

# TECHNICAL MEMORANDUM

**DATE:** March 26, 2014

**TO:** Scott Smith  
City of Mill Creek

**FROM:** Jeff Schramm  
TENW

**SUBJECT:** Crestview Village Traffic Assessment  
TENW Project No. 4855

CITY OF MILL CREEK  
ZONING CASE  
No. PP 14-66  
DATE 4-3-14  
BY [Signature]

This technical memorandum documents the traffic assessment completed for the proposed Crestview Village residential development, which includes 25 new single-family detached dwelling units. This traffic assessment includes a project description, trip generation estimate, distribution and assignment of project trips, and an assessment of transportation mitigation to Mill Creek and Snohomish County.

## Project Description

The proposed Crestview Village project site is located on two parcels represented by 2226 and 2304 132<sup>nd</sup> Street SE in the City of Mill Creek as shown in the Attachment A Site Vicinity Map. The proposed development is located within Transportation Service Area (TSA) D inside the Urban Growth Area (UGA). The preliminary site plan includes up to 25 single-family residential units. There are two existing single-family homes currently on site that will be removed as part of this project. Vehicular access to the site would be provided via a Residential road intersecting with 132<sup>nd</sup> Street SE. Full project buildout is expected in 2016. A preliminary site plan is included as Attachment B.

## Trip Generation

The trip generation estimate for the proposed Crestview Village development was based on the methodology included in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9<sup>th</sup> edition for Land Use Code (LUC) 210 (Single-Family Detached Housing). Average trip generation rates were utilized. The resulting trip generation calculations are summarized in Table 1 for the weekday daily, AM, and PM peak hour based on the net addition of 23 single-family residential housing units. Detailed trip generation calculations are included in Attachment C.

**RECEIVED**

APR 03 2014

CITY OF MILL CREEK

**Table 1**  
**Trip Generation Summary for Crestview Village**

Time Period	In	Out	Total
Weekday Daily	109	110	219
Weekday AM Peak Hour	4	13	17
Weekday PM Peak Hour	14	9	23

As shown in Table 1, the proposed Crestview Village residential development is estimated to generate 219 net new weekday daily trips, of which 17 would be generated during the weekday AM peak hour, and 23 trips during the weekday PM peak hour. These trip generation estimates include credit for the 2 existing single-family homes to be removed.

### Trip Distribution and Assignment

The distribution of the new weekday peak hour project trips was based on existing travel patterns in the site vicinity. In general, trips were distributed locally as follows:

- 20 percent to/from the west via 132<sup>nd</sup> Street SE
- 20 percent to/from the north via Bothell Everett Highway
- 20 percent to/from the south via Bothell Everett Highway
- 10 percent to/from the north via 35<sup>th</sup> Avenue SE
- 15 percent to/from the south via 35<sup>th</sup> Avenue SE
- 15 percent to/from the east via 132<sup>nd</sup> Street SE

The AM peak hour trip distribution and project trip assignment through key intersections impacted by 3 or more directional trips are illustrated on Attachment D. The PM peak hour trip distribution and project trip assignment through key intersections impacted by 3 or more directional trips are illustrated on Attachment E. The weekday AM and PM peak hour trip assignments at key intersections impacted by three (3) or more directional trips are shown in tabular format in Tables 2 and 3, respectively.

**Table 2**  
**AM Peak Hour Trip Assignment at Key Intersection**

Key Intersection ID#	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
177	1	2	2		1		1					

**Table 3**  
**PM Peak Hour Trip Assignment at Key Intersection**

Key Intersection ID#	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
177	1	1	1		2		3					2

## Transportation Mitigation

### City of Mill Creek

The Crestview Village development is required to contribute a mitigation payment for its impacts to City transportation facilities. Impact fees are based on a fee rate per net new weekday PM peak hour trips generated by the development. Per the *City of Mill Creek Ordinance 2011-735*, the traffic impact fee is \$3,000 per net new PM peak hour trip. The development is estimated to generate 23 net new PM peak hour trips, which results in an estimated traffic impact fee of \$69,000.

