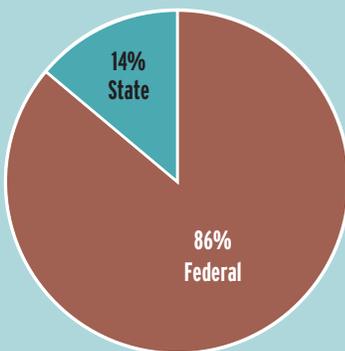


### FY2011 At-A-Glance

OCTOBER 1, 2010 - SEPTEMBER 30, 2011

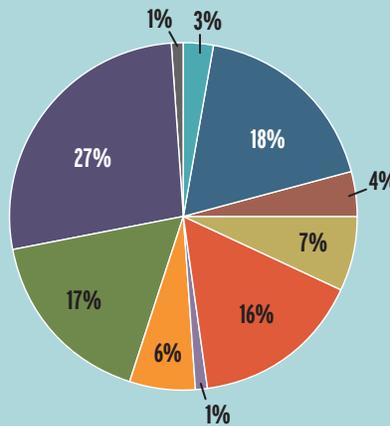
This publication presents a summary of Research and Library funding statistics and project progress for Fiscal Year 2011. The tables on pages 2 through 6 list all MDOT-funded research projects by topic area that were active or completed during 2011. These listings include both single-state Michigan research projects and multi-state pooled fund projects. In addition, the tables on page 7 provide a snapshot of new projects funded for 2012 and 2013.

#### FY 2011 SP&R Part II Expenditures by Funding Source



State Research Funds	\$ 697,073
Federal Research Funds	\$ 4,428,215
<b>TOTAL</b>	<b>\$ 5,125,288</b>

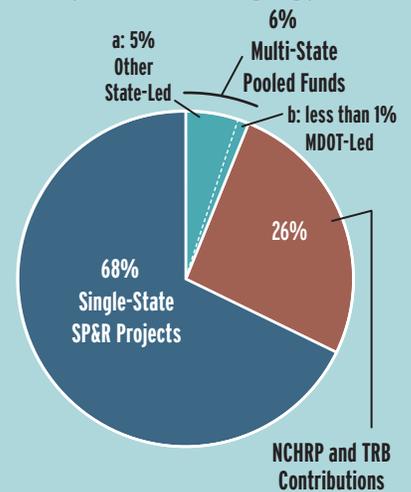
#### FY 2011 Research Project Expenditures by Topic Area



Topic areas with expenditures less than 1% (Environment, Rail and Workforce Development) do not display in the pie chart.

Asset Management	\$ 99,970
Bridges & Structures	\$ 667,042
Construction & Geotechnical	\$ 168,175
Design	\$ 271,841
Environment	\$ 0
Intelligent Transportation Systems	\$ 616,551
Maintenance	\$ 25,000
Mobility & Systems Operations	\$ 225,515
Pavement & Materials	\$ 651,506
Rail	\$ 3,830
Traffic & Safety	\$ 1,012,601
Workforce Development	\$ 0
Administrative	\$ 41,375
<b>TOTAL</b>	<b>\$ 3,783,406</b>

#### FY 2011 SP&R Part II Expenditures by Type



Single-State SP&R Projects	\$ 3,485,364
Multi-State Pooled Funds	
a: Participation in Pooled Funds Led by Other States	\$ 262,000
b: Participation in MDOT-Led Pooled Funds	\$ 36,042
Research Project Expenditures	\$ 3,783,406
NCHRP and TRB Contributions	\$ 1,341,882
<b>TOTAL</b>	<b>\$ 5,125,288</b>

# MDOT 2011 Research

## THESE TABLES ARE ORGANIZED BY FOCUS AREA:

### RESEARCH PROJECTS:

- Completed research reports that were released in Fiscal Year 2011: October 2010 to September 2011
- Research contracts that were active during FY 2011

### POOLED FUND PROJECTS:

- Multi-state transportation pooled fund studies led by MDOT
- Other multi-state transportation pooled fund studies in which MDOT participates, either through an FY 2011 contribution or through past contributions that are still producing value for Michigan

### ABBREVIATIONS:

FAM: Focus Area Manager  
RM: Research Manager

Completed project reports are available at  
[www.michigan.gov/mdotresearch](http://www.michigan.gov/mdotresearch).

