

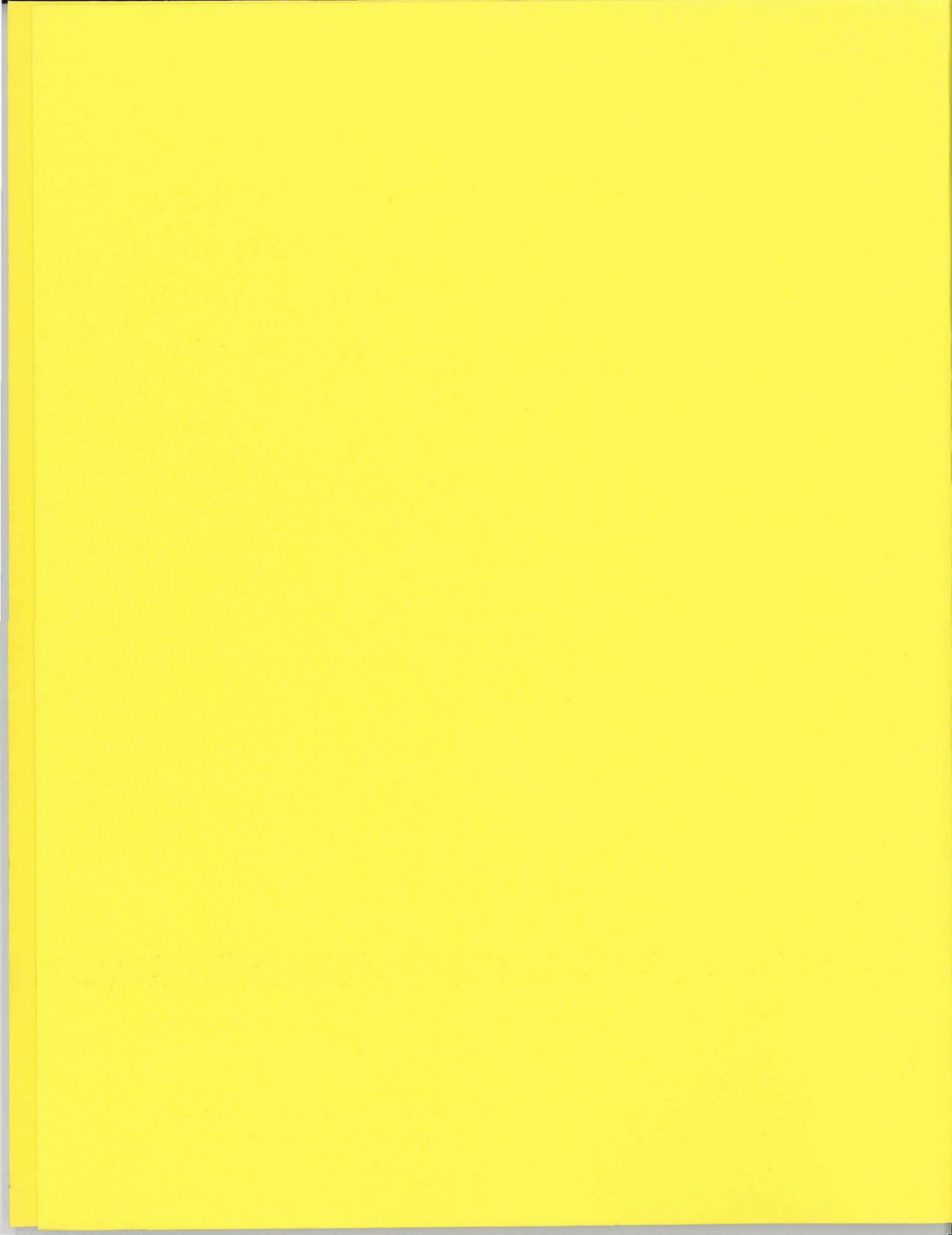
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HIGHWAY
EXTENSION
AND
RESEARCH
PROJECT
FOR
INDIANA
COUNTIES
AND
CITIES

**EVALUATION OF FHWA
TECHNOLOGY TRANSFER
PROGRAM AT HERPICC,
PURDUE UNIVERSITY**

PUBLICATION NO. : H-84-2

PURDUE UNIVERSITY - SCHOOL OF CIVIL ENGINEERING
In cooperation with
**INDIANA DEPARTMENT OF HIGHWAYS
INDIANA ASSOCIATION OF COUNTY COMMISSIONERS
INDIANA ASSOCIATION OF CITIES AND TOWNS
FEDERAL HIGHWAY ADMINISTRATION**



EVALUATION OF FHWA TECHNOLOGY TRANSFER PROGRAM
AT HERPICC, PURDUE UNIVERSITY

Initial Report

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for

the Highway Extension and Research Project for
Indiana Counties and Cities

Indiana Department of Highways

and

Federal Highway Administration

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I. SUMMARY AND OVERVIEW

As a part of its evaluation process HERPICC sent a questionnaire to 878 persons in counties and cities involved in the operation and management of the highway road system. County commissioners, auditors, surveyors, engineers, road supervisors and municipal mayors, city engineers, street commissioners and traffic engineers were sent questionnaires. The response, while not overwhelming, was deemed adequate to set some early parameters for the service delivery involved in the Technical Assistance Program.

The questionnaires given in Appendix A contained six sections to ascertain the following information:

- A brief profile of the respondents
- Estimation of road condition and expenditure patterns in the respondents jurisdiction
- Analysis of the perceptions of the responsibility of the various jobs related to road management and decision-making
- Needs analysis and assessment
- The extent of past involvement in taking advantage of Purdue's program in giving highway assistance
- A list of specific requests from HERPICC.

Analysis of the data suggests a course of action for HERPICC that

contains the following elements.

1. Give high priority to providing specific help to municipal persons, many of whom change with each election. Develop a set of guidelines for city persons who have new road responsibilities. Indicate how and where city officials can obtain information and training on how to deal with

- Snow and Ice Control
- Utility Cut Restoration
- Pot Hole Repair
- General City Road Maintenance Procedures
- Management of Roads

2. Set up a process whereby helpful funding data can be quickly and effectively passed on to all highway officials. A book set-up to include each year's new data could satisfy this perceived need.
3. Develop major HERPICC reports on road inventory techniques, funding priority determination or budget allocation techniques, and unpaved road management.
4. Obtain more involvement of more mayors, city auditors and street commissioners in the Purdue Road School. While technically not part of HERPICC, the Annual Road School, now in its 70th year, has been one very useful, proven mechanism

to deliver information to county and city officials in Indiana. It is sponsored jointly by the State Department of Highways and Purdue University. As an alternative, find ways of participating in the "Mayors Roundtables" held around the State sponsored by the Indiana Association of Cities and Towns.

5. Provide workshops and demonstrations around the state on

- Pot Hole Repair
- Bridges
- Erosion and Drainage

The responses to the survey present evidence reminding us that the second "C" in HERPICC has only been there for about two years. There was a sense that the questionnaire and the response rate was more reflective of Purdue's long history of service delivering to counties than to cities.

Further evaluation was to be obtained by a second questionnaire to be sent in the spring of 1984 with a final questionnaire in the very late fall of 1984. At one time, it was thought that those questionnaires would be simple modifications of this first questionnaire. It may be more appropriate to have only one more comprehensive questionnaire which would be sent very near the end of the 2 year Technical Assistance Program and send one or two very limited questionnaires in Spring 1984 to test specific areas.

The areas that would appear to benefit from further testing include efforts to:

1. Obtain better understanding of the Needs of City and Municipal Officials.
2. Identify specific needs on a regional basis for Indiana.
3. Determine where various officials obtain data for decision-making. Subsidiary questions would relate to access to computer information, determination of road condition and development of priorities for road maintenance.
4. Ascertain if the job descriptions obtained in the first survey are fairly reflective of the pertinent responsibilities for both the county and city officials.

