

Roadway Material Testing and Inspecting in Other States

I wonder if other state DOTs _____?

How many state DOTs _____?

Is there a state DOT that _____?

The 2025 Report to Answer Your Questions – and More!

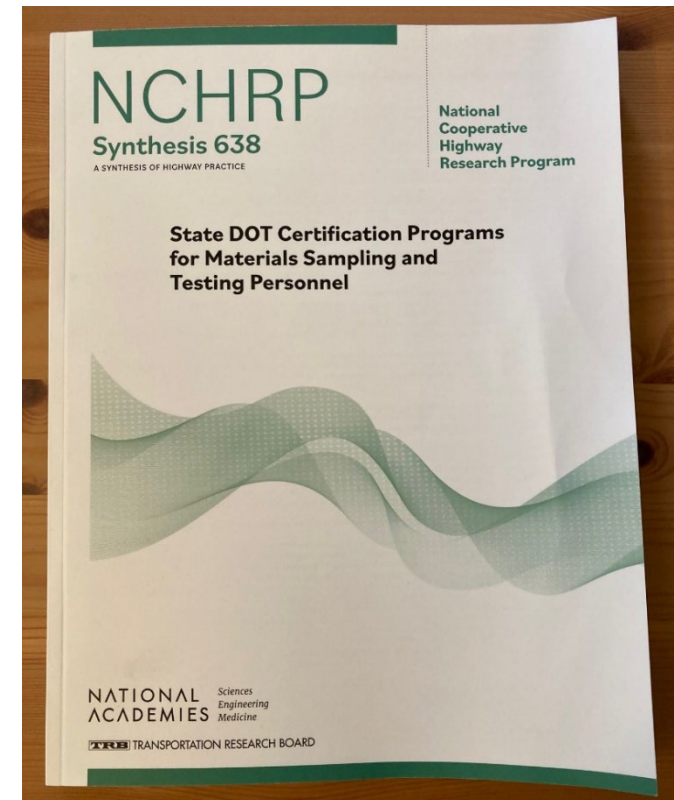
State DOT Certification Programs for Materials Sampling and Testing Personnel

Contributors

Georgene M. Geary, Desna Bergold; National Cooperative Highway Research Program; Transportation Research Board; National Academies of Sciences, Engineering, and Medicine

Citation

National Academies of Sciences, Engineering, and Medicine. 2025. *State DOT Certification Programs for Materials Sampling and Testing Personnel*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/28849>.



The Plan for M-TRAC Use of the Report

Report panelists Brian Squier (Iowa DOT) & Rachel Brown (Minnesota DOT)

1. Introduction to the report
2. Use key fact questions: wall data and within M-TRAC state reports

How many? How? Who? What kind?

