Exhibit 4

Traffic Methodology and Assumptions, Missoula – East & West I-90 Corridor Study – Phase I

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Purpose

This memorandum addresses the traffic methodology and assumptions for the East & West I-90 Corridor Study, Phase I. Upon concurrence, this memorandum will be used as the foundation for the analysis and will be incorporated into the final report.

Methodology and Assumptions

Analysis Time Periods

This study will analyze two separate years, Existing (2002) and Future No Build year based on Forecasting, in both the AM and PM peak hours. The study will also analyze special event traffic using November 23, 2002 (University football game) as a model for the Orange and Van Buren Interchanges in both the AM and PM peak hours for the event.

Based on analysis of 2002 existing freeway data the following peak hours have been determined:
AM Peak Hour 7 a.m. – 8 a.m.
PM Peak Hour 5 p.m. – 6 p.m.

Special Event (November 23, 2002) peak hours as follows for the Orange and Van Buren Interchanges:
AM Peak 10:10 a.m. – 11:15 a.m.
PM Peak 3:30 p.m. – 4:30 p.m.

Project Limits Area

The geographic area for the Corridor Study is between RM 94.414 and RM 110.00 in Missoula, Montana. The project area contains seven (7) full service interchanges:

DeSmet (RM 96.34)
Reserve Street (RM101.71)
VanBuren Street (RM 105.63)
Bonner (RM 109.22)
Airway Blvd. (RM 99.96)
Orange Street (RM 104.78)
East Missoula (RM 107.27)

The Affected Area

Sixteen (16) freeway mainline links, twenty-nine (29) freeway merge/diverge segments, and eighteen (18) existing intersections and ramp terminals are the subject of this study. The affected intersections are listed below.

- I-5 Eastbound On/Off-Ramp at DeSmet Interchange
- I-5 Westbound On/Off-Ramp at DeSmet Interchange
- Old US Highway 10 at US Highway 10
- Cartage Road at US Highway 93
- I-5 Eastbound On/Off-Ramp at Airway Blvd. Interchange
- I-5 Eastbound On/Off-Ramp at Reserve Street Interchange
- Michael Road at US Highway 93
- I-5 Westbound On/Off-Ramp at Reserve Street Interchange
- I-5 Eastbound On/Off-Ramp at Orange Street Interchange
- I-5 Westbound On/Off-Ramp at Orange Street Interchange
- West Spruce Street at North Orange Street
- I-5 Eastbound On/Off-Ramp at VanBuren Street Interchange
- I-5 Westbound On/Off-Ramp at VanBuren Street Interchange
- South VanBuren Avenue at US Highway 12
- I-5 Eastbound On/Off-Ramp at East Missoula Interchange
- I-5 Westbound On/Off-Ramp at East Missoula Interchange
- I-5 Eastbound On/Off-Ramp at Bonner Interchange
- I-5 Westbound On/Off-Ramp at Bonner Interchange

Operational Analysis Software

Three principal tools will be applied in this study:

HCS 2000 software will be used for freeway capacity analysis, weaving, ramps and ramp junctions.

CORSIMsoftware will be used to evaluate freeway flow operations with measurements of travel time and queue lengths on mainline I-90.

SYNCHRO/SIMTRAFFIC software 5.0 will be used to evaluate local ARTERIAL street intersection traffic operations at the study signalized and unsignalized intersections. LOS and delay will evaluated with comparison to the MDT desired acceptable LOS "C". If applicable, the influences of pedestrian and bicycle volumes on the subject intersections will also be identified.

Operational Assumptions and Analysis

In all cases existing conditions will represent year 2002. Traffic volumes for 2002 will be developed using current available data and will be adjusted to achieve a network balance.

Freeway Data and Methodology:

- Highway Capacity Software (HCS2000) will be used to evaluate freeway mainline/merge/diverge/weaving segments.
- Existing general-purpose peak hour freeway traffic volumes were obtained from MDT.
- Accident data was compiled by MDT for the period 1999 to 2001. If determined to be appropriate, the data will be supplemented with additional data from MDT.I-90 will be analyzed for four overall conditions, Existing 2002 AM and PM peak hours and Future No Build AM and PM peak hours.

Arterials/Intersections Data:

- Existing AM and PM peak hour turning movement counts were collected by CH2M HILL for the subject intersections. Intersection geometry was collected from MDT record drawings and field reviews.
- Current intersection signal timing will be supplied by the respective agency maintaining the intersection (MDT and/or City of Missoula).

Intersection Analysis Methods:

- Operational analysis will be provided for the existing and future No Build year conditions, as well as the event operational analysis adjacent to the Orange and Van Buren Interchanges.
- The AM and PM peak hours will be determined from existing traffic counts.
- Synchro/Simtraffic software, which implements Highway Capacity Manual methods[1], will analyze intersections (signalized and unsignalized).
- For the intersection analysis, intersection delay and associated LOS results will be reported. A ramp queuing analysis will be conducted to determine the potential for ramp queues spillover into the freeway mainline.