II. RESPONDENT PROFILE

Of the 878 questionnaires, 204 useful ones were returned yielding an overall 23% response rate. County and city engineers, surveyors, and county road supervisors gave the best overall response as indicated in Table 1.

The respondents' experience in roads was given as

0-2 years	- 20
2-5 years	- 41
5-12 years	- 41
Over 12 years	- 93
No Answer	- 9

County Commissioners (52% less than 5 years), Street Commissioners (40% less than 5 years), Mayors (33% less than 5 years) and Road Supervisors (38% less than 5 years) had the least experience. Forty-six or 22.5 percent of the respondents indicated that they were Registered Professional Engineers.

The respondents were from all over the state. Figure 1 shows the 6 state regions used by the highway department. Respondents who listed a county or city were classified by region with the breakdown as in Table 2 indicating a fairly equal return from all regions.

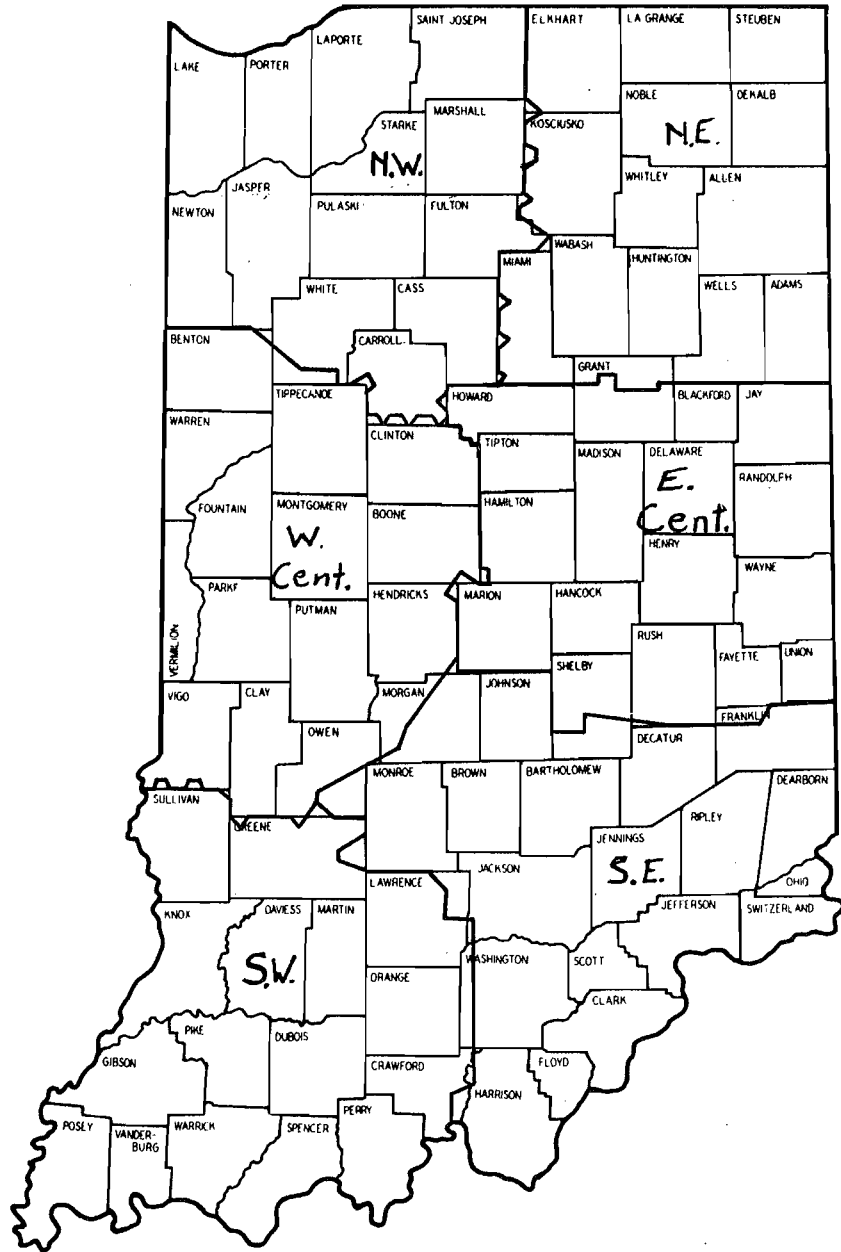


Figure 1. Six Regions Used in Highway Analysis

TABLE 1
RESPONDENTS BY JOB TITLE

	Respond	Sent	% Returned
County Commissioner	40	276	14.5
County Engineer	25	50	50
County Auditor	14	92	15.2
County Surveyor	24	87	27.8
Road Supervisor	37	91	40.7
Mayor	12	115	10.4
City Engineer	19	61	31.1
Street Commissioner	18	98	18.4
Traffic Engineer	4	8	50
Did Not Indicate Job Title	11	--	

TABLE 2
RESPONDENTS BY REGION OR DISTRICT

The respondents perception of their job responsi
extrusely important in targeting reports and spec

NW District	29
NE District	36
West Central District	28
East Central District	44
South West District	20
South East District	29
County/City Not Given	18

A. County Officials

No County Commissioners

... ..
... ..
... ..

III. Job Analysis

The respondents perception of their job responsibilities is extremely important in targeting reports and specific data to be delivered. This section derives the job responsibilities in road/highway management and work for the five levels of county officials and three principal levels of city/municipal jobs surveyed.

The job analysis which follows is based on the answers from those who responded.

A. County Officials

1. The county commissioners

- Set guidelines on budgets in consultation with road supervisors and engineers.
- Approve budgets and applications for funding.
- Work with county engineers; decide on strategy for obtaining Federal and State funds.
- Approve need for and requests to purchase new road equipment.
- Participate in establishing highway work priorities.
- Set guidelines, in conjunction with road supervisors and engineers for
 - a. highway plans
 - b. technical operations and major highway bridge modifications
 - c. safety
- Approve county highway plans.

2. The county auditor authorizes operating expenditures and audits their use. He reviews expenditures in funds for technical operation and major modifications.
3. The county surveyor is not involved in budgeting or planning but participates in technical operations of highways, on request.
4. The county road supervisor
 - Participates heavily in road budgeting process but only some time in funding applications.
 - Determines the need for new equipment; writes the specifications and orders equipment.
 - Works with engineers and commissioners in setting guidelines for technical plans and supervises plan preparation.
 - Sets highway work priorities on a day-to-day basis, manages technical operations and works on major modifications.
 - Works closely with law enforcement persons in highway safety; especially on establishing speed limits and road signing.
5. The county highway engineer
 - Determines guidelines for the engineering content of day-to-day technical operations.
 - Participates in all facets of major modifications of highways/bridges.
 - Sets guidelines with commissioners and road supervisors for traffic safety, road/street planning.
 - Writes applications for State and Federal funding of highway works in the county.

B. City/Municipality Officials

The jobs are analyzed for the Mayor, City Engineer and Street Commissioner. Only four traffic engineers responded. This analysis is weaker than the county one because it represents replies for less than 20 persons in each category and did not include other potentially important actors such as city council members.

1. The mayor seems to be heavily involved in street work and, in general, is the approval authority. He/she

works closely with the engineer and street commissioner in budgeting, planning and setting priorities for road work. He/she is heavily involved in working with law enforcement persons to improve safety as are the engineers and street commissioners.

2. City Engineer

- Writes applications for funding.
- Works in conjunction with mayor and street commissioner in setting guidelines for budgeting, planning, priority setting and safety.
- Determines engineering content, especially of major modifications, road rehabilitation etc.
- Can, on his own authority, try new techniques to improve task; often done in conjunction with street commissioner.

