



District Materials Engineer Job Book

Version 2.0

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This Job Book is intended to be a reference guide to assist staff in accomplishing their job. It points the way to official agency documentation and practice. In any case where there is a conflict between this document and official agency or district governance, agency governance and district practice holds precedence. If you identify such a conflict, please let the Learning Organization know. [Learning Organization - VDOT Job Books](#)

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Job Book Approval

State Materials Engineer

District Materials Engineer Job Book

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Introduction

This District Materials Engineer (DME) Job Book references existing resources that a DME needs to be successful. The contents of this Job Book were developed by subject matter experts—experienced DMEs who are currently in the position and are best situated to understand job-specific needs. The Job Book is focused primarily on serving new and less experienced practitioners but also contains information of use to all DMEs.

Key Roles and Responsibilities

The primary role of the DMEs is to provide leadership and management to the District Materials section. The DME Job Book starts with the following key roles and responsibilities, which are consistent with the position description in [MyCareerConnect](#):

- Workforce Safety
- Preliminary Engineering
- Field and Plant Quality Assurance Management
- Lab Support
- Project Support
- Consultation/Technical Guidance and Expertise
- Emergency Response
- Administrative Duties as it relates to training, managing staff and business functions

Key Contacts

For every DME role, key contacts include the Materials Division leadership and other DMEs. Key clients include the following District sections and Central Office Divisions: Structure and Bridge, Location and Design, Pavement Management, Environmental, Construction, and Maintenance. Other specific contacts are listed throughout this Job Book.

Key Resource

This Job Book includes links and systems a DME will use to fulfill key responsibilities. If a DME does not have access to systems, he or she can request access through System Access Request Application ([SARA](#)).

Key Deliverables/Actions/Practices

Each key role and responsibility is broken into more specific actions with information about where to obtain information. This Job Book is a reference to important aspects of the job and useful resources; however, it does not replace official governance or documentation.

A Living Document

The DME Job Book is a living document and will continue to evolve to reflect needs identified by practicing subject matter experts—the DMEs. DMEs will manage and maintain the content of this book. If any other topics should be considered for inclusion, please send suggestions to [Learning Organization—VDOT Job Books](#).

Promote Workforce Safety

Safety is a top priority for VDOT. All employees are expected to promote safe behaviors and safe workplace conditions.

Responsibilities

- Serve as an organizational leader for safety in all aspects of VDOT's work
- Promote and maintain a safe and healthy work environment
- Ensure all Materials personnel are aware of agency Safety Standards to include necessary personal protective equipment (PPE), materials, and training requirements
- Perform duties and manage area of responsibility in a manner consistent with [VDOT's Safety Directives](#)

Actions

- Demonstrate and practice safety behaviors in everyday work activities
- Discuss VDOT's Safety Rules with your staff, and ensure they have read and understand the rules
- Coordinate with District Safety Manager and Learning Manager to ensure your staff members complete required safety training in [VDOT U](#)
- Ensure Emergency Action Plan is posted and that staff are familiar with it
- Advocate for the [Safety Excellence Award Program](#) (SEAP) among all employees
- Ensure hard copy Safety Data Sheets are available and readily accessible to all employees for inventory materials and products
 - Resources: [OSHA](#) and [VOSH](#)
- Ensure the proper storage of nuclear density gauges on the district lot
 - Resource: [Radiation Protection Manual](#)
- Ensure compliance with silica dust safety procedures
 - Resource: [Crystalline Silica Employee Protection](#)
 - Contact: VDOT Industrial Hygienist

General Resource

- [Safety, Security, and Emergency Management Division](#)

Guidance and Helpful Hints

- Stress to staff that "safety is everybody's responsibility"
- Begin meetings with a safety topic and ensure your topics are congruent with the time of year and season. Model safety by wearing required personal protective equipment (PPE) and following safe work procedures at all times
- Be open to the safety ideas and concerns of all levels of workers, as well as to the different pathways for discussion including top down, bottom up, and peer-to-peer
- If you see a safety issue in the field, do not ignore it—address it. Encourage all staff to do the same
- Monthly staff safety meetings are helpful to remind staff of pertinent safety topics. Also, annual truck inspections are good to ensure that basic safety items are in order (fire extinguishers, first aid kits, etc.)
 - Resource: District Safety Checklist, Safety Inventory Log

Preliminary Engineering

The District Materials section, managed by the DMEs, coordinates with Materials Division, District Staff, on-call consultants, design builders, VDOT Design-Build Teams, localities, and developers to provide preliminary engineering assistance to design units to ensure successful delivery of projects.

