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**U.S. Department of
Transportation**
Office of the Secretary
of Transportation

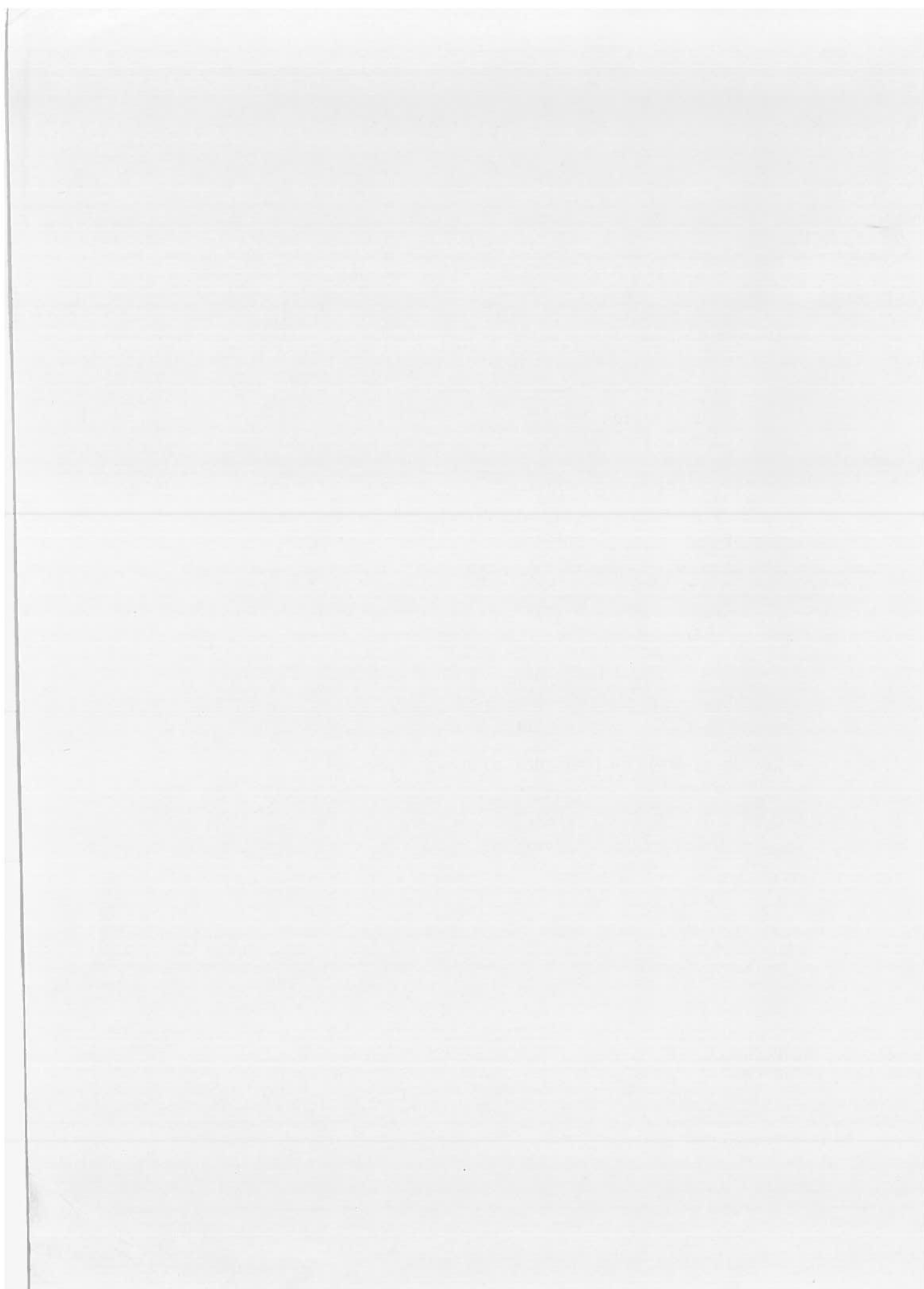
FY 1986 DOT Awards to Academic Institutions

University Research
Program

Prepared by:
University Research and
Technology Innovation Office
Transportation Systems Center

DOT/OST/P-34/87/058
June 1987

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Supplementary Notes
These awards cover contracts and grants for research and training.

Abstract
This report is a comprehensive listing of contracts and grants awarded by the U.S. Department of Transportation to colleges and universities during the fiscal year 1986.

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Summary of Contract/Grant Awards to Universities

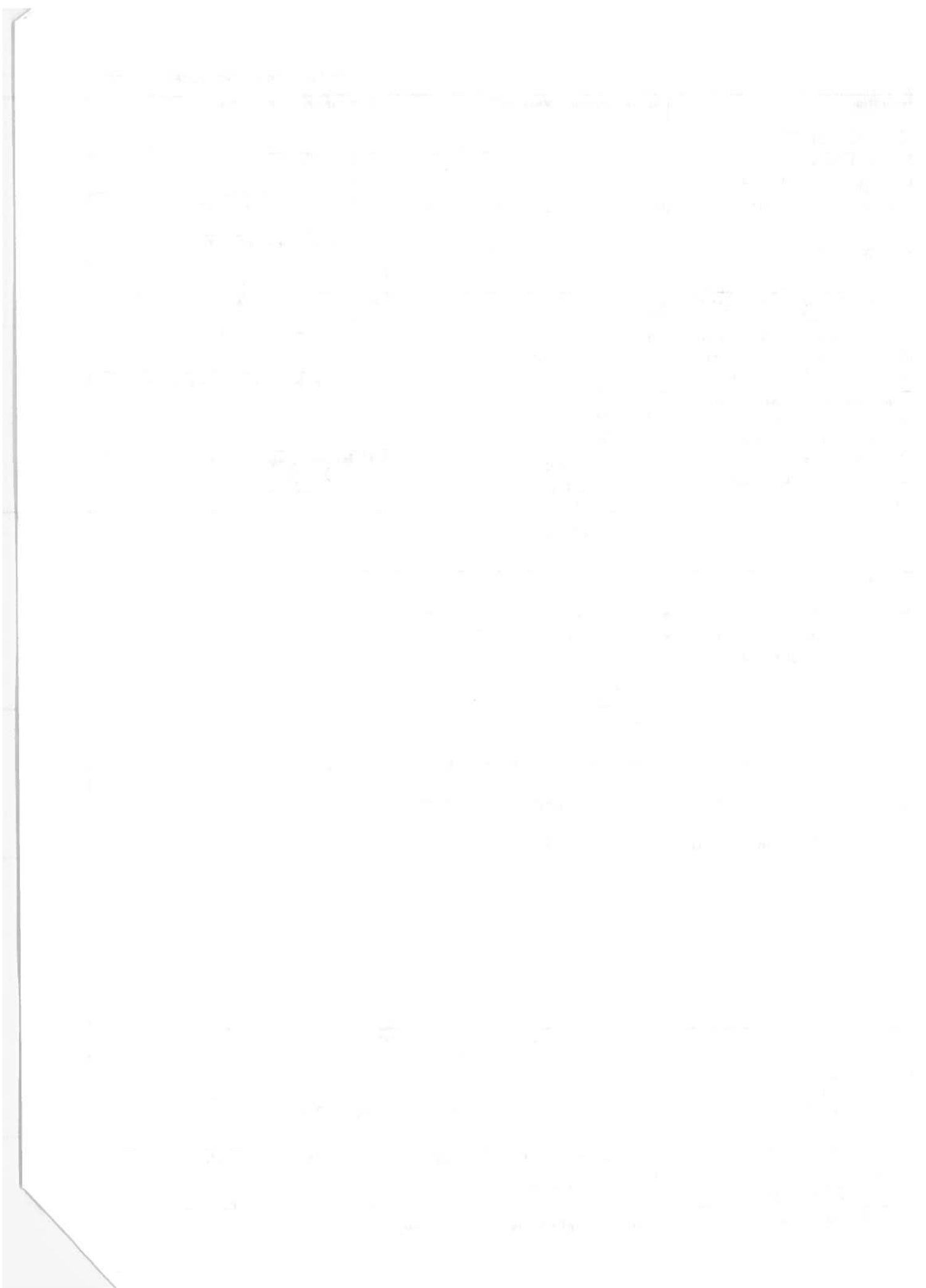
SECTION I - Awards by agency within DOT and by university

