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December 10, 2004

District 6 Proposal Evaluation Board
C/O Karen Aspelin
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Re: INSTITUTE OF TRANSPORTATION ENGINEERS DISTRICT 6
Request for Proposals 2005 Data Collection Projects

Dear Board Members:

The Montana State University Institute of Transportation Engineers (MSU-ITE) Student Chapter, in conjunction with Portland State University (PSU) is pleased to submit our proposal for the 2005 Data Collection Project. We are looking forward to working as a team to complete this data collection project and continuing to work with ITE to further student involvement in the transportation community at the local, national, and international levels.

MSU-ITE, and PSU-ITE are submitting this proposal titled *Trip Generation Characteristics of Drive - Thru Coffee Stands*. This data collection proposal responds to the specific requirements of the Request for Proposals (RFP). The collection method is based on volume studies as outlined in the *Manual of Traffic Engineering Studies, 4th edition, ITE, 1994*, as well as the Trip Generation Data Form. Data collection is a common practice in the engineering world and a necessary skill to learn. The proposed data collection effort will allow students to explore and refine their skills in this area with the help, guidance, and support of a mentor.

We will be available for additional consultation or clarification following your review of this proposal and during the implementation process. If you have any questions, or would like more information, please do not hesitate to contact us by phone or e-mail. We look forward to the opportunity to work with District 6 in an effort to expand the student involvement at a higher level.

Sincerely,

Trevor Iman
MSU-ITE Proposal Coordinator

Trip Generation Characteristics of Drive- Thru Coffee Stands

by

**MONTANA STATE UNIVERSITY
INSTITUTE OF TRANSPORTATION ENGINEERS
(MSU-ITE)
STUDENT CHAPTER**

**PORTLAND STATE UNIVERSITY
INSTITUTE OF TRANSPORTATION ENGINEERS
(PSU-ITE)
STUDENT CHAPTER**

A proposal prepared for the

**INSTITUTE OF TRANSPORTATION ENGINEERS
DISTRICT 6**

December 10, 2004

DATA COLLECTION PROPOSAL

The Montana State University Institute of Transportation Engineers (MSU-ITE) Student Chapter in conjunction with Portland State University Institute of Transportation Engineers Student Chapter (PSU-ITE) will conduct a study to investigate trip generation characteristics of drive-thru coffee stands. Trip generation data in this area is relatively limited based on documentation in ITE Trip Generation Manual 7th Edition. Due to the growing number of coffee stands, it is believed that information regarding such stands would be beneficial.

In this investigation road tubes or manual counts will be used for data collection on the adjacent roadways and drive-thru area. The purpose of collecting data on adjacent roadways is to associate drive-thru trips with volumes on neighboring roads. It is believed that location and adjacent traffic volumes have a large impact on trip generation besides the service provided by the stand itself. Transportation professionals, city planners, and permitting agencies could use this information to evaluate the impacts that a coffee stand could have on the transportation system. The intent is to develop trip rates using a number of independent variables; these include the number of windows and volume of adjacent street traffic.

This project is intended to be a joint data collection effort with Portland State University (PSU). Data collection will take place in Bozeman, MT and Portland, OR. The investigation will benefit the larger traffic engineering profession by collecting data to support: (1) the trips generated by this type of enterprise, (2) recommendations for locations based on analysis of current trends, and (3) correlating data between large metropolitan areas with that of smaller towns and cities.

This study will investigate trips generated at a particular location based on adjacent traffic volumes, and surrounding business types in the Bozeman, and Portland areas. The following locations have been selected to be studied:

Montana State University: Bozeman

The use of these locations will provide a diverse land use selection near which traffic patterns change based on time of day, day of the week etc. It should also provide a well defined peak hour shift based on traffic flow direction and volume.

1. West Main Street
2. Gibsons Parking Lot
3. Main Street near 15th Avenue
4. Intersection of 11th Avenue and Main Street
5. North 7th Avenue
6. North Rouse Street

Portland State University: Portland

These locations are spread all over the city in areas of varied land use and demographics and are subject to change as we develop a data collection process. All coffee stands are near access points to the central business district and traffic varies throughout the day.

1. SE 6th Ave and Hawthorne Blvd
2. SW Barbur Blvd near Barbur Transit Center
3. N Interstate Blvd and N Prescott St

4. SE 20th Ave and SE Stark St
5. NW Cornell Rd and NW Barnes Rd
6. SE 39th Ave and SE Division St

Road tube data collection equipment available through the respective universities will be utilized where possible and appropriate methods outlined in the Manual of Traffic Engineering Studies, 4th Edition (ITE 1994) will be followed. Once the volume data has been collected at each of the sites the data will be reduced using Excel spreadsheets, and compared between geographic locations and volume influence. Because the data collection is taking place in March and April, the traffic stream should be fairly representative of annual traffic and insensitive to seasonal effects (i.e., school is still in session, tourist season has not yet begun, adverse weather and road conditions are not problematic to data collection).