### Snohomish County

Pursuant to the interlocal agreement (ILA) between the City of Mill Creek and Snohomish County, the payment of traffic impact fees is required to mitigate the traffic impacts of the Crestview Village project traffic on Snohomish County transportation facilities. Consistent with Snohomish County Code 30.66B.330, the traffic impact fee is determined using the County's proportionate share formula:

$$\text{Impact Fee} = \text{Proportionate Share} \times \text{Trip Generation of Development (ADT)} \times \text{County Fee Rate.}$$

The proportionate share percentage is 70% for all development projects located in the City of Mill Creek. Based on a trip generation of 219 daily trips and the County current cost per daily trip of \$230, the Snohomish County traffic impact fee would be \$35,259 (70% X 219 daily trips X \$230). The Snohomish County traffic worksheet for developments in the City of Mill Creek is included in Attachment F.

If you have any questions regarding the information presented in this traffic assessment, please contact me at [schramm@tenw.com](mailto:schramm@tenw.com) or (425) 250-0581.

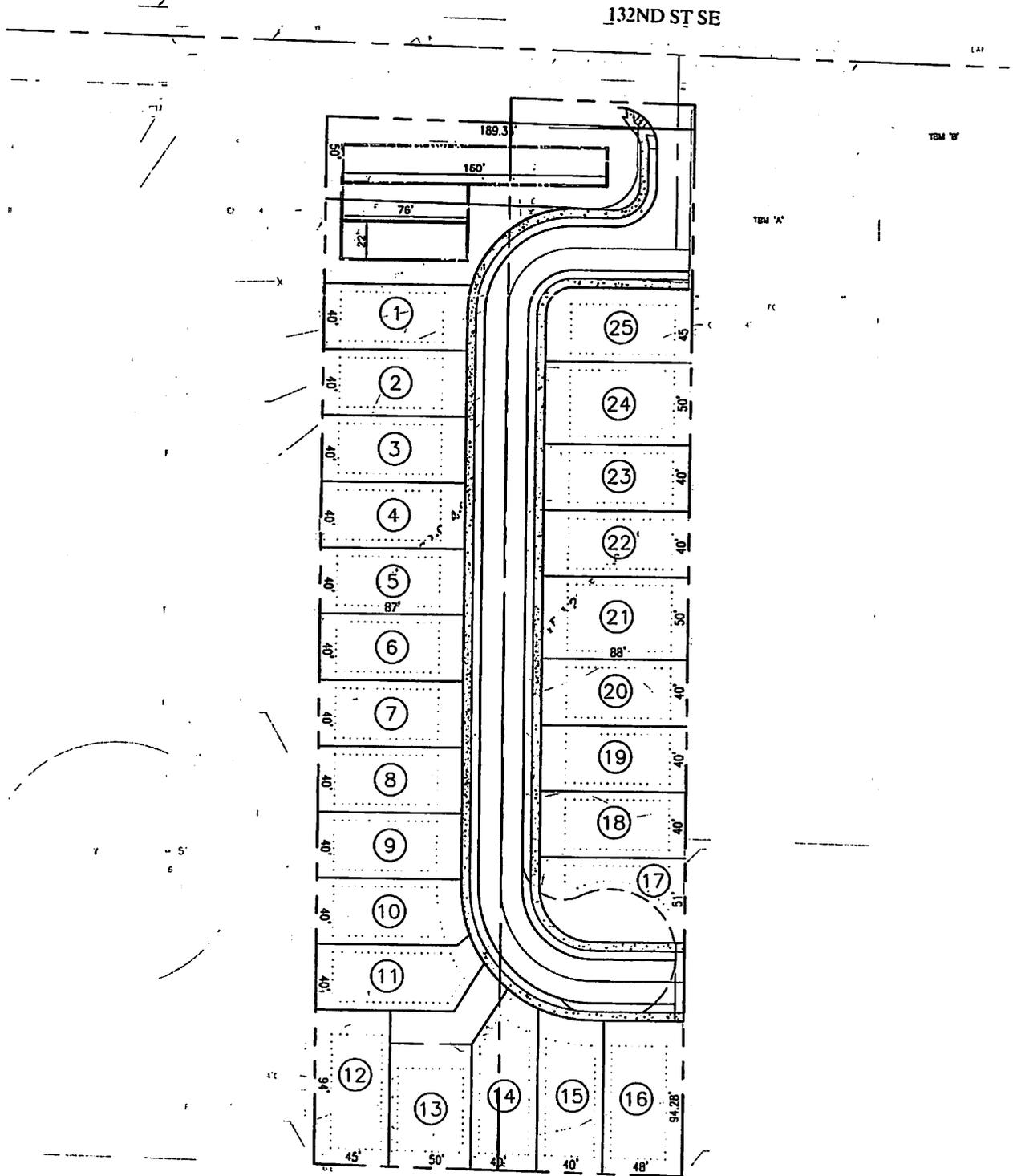
cc: Crestview Village 24, LLC  
Jeff Haynie, P.E., Principal, TENW

