

## PROJECT AGREEMENT

BETWEEN THE DEPARTMENT OF TRANSPORTATION OF THE UNITED STATES OF AMERICA  
AND THE FEDERAL MINISTRY OF TRANSPORT OF THE FEDERAL REPUBLIC OF GERMANY  
CONCERNING RESEARCH COOPERATION ON  
ALTERNATE ROUTING TRAFFIC CONTROL AND CONTINUATION OF  
COOPERATIVE RESEARCH ON URBAN NETWORK CONTROL

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This Project Agreement between the Department of Transportation of the United States and the Federal Ministry of Transport of the Federal Republic of Germany, executed in accordance with the general understanding between the U. S. Secretary of Transportation and the German Federal Minister of Transport, concerning research cooperation, sets forth a program to achieve maximum practicable cooperation in research and development of Alternate Routing Systems/ and Urban Network Control Systems. In carrying out the terms of this agreement, project management responsibility for the Department of Transportation is assigned to the Federal Highway Administration (FHWA) and project management responsibility for the Federal Ministry of Transport is assigned to the Department of Road Construction (Abteilung Strassenbau, STB).

### I. Alternate Routing Systems

a. Project purpose. The overall purpose of the project is to reduce traffic congestion on certain multi-lane, divided highways with limited access, hereinafter called "freeways," during peak periods, through the development of a safe, economical system of alternate routing. The potential scope of the project includes both the urban freeway with heavy weekday morning and evening work trips by local repeat drivers, and the intercity freeway with long distance holiday

and weekend trips by infrequent users. However, the immediate subject of the project will pertain to the intercity freeway problem at specific locations in the United States and in Germany, as set out below in the FHWA and STB Programs.

b. FHWA Program. The initial FHWA program in this area will be exploratory in nature and will consist of the design, implementation and evaluation of an experimental intercity alternate routing system to explore, develop, test and define alternate routing concepts and requirements. The first phase of this exploratory activity will be concerned with the diversion of traffic around a bottleneck from a single point via a single alternative. The site being considered is in the vicinity of Baltimore, Maryland, with the Baltimore Harbor Tunnel and the Baltimore Beltway (Interstate 695) as the alternative routes. Succeeding phases will expand the experimental system to an intercity (perhaps interstate) corridor. Because these first phases are exploratory in nature, and because they involve operation of a system on the public highway, it is necessary that they incorporate most of the joint program elements described in paragraph d. below. More thorough analyses of the several program elements will be undertaken as a result of the findings of the exploratory studies.

The proposed Baltimore study will involve the establishment of a diversion system to be operated for a period of 6 months to a year in order to foster public confidence in and familiarity with the system. A minimal number of volume and queue detectors will monitor traffic conditions and contribute data to the diversion strategies which will be developed. Some method of detecting incidents, such as accidents

and stalled vehicles will also be developed. Variable message signs and roadside radio will be used to convey routing information to drivers. It is expected that State traffic personnel will operate the system and control center. Experiments will be performed to evaluate the system, including aspects of driver attitude and response to the overall system and to different types of messages under different traffic conditions.

c. STB Program. In the German Freeway Network there are special portions of high density areas which need alternate routing traffic control. The development of variable message signs which indicate roadway destinations comprise the first stage of the investigation in this field. Other information needs have to be studied. The first test area is between Wiesbaden/Frankfurt and Mannheim/Heidelberg, which will be dealt with in 3 parts: north, middle and south. The north part investigation will be started in early summer 1972, the middle part investigation at the end of 1972 and the south part investigation in 1973. The investigations will include coordinated control by means of visual devices (signs, signals) and acoustic means (radio). The information communicated to the drivers in this manner may be legally binding or be of the nature of a recommendation.

General program requirements are:

- . Continuous detection of the traffic process and continuous central survey of the traffic conditions on the alternate routing system.
- . Investigations regarding criteria for alternate routing control.
- . Assessment of traffic situations from programmed traffic criteria by means of data processing.

- . Remote transmission of visual information to direct traffic where desired.
- . Knowledge of conformity with the natural laws of the traffic processes and development of corresponding control criteria.

However, the program will incorporate most of the joint program elements described in paragraph d. below.

d. Joint Project Elements. FHWA and STB respectively will use their best efforts to complete each of the following project elements relative to programs described in paragraphs b and c above, where an expected completion date is shown, and to furnish the other cooperating party with the results thereof by date following each element.