Mentoring

Mr. Michael Swenson, P.E., P.T.O.E of The Transpo Group has agreed to serve as the mentor for this project. He is an alumnus of Montana State University and serves as the engineer in charge of Transpo's internship program. The role of the mentor for this project is to provide active guidance and mentoring to students in conducting a successful and technically robust study. Several meetings/conference calls will be conducted before, during, and after the data collection process. During these meetings, MSU-ITE/PSU-ITE students will report both on their accomplished and planned activities. The mentor will guide the students by identifying advantages and disadvantages at each step of the investigation. The structure of this mentorship will allow students the opportunity to explore their own ideas and approaches but rely on the technical skills and experiences of the mentor. Dr. Ahmed Al-Kaisy, MSU, and Dr. Christopher Monsere, PSU, will provide faculty oversight for this study and offer additional technical expertise.

If awarded the \$2,000 grant for this effort the award would be split between MSU-ITE and PSU-ITE. The MSU-ITE Student Chapter would use half (\$1000) of these funds to (1) support District 6 Annual Meeting attendance of students actively participating in this effort, (2) recruit new members to expand and continue student involvement in ITE. PSU would use the other half (\$1000) for travel to the District 6 Annual Meeting in Kalispell, Montana.

SCHEDULE

Montana State University

Month	March				April				May				June			
Week	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Data Collection-trip Generation, 6 sites		■	■	■	■	■	■									
Data Analysis and Report Preparation					■	■	■	■								
District 6 Data Review									■							
Presentation Development-D6 Annual Meeting										■	■	■				
Abstract Development-Western ITE													■	■	■	■
MSU summer session																■

Portland State University

Month	March				April				May				June			
Week	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Data Collection-trip Generation, 6 sites		■	■	■	■	■										
Data Analysis and Report Preparation					■	■	■	■								
District 6 Data Review									■							
Presentation Development-D6 Annual Meeting										■	■	■				
Abstract Development-Western ITE													■	■	■	■
PSU summer session																■

LEVEL OF EFFORT

Placement of counters (or conduction of manual counts) for data collection, analysis, and reduction of trip generation data as part of this investigation will be conducted by approximately eight to ten students (per university). For each site, data will be collected for one week at each site. The estimated set up and data collection time (where applicable) is approximately 5 hours per site, for a total of 25 hours. In the event that additional time is available additional sites will be identified and studied. Data analysis and reduction time is estimated at 20 hours. Fifteen (15) hours has been allocated for report (abstract) development. The additional 20 hours will be used to coordinate with city officials, receive approval for placement of road tubes, and coordinate efforts with our advisors, mentors, and partner PSU. The study scope, as defined, can be realistically completed within the allotted level of effort.

Transportation Coursework Incorporation

Montana State University

Special effort will be taken to integrate this activity with the transportation curriculum at MSU. In the near-term, student involvement for this project will be solicited from the CE 580 Traffic Flow Theory course. Students currently enrolled in this graduate level course have taken CE 350 Transportation Engineering and CE 452 Traffic Engineering which introduces the concept of volume studies, and trip generation. The resulting data made available from this effort can be utilized in these courses, CE 557 Statistical Applications in Transportation, or in CE 454 Transportation Planning, as a practical case study. Further, this study methodology can be repeated in future years as a class or ITE project to determine impacts on city planning and regulation as cities evolve and change. Such activities can support future involvement in the MSU-ITE Student Chapter and the larger field of transportation.

Portland State University

Dr. Bertini and Dr. Monsere teach undergraduate and graduate courses in transportation engineering at PSU and have a strong policy of incorporating research and real data into classroom lessons. Both faculty members have reviewed this RFP and are supportive of the efforts. Data collected as part of this RFP may be used in CE 510: Transportation Safety Analysis, CE 454: Urban Transportation Systems, or CE 558 Public Transportation Systems.

Project Management

Montana State University

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Portland State University

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HOLD HARMLESS STATEMENT

The Montana State University Institute of Transportation Engineers Student Chapter holds harmless and indemnifies ITE District 6 from any and all liability associated with the conduct and completion of this proposal, data collection and associated activity.

The Portland State University Institute of Transportation Engineers Student Chapter holds harmless and indemnifies ITE District 6 from any and all liability associated with the conduct and completion of this proposal, data collection and associated activity.



Institute of Transportation Engineers District 6

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Name (please print)

Portland State University
Agency or Firm Research Assistant Professor 12/10/04
Title Date

2) _____
Signature (of author or employer) Trevor Iman
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Montana State University
Agency or Firm Proposal Coordinator 12/10/04
Title Date

Title of Paper (as it will be published):

Trip Generation Characteristics of Drive-Thru Coffee Stands

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