SECTION II - Awards by university and title of the contract/grant

SECTION III - Awards by state and university

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U.S. Department
of Transportation

**Research and
Special Programs
Administration**

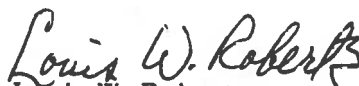
Transportation
Systems Center

Kendall Square
Cambridge, Massachusetts 02142

The Department of Transportation recognizes the innovative capabilities and professional expertise of the Nation's academic community as a critical resource in addressing transportation-related problems and policies at the local, state, regional, and national levels. In addition to funding transportation research and training, the Department convenes representatives of academia, industry, and government in university-based seminars to enhance understanding of technical and socio-economic issues and opportunities in all modes of transportation. These seminars serve as a valuable forum for the exchange of information on current transportation research results.

This publication, prepared annually by the Transportation Systems Center, University Research and Technology Innovation Office, summarizes the Department's contracts and grants awarded to colleges and universities during the Federal fiscal year 1986, which ended September 30, 1986. Total obligations amounted to \$46 million, including \$10.5 million of indirect highway-related R&D funding to universities via state governments and other agencies. Details of these awards are contained herein, as noted in the table of contents. Inquiries concerning additional information may be directed to the University Research and Technology Innovation Office.

We believe that the academic community, through the Department's research and training programs, is making significant contributions to improving the safety, economics, and efficiency of the Nation's transportation system.


Louis W. Roberts
Director



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**DEPARTMENT OF TRANSPORTATION
SUMMARY OF CONTRACT/GRANT AWARDS TO UNIVERSITIES**

Fiscal Year Obligations in Thousands

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
OST	\$ 3,045	\$ 4,311	\$ 7,367	\$ 4,813	\$ 3,581	\$ 4,152	*	*	*	*	\$ 109	\$ -0-	\$ -0-	\$ -0-
USCG	651	1,022	758	621	633	614	\$ 558	\$ 373	\$ 600	\$ 75	495	510	652	1,177
FAA	736	3,432	3,806	3,199	2,863	2,864	3,036	2,601	2,762	13,677	16,659	13,138	24,714	26,384
FHWA	2,283	3,979	2,706	7,127	10,993	10,102	9,128	9,282	9,562	6,645	7,275	9,432	7,261	13,363
FRA	719	328	795	2,018	887	309	477	258	147	20	0	170	50	10
NHTSA	4,408	4,497	5,029	4,940	6,961	6,334	3,651	3,145	3,613	2,057	2,473	2,862	3,092	1,730
UMTA	3,610	3,750	2,426	3,197	2,851	3,497	2,681	2,271	1,872	2,046	1,507	798	810	810
MARAD	-	-	-	-	-	-	-	-	-	288	530	1,088	1,215	389
RSPA	-	-	-	-	-	-	5,218	4,862	4,368	2,675	4,578	2,386	1,930	2,148
Totals	\$15,452	\$21,299	\$22,887	\$25,887	\$28,769	\$27,872	\$24,749	\$22,792	\$22,924	\$27,483	\$33,517	\$30,384	\$39,724	46,011

NOTE: Fiscal Year 1986 data for the Federal Highway Administration include direct obligations of \$2,856,695 and indirect obligations of \$10,506,034 for highway-related R&D funding to universities via state governments and other agencies.

() Denotes included with RSPA*

SECTION

I

AWARDS BY AGENCY
WITHIN DOT
AND BY UNIVERSITY

1917

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1917

UNITED STATES COAST GUARD

<i>University</i>	<i>City</i>	<i>State</i>	<i>Contract Number</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Alaska, University of	Fairbanks	AK	DTCG3986-C-80430	\$ 19,931	Atlas/Bristol Bay
Connecticut, University of	Storrs	CT	DTCG3983-L-20048	456,715	Lease
Dartmouth College	Hanover	NH	DTCG3983-C-00831	470,163	Computing services
Pennsylvania, University of	Philadelphia	PA	DTCG3986-C-80348	82,033	Design of knowledge support system
Worcester Polytechnic Institute	Worcester	MA	DTCG3985-A-80196	<u>148,575</u>	Marine fire research

UNITED STATES COAST GUARD--TOTAL

\$ 1,177,417

University	City	State	Contract Number	Contract Amount	Short Contract Title
Cameron University	Lawton	OK	DOT-FA70AC-2179	\$ 1,987,162	Management training facilities/service
Dayton, University of	Dayton	OH	DTFA0385-C-00009	12,000	Aircraft icing data
Embry-Riddle Aeronautical University	Orlando	FL	DTFA0384-C-00003	199,548	Training - aviation management
Georgia Institute of Technology	Atlanta	GA	DTFA0386-C-00059	373,308	New weapon detection concepts
Massachusetts Institute of Technology	Cambridge	MA	DTFA0386-C-00016	310,000	Technical studies - task order contract
North Dakota, University of	Grand Forks	ND	DTFA0186-C-00010	2,905,000	NEXRAD support
North Dakota, University of	Grand Forks	ND	DTFA0186-C-00032	665,000	NEXRAD support — weather research
Ohio University	Athens	OH	DTFA0182-C-10050	9,502	Category III studies
Oklahoma, University of	Norman	OK	DTFA0280-C-80001	2,042,548	Management training
			DTFA0282-D-82005	5,599,269	Air traffic recovery assistance
			DTFA0285-D-85047	10,226,902	Air traffic training
				<u>17,868,719</u>	
Oklahoma State University	Stillwater	OK	DTFA0285-D-85116	60,000	Chemical analysis
Princeton University	Princeton	NJ	DTFA0382-C-00046	80,000	Air traffic control performance
Wichita State University	Wichita	KS	DTFA0386-C-00059	<u>1,914,000</u>	Aviation safety research
				<u>\$ 26,384,239</u>	

FEDERAL AVIATION ADMINISTRATION — TOTAL

FEDERAL HIGHWAY ADMINISTRATION — DIRECT OBLIGATIONS

<i>University</i>	<i>City</i>	<i>State</i>	<i>Contract Number</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Colorado, University of	Denver	CO	DTFH6185-C-00150	\$ 40,217	Pavement drainage channel design
Florida, University of	Gainesville	FL	DTFH6183-C-00133	66,832	Software maintenance and user support
			DTFH6186-C-00016	72,392	Enhancement of Transyt 7-F
			DTFH6186-C-00018	168,862	Microcomputer support center
			DTFH6186-C-00107	55,584	Training courses
				<u>296,838</u>	
Illinois, University of	Urbana	IL	DTFH6185-C-00004	128,388	Rehabilitation method for rigid pavements
Kansas State University	Manhattan	KS	DTFH6185-C-00139	74,521	Guidelines - spills of hazardous materials
Kentucky, University of	Lexington	KY	DTFH6186-C-00118	79,538	Acoustic emission weld monitor
Massachusetts Institute of Technology	Cambridge	MA	DTFH6184-C-0094	14,094	Cost analysis - new pavement projects
			DTFH6184-C-00026	14,955	Improving dynamic ability multi-trailer vehicle
Michigan, University of	Ann Arbor	MI	DTFH6185-C-00091	168,336	Safety implications of truck configurations
			DTFH6185-C-00112	38,665	Design loads for future bridges
				<u>221,956</u>	
North Carolina, University of	Chapel Hill	NC	DTFH6184-C-00067	57,257	Safe geometric design for mini-cars
			DTFH6184-C-00079	93,594	Measures for hwy safety analysis
			DTFH6186-C-00041	369,098	Improvements for safety upgrading of horiz. curves
			DTFH6186-C-00104	45,000	Site impact traffic evaluation course
				<u>564,949</u>	
Oregon Graduate Center	Beaverton	OR	DTFH6186-X-00119	296,589	Special weld studies
			DTFH6185-C-00174	62,474	Hi strength bolts for bridges

