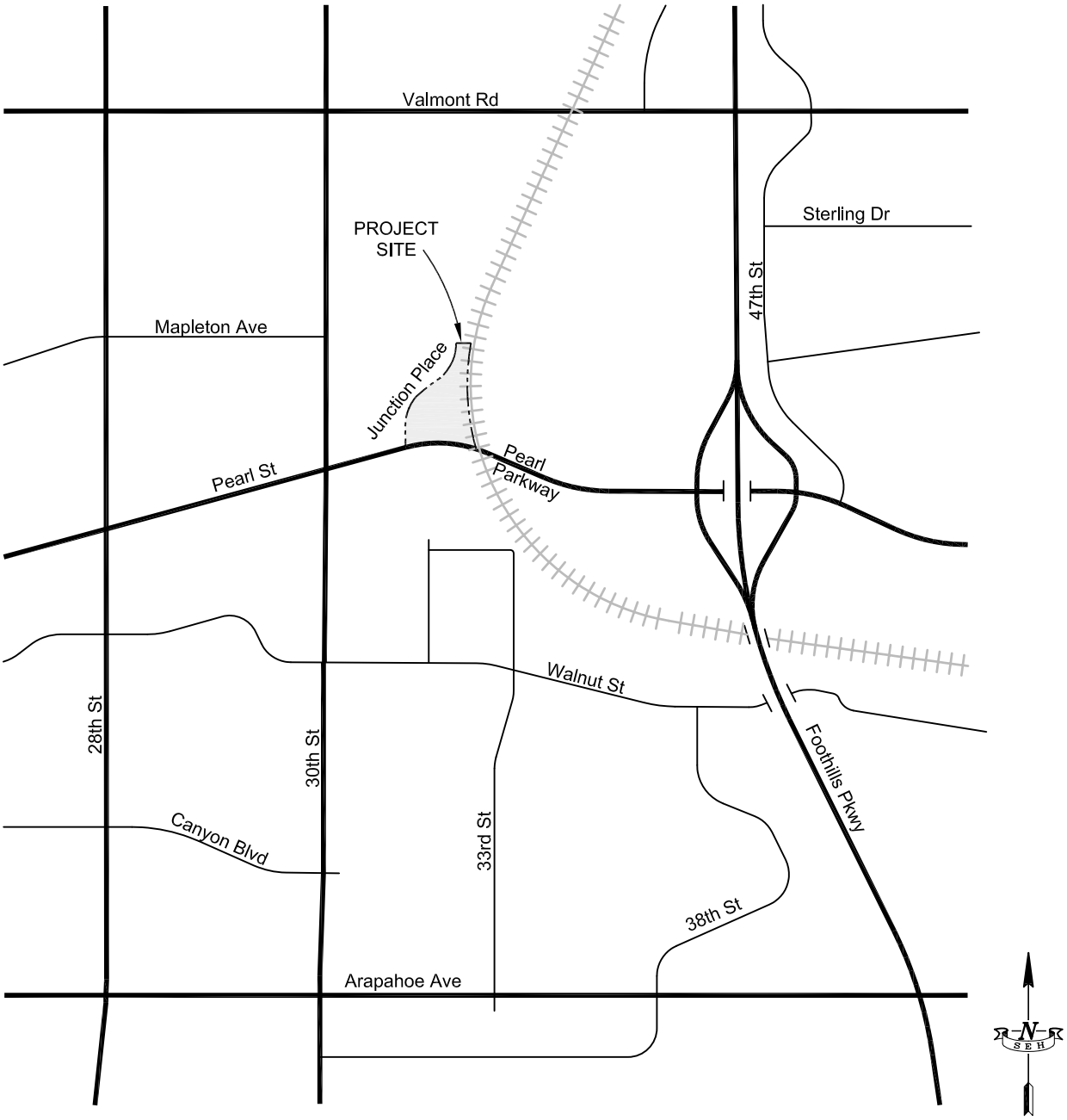


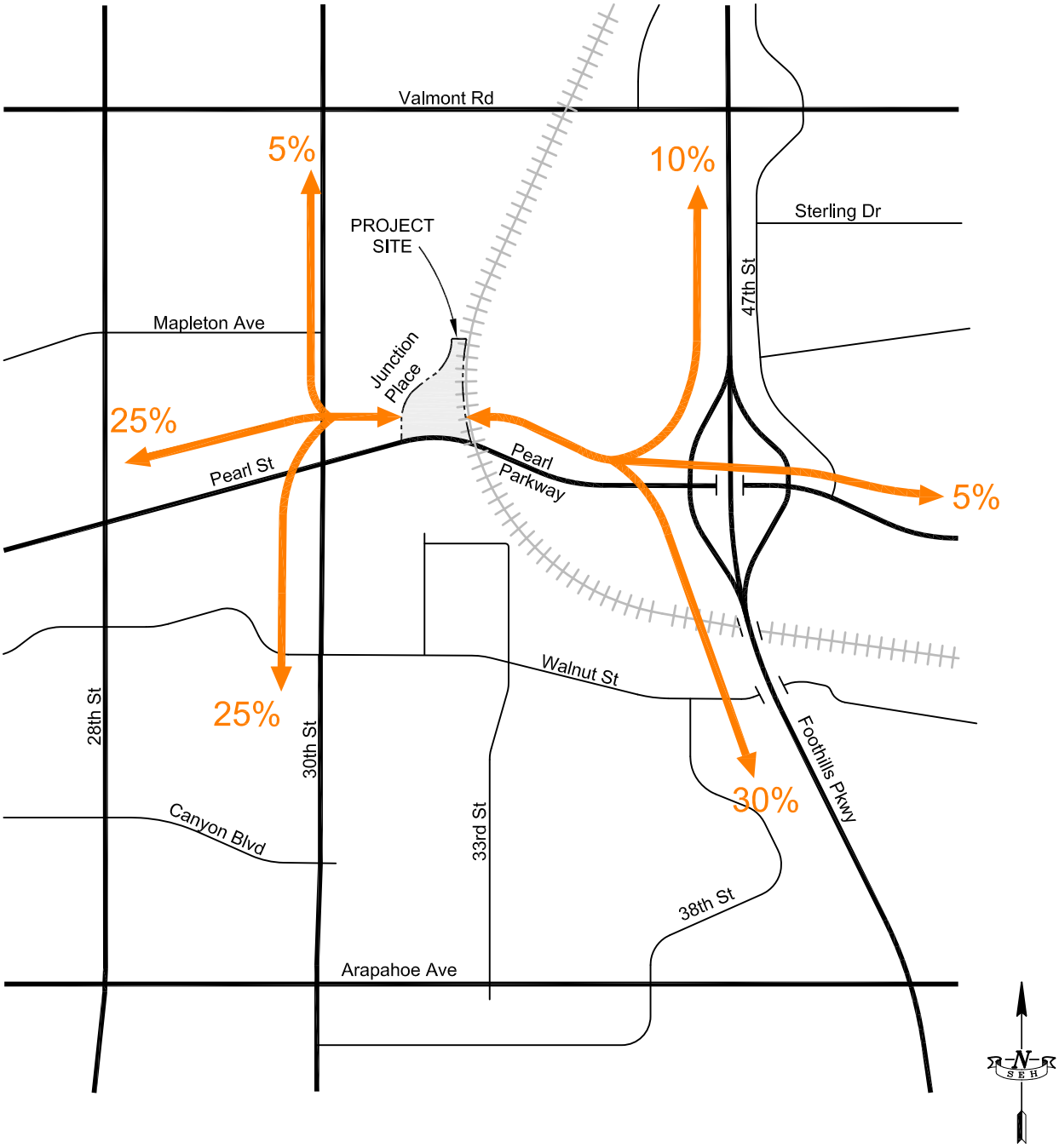
BOULDER TRANSIT VILLAGE TRAFFIC STUDY
VICINITY MAP

Scale	1"=1000'	Date	3/7/11	Drawn by	KLH	Job #	113832-REGTD	Figure	1

Table 1. Weekday Trip Generation Estimate - Boulder Transit Village & Transit Oriented Development

	Land Use	ITE Code	Size	Unit	Modal Split Factor[2]	Average Daily Trips [1]				A.M. Peak Hour Trips [1]				P.M. Peak Hour Trips [1]			
						Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
Commuter Vehicle	Residential Condominium/Townhouse	230	80	DU	0.60	5.81	279	140	139	0.44	21	4	17	0.52	25	17	8
	Quality Restaurant	931	2.7	KSF	0.60	89.95	146	73	73	0.81	1	1	0	7.49	12	8	4
	Hotel	310	136	Rooms	0.60	8.17	667	334	333	0.56	46	28	18	0.59	48	25	23
	Park and Ride	90	100	Parking Spaces	0.60	4.5	270	135	135	0.72	43	35	8	0.62	37	9	28
	Total - Commuter Vehicle						**1,362**	**682**	**680**		**111**	**68**	**43**		**122**	**59**	**63**
Buses	Bus Terminal[3]	-	7	Bays	-	-	660	330	330	-	53	27	26	-	55	28	27
	Total - Buses						**660**	**330**	**330**		**53**	**27**	**26**		**55**	**28**	**27**
	GRAND TOTAL						**2,022**	**1,012**	**1,010**		**164**	**95**	**69**		**177**	**87**	**90**

Notes:
1. Trip Generation estimates are based on rates contained in Trip Generation, 8th Edition (Institute of Transportation Engineers, 2008).
2. Commuter vehicle reduction factors due to bike, ped and local transit were calculated at 40%, thus a modal split factor of 0.60 is applied to estimated trip generation.
3. Trip Generation estimates for the Bus Terminal are based on the existing arrival/departure schedules of all buses from the Boulder Transfer Station on 14th/Walnut. Until RTD determines the routes/schedules for the Boulder Transit Village, it was assumed the number of routes and buses would not exceed the existing Boulder Transfer Station.