A mark in the "Spotlight" column indicates that a  
Research Spotlight for this project can be found at  
[www.michigan.gov/mdotresearch](http://www.michigan.gov/mdotresearch).

"Number of Participating States" for some pooled funds  
includes Canadian provinces and agencies such as FHWA.

A complete Fiscal Year 2011 annual report can be found at [www.michigan.gov/mdotresearch](http://www.michigan.gov/mdotresearch).

## Asset Management

FAM: Bill Tansil, RM: Michael Townley

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
N/A	A Framework for Statewide Roadway Asset Management	Dye Mgmt	Dye	Kelley	2/1/11	1/31/12	\$249,925	40%	\$99,970	

## Bridges & Structures

FAMs: Dave Juntunen and Matthew Chynoweth, RM: Michael Townley

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
RC-1547	A Critical Evaluation of Bridge Scour for Michigan Specific Conditions	LTU WSU	Carpenter Miller	Juntunen	6/19/07	2/1/11	\$165,689.05	92%	\$18,011.26	
RC-1560	High Skew Link Slab Bridge System with Deck Sliding Over Backwall or Backwall Sliding Over Abutment	WMU	Aktan	Kahl	11/6/08	9/30/11	\$265,022.63	87%	\$65,829.19	
	Identification of Causes and Solution Strategies for Deck Cracking in Jointless Bridges	MSU	Burqueño	Burns	10/20/09	1/30/12	\$169,968.00	58%	\$54,333.69	
	Development and Validation of a Sensor-Based Health Monitoring Model for Parkview Bridge Deck	WMU	Abudayyeh	Kahl	1/20/10	1/31/12	\$228,126.20	78%	\$120,304.66	
	Investigate Causes and Develop Methods for Preventing Falling Concrete from Bridge Decks or Falling Deck Concrete	LTU	Grace	Kahl	10/1/09	3/31/12	\$279,278.78	97%	\$151,122.46	
	Review and Revision of Overload Permit Classification	Michael Baker Jr., Inc.	Spangler	Wagner	10/1/10	3/31/12	\$209,405.64	29%	\$60,086.52	
	Improving Bridges with Prefabricated Precast Systems	WMU	Aktan	Kahl	10/1/10	9/30/12	\$264,935.62	18%	\$48,785.69	
	Development and Validation of Deterioration Models for Concrete Bridge Decks	MSU	Burqueño	Jansson	10/20/09	9/30/12	\$299,747.00	42%	\$84,019.62	
	Implementation of Sustainable and Green Design and Construction Practices for Bridges	MSU	Korkmaz	Larkins	10/1/10	9/30/12	\$99,818.00	49%	\$48,507.00	

## Bridges & Structures Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2011 Commitment	Expenditures Prior to 2011	Total MI Commitment	Total Commitments (All Agencies)	Start Date	End Date	Current MI Commitment End Date
TPF-5(254)	Bulb T Beam as Alternate ABC to Side-by-Side Box Beam	Juntunen	MI DOT	5	\$1,041.75	\$0.00	\$200,000.00	\$360,000.00	9/16/11	9/30/14	2014
TPF-5(174)	Construction of Crack-Free Bridge Decks, Phase II	Snook	KS DOT	12	\$15,000.00	\$25,000.00	\$70,000.00	\$580,000.00	10/1/10	9/30/11	2011

## Construction & Geotechnical

FAMs: Brenda O'Brien, Jason Gutting, Dick Endres, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
RC-1557	Feasibility of Digital Imaging to Characterize Earth Materials	UM	Hryciw	Endres	10/1/10	9/30/11	\$129,707.10	83%	\$108,174.72	