Attachments: A. Site Vicinity Map  
B. Preliminary Site Plan  
C. Trip Generation Calculations  
D. Weekday AM Peak Hour Project Trip Distribution and Assignment  
E. Weekday PM Peak Hour Project Trip Distribution and Assignment  
F. Snohomish County Traffic Worksheet



Attachment A: Site Vicinity





Attachment B: Preliminary Site Plan



## ATTACHMENT C

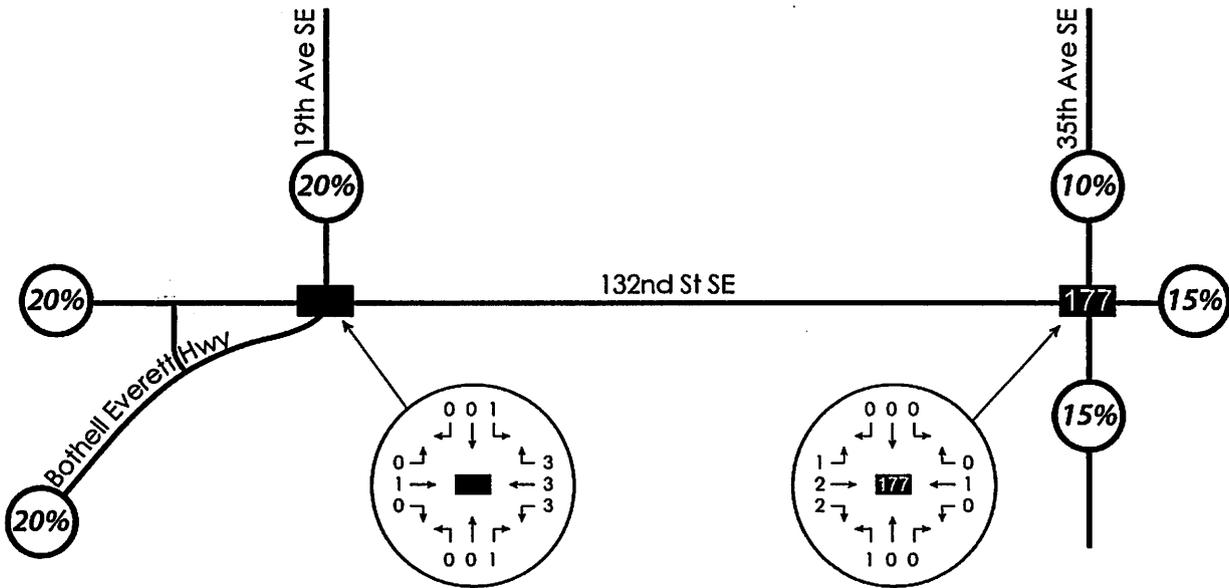
### Trip Generation Calculations

Land Use	Size	Units <sup>1</sup>	ITE LUC <sup>2</sup>	Trip Rate <sup>3</sup>	Directional Split <sup>3</sup>		Vehicle Trip Generation		
					Enter	Exit	Enter	Exit	Total
<b>DAILY</b>									
<u>Proposed Uses:</u>									
Single Family Detached Housing	23	DU	210	9.52	50%	50%	109	110	219