3. Use extending questions to launch discussion about facts.

**Why? Why not? What else is going on?
What is the impact? What plans are ahead?**

4. Looking toward the future – use of report, other research ideas.

The Plan for M-TRAC Use of the Report - 1

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NCHRP Synthesis Studies

National Cooperative Highway Research Program

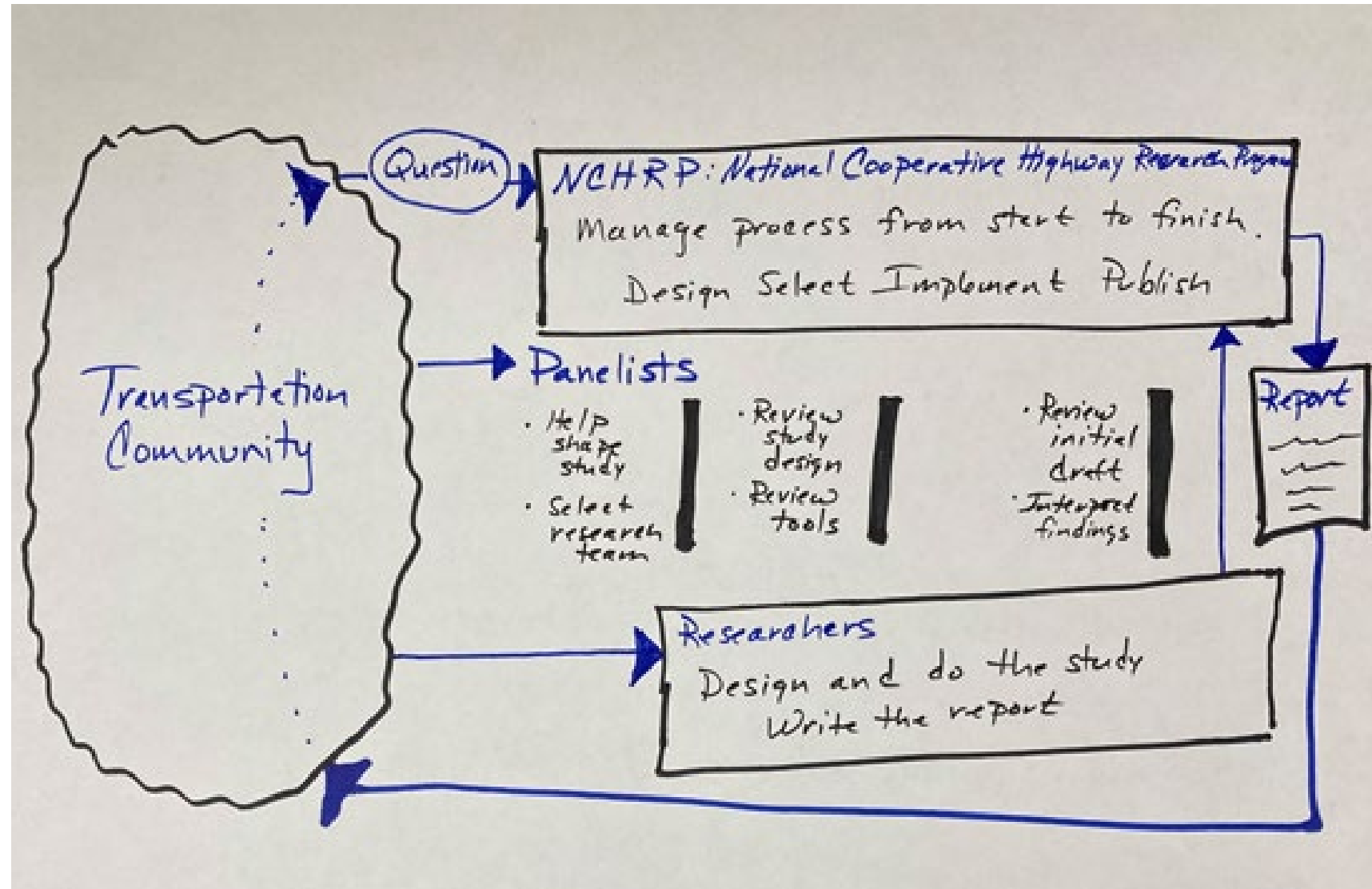
- Started in 1962 by the American Association of State Highway and Transportation Officials
- AASHTO asked the National Academies of Sciences, Engineering, and Medicine to administer the program.
- The Transportation Research Board is part of the National Academies and does a wide range of **primary research** and **synthesis studies**.
- **Synthesis study = pull together information about a specific topic and publish a concise report**



NCHRP Synthesis Study Process

National Cooperative Highway Research Program – Synthesis Study

- Questions emerge from transportation community and committees select the ones to research
- NCHRP manages the process to turn a question into a synthesis study
- Panel of content experts help shape the study, select a research team, and review instruments and report drafts
- Researchers conduct the study
- NCHRP publishes the study
- Transportation community uses the findings