Texas A&M University

College Station

TX

- DTFH6180-C-00040
- DTFH6185-C-00101
- DTFH6186-C-00071
- DTFH6185-C-00129

75,015
 22,341
 877,504
 35,439
1,010,299

Skid test services
 Meas. of heavy vehicle impact forces
 Testing new bridge rail design
 Rollover caused by concrete barriers

FEDERAL HIGHWAY ADMINISTRATION — DIRECT OBLIGATIONS — TOTAL

\$ 2,856,695

FEDERAL HIGHWAY ADMINISTRATION — INDIRECT OBLIGATIONS — HP&R/NCHRP FUNDS

<i>University</i>	<i>City</i>	<i>State</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Akron, University of	Akron	OH	\$ 43,000	Recycled asphalt production
Alabama, University of	University	AL	23,191	Structural behavior—Homewood bridge
Arizona State University	Tempe	AZ	45,000	Hwy landscape maintenance
			105,555	Slope erosion control
			<u>150,555</u>	
Arkansas, University of	Little Rock	AR	39,600	Waste utilization in hwy construction
California, University of	Berkeley	CA	22,541	New hwy capacity manual
			60,000	CA automated roadway installation
			14,000	Signal intersection performance
			8,438	Survey traffic signal timing
			30,702	Accident prediction model
			<u>135,681</u>	
California State University	Sacramento	CA	63,300	Perform. of thin wall concrete pipes
Case Western Reserve University	Cleveland	OH	27,800	Scheduling/control of construction projects
			200,000	Fatigue evaluation—steel bridges
			<u>227,800</u>	
Clemson University	Clemson	SC	46,297	Designs of storm water inlet capacities
Colorado, University of	Boulder	CO	5,000	Methodology to size detour drainage structure
Colorado, University of	Denver	CO	6,095	Peak runoff prediction for State of Colorado
Colorado State University	Ft. Collins	CO	9,000	Evaluate truck overturns
Florida Atlantic University	Boca Raton	FL	79,000	Cathodic protection of steel tendons

University	City	State	Amount	Short Contract Title
Georgia Institute of Technology	Atlanta	GA	\$ 15,000	Solutions to blistering of asphalt overlays
			27,000	Test method for predicting rutting characteristics
			50,000	Benefits of geosynthetics in flexible pavements
			<u>92,000</u>	
Georgia State University	Atlanta	GA	10,000	Technique for wetlands impact mitigation
Humbolt State University	Arcata	CA	18,400	Assessment of photovoltaic system capabilities
Idaho, University of	Moscow	ID	25,000	Moisture-induced damage to asphaltic concrete
Illinois, University of	Urbana	IL	28,690	Traffic analysis
			36,850	St. Charles case study
			223,900	Revision of hwy practice manual
			<u>289,440</u>	
Iowa State University	Ames	IA	165,000	Strengthening existing hwy bridges
Kentucky, University of	Lexington	KY	20,215	Properties of pavement components
			18,000	Vehicle classification data
			25,000	Pavement deflection eval.
			10,000	Rural traffic control
			18,244	Traffic control—maint. work zones
			36,000	Eval. experimental pavement surfaces
			12,000	Pavement performances
			49,500	Eval. sandstone bases
			25,000	Traffic volume estimates
			<u>378,959</u>	
Lehigh University	Bethlehem	PA	299,995	Redundancy in steel bridges
			250,000	Fatigue test—welded details
			250,000	Fatigue cracking
			200,000	Fatigue eval.—riveted steel bridges
<u>999,995</u>				

FEDERAL HIGHWAY ADMINISTRATION — INDIRECT OBLIGATIONS — HP&R/NCHRP FUNDS — continued

<i>University</i>	<i>City</i>	<i>State</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Maryland, University of	College Park	MD	60,833	Hydrologic analysis
			25,000	Asphalt aggregate mixtures
			116,383	Welded mesh in reinforced concrete bridge decks
			50,000	Rigid & composite pavements
			88,850	Storm water management
			145,000	Hydrologic analysis
			171,000	Fatigue testing—weathered beams
			<u>657,066</u>	
Massachusetts Institute of Technology	Cambridge	MA	\$ 57,512	Eval. of mix no. 8 overlay on bridgedeck
Michigan State University	East Lansing	MI	40,000	Evaluation of SCANDI
			25,000	Safety analysis—freeway exchanges
			<u>65,000</u>	
Mississippi, University of	University	MS	133,570	Pavement mgt. information system
Mississippi State University	Mississippi State	MS	31,200	Grid analysis—box girders
Montana State University	Bozeman	MT	9,200	Evaluation—test sections
New Hampshire, University of	Durham	NH	73,689	Influence of fly ash on Portland cement concrete
New Mexico, University of	Albuquerque	NM	13,787	Sealant evaluations
			60,000	Asphalt guidelines
			36,000	Asphalt modifiers
			46,000	Asphalt mixture properties
			<u>155,787</u>	
New Mexico State University	Las Cruces	NM	98,000	Bridge design
			18,000	Bridge deck rehab
			<u>116,000</u>	
North Carolina State University	Raleigh	NC	50,000	Designs of flexible pavements
			50,000	Investigation of high strength concrete

ADMINISTRATION - INDIRECT OBLIGATIONS - HP&R/NCHRP FUNDS - continued

University	City	State	Contract Amount	Short Contract Title
Northeastern University	Boston	MA	\$ 61,565	Turning flows at intersections
			73,000	Subgrade soils in permanent design
			<u>134,565</u>	
Ohio University	Athens	OH	97,731	Structural analysis-culverts
			81,415	Mech fatigue behavior
			<u>179,146</u>	
Oklahoma State University	Stillwater	OK	30,000	Aggregate in hi strength concrete
			110,000	Erosion control
			<u>140,000</u>	
Oregon State University	Corvallis	OR	27,750	Improved overlay design methods
Pennsylvania State University	University Park	PA	55,372	Design storm atlas
Puerto Rico, University of	Mayaguez	PR	76,185	Permanent design/rehab
Purdue University	West Lafayette	IN	52,460	Bridge deck overlay
			59,700	Fly ash for highway concrete
			9,000	Pavement evaluation
			50,000	Strategies for maintenance of bridges
			<u>171,160</u>	
Tennessee, University of	Knoxville,	TN	200,000	Bridge load capacity estimates
Texas, University of	Arlington	TX	83,000	Upgrade road roughness device