3. Street Commissioner

- Decides on need and writes specifications for new road equipment.
- Prepares annual road/street plan and implements it.
- Has day-to-day responsibility for regular highway operations (e.g., snow removal, mowing, and minor maintenance) and for implementing overseeing major modifications.
- Works closely with mayor and city engineer in safety, and matters of setting guidelines and developing strategy for budgeting, planning, priority setting.

IV. Needs Analysis and Assessment

The approach to obtain a good understanding of the needs is reflected in the understanding of the assessment of road condition, how the road funds are allocated, and in the specific needs indicated by the respondents.

A. Road Condition

The histogram below is in response to a request for an estimate of the percent of miles of road presently needing resurfacing and/or rebuilding. The largest number, 37 of the 169, responding said 50%. As can be observed it is close to a normal distribution with a mean of 49 percent and a standard deviation of about 23 percent.

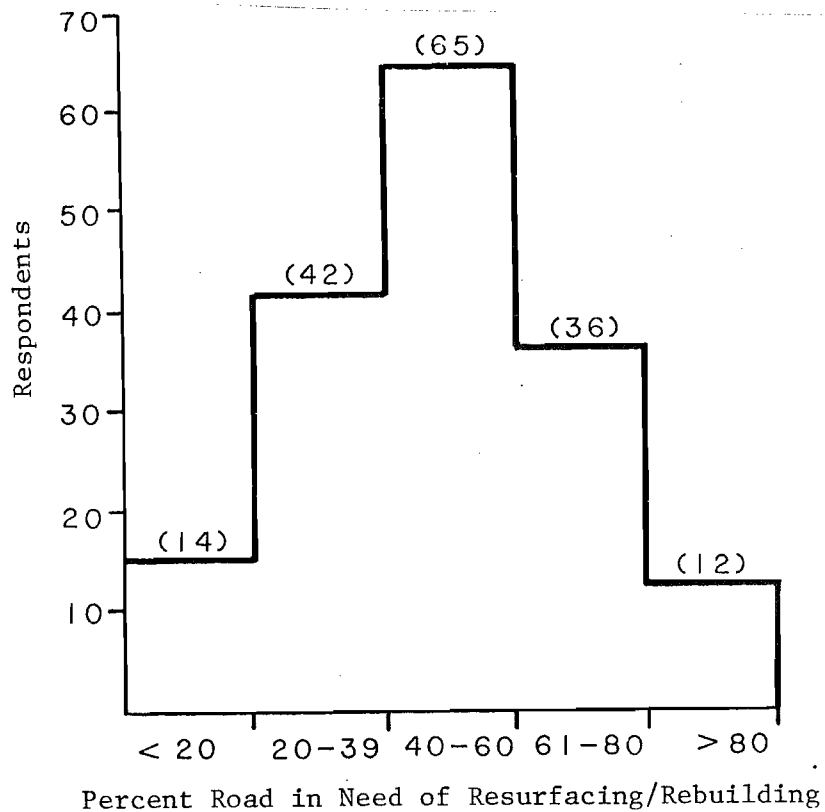


Figure 2. Road Needs

B. Inventory and Legal Status

Questions were asked about the existence of ordinances to establish posted speed limits and signs and to understand the status of the jurisdiction's inventory of roads and of signs.

	Yes	No	Don't Know	No Answer
Posted Speed Limits Est.				
by Ordinance	141	35	19	9
Signs Est. by Ordinance	124	62	18	9
Up-to-Date Road Inventory	110	56	26	12
Inventory of Traffic Signs	93	73	28	10

C. Expenditures for Road

Respondents were asked to indicate their informal or personal estimate of how funds were expended for roads. The following indicates an overall indication.

Mean	Median	
26%	20%	Operational (snow removal, mowing, ditch maintenance, etc.)
23%	20%	Minor repair of paved roads
25%	20%	Major resurfacing
6%	1%	New construction
14%	10%	Bridge repair

Other expenditure areas included

Labor 50%, 20%, 20%, 50%, 30%

Equipment repair - 10%

Reconstruction - 40%

D. Needs Assessment

Each respondent was asked to indicate which of 19 important areas of road management and operation needs would he/she like more information. There was no limit on the number of the subjects that could be checked. The respondent was asked to check the boxes and then to indicate which three had the highest priority.

The rank order of needs by votes received was:

Highway funding of local roads/streets	- 108
Use of Federal Funds for roads/streets	- 105
Road maintenance procedures	- 75
Erosion and drainage	- 74
Computer use in highway/road management	- 71
Road inventory techniques	- 63
Bridge maintenance	- 59
Pot hole repair	- 55
Utility cut restoration	- 47
Unpaved road maintenance	- 42
Mowing and weed control	- 41
Snow and ice control	- 40

Highway/RR grade crossing control	-	40
Traffic safety studies	-	36
Guidelines for selecting maint. equip.	-	33
Traffic control studies	-	25
Concrete for local roads	-	23
Access control	-	20
Other	-	6

Overall priority was determined by assigning 5 points for each need that was given first priority, 3 for each given second priority and 1 for each third priority. Tables 3 and 4 indicate the priorities by Job Title and by region of Indiana respectively. The check marks indicate priority representation.

Two additional questions were asked in another portion of the questionnaire to provide an approximate check on the data shown in Tables 3 and 4. Each respondent was asked to list their concerns about priorities in operation of the roads; Table 5 presents the results of the 95 answers given. Concerns about the technical operation are presented in Table 6 where 72 answers were given. Other than in financial and maintenance areas there seems to be only limited correlation. Correlation may have been better had the needs assessment section appeared earlier on the questionnaire, but we didn't want to prejudice the results.

TABLE 3
PRIORITY OF NEEDS BY JOB TITLE

Needs Assessment (Rank ordered by votes received)	Co. Comm.	Co. Auditor	Co. Engr.	Surveyor	Road Supervisor	Mayor	City Engr.	Street Comm.
Highway funding of local roads/ streets	2	1	6	-	1	1	2	1
Use of Federal Funds for roads/ streets	4	3	2	-	2	3	1	4
Road maintenance procedures	1	4	-	✓	3	3	3	2
Erosion and drainage	6	-	3	1	4	-	-	-
Computer use in highway/road management	5	2	✓	✓	5	-	5	6
Road inventory techniques	6	-	4	✓	6	2	6	3
Techniques for priority determination	9	-	5	✓	7	-	✓	6
Bridge maintenance	8	-	1	✓	7	-	-	-
Pot hole repair	3	-	-	-	✓	5	✓	9
Utility cut restoration	-	-	✓	-	-	-	4	4
Unpaved road maintenance	✓	-	-	-	✓	-	-	-
Mowing and weed control	✓	-	-	-	✓	✓	-	-
Snow and ice control	-	-	-	-	-	-	-	8
Highway/RR grade crossing control	-	-	✓	-	-	-	-	-
Traffic safety studies	-	-	✓	-	-	-	-	-
Guidelines for selecting maintenance equipment	10	-	-	-	-	-	-	✓
Traffic control studies	-	-	-	-	-	-	-	-
Concrete for local roads	-	-	-	-	-	-	-	-
Access control	-	-	-	-	-	-	-	-

TABLE 4

TOP PRIORITY NEEDS BY DISTRICT

Needs Assessment (Rank ordered by votes received)	State	NW	NE	W.Cen.	E.Cen.	SW	SE
Highway funding of local roads/streets	1	1	1	2	1	3	4
Use of Federal funds for roads/streets	2	2	3	4	3	1	8
Road maintenance procedures	3	5	2	2	4	2	3
Erosion and drainage	4	3	✓	1	6	4	6
Computer use in highway/road management	5	4	4	6	6	5	6
Road inventory techniques	6	6	7	6	2	✓	1
Techniques for priority determination	7	✓	7	5	8	-	5
Bridge maintenance	8	6	6	-	5	-	2
Pot hole repair	9	✓	5	✓	✓	6	9
Utility cut restoration	10	-	✓	✓	✓	-	✓
Unpaved road maintenance	11	-	-	✓	✓	✓	✓
Mowing and weed control	12	-	-	-	✓	-	✓
Snow and ice control	13	-	-	✓	✓	-	-
Highway/RR grade crossing control	13	✓	-	-	✓	-	-
Traffic safety studies	14	-	-	-	✓	-	✓
Guidelines for selecting maintenance equip.	15	-	-	-	✓	-	✓
Traffic control studies	16	-	-	-	-	-	✓
Concrete for local roads	17	-	-	-	-	-	-
Access control	18	-	-	-	-	-	-

TABLE 5
CONCERNS ABOUT PRIORITIES IN ROAD OPERATION

Money/Finances	27
Safety	18
Maintenance & Road Conditions	16
Bridges	7
Drainage	6
Priority Development	5
Management	5

All Answers are presented in Appendix B.