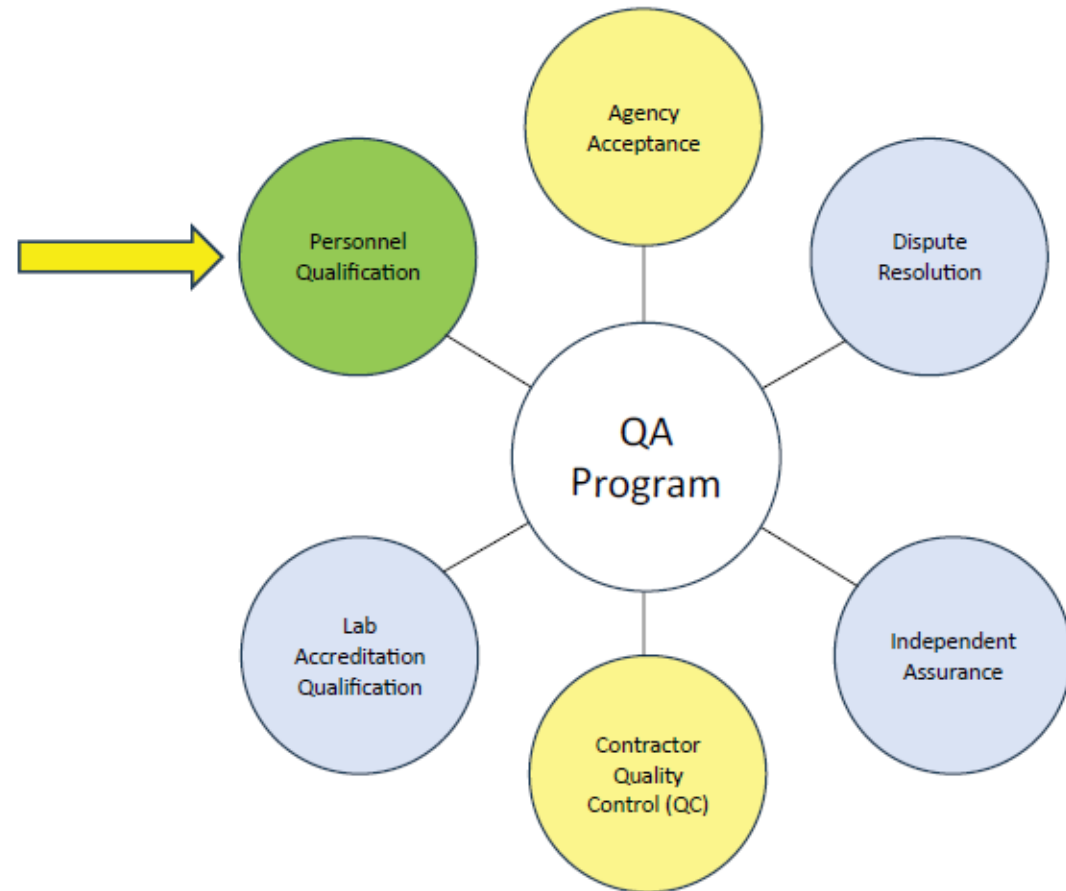
What are the **practices used by DOTs** for implementing **qualification or certification programs for personnel** who perform **materials sampling and testing** according to **23 CFR 637B**?

- Describe it: Not evaluation of quality, not “best practices,” no outcome analysis
- Focus on programs for sampling and testing
- One part of 23 CFR 637B (Code of Federal Regulations)

Six core elements of a roadway construction QA program included in the current 23 CFR 637B:

1. Agency acceptance,
2. Contractor quality control (QC),
3. Independent Assurance
4. **Personnel qualification and certification,**
5. Laboratory accreditation and qualification, and
6. Material testing dispute resolution.

Pages 7-8 of report



Source: Reproduced and modified from Dvorak and Conway 2023

Figure 1. Qualification and certification of personnel as a core element of a QA program.

Study Methods and Data

Researchers

Georgene M. Geary, GGfGA Engineering, LLC
Desna Bergold, D B Consulting and Associates, LLC

TRB Staff Officer

Sandra Larson

Methods

- Literature review
- Survey of all 50 state DOTs and the District of Columbia and Puerto Rico; **all 52 replied – 100% response rate!**
- Follow-up interviews of 10 state DOT representatives

Report

- Literature review
- Survey results
- Case examples
- Findings
- Standards and certifications
- Summary of findings
- Appendices – tools, data. +

Panelist Reflections

1. What do you learn by being on the panel?
2. What was most interesting or surprising for you?
3. How did having DOT and other representatives on the panel influence the research process and final report?

Patrick Allen, *Georgia Department of Transportation, Forest Park, GA*

Rachel Brown, *Minnesota Department of Transportation, Maplewood, MN*

Christopher Euler, *New York State Department of Transportation, Albany, NY*

Amy Melton, *Texas Department of Transportation, Austin, TX*

Brian Squier, *Iowa Department of Transportation, Ames, IA*

Xiaoyan Zheng, *Florida Department of Transportation, Gainesville, FL*

Jeffrey N. Withee, *FHWA Liaison*

Robert J. Shea, *TRB Liaison*

The Plan for M-TRAC Use of the Report - 2

Report panelists Brian Squire (Iowa DOT) & Rachel Brown (Minnesota DOT)

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“Flexibility in regulations and guidelines allowed DOT programs to be varied.” (p.98)

Similar and different in terms of ...