<b>NEW DAILY TRIPS =</b>							<b>109</b>	<b>110</b>	<b>219</b>
<b>AM PEAK HOUR</b>									
<u>Proposed Uses:</u>									
Single Family Detached Housing	23	DU	210	0.75	25%	75%	4	13	17
<b>NEW AM PEAK HOUR TRIPS =</b>							<b>4</b>	<b>13</b>	<b>17</b>
<b>PM PEAK HOUR</b>									
<u>Proposed Uses:</u>									
Single Family Detached Housing	23	DU	210	1.00	63%	37%	14	9	23
<b>NEW PM PEAK HOUR TRIPS =</b>							<b>14</b>	<b>9</b>	<b>23</b>

1 DU = Dwelling Units

2 Land Use Code from ITE 9th Edition Trip Generation Manual, updated 2012.

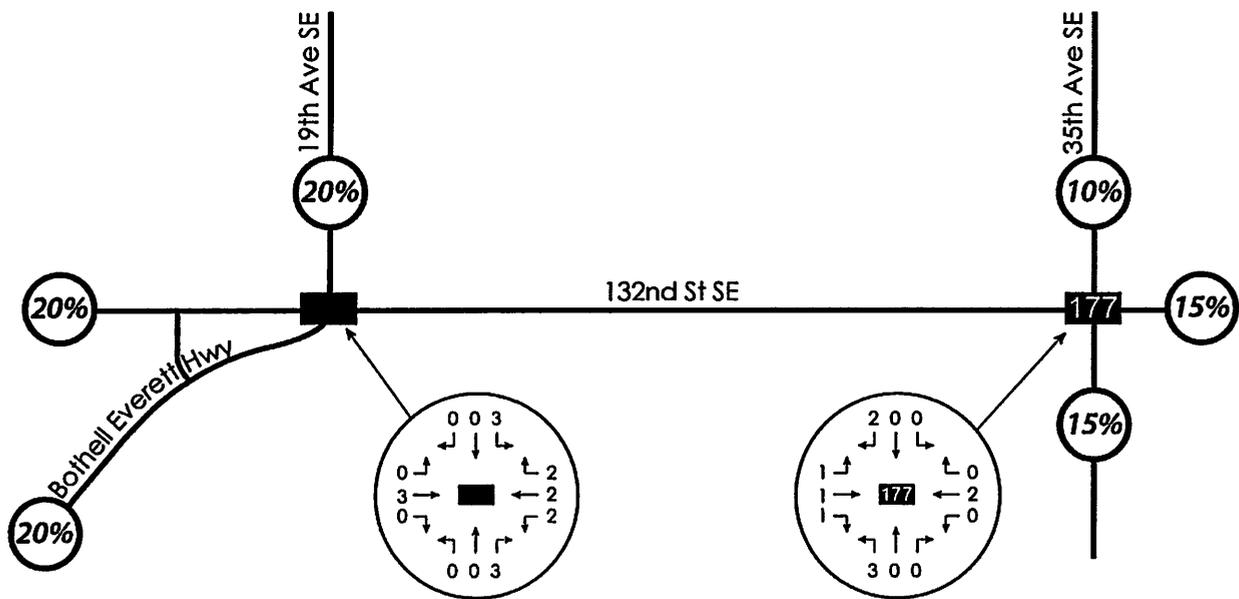
3 Trip rates and entering/exiting splits are based on LUC 210 in ITE Trip Generation Manual.