TABLE 6
CONCERNS ABOUT TECHNICAL OPERATION

- Training Needed	13
- Funding Shortage	13
- Manpower Shortage	9
- Safety	9
- Ordinances, Laws	4
- Drainage	4
- Priority Determination	3
- Efficiency	3

All Answers are presented in Appendix C.

V. HERPICC Relationships

Sections 2 and 6 of the questionnaire were intended to give some measure of the existing HERPICC relationship and indicate possible patterns of service delivery.

A. Past HERPICC Analysis

1. General

- 44% (89) had attended a workshop by HERPICC
- 59% (121) attended 1983 Road School
- 60% (96) attended 1982 Road School
- 47% (96) attended both 82 and 83 Road Schools
- 84% (172) received 1983 Directory
- 75% (153) acknowledged receipt of HERPICC NEWSLETTER
- 45% (92) received 1981 Highway Finance Data.

2. Table 7 presents the past HERPICC involvement by job title. Attendance at Road School may be an important way to facilitate delivery and involve some who are not involved, especially for county commissioners and auditors. City and municipal officials have been much less involved in Road School.

TABLE 7
HERPICC RELATIONSHIP BY JOB TITLE

Areas of Past Relationship	(No. Resp.) Job Title	County					City			
		(40) Comm.	(14) Auditor	(25) Engr.	(24) Surveyor	(37) Rd. Supv.	(12) Mayor	(19) Engr.	(18) St. Comm.	(4) Traffic Engr.
Newsletter		70%	71%	92%	67%	84%	58%	79%	67%	75%
Seminar Announ.		45	50	96	38	62	50	68	50	75
1983 Directory		88	93	96	63	92	92	79	72	75
County Highway Off. Guide		25	36	52	4	49	8	0	0	0
1981 Finance		35	36	68	17	62	67	42	28	50
Pot Hole Primer		17	0	56	0	65	50	37	50	25
Storm Drainage Manual		12	0	84	58	33	25	42	0	25
Equip. Specs. (Dump Truck)		28	7	100	13	86	58	58	94	50
1982 Road School		60	57	88	46	70	8	53	61	50
1983 Road School		60	43	92	54	84	8	47	33	75
Both Schools		38	36	84	33	62	8	47	33	50
Workshop in Last 2 Years		53	50	60	33	51	17	21	33	75

See note on page 1.

B. Workshops

Workshops are one very important method for delivering technical information. Since less than 50% had attended a workshop by HERPICC in the last two years, there seems to be good opportunity to improve in that area.

All of those (160 of 204) who provided answers to the question, would attend a workshop within one hour's drive or witness a demonstration within 50 miles. About 50% would attend a workshop within two hours and a slightly greater percentage would go 100 miles for a demonstration. About 14% would go any place in Indiana for a workshop.

The cross tabulation by job title is given in Tables 8 and 9.

C. Technical Reports Desired from HERPICC

A space was provided for those who had definitive requests for HERPICC to provide reports. Only 48 of the 204 respondents took advantage of the opportunity to suggest reports. Of those 48, 6 listed four subjects, 4 three subjects and 16 only two subjects. The technical reports are listed by requestor's job title in Appendix D. Broadly speaking the technical report topics most requested were:

- 21 Low-cost, low-density roads
- 15 Concrete road repair
- 9 Bridge repair

TABLE 8
 CROSS TABULATION OF WORKSHOP ATTENDANCE
 (43 did not answer)

	(One Hour) Respondents	Within Two Hours	Anyplace in Indiana
County Commissioner	36	58%	6%
County Auditor	7	57	-
County Surveyor	11	82	18
County Road Supv.	32	47	9
County Engineer	24	75	8
Mayor	10	60	10
City Engineer	15	80	20
Street Commissioner	14	86	29
Others	<u>12</u>	<u>75</u>	<u>50</u>
	161	52%	14%

TABLE 9
 CROSS TABULATION OF TRAVEL DISTANCE TO DEMONSTRATION
 (45 did not answer)

	(50 Miles) Respondents	Within 100 Miles	Within 150 Miles
County Commissioner	30	50%	15%
County Auditor	6	67	--
County Surveyor	13	62	6
County Road Supervisor	30	53	0
County Engineer	23	74	--
Mayor	10	70	0
City Engineer	15	67	--
Street Commissioner	15	7	27
Others	<u>11</u>	<u>72</u>	<u>36</u>
	159	58%	12%

- 7 Recycling and sealing
- 4 Funding
- 3 Drainage
- 3 Road equipment specifications.
- 3 Government analysis; jobs, laws, etc.

APPENDIX A
HERPICC Evaluation

Indiana (Indiana Department of Highways and Purdue University) was recently named as one of ten regional centers to explore upgrading technology transfer and delivery of road information to local governments. The 2-year program is being implemented by HERPICC (Highway Extension Research Project for Indiana Counties and Cities). One provision of the program is that it be carefully evaluated for its effectiveness, both to determine which parts of the ten regional programs best meet the needs and to provide structure for future programs. We are asking you, a county or town official with some responsibility for roads---financial and/or operational, to help us in this evaluation. The questionnaire given below is for the purpose of initially compiling your needs. You are asked to fill it out to the best of your knowledge. Please put down your own opinions. We have tried to keep it short so as to minimize your time. Since this questionnaire forms a major part in our evaluation plan, we need to have a very high response. So, PLEASE TAKE TIME TO ANSWER THE QUESTIONS and RETURN THE FORM BY JUNE 30, 1983. Return postage will be paid by Purdue. Thank you very much.

Harold L. Michael

Raw Frequencies - 204 respondents

1. PLEASE TELL US ABOUT YOURSELF AND YOUR POSITION.

A. County _____ City or town (if applicable) _____

- B. Are you a
- | | |
|--|--|
| 40 <input type="checkbox"/> County Commissioner | 12 <input type="checkbox"/> Mayor |
| 14 <input type="checkbox"/> County Auditor | 19 <input type="checkbox"/> City Engineer |
| 24 <input type="checkbox"/> Surveyor | 18 <input type="checkbox"/> Street Commissioner/Superintendent |
| 37 <input type="checkbox"/> Road Supervisor | 4 <input type="checkbox"/> Traffic Engineer |
| 25 <input type="checkbox"/> County Engineer | |
| 11 <input type="checkbox"/> Other (please specify) _____ | |

C. Your years experience in work associated with roads:

<input type="checkbox"/> 0-2 years 20	<input type="checkbox"/> 2-5 years 41	<input type="checkbox"/> 5-12 years 41	<input type="checkbox"/> more than 12 years 93	9 - No Answer
--	--	---	---	---------------

D. Are you a Registered Professional Engineer? 46 Yes 149 No 9 - No Answer

2. PLEASE INDICATE YOUR PAST INVOLVEMENT WITH HERPICC (Highway Extension Research Project for Indiana Counties and Cities).