- Program Management
- Training and Certification Policies
- Training
- Examination and Methods
- Certifications

Survey Results – Quick Comparison

1. Does your DOT manage the certification program? **79-88 %**
2. Do re-certifications happen in 5 years? **67 %**
3. Are certification processes the same for DOT and non-DOT personnel? **92 %**
4. Do you share certification information online? **49 %**
5. Do you accept or require ACI-CFT Grade 1? **94 %**
6. Do you develop written exams in-house? **80 %**

Questions for the Wall: Dot Voting → Discussion

Directions: A representative from each state use your DOT dot stickers and “vote” for each question.

1. How many materials testing qualification/certifications are issued by your DOT in a year?
2. Who is required by the DOT to be qualified/certified in these materials areas?
3. What elements are used and/or required as part of the DOT requalification/recertification?
4. Who is involved in the daily management of the qualification/certification program for the different material areas?
5. What types of technology does the DOT use to administer written exams?
6. Who has access to the exam questions and completed student exams?

The Plan for M-TRAC Use of the Report - 3

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How many? How? Who? What kind?

3. **Use extending questions to launch discussion about facts.**

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Volume: from the Report

How many materials testing qualification/certifications are issued by this DOT in a year? (approximately).

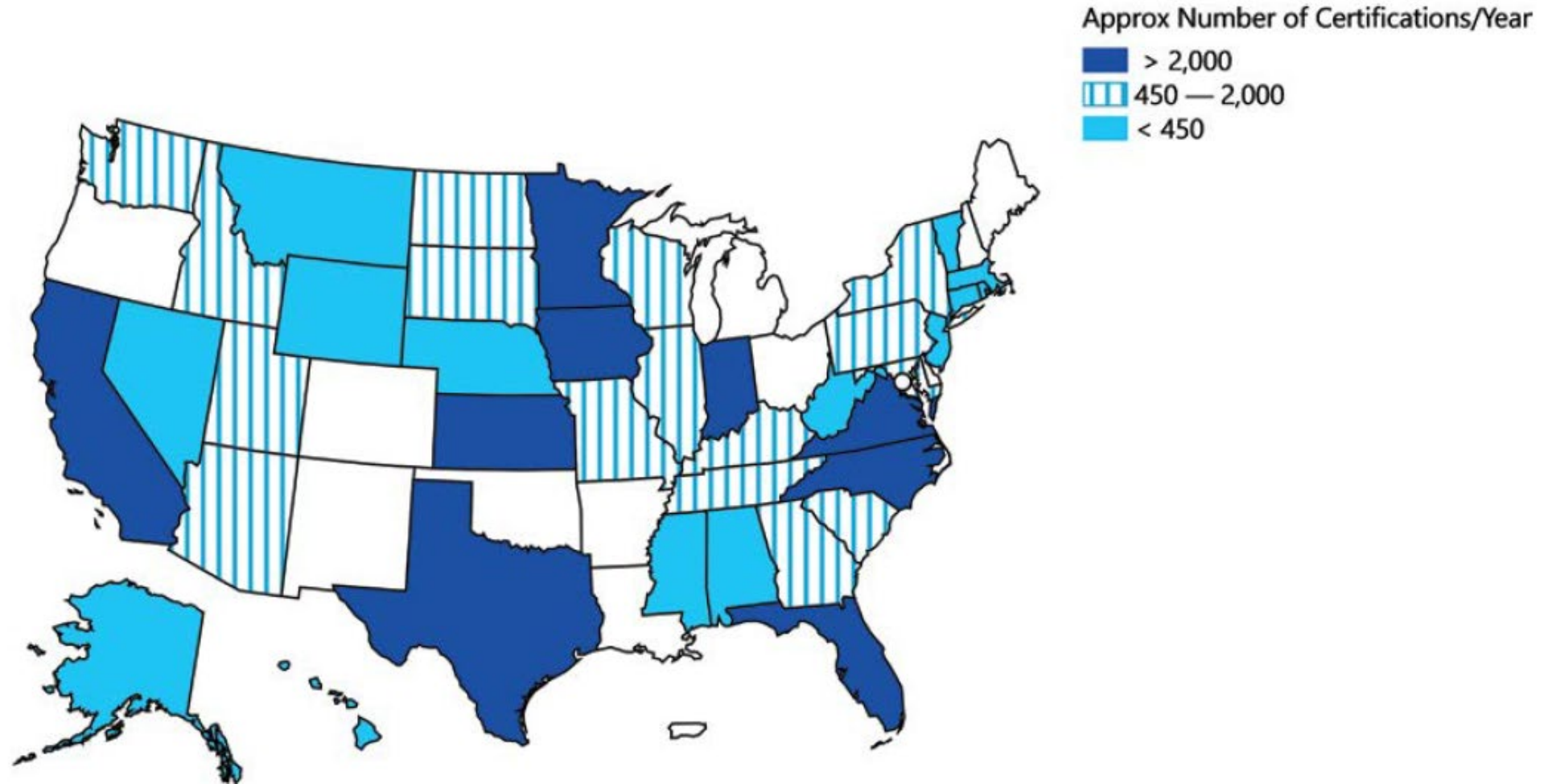


Figure 17. Question 16: Geographic distribution of certifications volume.

How many materials testing qualification/certifications are issued by your DOT in a year? (approximately)

< 500

500

1,000

1,500

2,000

2,500

3,000

3,500

4,000

4,000 <

How many materials testing qualification/certifications are issued by your DOT in a year? (approximately)

- What impacts your numbers?
- What impact do your numbers have on your program?
- Are your numbers changing? If so, what kind of impact do you think that change have on your program?
- Other questions ... ?

Types of Personnel Certified: from the Study

Who is required by the DOT to be qualified/ certified in these materials areas? (select all that apply).

Table 3. Question 7: Personnel subject to certification.

	DOT	Consultant	Contractor	Supplier	Local Government
Soils	48 92%	43 83%	24 46%	6 11.5%	11 21%
Aggregate	51 98%	43 83%	29 56%	22 42%	11 21%
Asphalt Mixture	52 100%	46 88.5%	38 73%	26 50%	13 25%