FEDERAL HIGHWAY ADMINISTRATION — INDIRECT OBLIGATIONS — HP&R/NCHRP FUNDS — continued

<i>University</i>	<i>City</i>	<i>State</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Texas, University of	Austin	TX	\$ 240,000	Anchorage zone reinforcement
			325,000	Mix design procedures for polymer modified asphalt
			60,000	Evaluation of the 4-cycle magnesium sulfate soundness test
			50,000	Concrete coating problems
			36,000	Distribution of post-tensioning forces
			60,000	Estimating residual fatigue life of bridges
			36,000	Distribution of post-tensioning forces
			80,000	Development of subbase friction information
			30,000	Alkali-aggregate reaction in concrete containing fly ash
			49,500	Design guide for short anchor bolts
			55,000	Bent column analysis and design
			70,000	Detailing reinforcement in concrete structures
			6,000	Field verification of bridge deck lateral post-tensioning
			100,000	Research plan for achieving adequate pavement friction
			135,000	Design of rest area comfort stations
			88,000	Treatment of asphalt mixtures with lime
			110,000	Evaluation of truck sizes on pavement deterioration
			85,000	Longer and wider trucks on the Texas highway system
			50,000	Mower-thrown object accidents
			<u>1,485,000</u>	

Texas A & M University

Amount

State

City

Short Contract Title

City	State	Short Contract Title	Amount
College Station	TX	Structural properties—asphaltic concrete pavement	\$ 250,000
		New guardrail end treatment	75,000
		Demonstration of exclusive truck facilities	60,000
		Operation and design applications using Passer III-85	117,420
		Sub area analysis using microcomputers	55,000
		Improved delineation of concrete barriers and gore areas	130,000
		Environmental effects on the physical properties of concrete	52,000
		Evaluation of fabric test pavements	5,000
		Rapid bridge deck replacement	21,700
		Effects of overloads on the service life of bridges	40,000
		Warrants for one-way frontage roads	99,800
		Improved delineation of concrete barriers and gore areas	100,000
		Improved delineation of concrete barriers and gore areas	100,000
		Longer and wider trucks on the Texas highway system	97,000
		Application of high-occupancy vehicle priority techniques	165,000
		Impact of carpools use of KATY transitway	74,000
		Enhancements to Passer II-84	80,000
		Trucks, size, weight and tire pressures on pavement deterioration	130,000
		Cost comparison of maintenance activities	145,000
		Texas flexible pavement data base	65,000
		Implementation of the FPS pavement design system	55,000
		Monitoring asphalt rubber test road performance	11,000
		Total	1,927,920

FEDERAL HIGHWAY ADMINISTRATION — INDIRECT OBLIGATIONS — HP&R/NCHRP FUNDS — continued

<i>University</i>	<i>City</i>	<i>State</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Toledo, University of	Toledo	OH	\$ 65,583	Inventory, scheduling of traffic control device
Vanderbilt University	Nashville	TN	57,000	Design for impact attenuation system
Virginia, University of	Charlottesville	VA	7,500	Factors affecting performance of bridges
			5,500	Transportation plans for small urban areas
			33,500	Software studies
			<u>46,500</u>	
Washington, University of	Olympia	WA	41,608	Construction erosion control
			1,200,000	Performance of bridge deck protective strategies
			34,373	Ferry system data
			90,035	Eval. concrete overlays for bridges
			<u>1,366,016</u>	
Washington State University	Pullman	WA	23,000	Guidelines for cuts in loess soils
			64,000	Continuous bridges without end blocks
			<u>87,000</u>	
West Virginia University	Morgantown	WV	146,000	Control of blowing snow
			<u>\$ 10,506,034</u>	

FEDERAL HIGHWAY ADMINISTRATION — INDIRECT OBLIGATIONS — TOTAL

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

<i>University</i>	<i>City</i>	<i>State</i>	<i>Contract Number</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Indiana University	Indianapolis	IN	DTNH2281-C-57205	\$ 137,604	Operation of NASS primary sampling units
			DTNH2282-C-07275	<u>660,000</u> 797,604	Operation of NASS zone center
Michigan, University of	Ann Arbor	MI	DTNH2281-C-17905	10,000	In-depth accident investigation
			DTNH2283-C-07095	61,538	Anthromorphic test device
			DTNH2284-C-07198	5,430	FMVSS 108 harmonization/upgrade
			DTHN2285-D-07259	<u>24,202</u> 101,170	Braking performance of light trucks
Montevallyo University	Montevallyo	CA	DTNH2283-C-07154	251,053	Operation of NASS primary sampling unit
Northwestern University	Evanston	IL	DTNH2285-C-05120	7,212	Training criteria for accident reconstructionists
			DTNH2285-C-15401	48,352	Safety belt usage demo project
			DTNH2286-C-05028	<u>120,652</u> 176,216	Performance measures of police traffic services
North Carolina, University of	Chapel Hill	MI	DTNH2286-C-07009	30,000	Analyze data from computerized vehicle
Pennsylvania, University of	Philadelphia	PA	DTNH2282-C-07157	59,636	Biomechanics of head injuries
			DTNH2283-C-07153	194,182	Operation of NASS primary sampling unit
Texas A & M University	College Station	TX	DTNH2283-C-07158	105,497	Operation of NASS primary sampling unit
			DTNH2286-D-21104	<u>15,000</u> 314,679	Vehicle recall campaign

Developing local support and funding for transportation services in rural areas	74,434	CA-11-0030	CA	Long Beach	CA	74,434
Increasing private sector involvement in urban mass transportation planning and service	81,664 <td>PA-11-0033 <td>PA <td>Pittsburgh <td>PA <td>81,664</td> </td></td></td></td>	PA-11-0033 <td>PA <td>Pittsburgh <td>PA <td>81,664</td> </td></td></td>	PA <td>Pittsburgh <td>PA <td>81,664</td> </td></td>	Pittsburgh <td>PA <td>81,664</td> </td>	PA <td>81,664</td>	81,664
Innovate financial strategies during facility construction	79,000 <td>NY-11-0039 <td>NY <td>New York <td>NY <td>79,000</td> </td></td></td></td>	NY-11-0039 <td>NY <td>New York <td>NY <td>79,000</td> </td></td></td>	NY <td>New York <td>NY <td>79,000</td> </td></td>	New York <td>NY <td>79,000</td> </td>	NY <td>79,000</td>	79,000
Potentials and problems of private sector transportation service	25,131 <td>TN-11-0017 <td>TN <td>Johnson City <td>TN <td>25,131</td> </td></td></td></td>	TN-11-0017 <td>TN <td>Johnson City <td>TN <td>25,131</td> </td></td></td>	TN <td>Johnson City <td>TN <td>25,131</td> </td></td>	Johnson City <td>TN <td>25,131</td> </td>	TN <td>25,131</td>	25,131
Joint funding agreements between universities and transit operating properties	76,545 <td>GA-11-0017 <td>GA <td>Atlanta <td>GA <td>76,545</td> </td></td></td></td>	GA-11-0017 <td>GA <td>Atlanta <td>GA <td>76,545</td> </td></td></td>	GA <td>Atlanta <td>GA <td>76,545</td> </td></td>	Atlanta <td>GA <td>76,545</td> </td>	GA <td>76,545</td>	76,545
Overcoming barriers to greater private sector involvement in transportation	36,631 <td>IL-11-0032 <td>IL <td>Chicago <td>IL <td>36,631</td> </td></td></td></td>	IL-11-0032 <td>IL <td>Chicago <td>IL <td>36,631</td> </td></td></td>	IL <td>Chicago <td>IL <td>36,631</td> </td></td>	Chicago <td>IL <td>36,631</td> </td>	IL <td>36,631</td>	36,631
Moving people: a 1985 revision	51,420 <td>ND-11-0001 <td>ND <td>Fargo <td>ND <td>51,420</td> </td></td></td></td>	ND-11-0001 <td>ND <td>Fargo <td>ND <td>51,420</td> </td></td></td>	ND <td>Fargo <td>ND <td>51,420</td> </td></td>	Fargo <td>ND <td>51,420</td> </td>	ND <td>51,420</td>	51,420
Training courses for small urban and rural transportation management	49,876 <td>OH-11-0007 <td>OH <td>Columbus <td>OH <td>49,876</td> </td></td></td></td>	OH-11-0007 <td>OH <td>Columbus <td>OH <td>49,876</td> </td></td></td>	OH <td>Columbus <td>OH <td>49,876</td> </td></td>	Columbus <td>OH <td>49,876</td> </td>	OH <td>49,876</td>	49,876
Evaluating the desirability of transit deregulation	80,106 <td>PA-11-0032 <td>PA <td>Philadelphia <td>PA <td>80,106</td> </td></td></td></td>	PA-11-0032 <td>PA <td>Philadelphia <td>PA <td>80,106</td> </td></td></td>	PA <td>Philadelphia <td>PA <td>80,106</td> </td></td>	Philadelphia <td>PA <td>80,106</td> </td>	PA <td>80,106</td>	80,106
Monopoly, deregulation and Coordination of public mobility services	65,809 <td>PR-11-0005 <td>PR <td>Rio Piedras <td>PR <td>65,809</td> </td></td></td></td>	PR-11-0005 <td>PR <td>Rio Piedras <td>PR <td>65,809</td> </td></td></td>	PR <td>Rio Piedras <td>PR <td>65,809</td> </td></td>	Rio Piedras <td>PR <td>65,809</td> </td>	PR <td>65,809</td>	65,809
Use of microcomputers in study of population trends and impact on transportation needs in rapidly growing metropolitan areas	42,997 <td>NY-11-0038 <td>NY <td>Troy <td>NY <td>42,997</td> </td></td></td></td>	NY-11-0038 <td>NY <td>Troy <td>NY <td>42,997</td> </td></td></td>	NY <td>Troy <td>NY <td>42,997</td> </td></td>	Troy <td>NY <td>42,997</td> </td>	NY <td>42,997</td>	42,997
Transit safety: case study of New York State's Public Transportation Safety Board	79,012 <td>VA-11-0015 <td>VA <td>Blacksburg <td>VA <td>79,012</td> </td></td></td></td>	VA-11-0015 <td>VA <td>Blacksburg <td>VA <td>79,012</td> </td></td></td>	VA <td>Blacksburg <td>VA <td>79,012</td> </td></td>	Blacksburg <td>VA <td>79,012</td> </td>	VA <td>79,012</td>	79,012
Effect of employee attitudes and productivity						
URBAN MASS TRANSPORTATION ADMINISTRATION - TOTAL						\$ 809,518