LEGEND	
<b>100</b>	Key Intersection
<b>■</b>	Non-Key Intersection
1 →	Project Trip Assignment (PM Peak = 5 in, 14 out)
<b>1%</b>	Trip Distribution %

Attachment D: AM Peak Hour Trip Distribution & Assignment





LEGEND	
<b>100</b>	Key Intersection
<b>■</b>	Non-Key Intersection
1 →	Project Trip Assignment (PM Peak = 16 in, 9 out)
<b>19%</b>	Trip Distribution %

## ATTACHMENT F

### Snohomish County Traffic Worksheet

## Traffic Mitigation Offer to Snohomish County

The applicant completes part one and submits it to the city with a completed county traffic worksheet. The city completes part two and sends it to the county. The county completes part three and sends it back to the city.

Part One to be completed by Applicant

<b>Basic Development Information</b>					
Name of City in which development is located _____					
Name of Proposed Development _____					
City Project File Number (if known) _____					
Name of Applicant _____					
Address of Applicant _____					
<b>Proportionate Share Calculation: Choose Option A or B</b>					
<input type="checkbox"/> Option A: Based on a percentage of the County's adopted impact fee (Attach traffic worksheet.)					
1. The applicable percentage of the County's fee: _____ %					
2. Net New Average Daily Traffic: _____ ADT					
3. The adopted County impact fee for this development: _____ \$/ADT					
4. Total Proportionate Share Amount: \$ _____					
<input type="checkbox"/> Option B: Based on a comprehensive traffic study (Attach traffic worksheet and traffic study)					
_____ No road improvements are impacted. Hence, proportionate share amount is zero.					
_____ The following road improvements are impacted. The calculation of proportionate shares is summarized below.					
List by Names/Description the Impacted County Projects (attach other pages if necessary)	County Project ID#	PHTs Impacting Project	Capacity Cost per PHT	Proportionate Share Obligation per Impacted Project	
1.					
2.					
3.					
4. Total Proportionate Share Amount (sum of obligations for each impacted project)				\$ _____	
<input type="checkbox"/> Trip Distribution and Assignment if Required					
If required, attach AM and PM peak-hour trip distribution and assignment. (Attach traffic worksheet showing whether or not it is required and traffic study).					
<input type="checkbox"/> Mitigation of Other Impacts if Required for Developments Generating More than 50 Peak-Hour Trips					
Mitigation of Impacts on Level of Service					
_____ No impact or not applicable _____ Mitigation as described in attached traffic study.					
Mitigation of Impacts on Inadequate Road Conditions					
_____ No impact or not applicable _____ Mitigation as described in attached traffic study.					
Mitigation for Impacts on Access or Circulation					
_____ No impact or not applicable _____ Mitigation as described in attached traffic study.					
<input type="checkbox"/> Written Offer					
The Applicant hereby voluntarily agrees to pay the total proportionate share amount shown above for impacts of the proposed development on the capacity of Snohomish County roads and provide mitigation of all other impacts as indicated above and described in attached documents.					
BY: _____ Date _____					
Signature by Authorized Official of Applicant or Authorized Representative					
Print Name and Title _____					
<i>Instructions to Applicant.</i> Submit this offer, a completed county traffic worksheet, and any other attachments to the city with your initial application or send directly to Deb Werdal, Snohomish Co. DPW Traffic, 3000 Rockefeller M/S 607, Everett WA 98201.					