Concrete	51 98%	47 90%	34 65%	24 46%	14 27%

Types of Personnel Certified: in the Room

Who is required by the DOT to be qualified/certified in these materials areas? (select all that apply)

	DOT	Consultant	Contractor	Supplier	Local Gov.
Soils					
Aggregate					
Asphalt					
Concrete					

Types of Personnel Certified: Discussion

Who is required by the DOT to be qualified/ certified in these materials areas?

- Why does your state require certifications as they do?
- What are the benefits of requiring certifications of contractors, suppliers and other government agencies?
What are the challenges?
- How does these requirements impact your program?

Recertification: from the Study

What elements are used and/or required as part of the DOT requalification/recertification? (select all that apply).

Table 8. Question 18: Elements used in recertification.

	Classroom or Online Training	Generic Continuing Education in the Area	IA Testing	Work Experience	Written Exam	Perf. Exam	Fees for Training and/or Exams	No Process
Soils	26 50%	1 2%	17 33%	4 8%	42 81%	37 71%	28 54%	2 4%
Aggregate	28 54%	3 6%	17 33%	5 10%	44 85%	38 73%	33 63%	0 0.0%
Asphalt Mixtures	29 56%	3 6%	19 37%	5 10%	45 87%	38 73%	34 65%	0 0.0%
Concrete	30 58%	1 2%	18 35%	3 6%	47 90%	40 77%	36 69%	0 0.0%

Recertification: in the Room

What elements are used and/or required as part of the DOT requalification/recertification? (select all that apply).

	Classroom or Online Training	IA Testing	Work Experience	Written Exam	Performance Exam	Fees – for training or exam
Soils						
Aggregate						
Asphalt						
Concrete						

What elements are used and/or required as part of the DOT requalification/recertification?

- For those who do not do classroom or online training, how does that work? A written or performance exam?
- For those who use IA reviews, are there other requirements too?
- Are there elements you wish you did or did not do?

Program Management: from the Study

Who is involved in the daily management of the qualification/certification program for the different material areas?
(select all that apply)

Table 2. Question 6: Program management by material area.

	DOT	Outside Contractor/ Consultant	LTAP	College/ University	Outside Association (e.g., APA ACI)	Other
Soils	46 88%	9 17%	1 2%	9 17%	11 21%	1 2%
Aggregate	44 85%	7 13%	1 2%	10 19%	15 29%	1 2%
Asphalt Mixture	42 81%	8 15%	2 4%	14 27%	16 31%	1 2%
Concrete	41 79%	7 13%	0 0%	10 19%	23 44%	1 2%

Program Management: in the Room

Who is involved in the daily management of the qualification/certification program for the different material areas? (select all that apply).