## Construction & Geotechnical Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2011 Commitment	Expenditures Prior to 2011	Total MI Commitment	Total Commitments (All Agencies)	Start Date	End Date	Current MI Commitment End Date
TPF-5(183)	Improving the Foundation Layers for Concrete Pavements	Grazioli	IA DOT	7	\$35,000.00	\$70,000.00	\$175,000.00	\$805,000.00	10/1/08	9/30/13	2013
TPF-5(227)	Continued Advancements in Load and Resistance Factor Design (LRFD) Foundations, Substructures and Other Geotechnical Features	Snook	FHWA	12	\$25,000.00	\$25,000.00	\$50,000.00	\$580,000.00	10/1/09	9/30/11	2011

## Design

FAM: Brad Wieferich, RM: Michael Townley

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
	Evaluating the Appropriate Level of Service for Michigan Rest Areas and Welcome Centers Considering Safety and Economic Factors	WSU	Gates	Lynwood	5/2/11	4/30/12	\$183,181.00	27%	\$48,590.96	
	Re-Examination of the 1994 and Subsequent Sewer and Culvert Installations of Various Pipe Types, Sizes and Depths	URS	Guter	Kline	5/25/11	5/24/12	\$502,000.00	44%	\$223,250.00	

## Environment

FAM: Kristin Schuster, RM: Michael Townley

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
	Greenhouse Gas Inventory for the Michigan Department of Transportation	FTCH	Buckler	Annelin	9/16/11	12/31/13	\$68,000.00	0%	\$0.00	

# Intelligent Transportation Systems

FAM: Matt Smith, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
N/A	MDOT Vehicle Infrastructure Integration Data Analysis Documentation and Research Support Program	UM	Sweatman	Cook	8/30/06	8/1/11	\$800,000.00	100%	\$49,753.00	
RC-1568	Evaluation of the Usage and Impact of the Michigan Vehicle Infrastructure Integration Program	Mixon-Hill	Mixon	Cook	2/15/07	8/30/11	\$3,500,000.00	100%	\$204,012.83	
N/A	ITS Hardware Laboratory and Equipment	MI DOT	Cook	Cook	10/1/05	9/30/11	\$450,000.00	88%	\$12,092.24	
	Infrastructure Monitoring Data Management	Alfred Benesch and Co.	Darwish	Cook	10/1/09	5/1/12	\$215,422.36	15%	\$32,313.35	
	Slippery Road Detection and Evaluation	UM	Robinson	Cook	10/20/09	6/1/12	\$242,836.00	75%	\$182,127.00	
	Advanced Applications of IntelliDrive Data Use Analysis and Processing 2 (DUAP 2) Project	Mixon/Hill	Mixon	Cook	8/9/11	6/30/14	\$3,884,739.00	3%	\$101,252.10	

# Intelligent Transportation Systems Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2011 Commitment	Expenditures Prior to 2011	Total MI Commitment	Total Commitments (All Agencies)	Start Date	End Date	Current MI Commitment End Date
TPF-5(231)	ITS Pooled Fund Program (ENTERPRISE)	Nederveid	MI DOT	11	\$35,000.00	\$35,000.00	\$175,000.00	\$1,585,000.00	10/1/09	9/30/14	2014

# Maintenance Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2011 Commitment	Expenditures Prior to 2011	Total MI Commitment	Total Commitments (All Agencies)	Start Date	End Date	Current MI Commitment End Date
TPF-5(218)	Clear Roads Winter Highway Operations Pooled Fund	Croze	MN DOT	24	\$25,000.00	\$25,000.00	\$50,000.00	\$1,695,000.00	10/1/09	9/30/11	2011