	Expected Completion Dates*	
	<u>FHWA</u>	<u>STB</u>
1. Develop methodology for determining travel conditions on the principal freeway and alternate routes, including development of prediction model.	73-1	73-1
2. Determination of benefits to be achieved through alternate routing.	74-1	73-2
3. i. Determination of criteria used by drivers for route selection such as travel time, uniformity of speed, cost, etc.	73-1	72-2
ii. Determination of type of information and message content required to induce diversion.	73-1	72-2

\*The target dates shown indicate the calendar year and the first and second half of that year. For example, "73-2" indicates completion in the second half of calendar year 1973.

	Expected Completion Dates	
	<u>FHWA</u>	<u>STB</u>
4. i. Criteria for selection of alternate routes.	N.A.**	73-1
ii. Development of strategies and algorithms, including traffic signal strategies, traffic parameters and quantification of decision variables.	73-2	73-2
5. Development of surveillance/measurement techniques (sensors, detectors) to obtain values of traffic parameters and decision variables for use in application of strategies and algorithms and system monitoring.	73-1	73-1
6. Development of communication system for transmitting information from detectors to control center and from control center to points of information presentation to drivers.	73-1	72-2
7. System requirements of central control center(s) (computer, communications, T.V. surveillance, system map display).	73-1	72-1
8. Requirements for and transmission (design and fabrication) of routing formation to drivers:	73-1	72-1
i. Visual, outside vehicle;	74-1	72-2
ii. Visual, inside vehicle;	N.A.	N.A.

\*\*N.A. means not applicable.

	Expected	
	<u>Completion Dates</u>	
	<u>FHWA</u>	<u>STB</u>

iii. Auditory, inside vehicle;	74-1	73-1
iv. Other, outside vehicle (e.g., maps, brochures)	N.A.	N.A.
9. Development of simulation model to test alternative strategies.	N.A.	73-1
10. Performance of field experiments for determination of:		
i. Technical feasibility;	74-1	72-2
ii. Driver acceptance;	74-1	72-2
iii. Effectiveness of system.	74-1	73-2
11. Evaluation of Results of Field Experiments.	74-1	74-1

e. Future plans. The above described FHWA and STB programs represent only the first phase of a longer range experimental effort involving all of the joint project elements in paragraph d. above. As initial project elements are completed or as other opportunities appear, it is anticipated that this Agreement will be modified to enlarge cooperative research for remaining project elements.

## II. Urban Network Control Systems

a. Following the 1969 agreement between FHWA and STB, both parties have established that in the area of Urban Network Control Systems further developments have taken place. Based on an exchange of ideas in Washington, D.C., in February 1972 and subject to further discussions it is felt that the possibility exists for further cooperation in this area.

FHWA will make available to STB research results and reports and

computer program documentation for digital simulation models. STB will make available to FHWA research results, and computer program documentation for their existing control programs. The following are of special interest to both parties:

1. Traffic simulation in urban networks.
2. Strategic concepts for network optimization.
3. Optimization methodology.
4. System performance evaluation techniques.
5. System design and development.
6. Vehicle classification.
7. Traffic flow funneling.

b. Both parties will exchange information on future program plans and their results.

### III. General Provision

a. It is understood that completion of all research is dependent on availability of funds to FHWA and STB, respectively. Results of each completed element will be in the language of the originating party and may be in the form of (i) draft, progress, interim or final reports; (ii) card or magnetic tape computer program; or (iii) other forms.

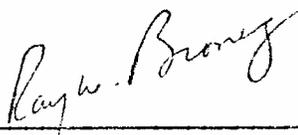
b. FHWA and STB will only release the contents of each others unpublished reports, results and other information to third parties if they are marked "for general distribution."

c. FHWA and STB will each exercise their best efforts to insure the accuracy of all data resulting from completed elements, but the

accuracy of such data is not guaranteed. Each party will use the other's data at its own risk, and furthermore shall hold the other harmless against any claim for damages arising out of the use of said data.

This project agreement, executed this 16th day of February, 1972 at Washington, D.C. shall enter into force upon signing. It shall remain in force until the last joint project element has been completed or unless earlier terminated by either the U.S. Department of Transportation or the German Federal Ministry of Transport upon 30 days written notice of intent to terminate. This project agreement may be amended at any time by mutual written agreement.

FOR THE UNITED STATES  
DEPARTMENT OF TRANSPORTATION



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Office of International Programs

FOR THE FEDERAL REPUBLIC OF GERMANY  
FEDERAL MINISTRY OF TRANSPORT



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