

Memorandum

To: Dan Cox
Miles Sand and Gravel

John Semrau, PE
Semrau Engineering and Survey

From: Gary A. Norris, P.E., PTOE
DN Traffic Consultants, Inc

Date: April 13, 2020

Subject: Grip Road Mine

RE: Response to Skagit County Request

The following memorandum was prepared to address the e-mail request from Skagit County dated April 11, 2020. The request is stated below:

Hi Michael – The documents that you sent me did not provide me the information I need to complete my review. I will clarify what I need below.

I want the original year 2013 turning movement count sheets for the intersections of Old Highway 99/Prairie Road intersection and Prairie Road/Grip Road intersection from DN Traffic Consultants or count vender, complete with the volumes counted every 15 minutes, the peak hour calculation and the Peak Hour Factor (PHF) calculation. These are the counts referred to in the “Preliminary Traffic Information” memo from Gary Norris, of DN Traffic Consultants, in Feb 2016. What I received instead was just a graphic showing the 2013 pm peak hour volumes, the same graphic that is in the “Preliminary Traffic Information” memo from Feb 2016 that I already had.

Response: The original 2013 turning movement count sheets for the intersections of Old Highway 99/Prairie Road and Prairie Road/Grip Road are no longer available. The peak hour turning movement volume were summarized in a July 2013 memorandum and again in a February 2016 memorandum. The PM peak hour volumes represented in these memos were collected between and 4 PM and 6 PM. The peak hour was determined to be 4:45 PM to 5:45 PM. I am attaching the 2013 Synchro File which summarizes PHF for the two intersections as well as the HV. What I do not have is a fifteen-minute summary of the traffic flow during the 2013 time period.

I also want the original year 2016 turning movement count sheets for the intersection of Prairie Road/Grip Road intersection from Skagit County or count vender, complete with the volumes counted every 15 minutes, the peak hour calculation and the Peak Hour Factor (PHF) calculation. These are the counts referred to in the “Prairie Road/Grip Road Intersection Study” memo written by Given Kutz, Skagit County, in March 2017.

Response: This information would be provided by Skagit County as referenced above.

The original count sheets that I did receive were from a count of Prairie Road/Grip Road intersection conducted in Dec 2019, including the volumes counted every 15 minutes and the peak hour calculation. First, the volumes in this Dec 2019 count do not seem correct, for example they include a northbound left turn from Prairie Road to a road that does not exist (Grip Road is only on the east side accessed by a northbound right turn). Second, the peak hour turning movement volume calculation is wrong in the spreadsheet.

Response: The December 2019 count summary form for the Prairie Road/Grip Road intersection was corrupt. I have corrected the form and it is attached.

I want the existing (2013 volume) traffic Synchro Level of Service calculations reports for the intersections of Old Highway 99/Prairie Road intersection and Prairie Road/Grip Road intersection from DN Traffic Consultants, that were referred to in the "Preliminary Traffic Information" memo from Gary Norris, DN Traffic Consultants, in 2016.

Response: The 2013 Volume Synchro LOS report for the intersection of Old Highway 99/Prairie Road and Prairie Road/Grip Road are attached.

I also want the HCS traffic Level of Service calculation reports for the intersection of Prairie Road/Grip Road intersection, for existing, existing plus 46 trucks a day, existing plus 30 trucks an hour and 25 year (2041) plus 30 trucks an hour, that were referred to in the "Prairie Road/Grip Road Intersection Study" memo from Given Kutz, Skagit County, in March 2017.

Response: As noted this analysis was conducted by Skagit County. The County should provide the documents.

The Synchro traffic Level of Service calculation sheets that I did receive were from a few days ago and do not match the counts from any year or the Delay and intersection Level of Service (LOS) results from any memo.

What I am looking for is original traffic counts sheets that have peak hour volumes that match the volumes entered in the Synchro or HSC delay and LOS calculations (as seen in the Synchro or HSC delay and LOS calculation reports). Then I want to see the Synchro or HSC delay and LOS from the calculation reports match the delay and LOS reported in the traffic analysis memos.