	DOT	Outside Contractor/ Consultant	LTAP	College/University	Outside Association
Soils					
Aggregate					
Asphalt					
Concrete					

Program Management: Discussion

Who is involved in the daily management of the qualification/certification program for the different material areas?

- For those that use a college/university or an outside association, or contractor/consultant, how is the working relationship with the DOT set up?
 - Challenges? Benefits?
- For those managed by DOTs, it is totally in-house, or do you collaborate with other organizations?
 - Challenges? Benefits?

Exam Delivery: from the Study

What types of technology does the DOT use to administer written exams? (select all that apply).

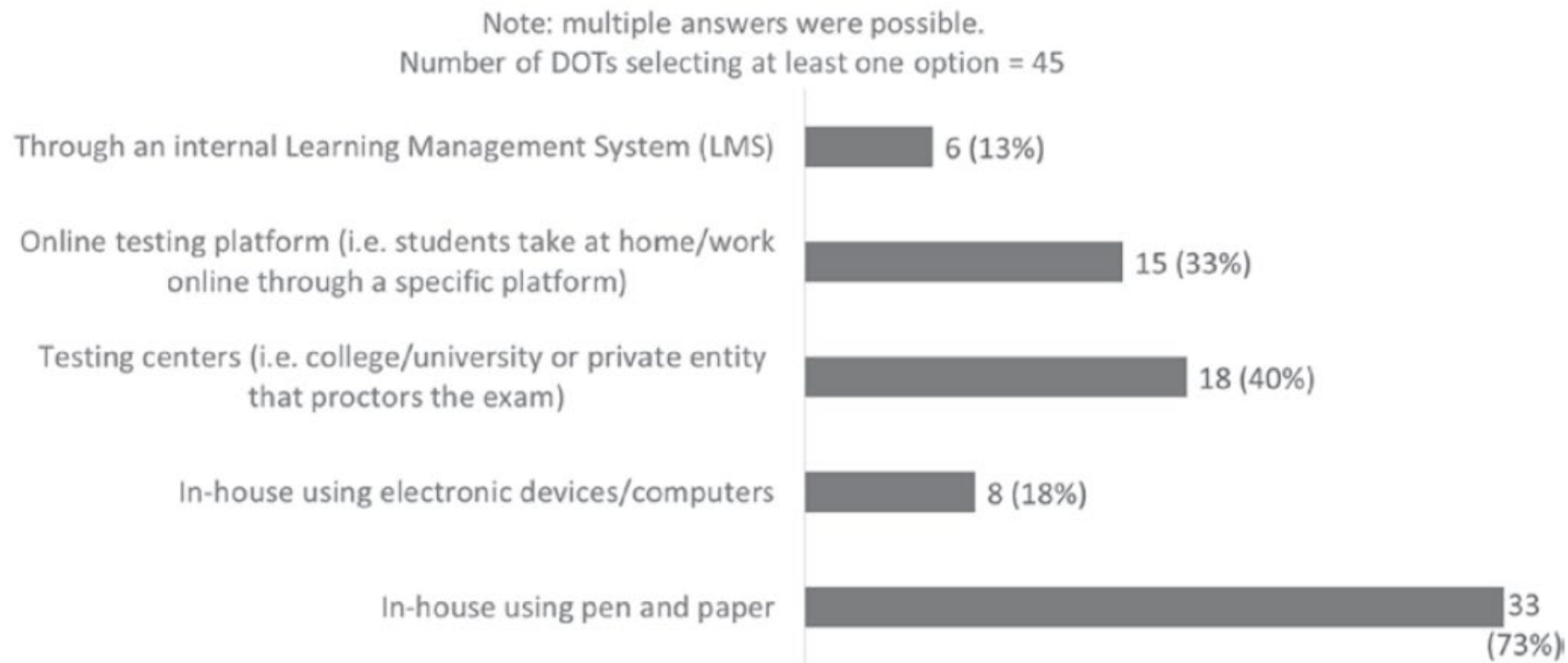


Figure 15. Question 15c: Types of exam technology used.

Exam Delivery: in the Room

What types of technology does the DOT use to administer written exams? (select all that apply)

Learning Management System (LMS)

**Online testing platform (i.e., students
take at home/work online)**

**Testing centers (i.e., college/university or
private entity that proctors the exam)**

**In-house using electronic
devices/computers**

In-house using pen and paper

What types of technology does the DOT use to administer written exams? (select all that apply)

- For those using hard copy exams, what drives that choice? What are the benefits or challenges?
- For those using testing centers, how does that work? Funding? Scheduling? Response from test-takers?
- For those doing online exams, what issues are you experiencing? Anything with AI impacts?