A. Have you attended a workshop sponsored by HERPICC in the last 2 years? Yes No 18 -
89 97 No Answer

B. Have you previously received any of the following from HERPICC?
(Please indicate yes by checking appropriate boxes.)

- 153 The HERPICC Newsletter
- 119 Any announcement of a HERPICC sponsored Training Seminar
- 172 1983 DIRECTORY of Indiana State, County, City and Town Officials
(responsible for road and street work)
- 54 County Highway Office Guide (Compendium of required forms for County Highway Office)
- 92 1981 Highway Finance Data
- 73 Primer on Pot Holes
- 68 County Storm Drainage Manual
- 113 Checklist and Sample Specifications for Single and/or Tandem Axle Dump Trucks

C. Did you attend either the Road School 1982 and/or 1983?

122 <input type="checkbox"/> 1982 Road School	121 <input type="checkbox"/> 1983 Road School	37 <input type="checkbox"/> Did not attend	30 <input type="checkbox"/> Never attended Road School
--	--	---	---

3. PLEASE TELL US YOUR ASSESSMENT OF ROADS IN YOUR JURISDICTION:

A. Overall estimate:

1. Off-hand, what percent of the roads in your jurisdiction need resurfacing or rebuilding?
_____ %
2. Are the posted speed limits (other than 55 mph) established by local ordinances?
141 Yes 35 No 19 Don't know 9 - No Answer
3. Are all your signs (stop, yield, slow, etc.) established by local ordinances?
124 Yes 52 No 18 Don't know 9 - No Answer
4. Do you have an up-to-date road/street inventory?
110 Yes 56 No 26 Don't know 12 - No Answer
5. Do you have an inventory of traffic signs and signals?
93 Yes 73 No 28 Don't know 10 - No Answer

B. Expenditures (this question is looking for your opinion)

Estimate the % of 1982 road expenditures in the following areas:

- _____ % Operational (snow removal, mowing, ditch maintenance, cleaning)
- _____ % Minor repair of paved roads (oiling, pot holes)
- _____ % Major resurfacing or shoulder repair or widening
- _____ % New road construction; number of lane miles _____
- _____ % Bridge repair
- _____ % Other (please indicate) _____

4. WHAT IS YOUR RELATIONSHIP IN HIGHWAY/STREET DECISION PROCESS?

A. Financial/Budgetary

1. In regard to our Street/Road Budget, I

76 <input type="checkbox"/> give broad guidelines for it	34 <input type="checkbox"/> audit the expenditures
44 <input type="checkbox"/> develop it in detail	44 <input type="checkbox"/> implement it
59 <input type="checkbox"/> approve it	53 <input type="checkbox"/> am not involved
10 <input type="checkbox"/> other (please specify) _____	

2. When our jurisdiction applies for State, or Federal Funds, I

68 <input type="checkbox"/> decide on strategy	27 <input type="checkbox"/> audit the funds
37 <input type="checkbox"/> write the application	62 <input type="checkbox"/> am not involved
66 <input type="checkbox"/> review and approve the application	14 <input type="checkbox"/> other (specify) _____

3. When we purchase new road equipment, I

79 <input type="checkbox"/> decide on need	45 <input type="checkbox"/> authorize expenditures
58 <input type="checkbox"/> approve need	48 <input type="checkbox"/> order equipment
72 <input type="checkbox"/> write specifications	

B. Road priorities

1. In development of our annual road/street plans, I

75 <input type="checkbox"/> set guidelines for it	41 <input type="checkbox"/> prepare it
51 <input type="checkbox"/> approve it	46 <input type="checkbox"/> implement it
58 <input type="checkbox"/> supervise its preparation	53 <input type="checkbox"/> am not involved

4. B. Continued

2. With regard to setting priorities for the highway work, I
- | | |
|---|---|
| 68 <input type="checkbox"/> establish them | 64 <input type="checkbox"/> am not involved |
| 63 <input type="checkbox"/> have day-to-day responsibility for them | 27 <input type="checkbox"/> other (specify) _____ |

3. My concerns about priorities in operation of the roads are: 95 answers given

C. Technical operations

1. With respect to highway street operations (e.g. snow, minor maintenance, mowing, etc.), I
- | | |
|---|---|
| 63 <input type="checkbox"/> am directly responsible | 33 <input type="checkbox"/> bring in new approaches to improve task |
| 71 <input type="checkbox"/> set guidelines for | 35 <input type="checkbox"/> other (specify) _____ |
| 30 <input type="checkbox"/> determine engineering content | |

2. With respect to major modification of highways/bridges (e.g., repairing, widening, new structures, etc.), I
- | | |
|---|--|
| 72 <input type="checkbox"/> set guidelines for | 39 <input type="checkbox"/> can on my own authority try new techniques and methods |
| 67 <input type="checkbox"/> have direct day-to-day supervision of | 36 <input type="checkbox"/> other (specify) _____ |
| 53 <input type="checkbox"/> determine engineering content | |

3. With respect to highway safety, I
- | | |
|---|--|
| 64 <input type="checkbox"/> set guidelines for | 54 <input type="checkbox"/> determine speed limits and signs |
| 105 <input type="checkbox"/> work with law enforcement people | 41 <input type="checkbox"/> am not involved |

4. My concerns about the technical operation in our jurisdiction are: 72 answers given

5. NEEDS ASSESSMENT

A. Important areas of need. In performance of my responsibility, I would like more information on: (Check all appropriate boxes.)

- | | |
|--|---|
| 63 <input type="checkbox"/> 1. Road inventory techniques | 55 <input type="checkbox"/> 12. Pot hole repair |
| 63 <input type="checkbox"/> 2. Techniques for priority determination | 74 <input type="checkbox"/> 13. Erosion and drainage |
| 75 <input type="checkbox"/> 3. Road maintenance procedures | 59 <input type="checkbox"/> 14. Bridge Maintenance |
| 71 <input type="checkbox"/> 4. Computer use in highway/road management | 42 <input type="checkbox"/> 15. Unpaved road maintenance |
| 25 <input type="checkbox"/> 5. Traffic control studies | 40 <input type="checkbox"/> 16. Snow and ice control |
| 36 <input type="checkbox"/> 6. Traffic safety studies | 41 <input type="checkbox"/> 17. Mowing and weed control |
| 108 <input type="checkbox"/> 7. Highway funding of local roads/streets | 23 <input type="checkbox"/> 18. Concrete for local roads |
| 105 <input type="checkbox"/> 8. Use of Federal Funds for roads/streets | 20 <input type="checkbox"/> 19. Access control |
| 33 <input type="checkbox"/> 9. Guidelines for selecting maintenance equipmt. | 4 <input type="checkbox"/> 20. Other <u>Bridge Design</u> |
| 40 <input type="checkbox"/> 10. Highway/RR grade crossing control | 1 <input type="checkbox"/> 21. Other _____ |
| 47 <input type="checkbox"/> 11. Utility cut restoration | 1 <input type="checkbox"/> 22. Other _____ |

B. Priority of need. In the above list, the three that have the highest priority, in the order of importance by number are:

Priority #1 7 Priority #2 8 Priority #3 13/4

6. DELIVERY OF HERPICC SERVICE

A. Priority Needs

In receiving priority information (1, 2, and 3) above I would be willing to (or have one of my staff members):

Attend a one/two-day workshop: 55 within one hour driving time

83 within two hours driving time

23 any place in Indiana

Witness a demonstration: willing to travel: 60 50 miles

80 100 miles

19 150 miles

Note: It is understood that with each conference or demonstration, appropriate reports, guidelines, and manuals will be available.

B. Technical reports

Even though the priority items above will improve my ability to perform my job, there are some other specific specialty reports that I would like to see HERPICC provide (e.g., purchase specifications on skip loaders, crack repair on bridges, concrete repair techniques, low-cost low-density road repair).

1. 43 answers

3. 10 answers

2. 32 answers

4. 6 answers

Please fold questionnaire in half with the mailing address, shown below, exposed. Staple or tape and mail. Thank you!