Response: I believe the data attached responds to your request for information provided by DN Traffic Consultants. If you have any questions, please give me a call at (425)765-5721.

Thanks

Gary















Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	15	3	104	39	1	42
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.83	0.83	0.77	0.92
Hourly flow rate (vph)	15	3	104	39	1	35
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)			185			
pX, platoon unblocked						
vC, conflicting volume	161	124			143	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	161	124			143	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	825	922			1427	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	18	143	36
Volume Left	15	0	1
Volume Right	3	39	0
cSH	840	1700	1427
Volume to Capacity	0.02	0.08	0.00
Queue Length 95th (ft)	2	0	0
Control Delay (s)	9.4	0.0	0.2
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	0.2
Approach LOS	A		

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		16.5%	ICU Level of Service A
Analysis Period (min)		15	

Concrete Nor West
Prairie Road/Old Hwy 99

2013 Existing
PM Peak Hour

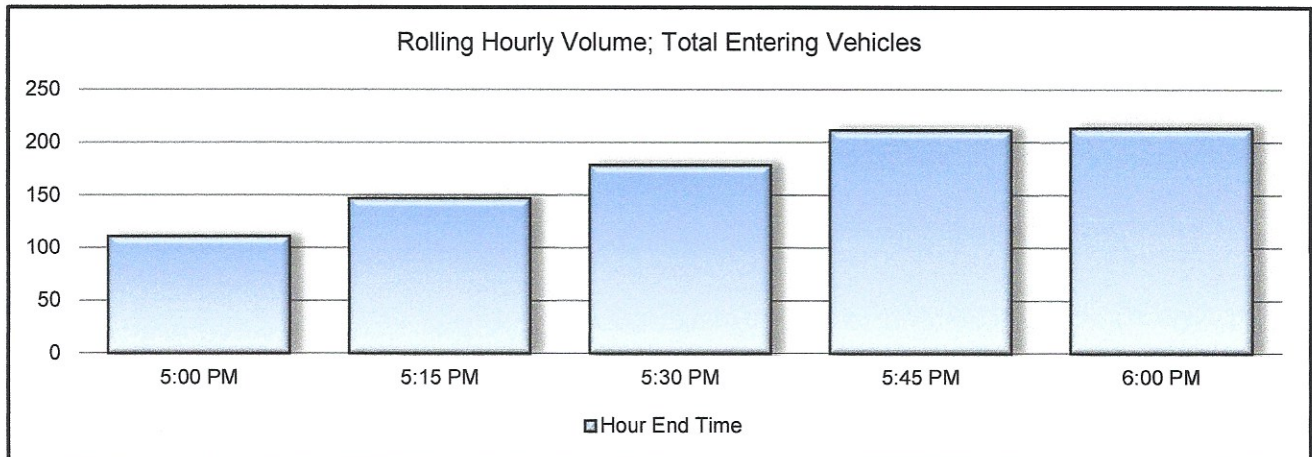
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	75	104	5	15	46	6	50	124	40	6	74	28
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.76	0.76	0.76	0.94	0.94	0.94	0.82	0.82	0.82
Hourly flow rate (vph)	84	117	6	20	61	8	53	132	43	7	90	34
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	420	403	107	446	399	153	124			174		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	420	403	107	446	399	153	124			174		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	82	77	99	95	88	99	96			99		
cM capacity (veh/h)	472	511	941	414	515	890	1444			1390		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	207	88	228	132								
Volume Left	84	20	53	7								
Volume Right	6	8	43	34								
cSH	500	506	1444	1390								
Volume to Capacity	0.41	0.17	0.04	0.01								
Queue Length 95th (ft)	50	16	3	0								
Control Delay (s)	17.2	13.6	2.0	0.5								
Lane LOS	C	B	A	A								
Approach Delay (s)	17.2	13.6	2.0	0.5								
Approach LOS	C	B										
Intersection Summary												
Average Delay			8.1									
Intersection Capacity Utilization			41.7%		ICU Level of Service					A		
Analysis Period (min)			15									