Exam Question Access: from the Study

Who has access to the exam questions and completed student exams?

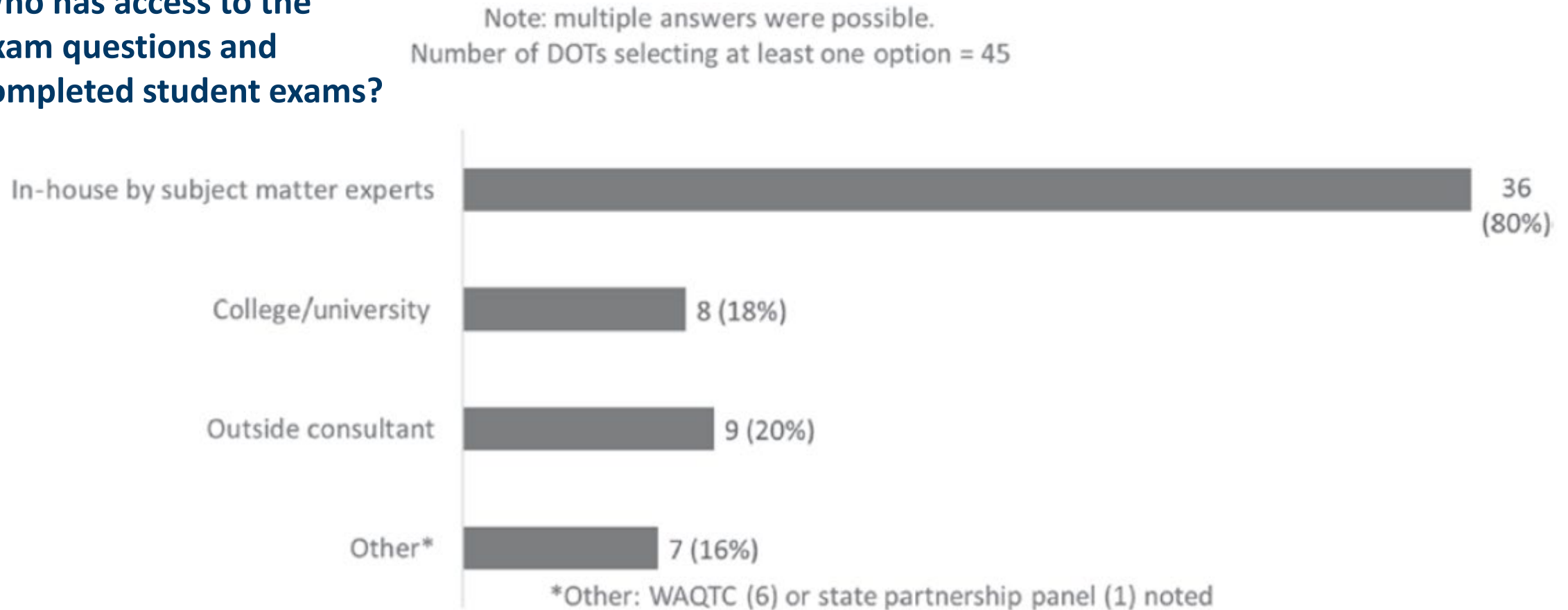


Figure 13. Question 15a: Exam question development.

Exam Question Access: in the Room

Who has access to the exam questions and completed student exams?

In-house (DOT) personnel by
subject matter experts

College/University

Outside Consultant

Other

Instructors (added)

Who has access to the exam questions and completed student exams?

- Does anyone share questions with instructors?
- Does anyone share answers to questions with students?
- Is anyone having issues with exam security?