Part Two: To be completed by the City

<b>Receipt of Written Offer and Attachments by City and Routing to County</b>	
Name of Proposed Development	
City Project File Number	
Date Received	
City Staffer Assigned to Project	
Address	
Phone	
<i>Instructions to City.</i> Send this offer and all attachments to Deb Werdal, Snohomish Co. DPW Traffic Operations, 3000 Rockefeller M/S 607, Everett WA 98201. Send copy to staffer shown above.	
BY:	
_____ Date _____	_____
Initialed by City Staffer	Print Name and Title

Part Three: To be completed by Snohomish County

<b>Receipt of Offer and Attachments by Snohomish County and Routing Back to City</b>	
Name of Proposed Development	
City Project File Number	
Received by:	
_____ Date _____	_____
Initialed by County Staffer	Print Name and Title
<b>Snohomish County Mitigation Request to City</b>	
Snohomish County has reviewed the traffic study worksheet and mitigation offer submitted by the applicant and has determined as follows:	
<input type="checkbox"/> Snohomish County requests that the City impose the mitigation offered above as a condition of approval for the Development. Snohomish County agrees to accept changes in the mitigation payment amount shown above resulting from TDM or lot-yield adjustments approved by the City.	<input type="checkbox"/> Snohomish County requests that the City require additional supplemental information to adequately evaluate the proposed development's impacts. <input type="checkbox"/> The information requested is shown in the notes below.
BY:	
_____ Date _____	_____
Signature by Authorized County Staffer	Print Name and Title
<b>Routing Back to City</b>	
<i>Instructions to County</i> Send this offer and all attachments to the City Staffer shown in Part Two above.	
Sent by:	
_____ Date _____	_____
Initialed by City Staffer	Print Name and Title
<b>Notes</b>	

**Snohomish County Traffic Worksheet and Traffic Study Requirements  
for Developments in the City of Mill Creek**

Snohomish County government, through an interlocal agreement (ILA) with the City of Mill Creek, may request traffic mitigation measures from any new development in the city that impacts roads in the unincorporated county. The City will impose the requested mitigation to the extent that the City determines that the mitigation is reasonably related to the impacts of the development. To determine the impacts, and to determine reasonable mitigation measures, the City of Mill Creek requires a traffic study from any development in the city that may have impacts on county roads. This 'traffic study' may be as simple as completing sections one and two of the county traffic worksheet below, or having a professional traffic engineer conduct a formal traffic study consistent with the requirements in section three below.

- If a development generates less than ten peak-hour trips and the applicant chooses Option A for mitigation payment (standard payment by percent of county impact fee), then the applicant will generally only have to fill out the first two sections of this traffic worksheet and complete a mitigation offer (see section four).
- However, if a development generates more than ten peak-hour trips, or if the applicant chooses Option B for mitigation payment (comprehensive impact analysis), then the applicant will have to fill out the first section of this worksheet, complete a separate traffic study consistent with the requirements in section three, and complete a mitigation offer (see Section Four).
- Applicants should submit all documents *to the City* as part of their initial submittal.
- Traffic study requirements for impacts on county roads are based on the County's traffic mitigation ordinance (Chapter 30.66B) and the city/county ILA. At the end of this document find references to the county contacts and county web site (sources for many of the documents related to traffic mitigation).
- Following review of the documents submitted, the County may request supplemental information and analysis as necessary to determine the impacts of the development in accordance with the city/county ILA. The City will require the proposed development to submit the supplemental information and analysis to the extent that the City determines that it is necessary to determine the impacts of the development.

**Section One (1) Worksheet General Information**

1. Name of Proposed Development \_\_\_\_\_  
 City Development File Number (if known) \_\_\_\_\_
2. Name, Address and Phone Number of Applicant \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
3. Development Site Address \_\_\_\_\_  
 \_\_\_\_\_
4. Is it a residential or commercial development? \_\_\_\_\_
5. Description of Development (size and specific type) \_\_\_\_\_  
 \_\_\_\_\_
6. How many new vehicle trips are expected to be generated by the proposed development? (For many common types of developments this information can be provided by the city or the county. For more complex developments trip generation may have to be determined under section three below)  
 \_\_\_\_\_ AM Peak Hour \_\_\_\_\_ PM Peak Hour \_\_\_\_\_ Average Daily Trips (ADT)
7. Proportionate Share Impact Mitigation: All applicants have two options in determining the amount of their traffic mitigation payment:  
 \_\_\_\_\_ For determining the amount based on a percentage of the county fee go to section two.  
 \_\_\_\_\_ For determining the amount based on a comprehensive traffic study go to section three.