# Mobility & Systems Operations

FAM: Steve Cook, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
RC-1543	The Effect of Work Zone Steady Burn Warning Lights on Motorist Safety	WSU	Datta	Gutting	11/2/09	12/1/10	\$200,000.84	99%	\$50,104.84	
RC-1559	Strategies for Improving Traveler Information	Cambridge Systematic, Inc.	Hedden	Firman	12/18/09	1/31/11	\$173,662.00	100%	\$20,830.38	
RC-1554	Developing a Congestion Mitigation Toolbox	Texas A&M	Crawford	Firman	10/1/10	9/30/11	\$154,580.09	100%	\$154,580.00	x
	Implementation of Quick Clearance in Michigan	Cambridge	Krechmer	Kremer	10/1/11	9/30/12	\$185,254.98	0%	\$0.00	

# Pavement & Materials

FAMs: Brenda O'Brien, Curtis Bleech, John Staton, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
RC-1548	Backcalculation of Resilient Modulus Values for Unbound Pavement Materials	MSU	Baladi	Eacker	11/19/08	12/31/10	\$157,746.00	100%	\$8,540.06	
RC-1552	Impact of Hydrated Cement Paste Quality and Entrained Air-Void System	MTU	Sutter	Staton	7/31/07	12/31/10	\$304,826.44	100%	\$25,216.81	
RC-1550	Sustainable Recycled Materials for Concrete Pavements	Applied Pavement Technology	Van Dam	Belcher	10/1/09	3/31/11	\$149,978.00	100%	\$59,034.83	
RC-1551	Extending Life of Asphalt Pavements	Applied Research Associates	Von Quintus	Iftikhar	10/7/09	4/30/11	\$147,008.49	68%	\$58,526.41	
RC-1553	Carbon Footprint for Hot Mix Asphalt and Portland Cement Concrete Pavements	MTU	Mukherjee	Bleech	3/18/09	5/31/11	\$199,999.49	100%	\$61,566.91	
RC-1556	Laboratory Evaluation of Warm Mix Asphalt	MTU	You	Barak	11/3/08	9/30/11	\$190,001.08	100%	\$95,000.45	
	Construction Productivity Symposium	E. S. D.	LaPointe	Chaput	10/1/11	11/30/11	\$3,000.00	0%	\$0.00	
	Improved Performance of Concrete Overlays	UM	Hansen	Krom	10/1/09	5/15/12	\$333,956.31	83%	\$107,877.65	
	Cost-Effectiveness of the MDOT Preventative Maintenance Program	Applied Pavement Technology	Peshkin	Kennedy	10/1/10	9/30/12	\$179,989.00	32%	\$58,223.83	
	Alternative Materials for Sustainable Transportation	MTU	You	Maack	11/13/09	9/30/12	\$299,960.16	47%	\$48,518.95	

# Pavement & Materials Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2011 Commitment	Expenditures Prior to 2011	Total MI Commitment	Total Commitments (All Agencies)	Start Date	End Date	Current MI Commitment End Date
TPF-5(021)	Base Funding for the North Central SuperPave Center	Barak	IN DOT	7	\$25,000.00	\$100,000.00	\$125,000.00	\$1,120,000.00	10/1/05	9/30/11	2011
TPF-5(159)	Technology Transfer Concrete Consortium (TTCC)	Staton	IA DOT	24	\$7,000.00	\$21,000.00	\$35,000.00	\$583,500.00	10/1/08	9/30/12	2012
TPF-5(179)	Evaluation of Test Methods for Permeability (Transport) and Development of Performance Guidelines for Durability	Sears-Bartz	IN DOT	11	\$12,000.00	\$65,000.00	\$87,000.00	\$843,000.00	10/1/08	9/30/11	2011
TPF-5(185)	Concrete Pavement Road Map Operations Support	Staton	FHWA	6	\$25,000.00	\$50,000.00	\$100,000.00	\$445,000.00	10/1/08	9/30/12	2012
TPF-5(205)	Implementation of Concrete Pavement Mixture Design and Analysis (MDA) Track of Concrete Pavement Road Map	Staton	IA DOT	14	\$15,000.00	\$30,000.00	\$45,000.00	\$400,000.00	10/1/08	9/30/11	2011
TPF-5(224)	Investigation of Jointed Plain Concrete Pavement Deterioration at Joints and the Potential Contribution of Deicing Chemicals	Staton	IA DOT	9	\$15,000.00	\$15,000.00	\$60,000.00	\$405,000.00	10/1/09	9/30/13	2013
TPF-5(225)	Validation and Implementation of Hot-Poured Crack Sealant	Bennett	VA DOT	9	\$25,000.00	\$25,000.00	\$100,000.00	\$800,000.00	10/1/09	9/30/13	2013
TPF-5(215)	Transportation Engineering and Road Research Alliance (TERRA)	Clover	MN DOT	6	\$5,000.00	\$5,000.00	\$25,000.00	\$167,500.00	10/1/09	9/30/14	2014