In the preliminary engineering phase, project plans and contract documents are prepared. DMEs, as members of the Project Development team, ensure projects are designed according to the Materials Division's [Manual of Instruction](#) (MOI).

DMEs provide materials expertise and technical assistance/support to the following programs:

- Subsurface Exploration
- Geotechnical Engineering
- Pavement Design and Evaluation
- Plan Reviews

General resources with which to be familiar; specific resources are listed in the subsections below

- [Materials Division](#) site - provides contact information and quick access to resources used in PE
- [LD-252 Form](#) - Request for Supporting Data
- [Location and Design Division's Project Development Process](#)

Subsurface Explorations

Northern Virginia, Bristol, Salem and Richmond districts have in-house drill crews; all other districts use on-call consultants to perform subsurface explorations.

Responsibilities/Actions

- Perform subsurface explorations in accordance with [MOI Chapter III - Geotechnical Engineering](#)
- Use Materials Division on-call drilling contracts (drilling only), on-call laboratory testing services (testing only) and on-call geotechnical engineering contracts (drilling, testing and engineering design reports) to accomplish the work
 - Resource: [On-call Contract Site](#)
- Oversee geotechnical activities performed by turnkey technical contracts (i.e., Structure and Bridge, Location and Design, etc.)

Guidance and Helpful Hints

- Traffic control and utility marking on-call contracts are obtained by each district (necessary for use with VDOT drill crews). Ensure that Consultants are aware of VDOT-owned utilities
- District L&D Survey Section usually locates the borings unless the L&D design is being performed by a consultant
- Provide careful oversight of consultants, particularly when boring locations are difficult to access

- Tooling and rig maintenance can be expensive; make sure you budget accordingly (typically around mid-March)
- Consultants may not always be available when you need them; build in coordination time accordingly or perhaps seek help from another DME
- Build in schedule for private property access notification; railroad property access is especially time-consuming; notifications may be coordinated through CO, District ROW, or District Survey.

Geotechnical Engineering

Responsibility

- Oversee the District Geotechnical Engineering Program in accordance with [MOI Chapter III - Geotechnical Engineering](#)

Actions

- Establish investigation scope, budget and schedule; coordinate with Project Manager
- Perform geotechnical investigations with VDOT drilling crews and/or oversee investigations performed by consultants for specific projects
- Use on-call geotechnical contracts to perform investigations and complete laboratory testing
- Provide geotechnical expertise to quickly and efficiently resolve geotechnical problems
- Perform special investigations for emergency response (sinkholes, slope failures, etc.)
- Initiate request for proposals from consultants; review proposals for compliance with on-call contracts; execute notice to proceed; monitor progress; review reports; review and approve invoices
 - Resource: [On-call Contract Site](#)
- Review and sign/seal final report (by VDOT only) and plan sheets
- Upload gINT logs, including design-build and P3 projects to Central Office Materials Geotechnical Database internal folder [||501-ric-nas1|WAP00834|Public|CO Materials Geotechnical|GDBMS]
- Answer questions from consultants, developers, bidders, design builders and contractors
- Review designs by localities, counties, etc.

Resources

- [Geotechnical Software Support](#) - will need to scroll down until you see the Geotechnical Software Support section
- Load Resistance Factor Design (AASHTO)

Guidance and Helpful Hints

- Coordinate with the District MegaProject Manager and/or District L&D Engineer early in the process to ensure the timely initiation of the geotechnical engineering required for P3 projects. P3 projects are typically fast tracked and unknown until late in the process
- It is very important to put a lot of time and effort into the Geotechnical Engineering Data Report for design-build projects to ensure it is accurate and correct. You will have to live with this document for the duration of the project. It is difficult to anticipate all issues with minimal plan details (often just project limits with no plans)
- Typically, investigations take longer than anticipated and involve unknowns. Allow a healthy contingency

- Reach out to other DMEs as resources for things you are not familiar or comfortable with. Usually, someone else has completed a similar project. Ensure adequate time is allotted for peer reviews on complex projects
- Every district has unique geotechnical challenges and contractor resources/expertise, so solutions will vary across districts
- Coordinating bridge borings and testing with bridge designer can alleviate potential issues
- Meet with the Design and Construction Sections early during the design phase to discuss geotechnical challenges and recommendations. Early understanding of geotechnical issues can often help guide the project design and avoid significant changes to the plans late in the development process.