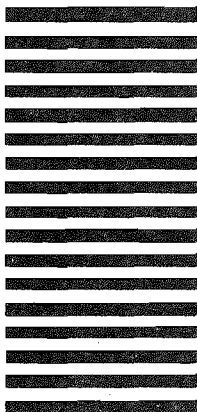
Question #5 - Needs Assessment

Responses to "OTHER"

- Bridge Design
- Employee Safety
- Fleet Safety
- County Liabilities
- Proper Insurance Coverage
for Counties
- Brush & Tree Removal
- Storm Water Control
- Legal Rights & Interpretations
- Use of Federal Revenue Sharing
- Survey of Salaries, Work Schedules, and
Benefits of Indiana County Highway
Departments



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



APPENDIX B

JOB ANALYSIS CROSS TABULATIONS

Section 4 of the questionnaire was an attempt to develop a better understanding of the way in which each respondent viewed his/her job. Cross tabulations of that section by Job Title appear below. Circled numbers indicate primary responsibility and squared percentages suggest a strong coordination role in the job discussion.

A. Financial/Budgetary

In regard to Street Road Budget, I

	Percentages								
	County					City			
	Comm.	Aud.	Surv.	Suprv.	Engr.	Mayor	Engr.	St.Comm.	Traf.
Give broad guidelines	50	21	0	51	24	58	47	50	50
Develop it in detail	15	0	0	43	16	33	21	33	0
Approve it	83	0	0	19	0	42	32	17	25
Audit the expenditure	18	79	0	19	4	0	16	22	0
Implement it	13	14	0	32	20	8	37	39	25
Am not involved	2	0	96	5	40	8	32	11	50
Other	0	0	8	3	20	8	0	0	0

When our jurisdiction applies for State or Federal funds, I

	Percentages								
	County					City			
	Comm.	Aud.	Surv.	Suprv.	Engr.	Mayor	Engr.	St.Comm.	Traf.
Decide on strategy	53	0	4	30	50	37	6	50	50
Write application	7	7	0	5	72	8	53	0	25
Review/approve appl.	63	21	0	24	32	58	32	11	25
Audit the funds	18	64	0	11	20	0	11	0	0
Am not involved	8	14	88	43	4	8	16	67	0

When we purchase new road equipment, I

	Percentages								
	County					City			
	Comm.	Aud.	Surv.	Suprv.	Engr.	Mayor	Engr.	St.Comm.	Traf.
Decide on need	50	7	0	73	12	25	16	100	50
Approve need	80	0	0	22	4	50	37	11	0
Write specs.	20	14	0	76	24	17	37	89	0
Authorize expend.	50	43	0	11	4	25	16	17	25
Order equip.	18	7	0	49	16	25	11	67	0

B. Road Priorities

In development of annual road/street plans, I

	Percentages								
	County					City			
	Comm.	Aud.	Surv.	Suprv.	Engr.	Mayor	Engr.	St.Comm.	Traf.
Set guidelines	45	7	0	54	44	38	32	56	50
Approve it	65	0	0	16	4	42	47	0	50
Supervise its prep.	18	0	0	60	32	17	37	50	0
Prepare plan	10	7	0	38	16	17	26	57	0
Implement it	3	0	0	46	32	17	32	44	0
Am not involved	5	72	88	3	32	0	21	11	25

With regard to setting priorities for highway work, I

	Percentages								
	County					City			
	Comm.	Aud.	Surv.	Suprv.	Engr.	Mayor	Engr.	St.Comm.	Traf.
Establish them	47	0	0	41	20	50	47	33	75
Have day-to-day resp.	10	0	0	81	16	33	26	72	0
Am not involved	15	79	92	5	48	0	26	11	0
Other	25	14	4	3	24	8	21	0	25

Concerns are listed in Appendix B.

C. Technical Operations

With respect to highway street operations (e.g. snow, minor maintenance, mowing, etc.), I

	Percentages								
	County					City			
	Comm.	Aud.	Surv.	Suprv.	Engr.	Mayor	Engr.	St.Comm.	Traf.
Am directly resp.	13	0	0	84	8	25	5	100	25
Set guidelines for	65	0	0	41	20	58	26	50	0
Determine Engrg. con.	3	0	8	5	60	0	37	0	50
Bring in new approaches to improve tech.	13	0	0	30	8	0	32	39	0
Other	10	50	33	0	36	8	21	0	25

With respect to major modifications of highways/bridge (e.g. repairing, widening, new structures, etc.), I

	Percentages								
	County					City			
	Comm.	Aud.	Surv.	Suprv.	Engr.	Mayor	Engr.	St.Comm.	Traf.
Set guidelines	58	0	4	24	72	42	37	11	25
Have direct day-to-day supervision	7	0	13	60	80	33	21	56	0
Det. engr. content	15	0	17	11	84	0	63	0	50
Try new tech.	8	0	17	27	44	8	32	11	0
Other	20	43	29	8	8	17	16	22	25

With respect to highway safety, I

	Percentages								
	County					City			
	Comm.	Aud.	Surv.	Suprv.	Engr.	Mayor	Engr.	St.Comm.	Traf.
Set guidelines for	55	0	4	38	60	33	21	0	25
Work with law enforc.	43	0	8	68	40	83	84	94	75
Det. speed lim./signs	38	0	17	41	44	0	11	6	50
Am not involved	5	79	58	14	12	0	5	6	25

Appendix C

Responses to: Concerns about priorities in operations of the roads

County Commissioner

To keep the roads as safe for travel as possible
Funding, general supervision
Help establish priorities on which roads to hot-mix and which to repair
chip and seal
Obtaining waivers for unnecessary federal right-of-way requirements
Pot-holes maintenance
Quality of work
Getting our existing roads in good repair
All districts are treated the same
Try to maintain our most traveled hard surface roads; grade and maintain
gravel roads
To work close with the Superintendent and Engineer to have a good working
relation (County Commissioner)
To prioritize by traffic and keep roads repaired as well as funds will allow
Usage, population, location, cost
Safety and amount of traffic
Saving what roads we have, then up-grading the gravel roads in the county
Lack of information
Funds
Safety, number of vehicles per day, durability

Auditor

Financial
The financial needs of the department exceed the revenues

Surveyor

Plan new bridge construction
Section stones
Bridges only
Drainage only
We continue to hire men and buy equipment and have less for materials
Perhaps first to establish priorities other than paving roads that
government officials live on.
We need to chip & seal our existing paved road more frequently
No qualified direction

Road Supervisor

Getting enough money to keep roads in repair
Money & the lack of it
To maintain existing HAC roads without construction of additional HAC
roads due to funding.
Existing condition, traffic volume, location, type of existing government
Securing enough money to maintain and improve roads
Lack of funds preclude any major road work

Appendix C - Continued

Mainly bridges and roadside hazards
Drainage
My own inspection - ride the roads two to three times
Sealing of asphalt
Seeing that highly travelled roads are repaired first
Drainage and removal of holes
Safety
Location of road and amount of travel
Maintenance of asphalt roads
Road conditions first, then building new roads

County Engineer

Shortage of funds
I give advice and technical help on road projects
That we have left the basics such as good drainage and base construction
Mainly bridges and roadside hazards
Traffic & traffic safety; drainage
Lack of preventative maintenance & center stripping & dust preventatives
ADT, condition, accidents and complaints
County has no plan for improvement of FAS or collector system
New construction, federal aid, bridges, traffic control, signs & stripping
Bridges and subdivisions
Pot-holes, mowing, reconstruction, traffic control, snow removal
Bridges
Engineering & safety
Too little money to handle the volume of traffic in this tourist area

Mayor

Lack of funding
Condition of road, safety, drainage
Rapid deterioration
To see we develop repairs/maintenance and upkeep within our budget
Keep traffic flowing as best as possible
Road drainage

City Engineer

Service, safety, maintenance
Moving traffic safely with least possible congestion without hazard to pedestrians.
Secure appropriate funding to stay ahead of needs
Financing
Maintenance procedures-drainage
City is using R&S funds for maintenance
Traffic safety should be first
Politics, not need, decide too many street improvement locations
My lack of involvement or authority
Capacity, condition, safety
Unpaved streets

Street Commissioner

Amount of traffic; condition of street
Money available
Safety, maintenance, drainage
Safety
Which street needs attention most
Maintenance
Safety, longevity of obvious need for repair, road count, finance
Budget - manpower availability
Insufficient funds to handle all serious roads
Safety vs. funds approved and available
Funding & equipment
Safety

Traffic Engineer

Traffic safety - minimum delay
No involvement - we are an MPO with 19 communities, 3 counties, and I do
it under our review process in N.W. Indiana

Appendix D

Concerns About Technical Operation

County Commissioner

That the county sheriff does not function as a safety officer - no traffic tickets are issued for speeding, sign damage, etc. The state only does this.