# Rail

FAM: Kris Foondle, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
	Timing Issues for Traffic Signals Interconnected with Highway-Railroad Grade Crossings	WSU	Datta	Foondle	8/1/11	7/30/12	\$89,758.00	4%	\$3,830.18	

# Traffic & Safety

FAM: Mark Bott, RM: Michael Townley

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
RC-1542	Educating the Public to Negotiate Roundabouts	WSU	Savolainen	Lariviere	11/2/09	3/31/11	\$199,649.43	100%	\$137,383.69	x
RC-1555	Safety Analysis of 4-Lane to 3-Lane Conversions (Road Diets) in Michigan	MSU	Lyles	Leix	10/1/10	9/30/11	\$149,281.00	49%	\$72,825.30	
RC-1562	Low-Cost, High-Impact Measures to Meet the Transportation Needs of Michigan's Aging Population	UM	Eby	Lariviere	10/1/10	9/30/11	\$203,104.79	98%	\$199,069.55	x
RC-1561	Improving Driver Safety with Behavioral Countermeasures	CMU	Backs	Lariviere	10/27/09	9/30/11	\$149,923.67	93%	\$90,603.73	
	Evaluating the Performance and Effectiveness of Roundabouts	Opus Int'l	Bagdade	Kanitz	10/1/10	12/31/11	\$149,944.15	77%	\$116,097.48	
	Evaluating the Performance and Making Best Use of Passing Relief Lanes	Opus Int'l	Bagdade	Kanitz	10/1/10	12/31/11	\$159,887.20	57%	\$91,504.57	
	Evaluating Pedestrian Safety Improvements	WMU	VanHouten	Thompson	10/1/10	9/30/12	\$199,999.00	36%	\$71,434.17	
	Sharing the Road: Optimizing Pedestrian and Bicycle Safety and Vehicle Mobility	T.Y. Lin Int'l	LaPlante	Thompson	10/1/10	3/31/12	\$199,751.95	39%	\$77,747.56	
	Impact of Non-Freeway Rumble Strips, Phase I	WSU	Datta	Morena	6/1/10	6/30/12	\$262,829.81	62%	\$155,935.30	

# Workforce Development

FAM: TBD, RM: André Clover

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
	Examining the Disadvantaged Business Enterprise (DBE) Program	UM	Davis	Collins	10/1/11	9/30/12	\$193,035.02	0%	\$0.00	

# Administrative

Report Number	Title	Contractor	Investigator	Project Manager	Start Date	End Date	Total Budget	% Complete	FY 11 Expenditures	Spotlight
N/A	Research Peer Exchange	MDOT	Roberts	Roberts	10/1/10	12/31/10	\$25,000.00	33%	\$8,374.82	