Location: Prairie Road/Grip Road City/Town: Skagit County
 Checker: GAN Weather: Rain Job: Grip Road Mine
 Date: 12/16/19 Thur Start Time: 4:00 PM Pk Hr: 5:00 PM 6:00 PM
 # of minutes counted per interval: 14.0 minutes

END TIME	From the NORTH (SOUTHBOUND)							N Leg Peds	From the EAST (WESTBOUND)							E Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes	RT		TH	LT	TOTAL	HV	Bikes			
4:15 PM	0	4	0	4	0	0	0	0	0	0	0	0	0	0		
4:30 PM	0	5	1	6	1	0	0	0	0	0	0	0	0	0		
4:45 PM	0	6	0	6	0	0	0	0	0	0	0	0	0	0		
5:00 PM	0	8	0	8	1	0	0	2	0	3	5	0	0	0		
5:15 PM	0	8	1	9	2	0	0	1	0	1	2	0	0	0		
5:30 PM	0	4	0	4	0	0	0	0	0	1	1	0	0	0		
5:45 PM	0	7	1	8	0	0	0	0	0	7	7	0	0	0		
6:00 PM	0	13	0	13	1	0	0	0	0	3	3	0	0	0		
PK HR	0	32	2	34	3	0	0	1	0	12	13	0	0	0		
Adj HR	0	34	2	36	3	0	0	1	0	13	14	0	0	0		

END TIME	From the SOUTH (NORTHBOUND)							S Leg Peds	From the WEST (EASTBOUND)							W Leg Peds
	RT	TH	LT	TOTAL	HV	Bikes	RT		TH	LT	TOTAL	HV	Bikes			
4:15 PM	3	7	0	10	1	0	0	0	0	0	0	0	0	0		
4:30 PM	3	8	0	11	1	0	0	0	0	0	0	0	0	0		
4:45 PM	4	10	0	14	0	0	0	0	0	0	0	0	0	0		
5:00 PM	17	23	0	40	1	0	0	0	0	0	0	0	0	0		
5:15 PM	8	29	0	37	4	0	0	0	0	0	0	0	0	0		
5:30 PM	12	29	0	41	2	0	0	0	0	0	0	0	0	0		
5:45 PM	15	20	0	35	1	0	0	0	0	0	0	0	0	0		
6:00 PM	13	26	0	39	1	0	0	0	0	0	0	0	0	0		
PK HR	48	104	0	152	8	0	0	0	0	0	0	0	0	0		
Adj HR	51	111	0	162	9	0	0	0	0	0	0	0	0	0		

END TIME	15 Min Totals (adj)				Time Start - End	Rolling Hr Vol	Pk Hr?
	Veh	HV	Peds	Bikes			
16:15	15	1	0	0	4:00 PM - 5:00 PM	111	no
16:30	18	2	0	0	4:15 PM - 5:15 PM	147	no
16:45	21	0	0	0	4:30 PM - 5:30 PM	178	no
17:00	57	2	0	0	4:45 PM - 5:45 PM	211	no
17:15	51	6	0	0	5:00 PM - 6:00 PM	213	YES
17:30	49	2	0	0			
17:45	54	1	0	0			
18:00	59	2	0	0			



INTERSECTION: Prairie Road/Grip Road
 PEAK HOUR: 5:00 PM 6:00 PM
 DATE: 16-Dec-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR

		N			
		36	112		
W	0			14	E
		0			53
		47		162	
		S			

APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR

		36				
		0	34	2		
		RIGHT	THRU	LEFT		
		NORTH				
		WEST			EAST	
		SOUTH				
		LEFT	THRU	RIGHT		
		0	111	51		
		162				

0	0	0	0
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1		
0	14	
13		

Pedestrians (Peak Hour)	
Crossing Leg	# of
North	0
South	0
East	0
West	0
Total	0

Bikes (Peak Hour)	
Approach	# of
From North:	0
From South:	0
From East:	0
From West:	0
Total	0