Note: The UMTA grants listed above were reported previously as FY 1985 awards. These grants actually were awarded in October, 1985 and appear here as FY 1986 awards.

MARITIME ADMINISTRATION

<i>University</i>	<i>City</i>	<i>State</i>	<i>Contract Number</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
California, University of	Berkeley	CA	DTMA91-86-C-60107	\$ 44,953	Statistical analysis—nonlinear ship motions
Georgia Institute of Technology	Atlanta	GA	DTMA91-86-C-60116	54,929	Treatment for anti-fouling of ship hull materials
Lehigh University	Bethlehem	PA	DTMA91-86-C-60117	50,000	Tripping of asymmetrical stiffeners
Louisiana State University	Baton Rouge	LA	DTMA9184-C-60118	48,670	Coastal off-shore transport by barges
Massachusetts Institute of Technology	Cambridge	MA	DTMA9184-C-41014	63,179	Sea trails to determine hydrodynamic coefficients
Michigan, University of	Ann Arbor	MI	DTMA9186-C-60120	31,977	Bow impact loads
Texas A&M University	College Station	TX	DTMA9186-C-60121	50,000	Liquid sloshing loads
Virginia Polytechnic Institute and State University	Blacksburg	VA	DTMA9186-C-60122	45,015	Hydrodynamic force module

\$ 388,723

MARITIME ADMINISTRATION—TOTAL

RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION

<i>University</i>	<i>City</i>	<i>State</i>	<i>Contract Number</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Boston University	Boston	MA	DTRS5785-C-00091	\$ 153,849	Navigation/surveillance systems
Bradley University	Peoria	IL	DTRS5785-C-00090	98,520	Navigation/surveillance systems
Iowa State University	Ames	IA	DTRS5785-C-00089	55,500	Navigation/surveillance systems
Lehigh University	Bethlehem	PA	DTRS5785-C-00093	42,946	Navigation/surveillance systems
Lowell, University of	Lowell	MA	DTRS5785-C-00088	45,000	Navigation systems analysis
Massachusetts Institute of Technology	Cambridge	MA	DTRS5785-C-00083	872,647	Advanced computer concept applications
			DTRS5785-C-00092	106,990	Structural integration in trans system
			DTRS5785-C-00085	85,000	Telecommunications system analysis
			DTRS5785-C-00102	75,000	Vehicle dynamics
			DTRS5786-C-00007	84,882	Airline scheduling delays at airports
			TSC-1320	28,052	Reference services
				<u>379,924</u>	
Michigan, University of	Ann Arbor	MI	DTRS5783-C-00055	70,000	Displaced auto worker study
Ohio University	Athens	OH	DTRS5783-C-00097	84,093	Research support
			DTRS5785-C-00063	88,331	Modernize FAA ATC system
				<u>172,424</u>	
Ohio State University	Columbus	OH	DTRS5785-C-00101	80,000	Correlation of accid. human error
Purdue University	West Lafayette	IN	DTRS5785-C-00099	20,000	Research--TTD
Virginia, University of	Charlottesville	VA	DTRS5785-C-00103	169,937	Vehicle crashworthiness
Washington, University of	Seattle	WA	DTRS5785-C-00169	37,093	Test meas. RR car wheels
				<u>37,093</u>	

RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION - TOTAL \$ 2,197,840

SECTION

II

AWARDS BY UNIVERSITY
AND
TITLE OF CONTRACT/GRANT



AWARDS BY UNIVERSITY AND TITLE OF CONTRACT/GRANT

<i>University</i>	<i>DOT Admin.</i>	<i>Contract Number</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Akron, University of	FHWA	HP&R/NCHRP Funds	\$ 43,000	Recycled asphalt production
Alabama, University of	FHWA	HP&R/NCHRP Funds	23,191	Structural behavior--Homewood bridge
Alabama A&M University	UMTA	AL-11-0003*	66,893	Devel. funding for transportation in rural areas
Alaska, University of	USCG	DTCG3986-C-80430	19,931	Atlas/Bristol Bay
Arizona State University	FHWA	HP&R/NCHRP Funds	{ 45,000 105,555 150,555	Hwy landscape maintenance Slope erosion control
Arkansas, University of	FHWA	HP&R/NCHRP Funds	39,600	Wrote utilization in hwy construction
Boston University	RSPA	DTRS5785-C-00091	153,849	Navigation/surveillance systems
Bradley University	RSPA	DTRS5785-C-00090	98,520	Navigation/surveillance systems
California, University of/Berkeley	MARAD	DTMA9186-C-60107	{ 44,953 22,541 60,000 14,000 8,438 30,702 180,634	Statistical analysis--non-linear ship motions New hwy capacity manual CA automated roadway installation Signal intersection performance Survey traffic signal timing Accident prediction model
California State University	UMTA	CA-11-0030*	74,434	Urban mass transportation planning and service
	FHWA	HP&R/NCHRP Funds	{ 63,300 137,734	Performance of thin wall concrete pipes
Cameron University	FAA	DOT-FA70AC-2179	1,987,162	Mgt. training facilities/services
Carnegie-Mellon University	UMTA	PA-11-0033*	81,664	Financial strategies during facility construction