# Administrative Pooled Fund Studies

Study #	Title	MDOT Project Manager	Lead State or Agency	Number of Participating States	MI 2011 Commitment	Expenditures Prior to 2011	Total MI Commitment	Total Commitments (All Agencies)	Start Date	End Date	Current MI Commitment End Date
TPF-5(181)	Transportation Research Program Management Database	Nelson	WA DOT	7	\$0.00	\$26,000.00	\$26,000.00	\$504,000.00	10/1/07	9/30/11	2011
TPF-5(209)	Support of the Transportation Curriculum Coordination Council (TCCC)	O'Brien	FHWA	14	\$20,000.00	\$20,000.00	\$100,000.00	\$925,000.00	10/1/09	9/30/14	2014
TPF-5(237)	Transportation Library Connectivity	Briseno	MO DOT	24	\$5,000.00	\$0.00	\$10,000.00	\$885,528.00	10/1/10	9/30/12	2012
TPF-5(240)	Core Program Services for a Highway RD&T Program-FY 2011 (TRB)	Townley	FHWA	22	\$206,710.00	\$0.00	\$206,710.00	\$3,846,250.00	10/1/10	9/30/11	2011
TPF-5(411)	National Cooperative Highway Research Program (NCHRP) for FY 2011	Clover	FHWA	1	\$1,135,172.00	\$0.00	\$1,135,172.00	\$1,135,172.00	10/1/10	9/30/11	2011
N/A	AASHTO's Environmental Technical Assistance Program (ETAP)*	Townley	AASHTO	N/A	\$8,000.00	\$0.00	\$8,000.00	N/A	10/2/14	10/1/15	2011

\*This project uses 100% federal dollars but is a single-state project.

# 2011 Statistics

## Research Services (FY 2011)

- 9 Amendments
- 18 Closed projects
- 18 New projects
- 46 SPR II funded projects
- 19 Pooled fund projects

## Library Services (January - December 2011)

- Total circulation: 18,205 (MDOT and C&T Library)
- New materials: 504 (MDOT and C&T Library)
- Reference services: 187 (MDOT Library only)
- Interlibrary loans: 103 (MDOT Library only)
- Visitors: 274 (MDOT Library only)

# Looking Ahead

## Fiscal Year 2012 Projects

Focus Area	Project Title
Bridges & Structures	Evaluation of Prestressed Concrete Beams in Shear
Construction & Geotechnical	Effect of Pile-Driving Induced Vibrations on Nearby Structures and Other Assets
Design	Roadsides Corridor Planning
Maintenance	Monitoring Highway Assets with Remote Technology
Mobility & Systems Operations	Best Practices for Emergency Rerouting
	Evaluating the Financial Cost and Impact on Long-Term Pavement Performance of Expediting Michigan's Road Construction Work
	Transportation Reliability and Trip Satisfaction
Pavement & Materials	Preparation for Implementation of the Mechanistic-Empirical Pavement Design Guide in Michigan
Traffic & Safety	Study of High-Tension Cable Barrier on Michigan Roadways
	Transportation Patterns of Older Driver in Rural Michigan

## Fiscal Year 2013 Projects

Focus Area	Project Title
Bridges & Structures	Evaluation of Bridge Decks Using Non-Destructive Evaluation (NDE) at Near Highway Speeds for Effective Asset Management
	Side-by-Side Probability for Bridge Design and Analysis
	Remote Monitoring of Fatigue-Sensitive Details on Bridges
	Design and Construction Guidelines for Strengthening Bridges Using Fiber-Reinforced Polymers (FRP)
	Evaluating Prestressing Strands and Post-Tensioning Cable in Concrete Structures Using Non-Destructive Evaluation (NDE) Methods Including Joint Shear Wave Analysis
Construction & Geotechnical	Freezing and Thawing of Frost-Susceptible Soils—Development of a Reliable Predictive Model
Traffic & Safety	Development of Performance Measures for Non-Motorized Dynamics



# The Research Administration Team

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## MISSION

Promoting innovative research for economic benefit and improved quality of life

## VALUES

- Quality
- Teamwork
- Customer Orientation
- Integrity
- Pride

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