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.65	SB
	From South:	0.92	NB
	From East:	0.47	WB
	From West:	n/a	EB
	Total	0.90	All

Heavy Vehicles:	From North:	3	8.3%	SB
	From South:	9	5.6%	NB
	From East:	0	0.0%	WB
	From West:	0	#DIV/0!	EB

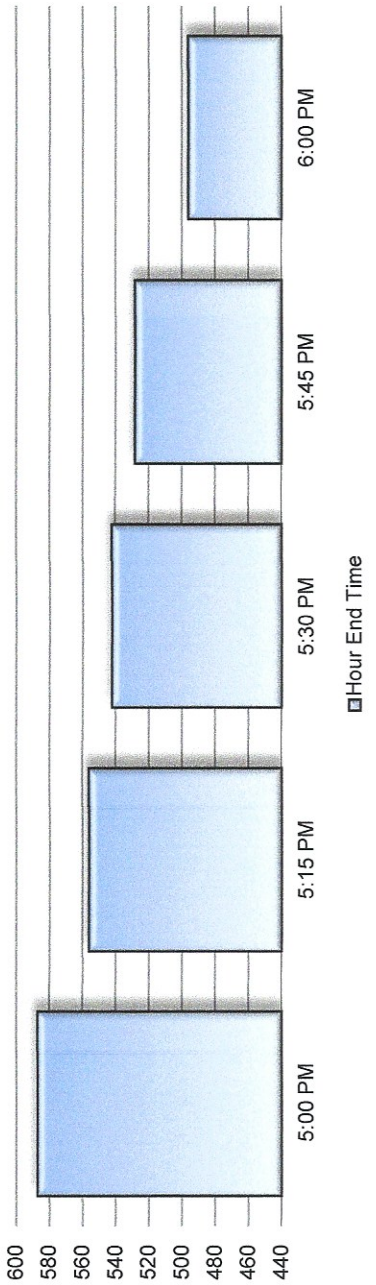
Location: **Prairie Road/SR 99** City/Town: **Skagit County**
 Checker: **GAN** Weather: **Rain** Job: **Strip Road Gravel Min**
 Date: **12/18/19** Start Time: **4:00 PM** Pk Hr: **4:00 PM 5:00 PM**
 # of minutes counted per interval: **14.0 minutes**

END TIME	From the NORTH (SOUTHBOUND)					N Leg Peds	From the EAST (WESTBOUND)					E Leg Peds
	RT	TH	LT	TOTAL	HV		Bikes	RT	TH	LT	TOTAL	
4:15 PM	3	7	1	11	0	0	3	13	3	19	3	0
4:30 PM	3	8	1	12	0	0	4	15	4	23	3	0
4:45 PM	11	16	2	29	0	0	1	16	2	19	3	0
5:00 PM	4	5	0	9	2	0	0	19	3	22	1	0
5:15 PM	6	7	0	13	3	0	1	8	1	10	1	0
5:30 PM	16	13	2	31	2	0	1	7	1	9	0	0
5:45 PM	8	13	2	23	1	0	0	15	0	15	0	0
6:00 PM	4	9	1	14	1	0	1	14	5	20	0	0
PK HR	21	36	4	61	2	0	8	63	12	83	10	0
Adj HR	23	39	4	66	2	0	9	68	13	90	11	0