Pavement Design and Evaluation

Responsibility

- Oversee the District Pavement Design Program in accordance with [Chapter VI of MOI, Pavement Evaluation and Design](#)

Actions

- Use on-call pavement engineering contracts to perform investigations and complete laboratory testing
- Apply pavement type selection procedures including Life Cycle Cost Analysis and alternate design consideration
- Provide minimum pavement sections for design-build and P3 projects
- Provide pavement design expertise to quickly and efficiently resolve pavement engineering problems
- Perform special investigations for emergency response (cores for failing pavements, etc.)
- Establish investigation scope, budget and schedule; coordinate with Project Manager
- Initiate request for proposals from consultants; review proposals for compliance with on-call contracts; execute notice to proceed; monitor progress; review reports; review and approve invoices
 - Resource: [On-call pavement contract site](#)
- Review and sign/seal final report (by VDOT only) and plan sheets
- Upload final reports to [Pavement Design and Evaluation Program database](#)
- Answer questions from consultants, developers, bidders, design builders, and contractors
- Review designs by localities, counties, etc.

Resources

- [Pavement Design and Evaluation Documents](#) - will need to scroll down until you see the Pavement Design and Evaluation section
- [Pavement Design Guide](#)

Guidance and Helpful Hints

- Early coordination with the District MegaProject Manager is essential to early initiation of pavement design engineering required for P3 projects since these are typically on a fast track schedule and are often unknown until late in the process
- It is very important to put a lot of time and effort into the minimum pavement section design for design-build projects to ensure that these are accurate and correct; you will have to live with this design; difficult to anticipate all issues with minimal plan details (often just project limits with no plans)
- All investigations take longer than anticipated and typically involve unknowns; allow a healthy contingency
- Use other DMEs as resources for things you are not familiar or comfortable with; likely somebody else has completed a similar project; consider peer reviews for complex projects (if there is time)
- The AASHTOWARE MEPDG software can be quirky and difficult to use; check with AASHTO 1993 pavement design methodology and/or use personal experience; Materials Division Pavement Design and Evaluation staff are very helpful with resolving issues
- Every district has unique pavement engineering challenges and contractor resources/expertise so solutions will vary across the state (CTA, concrete, asphalt, etc.)
- What has worked well in the past will likely serve you well in the future
- For annual PD&E investigations, coordinate with District Pavement Manager to ascertain budget, schedule, and potential pavement sections

Plan Reviews

Responsibilities/Actions

- Review preliminary engineering plans for compliance with VDOT specifications and standards (includes in-house designs, consultant designs, design-build, P3, developers, permits, counties, local assistance program (LAP), etc.)
- Check that recommendations in the geotechnical engineering report have been implemented correctly and accurately in the plans (to include pavement designs)
- Perform bidability review to ensure correct specifications, copied notes, and special provisions are used

Guidance and Helpful Hints

- Plans may be difficult to review electronically and it could be more efficient to review hard copies. Request hard copy plans if preferred
- Review form comments are formatted differently for L&D and P3 projects. Each P3 project typically has their own format as well as some design-build projects
- Submission quality varies greatly; some require more work to get in shape, especially for developers or consultants less familiar with VDOT requirements
- It may be challenging to discern what is being proposed/submitted for design-build projects. Some have less than the required detail to minimize costs. If you are unsure, ask for clarification.
- Urban districts can have several hundred reviews per year
- Plan reviews are typically performed with VDOT Materials staff
- Plans/contract must meet design requirements (e.g. minimum CBR value for borrow)
- It is often better to include too much information (sawcut locations, pavement tie-ins, showing UD in plan sheets, etc.) than to provide too little detail

- Meet with the Construction Section when performing constructability reviews to make sure geotechnical recommendations align with the Phasing and Maintenance of Traffic shifts of the construction project.