## Section Two (2) Proportionate Share Determined by Percentage of County Impact Fee

### 2(a) Calculation of Payment Amount

1. Standard default estimated percentage of trips impacting county roads 70 % or 2. Other Percentage: (Note: See author's qualifications in section three below.) Estimated percentage of trips impacting county roads from attached trip distribution: \_\_\_\_\_ %

3. Development New Average Daily Trip Generation (ADT) \_\_\_\_\_

4. Type of Development (Residential or Commercial) \_\_\_\_\_

5. County Commercial Fee Rate \$ \_\_\_\_\_ 6. County Residential Fee Rate \$ \_\_\_\_\_

(Note: Consistent with county code and the ILA, developments pay the rate in effect at the time of their submittal. As of 2/1/06 the rates were \$227 for commercial developments and \$267 for residential developments. Through ordinance, the County Council can change these rates at any time, so consult with the County or look at Snohomish County Code 30.66B.330 to find the latest fee rates.)

### 7. Calculation of Proportionate Share Impact Mitigation

$$\frac{\text{\#1 or \#2 above:}}{\% \text{ of trips}} \times \frac{\text{\#3 above:}}{\text{ADT}} \times \frac{\text{\#5 or \#6 above:}}{\text{Fee Rate}} = \$ \frac{\text{proportionate share}}{\text{mitigating payment}}$$

### 2(b) Determining whether or not an additional traffic study is necessary

Will the development generate more than 10 peak-hour trips *or* are there other impacts that need to be addressed (e.g., level of service, safety, or access and circulation)

\_\_\_\_\_ No. Skip section three and go to section four.

\_\_\_\_\_ Yes. Read the introduction to section three and skip to section 3(b).

## Section Three (3) Traffic Study Requirements

Introduction: This section outlines requirements for traffic studies for impacts on County roads. If an applicant chooses (or is required) to complete a traffic study, then it should be submitted along with this worksheet and a mitigation offer. (Note on Author's Qualifications: A traffic study under this section must be conducted by an engineer licensed to practice in the state of Washington with special training and experience in traffic engineering and, preferably, membership in the institute of transportation engineers. For individuals/firms not on the City's approved list, the developer will provide, with the traffic study, the credentials of the individual or firm performing the traffic study certifying compliance with these qualifications.)

### 3(a) Proportionate share impact mitigation based on comprehensive traffic study

1. Development's Trip Generation and Distribution. Determine the PM peak-hour trip generation and distribution for the development consistent with Section 3(b) below.
2. Impacted Improvements. Determine which of the road sections with planned improvements in the county's impact fee cost basis (Transportation Needs Report Appendix D) are impacted by three or more development-generated *directional* PM peak hour trips (PM PHT).
3. Current Counts. For each impacted improvement, provide current traffic counts to determine the PM PHT.
4. Reserve Capacity. Determine "reserve capacity" for each impacted improvement by subtracting the current PM PHT from the maximum service volume (MSV) for the existing facility. Reserve capacity is set to zero if current PM PHT exceeds the MSV. For MSVs see County DPW Rule 4224.
5. New Capacity. New capacity is the incremental increase in PHT that could be accommodated with the planned improvement. Determine the new capacity of each impacted improvement by subtracting the current MSV from the future MSV after the improvement.
6. Chargeable Capacity. For each impacted improvement, add the reserve capacity to the new capacity.
7. Final Adjusted Cost. Find the cost of each impacted improvement and make any adjustments used by the County for tax credits (see Transportation Needs Report Appendix D).
8. Capacity Cost per Peak-Hour Trip. For each impacted improvement, determine the capacity cost per PM PHT by dividing the final adjusted improvement cost by the chargeable capacity.
9. Traffic Impacts. From step one above, take the *total* number of PM PHT (in both directions) impacting each planned improvement.
10. Proportionate Share. For each impacted improvement, determine the proportionate share impact mitigation by multiplying the capacity cost per peak-hour trip by the number of PM PHT impacting the improvement.