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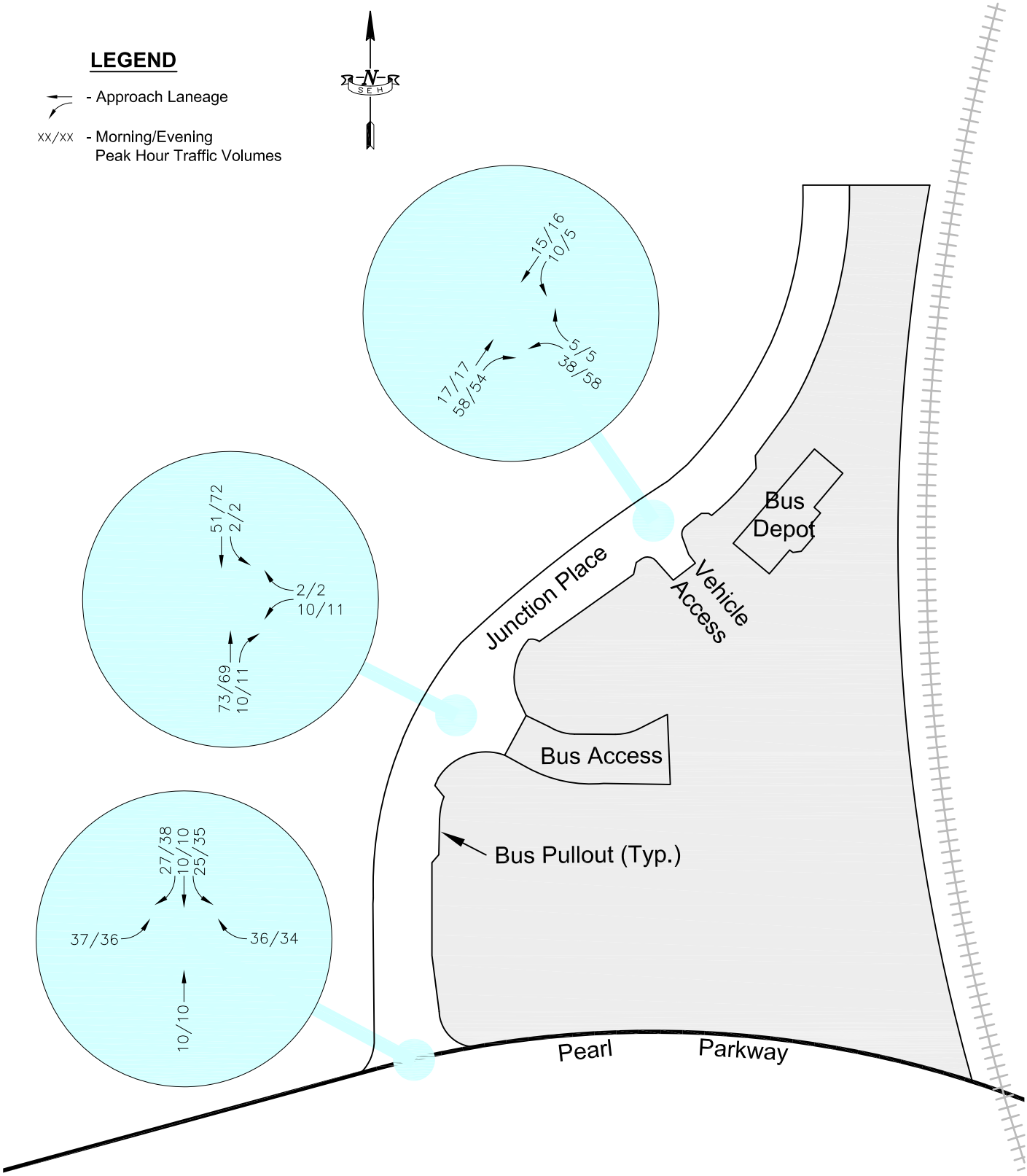
BOULDER TRANSIT VILLAGE TRAFFIC STUDY
TRIP DISTRIBUTION

Scale	1"=1000'	Date	3/7/11	Drawn by	KLH	Job #	113832-REGTD	Figure	2



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BOULDER TRANSIT VILLAGE TRAFFIC STUDY
TRIP ASSIGNMENT

Scale	1"=100'	Date	3/7/11	Drawn by	KLH	Job #	113832-REGTD	Figure	3