*Denotes Grant

AWARDS BY UNIVERSITY AND TITLE OF CONTRACT/GRANT

<i>University</i>	<i>DOT Admin.</i>	<i>Contract Number</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Case Western Reserve University	FHWA	HP&R/NCHRP Funds	\$ 27,800 200,000 <u>227,800</u>	Scheduling/control of construction projects Fatigue evaluation—steel bridges
Clemson University	FHWA	HP&R/NCHRP Funds	46,297	Designs of storm water inlet capacities
Colorado, University of/Boulder	FHWA	HP&R/NCHRP Funds	5,000	Methodology of size detour drainage structures
Colorado, University of/Denver	FHWA FHWA	HP&R/NCHRP Funds DTFH6185-C-00150	6,095 40,217 <u>46,312</u>	Peak runoff prediction for Colorado Pavement drainage channel design
Colorado State University	FHWA	HP&R/NCHRP Funds	9,000	Evaluate truck overturns
Columbia University	UMTA	NY-11-0039*	79,000	Problems of private sector involvement in transportation
Connecticut, University of	USCG	DTCG3983-L-20048	456,715	Lease
Dartmouth College	USCG	DTCG3983-C-00831	470,163	Computing services
Dayton, University of	FAA	DTFA0385-C-00009	12,000	Aircraft icing data
East Tennessee State University	UMTA	TN-11-0007*	25,131	Funding agreements between universities and transit operating properties
Embry-Riddle Aeronautical University	FAA	DTFA0384-C-00003	373,308	New weapon detection concepts
Florida, University of	FHWA	DTFH6185-C-00150 DTFH6183-C-00133 DTFH6186-C-00016 DTFH6186-C-00018 DTFH6186-C-00107	40,217 66,832 72,392 168,862 55,584 <u>403,887</u>	Pavement drainage channel design Software maintenance and user support Enhancements to Transyt 7-F Microcomputer support center Training course

AWARDS BY UNIVERSITY AND TITLE OF CONTRACT/GRANT — continued

University	DOT Admin.	Contract Number	Contract Amount	Short Contract Title
Florida Atlantic University	FWHA	HP&R/NCHRP Funds	\$ 79,000	Cathodic protection of steel tendons
Georgia Institute of Technology	FAA	DTFA0386-C-00059	373,308	New weapon detection concepts
	MARAD	DTMA9186-C-60116	54,929	Anti-fouling of ship hull materials
	UMTA	GA-11-0017*	76,545	Overcoming barriers to private sector involvement in transportation
Georgia State University	FWHA	HP&R/NCHRP Funds	15,000	Solutions to blistering of asphalt overlays
			27,000	Test method to predict rutting characteristics
			50,000	Benefits of geosynthetics in flexible pavement
			<u>596,774</u>	
Georgia State University	FWHA	HP&R/NCHRP	10,000	Techniques for wetlands impact mitigation
Humbolt State University	FWHA	HP&R/NCHRP Funds	18,400	Assessment of photovoltaic system capabilities
Idaho, University of	FWHA	HP&R/NCHRP Funds	25,000	Moisture-induced damage to asphalt concrete
Illinois, University of/Champaign	FRA	DTRF5384-C-00036	10,000	Interregional grain transportation study
Illinois, University of/Chicago	UMTA	IL-11-0032*	36,631	Moving people: a 1985 revision
Illinois, University of/Urbana	FWHA	HP&R/NCHRP Funds	128,388	Rehabilitation method for rigid pavements
			28,690	Traffic analysis
			36,850	St. Charles case study
			<u>223,900</u>	Revision of hwy practice manual
			<u>417,828</u>	
Indiana University	NHTSA	DTNH2281-C-57205 DTNH2282-C-07275	137,604	Operation of NASS primary sampling unit
			660,000	Operation of NASS zone center
			<u>797,604</u>	
Iowa State University	RSPA	DTRS5785-C-00089	55,500	Navigation/surveillance systems
	FWHA	HP&R/NCHRP Funds	165,000	Strengthening hwy bridges
			<u>220,500</u>	

*Denotes Grant

AWARDS BY UNIVERSITY AND TITLE OF CONTRACT/GRANT — continued

<i>University</i>	<i>DOT Admin.</i>	<i>Contract Number</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Kansas State University	FHWA	DTFH6185-C-00139	\$ 74,521	Guidelines—spills of hazardous materials
Kentucky, University of	FHWA	DTFH6186-C-00118	79,538	Acoustic emission weld monitor
			20,215	Properties of pavement components
			18,000	Vehicle classification data
			25,000	Pavement deflection eval.
			10,000	Rural traffic control
			18,244	Traffic control—maint. work zones
		36,000	Eval. experimental pavement surfaces	
		12,000	Pavement performance	
		49,500	Evaal. sandstone bases	
		25,000	Traffic volume estimates	
		<u>458,497</u>		
Lehigh University	MARAD	DTMA91-86-C-60117	50,000	Tripping of asymmetrical stiffeners
	RSPA	DTRS5785-C-00088	42,946	Navigation/surveillance systems
	FHWA	HP&R/NCHRP Funds	299,995	
			250,000	
		250,000		
		200,000		
		<u>1,092,941</u>		
Louisiana State University	MARAD	DTMA9186-C-60188	48,670	Coastal off-shore transport by barges
Lowell, University of	RSPA	DTRS5785-C-00088	45,000	Navigation systems analysis
Maryland, University of	FHWA	HP&R/NCHRP Funds	60,833	Hydrologic analysis
			25,000	Asphalt aggregate mixtures
			116,383	Welded mesh in reinforced concrete
			50,000	Rigid & composite pavement
			88,850	Storm water management
			145,000	Hydrologic analysis
		171,000	Fatigue testing—weathered beams	
		<u>657,066</u>		

AWARDS BY UNIVERSITY AND TITLE OF CONTRACT / GRANT — continued

University	DOT Admin.	Contract Number	Contract Amount	Short Contract Title
Massachusetts Institute of Technology	FAA	DTF A0386-C-00016	\$ 310,000	Technical studies—task order contract
		DTR S5785-C-00083	872,647	Advanced computer concept applications
	RSPA	DTR S5785-C-00092	106,990	Structural integration in trans. sys.
		DTR S5785-C-00085	85,000	Telecommunication sys. analysis
		DTR S5785-C-00102	75,000	Vehicle dynamics
		DTR S5786-C-00007	84,882	Airline scheduling delays at airports
		TSC-1320	28,052	Reference services
	MARAD	DTMA9184-C-41014	63,179	Sea trials to determine hydrodynamic coefficients
	FHWA	DTFH6184-C-00094	14,094	Cost analysis—new pavement projects
	FHWA	HP&R/NCHRP Funds	57,512	Eval. of mix no. 8 overlay on bridge deck
		1,697,356		
Michigan, University of	RSPA	DTR55783-C-00055	70,000	Displaced auto worker study
	MARAD	DTMA9186-C-60120	31,977	Bow impact loads
		DTFH6184-C-00026	14,955	Improving dynamic ability multi-trailer vehicle
	FHWA	DTFH6185-C-00091	168,336	Safety implications of truck configurations
		DTFH6185-C-00112	38,665	Design loads for future bridges
		DTNH2281-C-17095	10,000	Accident investigation
		DTNH2283-C-07095	61,538	Anthropomorphic test device
	NHTSA	DTNH2284-C-07198	5,430	FMVSS 108 harmonization/upgrade
		DTNH2285-D-07259	24,202	Braking performance—light trucks
			425,103	
Michigan State University	FHWA	HP&R/NCHRP Funds	40,000	Evaluation of SCANDI
			25,000	Safety analysis—freeway exchanges
		65,000		
Mississippi, University of	FHWA	HP&R/NCHRP Funds	133,570	Pavement mgt. info. sys.
Mississippi State University	FHWA	HP&R/NCHRP Funds	31,200	Grid analysis
Montana State University	FHWA	HP&R/NCHRP Funds	9,200	Eval.—test sections
Montevallo, University of	NHTSA	DTNH2283-C-07154	251,053	Operation of NASS primary sampling unit
New Hampshire, University of	FHWA	HP&R/NCHRP Funds	73,689	Fly ash on Portland cement