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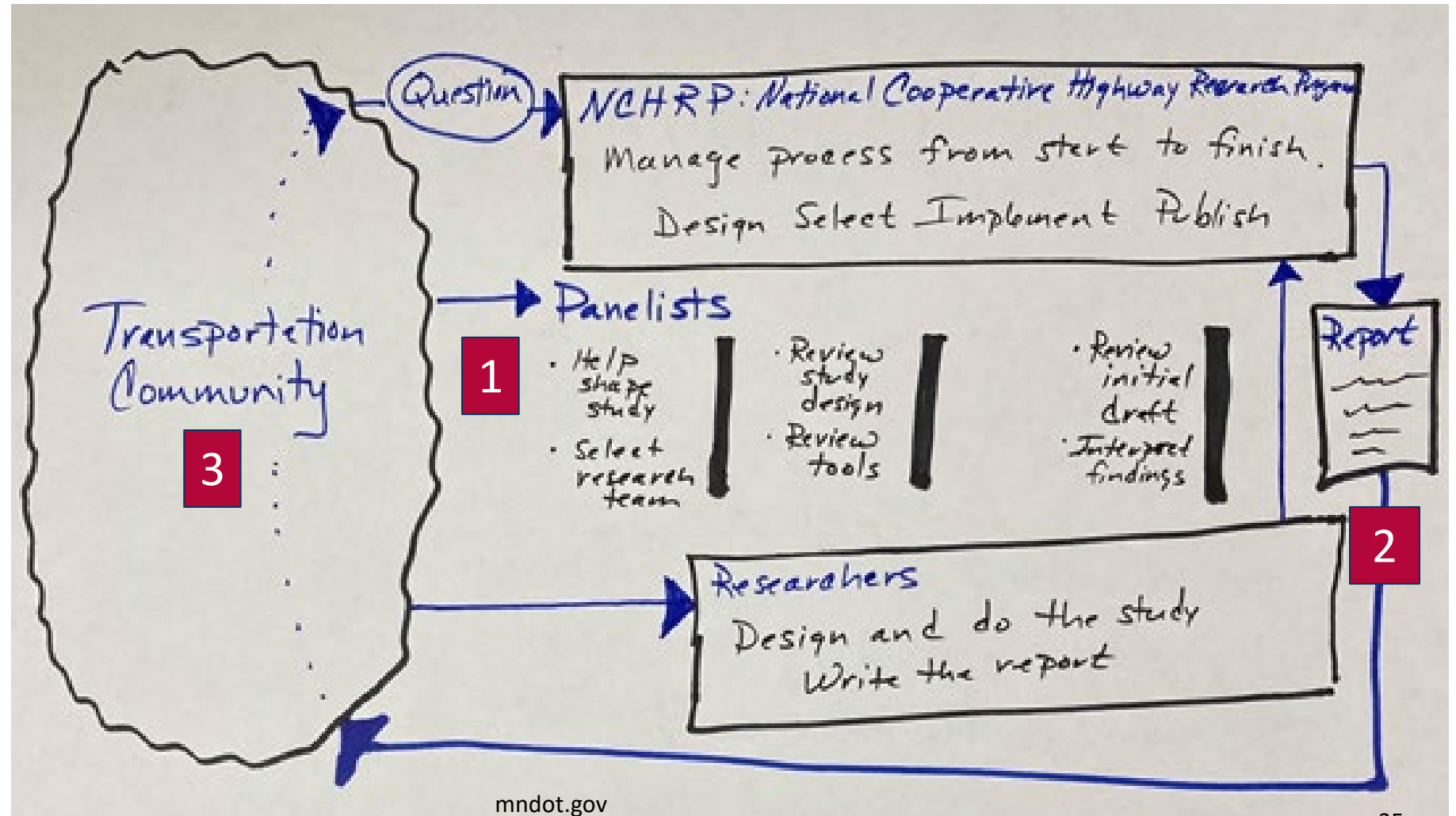
3. Use extending questions to launch discussion about facts.

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What is the impact? What plans are ahead?

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Three Ways to Get Involved in this Work

1. Participate in a panel
2. Read and use the report
3. Identify research questions



Why Read the Report?

***** there is just SO much in there *****

- Learn about the history of roadway materials sampling and testing.
- Find answers to questions about sampling and testing programs.
- Get specific ideas for improving your program.
- Find contacts of others doing things the same way or differently.
- Identify other research questions.

1. These were topics identified for further study. Any interest in them?

- **Guide to QA.** AASHTO R 25 provides a framework for programs and there a few other documents with guidelines. But nothing to pull it all together, a guide or standard practice document.
- **Brochure on Cooperative Models.** Describe aspects of NETTCP and WAQTC.
- **Encourage Cooperation.** Essentially more M-TRAC. 😊
- **Study of Prerequisites.** How programs set up and implement them; impact on recruitment.
- **Study on Recertifications.** Structure, Use of IA, benefits and challenges of different methods
- **Quantify Benefits of Training.** Framework for evaluation of training, possible national process.

2. Any other topics, questions, or study ideas that we might want to pitch to NCHRP?