Field and Plant Quality Assurance Management

Responsibility

- Oversee District Materials' field, plant and laboratory quality assurance programs to ensure, through tests and observations, that materials used in the construction and maintenance of Virginia's roadway system conform to the requirements and performance expectations set forth by contracts, specifications, and quality standards

Actions

- Review and approve mix designs for Hot-Mix Asphalt (HMA), Hydraulic Cement Concrete (HCC), and Central-Mix Aggregate (CMA)
- Ensure all District Materials' field, plant and laboratory supervisors and technicians are knowledgeable, adequately prepared, and capable of carrying out the following assignments related to materials sampling, testing, or inspection:
 - Field
 - Monitor project inspection, Independent Assurance (IA), and/or Verification Sampling and Testing (VST) programs for test frequency and result compliance
 - Perform routine verification of inspection and contractor certifications and qualifications in the field
 - Review construction submittals (special items, shop drawings, etc.), if requested, for compliance with approved construction plans
 - Provide and maintain field equipment
 - When providing equipment to consultant inspection, check contracts to ensure VDOT responsibility for supplying field equipment - varies by district. Contact your District Consultant Inspection Coordinator for guidance
 - Plant
 - Inspect production facilities and approve QA/QC plans for HMA, HCC and CMA plants
 - Perform routine monitoring of the facilities, equipment and plant personnel for compliance with standards and specifications
 - Work with Materials Division to oversee structural production facilities (steel, precast, prestressed, etc.) and miscellaneous suppliers
 - Laboratory
 - Maintain relevant AASHTO:resource accreditation
 - Train, certify, and equip staff to carry out consistent and accurate routine lab testing of sampled materials for comparison with contractor test results to confirm that sampled materials comply with specification and IA requirements
- Ensure the compliance, maintenance and enforcement of the Bonded Weigh and Nuclear Safety programs at the district level
 - Resources:
 - [Bonded Weigh Program Training Manual](#)
 - [Radiation Protection Program Manual](#)

Resources

- [Materials Manual of Instructions \(MOI\), Chapters 1-5](#)
- [On-call Contracts for transporting samples](#)

Contacts

- Materials Division Physical Lab Manager, Soils Lab Manager, Chemistry Lab Manager, Asphalt Lab Manager
- Materials Division Structures Section and Quality Assurance Section
- Regional Lab Managers
- District Materials Quality Assurance Managers

Guidance and Helpful Hints

- When in doubt, reach out to neighboring DMEs with questions or situations you are unsure about. More often than not, at least one other district has addressed the problems, questions or issues you face
- Have routine meetings with supervisors in charge of the field, plant and lab sections to understand their processes, challenges and needs on no less than a monthly basis (preferably weekly)
- Read Chapters [I](#) and [II](#) of the MOI
- Cross-training between materials (HMA, HCC, and CMA) will help workload during busy periods or during vacancies
- Review field supplies/equipment with Quality Assurance Manager to include in annual budget (typically mid-February)

Lab Support

DMEs Lab support responsibilities vary by district. All districts have limited asphalt and concrete lab testing capabilities. The following districts have full service regional labs:

- Culpeper (serves Culpeper, Northern Virginia, and Fredericksburg districts)
- Salem (serves Salem, Staunton, and Lynchburg districts)
- Materials Division (serves Central Office, Richmond and Hampton Roads districts)
- Bristol (serves Bristol district)

Responsibility

- Oversee District Materials' laboratory quality assurance testing programs to ensure tests are performed in accordance with published test procedures set forth by contracts, specifications, and quality standards

Actions

- Investigate differences in test results between the VDOT laboratory and producer (or consultant) laboratories
- Coordinate sample retrieval, testing, and test reporting between VDOT Materials Project Controls and VDOT laboratory
- Monitor and recommend certifications/training for laboratory technicians, especially when new skills become required due to changing material specifications and tests
- Maintain laboratory accreditation through Cement and Concrete Reference Laboratory (CCRL) and [AASHTO resource](#)

Resources

- [Materials Manual of Instructions \(MOI\), Chapter VIII](#) - Reports and Forms
- [Virginia Test Methods](#) (VTMs)
- [Virginia Calibration Methods](#) (VCMs)
- AASHTO Standard Test Methods and Specifications
- American Society of Testing and Materials (ASTM) Standard Test Methods and Specifications