AWARDS BY UNIVERSITY AND TITLE OF CONTRACT/GRANT — continued

<i>University</i>	<i>DOT Admin.</i>	<i>Contract Number</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
New Mexico, University of	FHWA	HP&R/NCHRP Funds	\$ 13,787	Sealant eval.
			60,000	Asphalt guidelines
			36,000	Asphalt modifiers
			46,000	Asphalt mixture properties
			<u>155,787</u>	
New Mexico State University	FHWA	HP&R/NCHRP Funds	98,000	Bridge design
			18,000	Bridge deck rehab.
			<u>116,000</u>	
North Carolina, University of	FHWA	DTFH6184-C-00067	57,257	Design for mini-cars
			93,594	Hwy. safety analysis
			369,098	Safety upgrading curves
			45,000	Traffic eval.
			30,000	Data anal.
			<u>594,949</u>	
North Carolina State University	FHWA	HP&R/NCHRP Funds	50,000	Flexible pavements
			37,500	Hi strength concrete
			32,000	Bridge mgt.
			32,000	Bridge mgt.
			151,500	
			<u>151,500</u>	
North Dakota, University of	FAA	DTFA0186-C-00010	2,905,000	NEXRAD support
			665,000	NEXRAD support
			<u>3,570,000</u>	
North Dakota State University	UMTA	ND-11-0011*	51,420	Training courses
Northeastern University	FHWA	HP&R/NCHRP Funds	61,565	Turning flows at intersections
			73,000	Subgrade soils in pavement design
			<u>134,565</u>	
Northwestern University	NHTSA	DTNH2285-C-05120	9,520	Training criteria
			48,352	Safety belt usage demo
			120,652	Performance measures of police traffic services
			<u>176,216</u>	

AWARDS BY UNIVERSITY AND TITLE OF CONTRACT/GRANT — continued

University	DOT Admin.	Contract Number	Contract Amount	Short Contract Title
Ohio University	FAA	DTFA0182-C-10050	\$ 9,520	Category III studies
	RSPA	DTRS5783-C-00097	84,093	Research support
	RSPA	DTRS5785-C-00063	88,331	Modernize FAA ATC system
	FHWA	HP&R/NCHRP Funds	97,731	Structural analysis—culverts
	FHWA		81,415	Mech. fatigue behavior
			<u>361,090</u>	
Ohio State University	RSPA	DTRS5785-C-00101	80,000	Correlation of accid. human error
	UMTA	OH-11-0007*	49,876	Evaluation—transit deregulations
			<u>129,876</u>	
Oklahoma, University of	FAA	DTFA0280-C-80001	2,042,548	Mgt. training
	FAA	DTFA0282-D-82005	5,599,269	Air traffic recovery assistance
	FAA	DTFA0285-D-85047	10,226,902	Air traffic training
			<u>17,868,719</u>	
Oklahoma State University	FAA	DTFA0285-D-85116	60,000	Chemical analysis
	FHWA	HP&R/NCHRP Funds	30,000	Aggregate in hi strength concrete
	FHWA		110,000	Erosion control
			<u>200,000</u>	
Oregon Graduate Center	FHWA	DTFH6186-X-00119	296,589	Special weld studies
Oregon State University	FHWA	HP&R/NCHRP Funds	27,750	Improved overlay design method
Pennsylvania, University of	USCG	DTCG3986-C-80348	82,033	Design of knowledge support system
	NHTSA	DTNH2282-C-07157	59,636	Biomechanics of head injuries
	UMTA	PA-11-0032*	80,106	Coordination of public mobility services
			<u>221,775</u>	
Pennsylvania State University	FHWA	HP&R/NCHRP Funds	55,372	Design storm atlas
Princeton University	FAA	DTFA0382-C-00046	80,000	Air traffic control performance
Puerto Rico, University of	FHWA	HP&R/NCHRP Funds	76,185	Pavement design
	UMTA	PR-11-0005*	65,809	Population trends
			<u>141,994</u>	

*Denotes Grant

AWARDS BY UNIVERSITY AND TITLE OF CONTRACT / GRANT — continued.

<i>University</i>	<i>DOT Admin.</i>	<i>Contract Number</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Purdue University	RSPA	DTRS5785-C-00099	\$ 20,000	Research—TTD
	FHWA	HP&R/NCHRP Funds	52,460	Bridge deck overlay
	FHWA		59,700	Fly ash for highway concrete
	FHWA		9,000	Pavement evaluation
	FHWA		50,000	Strategies for maintenance of bridges
			<u>191,160</u>	
Rensselaer Polytechnic Institute	UMTA	NY-11-0038*	42,997	Transit safety study
Tennessee, University of	FHWA	HP&R/NCHRP Funds	200,000	Bridge load capacity estimates
Texas, University of/Arlington	FHWA	HP&R/NCHRP Funds	83,000	Road roughness device
Texas, University of/Austin	FHWA	DTFH6185-C-00174	62,474	Hi strength bolts for bridges
			240,000	Anchorage zone reinforcement
			325,000	Mix design procedures for polymer modified asph.
			60,000	Rigid pavement data base
			60,000	Evaluation of the 4-cycle magnesium sulfate soundness test
			50,000	Concrete coating problems
			36,000	Distribution of post-tensioning forces
			60,000	Estimating residual fatigue life of bridges
			36,000	Distribution of post-tensioning forces
			80,000	Development of subbase friction information
			30,000	Alkali-aggregate reaction in concrete containing fly ash
			49,500	Design guide for short anchor bolts
			55,000	Bent column analysis and design
			70,000	Detailing reinforcement in concrete structures
			6,000	Field verification of bridge deck lateral post-tensioning
			100,000	Research plan for achieving adequate pavement friction
			135,000	Design of rest area comfort stations
			88,000	Treatment of asphalt mixtures with lime
			110,000	Evaluation of truck sizes, on pavement deterioration
			85,000	Longer and wider trucks on the Texas highway system

University DOT Admin. Contract Number Contract Amount Short Contract Title

Texas A&M University

MARAD	DTMA9186-C-60121	\$ 50,000	Liquid sloshing loads
NHTSA	DTNH2283-C-07153	194,182	Operation of NASS primary sampling unit
NHTSA	DTNH2283-C-07158	105,497	Operation of NASS p.s.u.
NHTSA	DTNH2286-D-21104	15,000	Vehicle recall campaign
FHWA	DTFH6180-C-00040	75,015	Skid test services
FHWA	DTFH6185-C-00101	22,341	Meas. of heavy vehicle impact forces
FHWA	DTFH6186-C-00071	877,504	Test new bridge rail design
FHWA	DTFH6185-C-00129	35,439	Rollover caused by concrete barriers
		250,000	Structural properties--asphaltic concrete pavement
		75,000	New guardrail end treatment
		60,000	Demonstration of exclusive truck facilities
		117,420	Operation and design applications using passer III-85
		55,000	Sub area analysis using microcomputers
		130,000	Improved delineation of concrete barriers and gore areas
		52,000	Environmental effects on the physical properties of concrete
		5,000	Evaluation of fabric test pavements
		21,700	Rapid bridge deck replacement
		40,000	Effects of overloads on the service life of bridges
		99,800	Warrants for one-way frontage roads
		100,000	Improved delineation of concrete barriers and gore areas
		100,000	Improved delineation of concrete barriers and gore areas
		97,000	Longer and wider trucks on the Texas highway system
		165,000	Application of high-occupancy vehicle priority techniques
		74,000	Impact of carpoools use of KATY Transitway
		80,000	Enhancements to passer II-84
		130,000	Trucks size, weight and tire pressures on pavement deterioration
		145,000	Cost comparison of maintenance activities
		65,000	Texas flexible pavement data base
		55,000	Implementation of the FPS pavement design system
		11,000	Monitoring asphalt rubber test road performance

