Attachment M – Construction Traffic Review Analysis

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TO: Kelsey Hawkins, Associate/Deputy Project Manager; Harris & Associates

FROM: Phuong Nguyen, Senior Transportation Engineer; CR Associates

DATE: January 23, 2023

RE: **Kensho Development Construction Traffic Review**

The purpose of this technical memorandum is to document the construction trips analysis for the Kensho Development (the "Project"). The Project is also known as the Pheasant Hills Multi-Family project, and the names are used interchangeably herein.

Construction Trips Generation Analysis and Recommendations

The construction traffic analysis presented below compares the Proposed Project anticipated construction trips against the residential traffic studied in the Pheasant Hills Multi-Family Local Transportation Study (LTS) by CR Associates (December 2022). **Table 1** displays the trip generation for the Proposed Project, as studied in the LTS.

Table 1 –Trips Generation Table from LTS

Land Use	Units	Trip Rate	ADT	AM Peak Hour					PM Peak Hour				
				%	Trips	Split	In	Out	%	Trips	Split	In	Out
Multi-Family Residential (More Than 20 DU/Acre)	185 DU	6/DU	1,110	8%	89	2:8	18	71	9%	100	7:3	70	30

Source: SANDAG (not so) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (April 2002)

The construction trip generation was developed in coordination with the Project's team and output from the California Emissions Estimator Model (CalEEMod) and is shown in **Table 2.** For comparison purposes, heavy vehicle trips (hauling or vendor truck trips) were converted to Passenger Car Equivalent (PCE), using a factor of 3.5 PCE[1] per truck trip.

[1] Passenger car equivalent (PCEis a metric used in transportation engineering, to assess traffic-flow rate on a roadway. A passenger car equivalent is essentially the impact that a mode of transport has on traffic variables (such as headway, speed, density) compared to a single car. For example, typical values of PCE are: private car (including taxis or pick-up) = 1 PCE, bus = 3 PCE, heavy truck = 3.5 PCE.

Table 2 – Construction Trips[2] Per Day from CalEEMod

Construction Phase	# Working Days	Number of Worker	Worker Vehicle Trips	Number of Vendor Truck	Vendor Truck Trips	Number of Haul Truck	Haul Trucks Trips	Total Truck Trips	Passenger Car Equivalent[3]	Total Trips (Worker + Truck PCE)
Demolition	20	7	14	0	0	3	6	6	21	35
Grading	**30**	**7**	**14**	**0**	**0**	**42**	**84**	**84**	**294**	**308**
Building Construction	**260**	**80**	**160**	**22**	**44**	**0**	**0**	**44**	**154**	**314**
Paving Phase 1	20	5	10	0	0	0	0	0	0	10
Architectural Coating	130	18	36	0	0	0	0	0	0	36
Site Preparation	60	35	70	0	0	0	0	0	0	70
Paving Phase 2	30	10	20	0	0	0	0	0	0	20

[2] All are one-way Trips. Rounded up for daily number of workers and daily haul trips
[3] Passenger Car Equivalent (PCE) is calculated at 3.5 vehicles per truck.

As shown, the highest number of trips, between 308 and 314 trips per day, would occur during the grading and building construction phases of the Proposed Project, respectively. These trips were then converted to daily and peak hours trip generation, with the following assumptions:

1. Since the standard work schedule is 7 AM till 3 PM, it assumed that most construction workers would be on-site prior to the AM peak hours studied (7 AM – 9 AM), and left the LTS study area prior to the PM peak hours (4 PM – 6 PM). Therefore, these trips were included in the daily trip generation but not in the peak-hour trip generation. However, depending on the Project's construction schedule, some workers may arrive between the AM peak period (7 AM – 9 AM) during the building construction phase. Recommendations to accommodate these potential trips are provided below.

2. Truck trips were assumed to operate at an even interval between 7 AM and 3 PM (8-hour period). Since the workday ends prior to the PM peak hours, truck trips would only occur during the AM peak hours.

The daily and AM peak hour trip generation for both the grading and building construction phases are presented in **Table 3** and **Table 4**, respectively. PM peak hour trips are not displayed as there are no construction-related trips anticipated to occur during the PM peak hour.

Table 3 – Construction Trips Per Day - Grading

Trips Type	Amount (worker or trucks)	Daily Trips (PCE)	AM Peak Hour					
			%	Trips	Trips (PCE)	Split	In	Out
Worker	7	14	Workers are already on-site prior to the AM peak hour					
Trucks	42	294	12.5%	6	21	5:5	11	10
Total	-	**308**		**6**	**21**		**11**	**10**

Table 4 – Construction Trips Per Day – Building Construction

Trips Type	Amount (worker or trucks)	Daily Trips (PCE)	AM Peak Hour					
			%	Trips	Trips (PCE)	Split	In	Out
Worker	80	160	Workers are already on-site prior to the AM peak hour					
Trucks	22	154	12.5%	3	11	5:5	6	5
Total		**314**		**3**	**11**		**6**	**5**

As shown, the total daily trips for the grading and construction phases would be less than those studied in the LTS, 308 trips and 314 trips vs. 1,110 trips. In addition, the AM peak hour trips would also be less than those studied in the LTS, 21 trips and 11 trips vs. 89 trips.

Because the primary ingress/egress for the Proposed Project site is located adjacent to an active railroad track and based on a review of the current trip patterns along Guajome Street, the following measures are recommended:

1. Develop a traffic control plan, including flaggers, to ensure that neither workers nor construction trucks would queue onto the railroad tracks during construction.
2. During the Building Construction phase, a minimum of two permanent flaggers should be stationed along Guajome Street during the AM peak period to ensure that the surge in worker traffic does not cause a significant detrimental effect on Guajome Street.
3. Locate the temporary driveway (for construction traffic) as far west along Guajome Street as possible.
4. The Project applicant and general contractor should coordinate with City staff to address any traffic issue that occurs.