Fund to maintain county highways in a safe condition

Help hire consultants for major projects

Setting proper, legal speed limits

Best roads & bridges for the money

Needs to be updated

As county commissioners we do not have anyone to follow-up on our decisions to see that they are implemented.

Keep all roads as good as possible

Safety and the upkeep of all roads

We do not have enough money available to do major improvements using available technology.

With funding on roads and taxes at a standstill, we must put priority on certain road programs.

To have as much information for our superintendent and engineer as possible.

Keep them as current as today on new methods.

Time - part-time commissioners are a thing of the past

I am concerned about the safety of bicycle riders especially on narrow two lane roads and after dark when some have only reflectors and no lights.

Auditor

See that ordinances are correctly handled

Audit of funds spent

Surveyor

Drainage capacity of bridges and culverts on regulated drains

County hires outside engineering firm for road work

Stretch the cumulative bridge fund as far as it will go

Drainage as affects or is affected by county or regulated drains

There are few standards or priorities

Determining R.O.W. widths, location of roads, maintaining road records in County Surveyor's office.

No qualified supervision - based on politics

Road Supervisor

We are trying to do the best job possible

Community's need for understanding technical operations

Finance

Lack of money for major highway work. To save money much of the mowing has been curtailed - adequate funding!

Safety

Maintenance

Do the job, with all the technical help we can get, also any information on equipment for our type of operation.

Safety for the public - signs, roads, washouts, trying to keep up blacktops, gravel roads, bridges.

Trying to upgrade roads to conform to established engineering and safety standards.

Not enough expertise in present manpower. Not enough supervision.

To find the most economical approach to ensure the best surface available for the cost.

County Engineer

Growing paperwork load to assist in technical operations - lack of personnel and finances to cover properly.

Need better education of front line supervisors with reference to proven technical approaches to roadway operations and maintenance.

Bridge construction and maintenance; road construction

That we are not adequately funded to "do it right"!

Safety

The courts are beginning to dictate my work

Elected officials are not responsive to long range planning

Lack of engineering input into the maintenance program which needs better management and subsequently efficiency.

A better understanding

Economical ways to widen, modify or construct, or rehabilitate typical county bridges.

Funds, reconstruction, and repair of roads and bridges

New and reconstruction control - engineering, construction, & safety

We need to inventory all roads, provide more signs and pavement stripping

The failure to follow proven practices by maintenance supervision

Mayor

Efficiency, safety

To set guidelines for the future of streets/try to see that the street department has the materials to do their job.

Not enough money or technical assistance to do the job right

Ways to improve road drainage

City Engineer

Financial decisions rest with the City Council, who in large part do not know all the contributing factors.

Lack of money and personnel to do work required and/or requested

Getting the most out of the budget dollar through greater efficiency, new techniques, etc.

The effort required to educate city fathers on various matters

Implementing warrants and priority selections

Work with state on highways in town; work with street superintendent

My lack of involvement at a technical level. I have no authority for control of operation.

Street Commissioner

Economy - money to do the tasks needed to keep our streets safe
Need of funds to widen heavily travelled streets
Safety of pedestrians and vehicles on our streets; proper upkeep for good
ingress and egress of city roads.
Political tradeoffs
Do the best we can with what we have or can get from state or federal

Traffic Engineer

Time completion, manpower limitations, equipment conditions
Practically non-existent; if so, it's only on a very minor basis

Appendix E

Technical Reports Requested From Herpicc

By County Commissioners (40 respondents, 11 answered)

Low-cost, low density road repair - 4
Chip & seal process - 2
A good calcium chloride program for counties that have 50% of their roads
gravel, calcium economics - 2
Specifications on ship loader
Crack repair on bridges
Sharing State owned equipment
Feasibility of owning a pug mill
Keep farmers from farming road ditch
Help in determining road drainage & field drainage
Low cost of new bridges
Right-of-way improvement procedures
One-cent County gas tax charged for rapid transportation of no benefit
to us.

By County Auditor (14 respondents; 1 answered)

Bridge repair and replacement
Weed and bush control
Black-top road recycling

By Surveyor (24 respondents; 3 answered)

Low cost, low density road repair - 2
Crack repair on bridges
Subdivision road and street specifications

By Road Supervisors (37 respondents; 7 answered)

Low-cost, low-density road repair - 4
Crack repair on bridges,
Road repair - 2
Survey of salaries & work schedules--counties of Indiana
More about funding for roads
Specifications on road graders
Specifications on service trucks

By County Engineer (25 respondents; 7 answered)

Crack repair and sealing on bridges - 2
Dow overlay & plaster film in road work - 2
Project cost information, different designs - 2
Concrete repair techniques
New construction methods
Signing for low volume roads (rural & intersection)
Small bridge construction with county labor
Anything pertaining to roads and bridges

Studies on rural road-way widths
Compilation of laws concerning operations of County Highway Departments

By Mayor (12 respondents; 4 answered)

Concrete road repair techniques - 3
Recycling - hot and cold
Other items pertinent to roads, streets and equipment

By City Engineer (19 respondents; 6 answered)

Concrete repair techniques - 5
Low-cost, low density road repair - 3
Preventative maintenance on roads
Information on signalization equipment
Crack filling materials and methods
Pavement fabrics

By Street Commissioner/Superintendent (8 respondents; 5 answered)

Low cost, low density road repair - 3
Concrete repair techniques - 2
Storm water drainage pipe and ditch - 2
Information on Federal and State funding
Engineering courses to aid non-engineering professional
Pot-hole repair
Tool inventory control
Resurfacing and rebuilding of asphalt streets by recycling

By others (15 respondents; 4 answered)

-Relate services to size of community or government involved
-Economic analysis of benefits associated with the system