**3(b) Trip Generation and AM and PM Peak Hour Trip Distribution and Assignment**

Calculate AM, PM and Daily trip generation consistent with the ITE Trip Generation Handbook and Snohomish County Public Works Rule 4220. Determine the trip distribution and assignments consistent with the County’s document titled “Format for Trip Distributions”(available at County web site, see below).

- Within the developments transportation service area (TSA) the distributions will be carried out to each key intersection at which the approach or departure volumes on any leg have three (3) or more peak hour trips. Get the most current list of key intersections on the web site described below. Trips should be distributed onto the road system as it is expected to be in six years.
- The distribution should be a schematic map showing the broad distributions of trips in terms of percentages on different roads. Show all City boundaries.
- The assignment should be a schematic map with the impacted key intersections identified by ID# and turning movements for each shown in separate diagrams on the same page or on different pages. The assignment should also be presented in tabular form listing each intersection by intersection ID#, and the number of trips at each movement.

**3(c) Additional Analysis for Developments Generating More Than Fifty (50) Peak Hour Trips**

For large developments (i.e., those generating more than 50 peak-hour trips), the County may request mitigation for impacts on the level of service of County roads, documented safety locations (the County calls such locations “inadequate road conditions” or “IRCs”), and access or circulation. The traffic study requirements below are intended to disclose impacts. Based on this information the County may request through the City that the applicant provide additional information showing possible mitigation measures. If any off-site improvements were needed for mitigation the County would work with the applicant to determine requirements for right-of-way, construction plans, right-of-way use permits, construction/maintenance bonds, and other issues.

**Impacts on Level of Service (LOS) of County Arterials**

Contact Snohomish County Public Works for the most current list of arterial units in arrears and critical arterial units. Identify any arterial units in arrears or critical arterial units impacted by three or more directional peak-hour trips.

**Impacts on Inadequate Road Conditions**

Contact Snohomish County Public Works for a list of the current IRCs. Identify any IRCs impacted by three or more peak-hour trips. Note: Unlike LOS impacts in which at least three or more peak hour trips have to be added in one direction to require disclosure (e.g., 3 westbound), for IRCs, any three peak hour trips added to IRC locations are considered an impact for which disclosure is necessary (e.g., 2 westbound plus 1 eastbound).

**Impacts on Access or Circulation**

The County may request improvements to existing roads to provide safe and efficient access and/or circulation. In some instances, the County may request provisions for future County roads identified in the Comprehensive Plan or in Small Area Transportation Studies. If so, the County will request specific additional information through the City.

**Section Four (4) Traffic Mitigation Offer to Snohomish County**

The applicant should complete a traffic mitigation offer to Snohomish County that summarizes the mitigation identified in the county traffic worksheet and any additional traffic study. This will facilitate timely review of the development and processing of the application. The form to use for the mitigation offer is titled “Traffic Mitigation Offer to Snohomish County.” This form is typically provided to all applicants along with this traffic study checklist. In addition, copies are available from the county contacts or the Snohomish County web site shown below.

**Additional Information**

**County Web Site**

Snohomish County Public Works has a web site with many documents related to traffic studies and mitigation requirements for developers. From the Snohomish County Home Page go to:

Departments/Public Works/Divisions/TES/ProgramPlanning/3066B

**County Contacts**

- Deb Werdal, Snohomish County DPW Traffic, 3000 Rockefeller M/S 607, Everett WA 98201, (425) 388-3184, [debra.werdal@co.snohomish.wa.us](mailto:debra.werdal@co.snohomish.wa.us)
- Maria Schmidt, Snohomish County DPW Traffic, 3000 Rockefeller M/S 607, Everett WA 98201, (425) 388-3099, [maria.schmidt@co.snohomish.wa.us](mailto:maria.schmidt@co.snohomish.wa.us)