END TIME	From the SOUTH (NORTHBOUND)					S Leg Peds	From the WEST (EASTBOUND)					W Leg Peds
	RT	TH	LT	TOTAL	HV		Bikes	RT	TH	LT	TOTAL	
4:15 PM	7	20	7	34	3	0	9	29	21	59	5	0
4:30 PM	8	24	8	40	4	0	11	34	25	70	6	0
4:45 PM	13	23	4	40	1	0	9	34	9	52	4	0
5:00 PM	5	24	15	44	5	0	15	30	20	65	2	0
5:15 PM	9	10	5	24	0	0	15	22	10	47	2	0
5:30 PM	11	14	5	30	3	0	8	38	16	62	3	0
5:45 PM	4	20	10	34	1	0	4	30	21	55	0	0
6:00 PM	9	19	7	35	1	0	7	23	11	41	2	0
PK HR	33	91	34	158	13	0	44	127	75	246	17	0
Adj HR	35	98	36	169	14	0	47	136	80	263	18	0

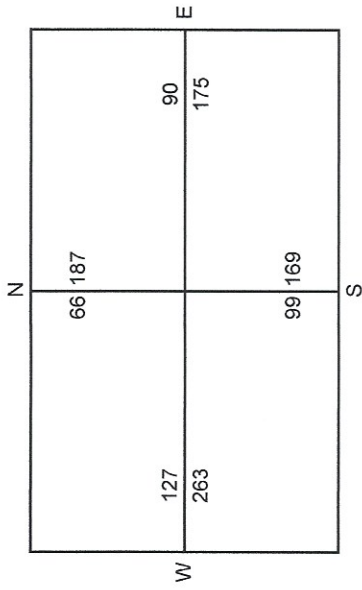
END TIME	15 Min Totals (adj)			Rolling Hr Vol	Pk Hr?	
	Veh	HV	Peds			
16:15	132	14	0	5:00 PM	587	YES
16:30	155	11	0	5:15 PM	556	no
16:45	150	10	0	5:30 PM	542	no
17:00	150	4	0	5:45 PM	528	no
17:15	101	4	0	6:00 PM	496	no
17:30	141	3	0			
17:45	136	0	0			
18:00	118	29	0			

Rolling Hourly Volume; Total Entering Vehicles

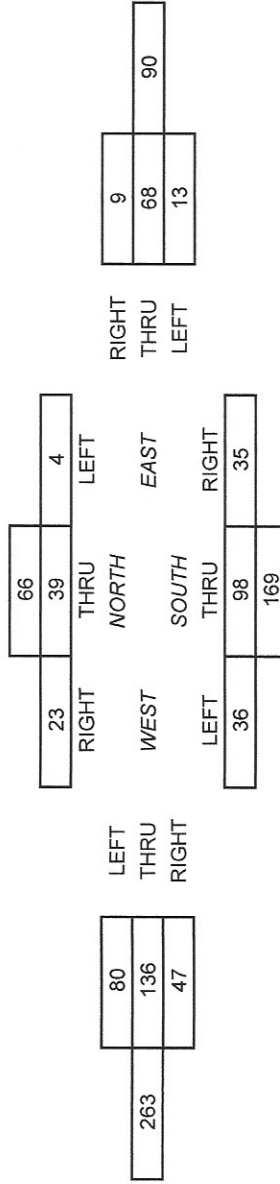


INTERSECTION: Prairie Road/SR 99
 PEAK HOUR: 4:00 PM 5:00 PM
 DATE: 18-Dec-19

DIRECTIONAL LEG VOLUMES -- PEAK HOUR



APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR



Pedestrians (Peak Hour)	
Crossing Leg	# of
North	0
South	0
East	0
West	0
Total	0

Bikes (Peak Hour)	
Approach	# of
From North:	0
From South:	0
From East:	0
From West:	0
Total	0

ADJUSTMENT FACTORS DERIVED FROM COUNT

Peak Hour Factors:	From North:	0.50	SB
	From South:	0.90	NB
	From East:	0.95	WB
	From West:	0.88	EB
	Total	0.95	All

Heavy Vehicles:	From North:	2	3.0%	SB
	From South:	14	8.3%	NB
	From East:	11	12.2%	WB
	From West:	18	6.8%	EB