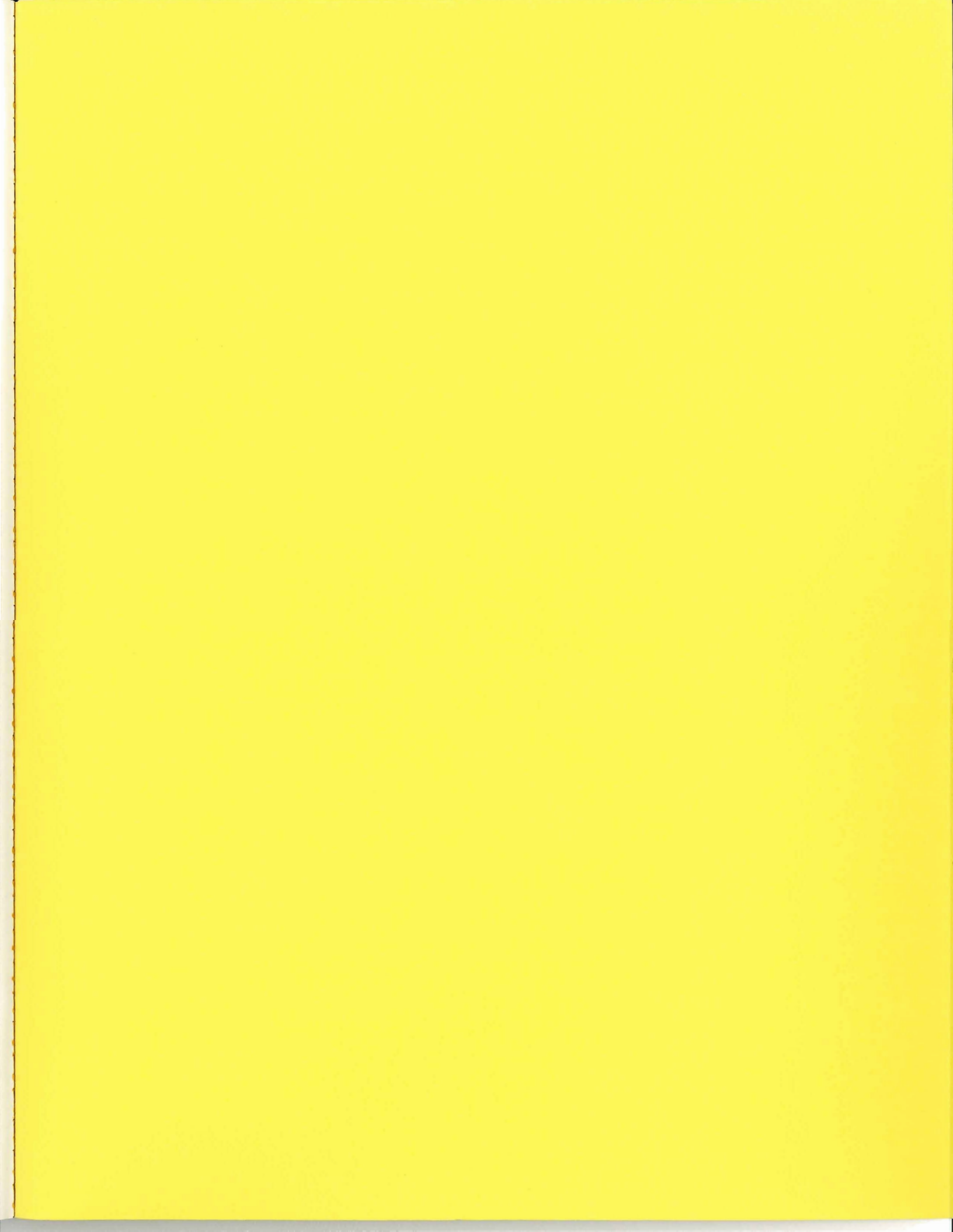
APPENDIX F
NEEDS ASSESSMENT FREQUENCIES AND PRIORITY FACTORS BY REGION

NEEDS ASSESSMENT Rank ordered by votes received	Item No.	State Freq.	(29)	(36)	(28)	(44)	(20)	(29)						
			NW District Priority Freq. Factor	NE District Priority Freq. Factor	WC District Priority Freq. Factor	EC District Priority Freq. Factor	SW District Priority Freq. Factor	SE District Priority Freq. Factor						
Highway funding of local roads/streets	7	108	17	45	16	56	15	33	24	53	11	19	15	21
Use of Federal Funds for roads/streets	8	105	15	37	20	39	17	29	20	35	11	29	14	15
Rd. maint. procedures	3	75	11	17	14	41	13	33	12	28	7	24	12	22
Erosion and drainage	13	74	12	20	11	--	18	34	13	20	7	12	11	16
Computer use in high- way/road management	4	71	13	18	11	27	10	13	15	20	6	10	12	16
Rd. inventory tech.	1	63	11	15	10	15	10	13	14	36	6	--	7	26
Tech. for priority determination	2	63	7	8	9	15	11	19	15	19	4	--	10	18
Bridge maintenance	14	59	11	15	12	16	9	--	9	22	4	--	11	24
Pot hole repair	12	55	9	10	11	18	8	7	8	12	6	9	5	7
Utility cut restor.	11	47	3	--	10	--	5	7	12	--	2	--	8	--
Unpaved rd. maint.	15	42	3	--	7	--	10	--	8	--	6	--	6	--
Mowing & weed control	17	41	4	--	6	--	5	--	13	10	5	--	7	--
Snow & ice control	16	40	5	--	6	--	9	--	10	--	3	--	4	--
Hwy./RR grade crossing control	10	40	8	--	5	--	2	--	12	--	2	--	4	--
Traffic safety studies	6	36	4	--	6	--	5	--	9	--	2	--	6	--
Guidelines for selecting maint. equipment	9	33	3	--	6	--	6	--	9	--	2	--	5	--
Traffic control studies	5	25	4	--	3	--	3	--	3	--	2	--	6	--
Concrete for local rds.	18	23	--	--	7	--	1	--	6	--	2	--	3	--
Access control	19	20	1	--	3	--	2	--	5	--	1	--	4	--

APPENDIX G
NEEDS ASSESSMENT FREQUENCIES & PRIORITY FACTORS
BY JOB TITLE

NEEDS ASSESSMENT Rank ordered by votes received	County								City							
	Commissioner		Auditor		Surveryor		Rd. Super.		Engineer		Mayor		Engineer		St. Commissi	
	Raw Freq	Priority votes	Raw Freq	Priority votes	Raw Freq	Priority votes	Raw Freq	Priority votes	Raw Freq	Priority votes	Raw Freq	Priority votes	Raw Freq	Priority votes	Raw Freq	Priority votes
Hwy. Funding of local roads/streets	26	65	8	19	1	--	21	57	9	14	12	19	11	22	15	41
Use of Federal Funds for roads/streets	28	33	8	11	1	--	22	56	14	33	8	13	9	30	11	12
Road Maintenance procedures	24	79	2	6	2	11	20	32	4	--	5	13	5	16	11	27
Erosion & drainage	16	20	1	--	13	31	17	24	11	30	3	--	6	--	6	--
Computer use in hwy./rd. management	18	22	7	12	2	7	14	21	12	12	1	--	6	10	3	11
Rd. Inventory Techniques	9	20	2	--	2	10	17	14	9	17	4	16	8	7	7	14
Techniques for priority determination	13	15	2	--	2	9	13	12	9	15	2	6	9	--	8	11
Bridge maintenance	18	16	2	--	6	11	12	12	18	45	0	--	0	--	0	--
Pot Hole repair	17	38	2	--	0	--	12	--	3	--	6	12	6	--	9	5
Utility cut restoration	6	--	0	--	2	--	4	--	7	--	5	--	12	11	6	12
Unpaved road maintenance	17	7	1	--	1	--	14	--	3	--	1	--	1	--	4	--
Mowing & weed control	12	--	2	--	3	--	10	--	1	--	8	--	2	--	3	--
Snow & ice control	5	--	0	--	1	--	8	--	0	--	5	--	5	--	11	8
Hwy./RR grade crossing control	4	--	1	--	1	--	9	--	9	5	4	--	4	--	4	--
Traffic safety studies	7	--	2	--	0	--	7	9	7	11	1	--	5	--	2	--
Guidelines for selecting maintenance eqpt.	10	13	1	--	0	--	9	9	1	--	3	--	3	--	6	--
Traffic control studies	3	--	1	--	0	--	6	--	5	--	1	--	4	--	1	--
Concrete for local roads	4	--	0	--	0	--	2	--	4	--	1	--	6	--	5	--
Access control	0	--	0	--	1	--	3	--	4	--	0	--	6	--	3	--

Note: Priority Ranking 5 points, 3 points, 1 point for 1st, 2nd, 3rd Priority, respectively.



A.
Evaluation of FHWA Technology
Transfer Program at HERPICC, Purdue
University
H-84-2