3,302,898

AWARDS BY UNIVERSITY AND TITLE OF CONTRACT / GRANT — continued

<i>University</i>	<i>DOT Admin.</i>	<i>Contract Number</i>	<i>Contract Amount</i>	<i>Short Contract Title</i>
Toledo, University of	FHWA	HP&R/NCHRP Funds	\$ 65,583	Scheduling of traffic control device
Vanderbilt University	FHWA	HP&R/NCHRP Funds	57,000	Impact attenuation system
Virginia, University of	FHWA	HP&R/NCHRP Funds	7,500	Factors affecting performance of bridges
			5,500	Transportation plans for small urban areas.
			33,500	Software studies
	RSPA	DTRS5785-C-00103	169,937	Vehicle crashworthiness
			<u>216,437</u>	
Virginia Polytechnic Institute and State University	MARAD UMTA	DTMA9185-C-60122 VA-11-0015*	45,015 79,012	Hydrodynamic force module Effect of employee attitudes and productivity
			<u>124,027</u>	
Washington, University of	FHWA	HP&R/NCHRP Funds	41,608	Construction erosion control
			1,200,000	Bridge deck protective strategies
			34,373	Ferry system data
			90,035	Eval. concrete overlays for bridges
	RSPA	DTRS5785-C-00169	37,093	Test meas. RR car wheels
			<u>1,403,109</u>	
Washington State University	FHWA	HP&R/NCHRP Funds	23,000	Guidelines for cut in loess soils
			64,000	Continuous bridges without end blocks
			<u>87,000</u>	
West Virginia University	FHWA	HP&R/NCHRP Funds	146,000	Control of blowing snow
Wichita State University	FAA	DTFA0386-C-00059	1,914,000	Aviation safety research
Worcester Polytechnic Institute	USCG	DTCG3985-A-80196	148,575	Marine fire research

SECTION III

SUMMARY BY STATES

1913

11

1913

SUMMARY BY STATES

State/University

*Total FY 1986
Obligations*

1. ALABAMA

Alabama, University of	\$ 23,191
Alabama A&M University	66,893
	\$ 90,084

2. ALASKA

Alaska, University of	\$ 19,931
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3. ARIZONA

Arizona State University	\$ 150,555
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4. ARKANSAS

Arkansas, University of	\$ 39,600
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5. CALIFORNIA

California, University of/Berkeley	\$ 180,634
California State University/Long Beach	74,434
California State University/Sacramento	63,300
Humbolt State University	18,400
Montevallo, University of	251,053
	\$ 587,821

6. COLORADO

Colorado, University of/Boulder	\$ 6,095
Colorado, University of/Denver	46,312
Colorado State University	9,000
	\$ 61,407

7. CONNECTICUT

Connecticut, University of	\$ 456,715
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8. FLORIDA

Embry Riddle Aeronautical University	\$ 199,548
Florida, University of	363,670
Florida Atlantic University	79,000
	\$ 642,218

9. GEORGIA

Georgia Institute of Technology	\$ 596,782
Georgia State University	10,000
	\$ 606,782

10. IDAHO

Idaho, University of	\$ 25,000
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SUMMARY BY STATES—continued

<i>State/University</i>	<i>Total FY 1986 Obligations</i>
11. ILLINOIS	
Bradley University	\$ 98,520
Illinois, University of/Champaign	10,000
Illinois, University of/Chicago	36,631
Illinois, University of/Urbana	417,828
Northwestern University	176,216
	<u>\$ 739,195</u>
12. INDIANA	
Indiana University/Indianapolis	\$ 797,604
Purdue University	191,160
	<u>\$ 988,764</u>
13. IOWA	
Iowa State University	\$ 220,500
14. KANSAS	
Kansas State University	\$ 74,521
Wichita State University	1,914,000
	<u>\$ 1,988,521</u>
15. KENTUCKY	
Kentucky, University of	\$458,497
16. LOUISIANA	
Louisiana State University	\$ 48,670
17. MARYLAND	
Maryland, University of	\$ 657,066
18. MASSACHUSETTS	
Boston University	\$ 153,849
Lowell, University of	45,000
Massachusetts Institution of Technology	1,697,356
Northeastern University	134,565
Worcester Polytechnic Institute	148,575
	<u>\$ 2,179,345</u>
19. MICHIGAN	
Michigan, University of	\$ 425,103
Michigan State University	65,000
	<u>\$ 490,103</u>
20. MISSISSIPPI	
Mississippi, University of	\$ 133,570
Mississippi State University	31,200
	<u>\$ 164,770</u>

SUMMARY BY STATES—continued

<i>State/University</i>	<i>Total FY 1986 Obligations</i>
21. MONTANA	
Montana State University	\$ 9,200
22. NEW HAMPSHIRE	
Dartmouth College	\$ 470,163
New Hampshire, University of	73,689
	<u>\$ 543,852</u>
23. NEW MEXICO	
New Mexico, University of	\$ 155,787
New Mexico State University	116,000
	<u>\$ 271,787</u>
24. NEW JERSEY	
Princeton University	\$ 80,000
25. NEW YORK	
Columbia University	\$ 79,000
Rensselaer Polytechnic Institute	42,997
	<u>\$ 121,997</u>
26. NORTH CAROLINA	
North Carolina, University of	\$ 594,949
North Carolina State University	151,500
	<u>\$ 746,449</u>
27. NORTH DAKOTA	
North Dakota, University of	\$ 3,570,000
North Dakota State University	51,420
	<u>\$ 3,621,420</u>
28. OHIO	
Case Western Reserve University	\$ 227,800
Dayton, University of	12,000
Ohio University	361,072
Ohio State University	129,876
Toledo, University of	65,583
	<u>\$ 796,331</u>
29. OKLAHOMA	
Cameron University	\$ 1,987,162
Oklahoma, University of	17,868,719
Oklahoma State University	200,000
	<u>\$20,055,881</u>

SUMMARY BY STATES—continued

<i>State/University</i>	<i>Total FY 1986 Obligations</i>
30. OREGON	
Oregon Graduate Center	\$ 296,589
Oregon State University	27,750
	<u>\$ 324,339</u>
31. PENNSYLVANIA	
Carnegie-Mellon University	\$ 81,664
Lehigh University	92,946
Pennsylvania, University of	221,775
Pennsylvania State University	55,372
	<u>\$ 451,757</u>
32. PUERTO RICO	
Puerto Rico, University of	\$ 141,994
33. SOUTH CAROLINA	
Clemson University	\$ 46,297
34. TENNESSEE	
East Tennessee State University	\$ 25,131
Tennessee, University of	200,000
Vanderbilt University	57,000
	<u>\$ 282,131</u>
35. TEXAS	
Texas, University of/Arlington	\$ 83,000
Texas, University of/Austin	1,547,474
Texas A&M University	3,302,898
	<u>\$ 4,933,372</u>
36. VIRGINIA	
Virginia, University of	\$ 216,437
Virginia Polytechnic Institute	124,027
	<u>\$ 340,464</u>
37. WASHINGTON	
Washington, University of	\$ 1,403,109
Washington State University	87,000
	<u>\$ 1,490,109</u>
38. WEST VIRGINIA	
West Virginia University	\$ 146,000