Traffic Analysis Assumptions

Tables 1 and 2 provide the analysis assumptions for freeway mainline, freeway merge/diverge, signalized, and unsignalized intersections.

Table 1. HCS2000 Assumptions for Freeway Mainline and Merge/Diverge Analysis

Freeway Mainline		AM	PM
	Peak-hour factor, PHF	Based on data, otherwise 0.90	Based on data, otherwise 0.90
	Number of through lanes, N	2	2
	Terrain	Level or Rolling, grade analysis may be required	Level or Rolling, grade analysis may be required
	Trucks and buses (%)	Based on data	Based on data
	RVs (%)	0	0
	Driver population adjustment, f_P	TBD (0.90 to 1.00) recommend 0.98	TBD (0.90 to 1.00) recommend 0.98
	Free-flow speed (FFS) type	Base	Base
	Measured FFS (mph)	-	-
	Base FFS (mph)	70	70
	Lane width (ft), LW	12.0	12.0
	Right shoulder lateral clearance (ft), LC	6.0	6.0
	Interchange density (int./mile), ID	TBD (calculated)	TBD (calculated)
	Rural freeways?	Dependent on location (Yes or No)	Dependent on location (Yes or No)

[1] Transportation Research Board Special Report 209, Highway Capacity Manual, updated 2000.

Table 1. HCS2000 Assumptions for Freeway Mainline and Merge/Diverge Analysis

Freeway Merge/Diverge		AM	PM
	Freeway Data		
	Number of lanes on freeway, N	2	2
	Free-flow speed (mph), s_{FF}	Based on adjacent mainline section HCS file	Based on adjacent mainline section HCS file
	Peak-hour factor, PHF	Based on data, otherwise 0.90	Based on data, otherwise 0.90
	Terrain	Level or Rolling, grade analysis may be required	Level or Rolling, grade analysis may be required
	Trucks and buses (%)	Based on data	Based on data
	RVs (%)	0	0
	Driver population adjustment, f_P	TBD (0.90 to 1.00) recommend 0.98	TBD (0.90 to 1.00) recommend 0.98
	On-Ramp Data		
	Free-flow speed (mph), s_{FR}	35 - regular ramps 25 - loop ramps	35 - regular ramps 25 - loop ramps
	Number of lanes on ramp, N	1 - 2	1 - 2
	Length of first acceleration lane (ft), LA or LA1	TBD	TBD
	Length of second acceleration lane (ft), LA2	TBD	TBD
	Peak-hour factor, PHF	Based on data, otherwise 0.90	Based on data, otherwise 0.90
	Terrain	Level or Rolling, grade analysis may be required	Level or Rolling, grade analysis may be required
	Trucks and buses (%)	Based on data	Based on data
	RVs (%)	0	0
	Driver population adjustment, f_P	TBD (0.90 to 1.00) recommend 0.98	TBD (0.90 to 1.00) recommend 0.98

Table 1. HCS2000 Assumptions for Freeway Mainline and Merge/Diverge Analysis

Freeway Merge/Diverge		AM	PM
	Off-Ramp Data		
	Free-flow speed (mph), s_{FR}	35 - regular ramps 25 - loop ramps	35 - regular ramps 25 - loop ramps
	Number of lanes on ramp, N	1	1
	Length of first deceleration lane (ft), LD or LD1	TBD	TBD
	Length of second deceleration lane (ft), LD2	TBD	TBD
	Peak-hour factor, PHF	Based on data, otherwise 0.90	Based on data, otherwise 0.90
	Terrain	Level or Rolling, grade analysis may be required	Level or Rolling, grade analysis may be required
	Trucks and buses (%)	Based on data	Based on data
	RVs (%)	0	0
	Driver population adjustment, f_P	TBD (0.90 to 1.00) recommend 0.98	TBD (0.90 to 1.00) recommend 0.98
	Adjacent Ramp Data		
	Position of adjacent ramp	TBD (upstream or downstream)	TBD (upstream or downstream)
	Type of adjacent ramp	TBD (on or off)	TBD (on or off0
	Distance to adjacent ramp (ft)	TBD	TBD
	Peak-hour factor, PHF	TBD (0.90 to 1.00)	TBD (0.90 to 1.00)
	Terrain	Level or Rolling, grade analysis may be required	Level or Rolling, grade analysis may be required
	Trucks and buses (%)	Based on data	Based on data
	RVs (%)	0	0
	Driver population adjustment, f_P	TBD (0.90 to 1.00) recommend 0.98	TBD (0.90 to 1.00) recommend 0.98

Table 2. HCS2000 Assumptions for Signalized and Unsignalized Intersection Analysis

Signalized Intersections		**AM**	**PM**
	Duration (hours)	TBD (0.25 or 1.0)	TBD (0.25 or 1.0)
	Peak-hour factor, PHF	Based on data	Based on data
	Right turns on red	10% - shared 20% - exclusive	10% - shared 20% - exclusive
	Average queue spacing (ft)	25.0	25.0
	Arrival type	3	3
	Unit extension (sec)	3.0	3.0
	Start-up lost time (sec)	2.0	2.0
	Extension of effective green (sec)	2.0	2.0
	Minimum green time (sec), per phase	10.0	10.0
	Yellow and all-red time (sec), per phase	4.0	4.0
	Ideal saturation flow rate (pcphgpl)	1900	1900
	Lane width (ft)	Based on record drawings	Based on record drawings
	Percent heavy vehicles (%)	Based on data	Based on data
	Percent grade (%)	Based on record drawings	Based on record drawings
	Parking maneuvers per hour	None	None
	Bus stops per hour	0 to 2, dependent on location	0 to 2, dependent on location
	Conflicting bikes and pedestrians per hour	Based on data, otherwise HCS methodology	Based on data, otherwise HCS methodology
Unsignalized Intersections		**AM**	**PM**
	Duration (hours)	TBD (0.25 or 1.0)	TBD (0.25 or 1.0)
	Peak-hour factor, PHF	Based on data	Based on data
	Percent heavy vehicles (%)	Based on data	Based on data
	TWSC		
	Percent grade (%)	Based on record drawings	Based on record drawings
	Saturation flow rate (vph)	1700	1700
	Pedestrian flow (ped/hr)	Based on data, otherwise HCS assumptions	Based on data, otherwise HCS assumptions
	Upstream signal data?	No	No

Intersection Level of Service (LOS)

The transportation analysis performed for this project focuses on the evaluation of freeway operations as well as intersection traffic operations.

Traffic operations will be assessed based on intersection level of service (LOS) and queue length analyses. Intersection LOS and queue length analyses for unsignalized and signalized right-angle intersections will be performed using methods consistent with the Highway Capacity Manual (HCM) 2000 edition reported from Synchro/SimTraffic.

Under the HCM methodology, delay is calculated differently between unsignalized and signalized intersections. The primary reason for this is that drivers expect different levels of performance between signalized and unsignalized intersections. Since stop-controlled intersections do not necessarily control all movements allowed at the intersection, delay is calculated only for those movements that must stop and wait until a sufficient gap is available. Therefore, for unsignalized intersections, delay is reported by movement in terms of averages seconds per vehicle and a corresponding letter grade. The range of letter grades, as they relate to seconds of delay and traffic flow characteristics are presented in Table 3, below.

Table 3
Level of Service Criteria for Unsignalized TWSC and AWSC Intersections

Level of Service	**Average Delay (seconds per vehicle)**	**Traffic Flow Characteristics**
A	< 10	Little or no traffic delays
B	> 10 - ≤15	Short traffic delays
C	> 15 - ≤ 25	Average traffic delays
D	> 25 - ≤ 35	Long traffic delays
E	> 35 - ≤ 50	Very long traffic delays
F	> 50	Queuing on minor approaches and not enough gaps of suitable size to allow safe crossing of major street. Signalization should be investigated at this point, but warrant must be satisfied before implementation.

TWSC – Two-way stop controlled
AWSC – All Way stop controlled

Source: HCM, Transportation Research Board, 2000

For signalized intersections, all movements are controlled by the traffic signal system. The signal assigns the right of way to each movement or approach and allocates green time in a way that attempts to minimize the average delay experience by all vehicles moving through the intersection. Because of the way the signal controls delay for all movement in an attempts to minimize the delay for the entire intersection, it is reported in terms of seconds of average approach delay for the entire intersection and letter grade. Intersection level of service will be determined based on influences of balanced volume to capacity ratios.

Table 4, presents the range of letter grades for signalized intersections and the corresponding ranges of delay and traffic flow characteristics.

Table 4
Level of Service Criteria for Signalized Intersections

Level of Service	Average Delay (seconds per vehicle)	Traffic Flow Characteristics
A	≤ 10	Most vehicles arrive during the green phase and do not stop at all
B	> 10 to ≤ 20	More vehicles stop, causing higher delay
C	> 20 to ≤ 35	Vehicle stopping is significant, but many still pass through the intersection without stopping
D	> 35 to ≤ 55	Many vehicles stop, and the influence of congestion becomes more noticeable
E	> 55 to ≤ 80	Very few vehicles pass through without stopping
F	> 80	Considered unacceptable to most drivers; intersection is not necessarily over capacity even though arrivals exceed capacity of lane groups

Source: HCM, Transportation Research Board, 2000

Intersection operations will be evaluated using Synchro, requiring more detailed input than HCS, but is capable of evaluating a system of interconnected intersections, opposed to a group of isolated ones. This type of analysis is important for arterials whose intersections are closely spaced because, under heavy congestion, the queues and delays from adjacent intersections can affect each other. Therefore, when intersections are evaluated as coordinated signals, Synchro accounts for uniform vehicle arrival, that increases the vehicle throughput.