Contacts

- Materials Division Engineers, specifically Asphalt Field Engineers
- Materials Division Physical Lab Manager, Soils Lab Manager, Chemistry Lab Manager, Asphalt Lab Manager
- Virginia Transportation Research Council (VTRC) Scientists and Researchers - can provide advanced testing information

Guidance and Helpful Hints

- Materials Division central lab offers more advanced testing capabilities (i.e., chemistry, soil mechanics testing, etc.)
 - Contact the respective Program Manager for a comprehensive list of Materials Division lab testing capabilities
- Trust the knowledgeable staff in each district and reach out to other DMEs to gain a full understanding of what is being measured, how it is being measured and who is responsible for what

- Question technicians to know why they are doing something a certain way. Do not accept "this is the way we have always done it" as a response to a procedure or test. Test specifications and procedures change
- Limited lab testing consists of field concrete cylinder breaks and asphalt plug density testing
- Mobile compression machines for concrete cylinder testing may be located in remote areas throughout the district
- Review equipment and lab supplies inventory with Quality Assurance Manager to include repair, replacement, or supplies in annual budget (typically mid-March)

Construction/Project Support

After the project is awarded, DMEs, as a member of the Project Delivery team, ensure projects are constructed according to the Materials Division's [Manual of Instructions](#) (MOI).

DMEs support the following project delivery types:

- Design-Bid-Build (Regular Advertisement Award Process (RAAP) or Special Advertisement and Award Process (SAAP))
- [Design Build/Public-Private Transportation Act \(PPTA or P3\)](#)
- [Locally Administered Projects \(LAP\)](#)
- [Land Development](#)
- State Force Projects

General resources that apply to every subsection; specific references are listed in the subsections

- [Chapter VII of MOI: Materials Acceptance and Materials Notebooks Program](#)
- [Materials Notebook Resource Document](#)
- [Materials Approved Lists](#)

Design-Bid-Build Projects (RAAP or SAAP)

The vast majority of VDOT projects are Design-Bid-Build (DBB); designed and advertised and constructed by VDOT.

Responsibility

- Ensure all District Materials' staff are knowledgeable, adequately prepared, and capable of carrying out the following actions related to materials notebooks, quality assurance, and oversight

Actions

- Materials Notebooks
 - Attend Pre-Construction Meeting
 - Review initial [C-25 Source of Materials](#)
 - Audit notebook quarterly during construction
 - Provide project support (materials approval, etc.) to project personnel
 - Review final notebook
 - Provide [TL-131](#) certification for federally-funded projects to FHWA administrator and contract administration
- Quality Assurance
 - Provide Verification/Acceptance sampling and testing
 - Perform Depth control testing
 - Perform Independent Assurance Checks
 - Verify certifications
 - Verify equipment calibrations
 - Observe contractor testing
 - Compare VDOT and contractor results

Contacts

- Area Construction Engineers (ACE)
- Construction Managers
- Project Inspectors

- District Contract Administration Section
- Materials Division, Documentation Section

Resource

- [Construction Manual](#)

Guidance and Helpful Hints

- Starting the project off correctly (at the Pre-Construction Meeting) is very important. Ensure that the contractor understands any special requirements.
- Auditing the notebook quarterly during the project will help limit errors in the final notebook, making acceptance simpler and quicker
- Coordinate with the VDOT project personnel to determine when sampling/testing can be performed
- Maintain an accurate inventory of testing equipment to help keep up with calibration of field equipment
- Remember the order of precedence for specifications (R&B Specs 105.11); don't forget supplemental specifications
- Be proactive to perform field reviews to ensure quality

Design-Build Projects (including PPTA and P3)

Design-Build (DB) projects are partially designed by VDOT, advertised, and then the Design-Builder completes the design and construction. Much of the DME's responsibilities are delegated to the Design-Builder's Quality Assurance Manager (QAM) and Geotechnical Engineer of Record (GEOR).

Responsibilities/Actions

- Geotechnical Engineering Investigations
 - Verify that geotechnical investigations and designs meet [MOI Chapter III](#) requirements
 - Verify that pavement designs meet the minimum pavement requirements in the Request For Proposal (RFP)
- Materials Notebook/Buy America Material Document Review
 - Support setup of QAM notebook
 - Audit QAM notebook quarterly during construction
 - Review final QAM notebook; ensure QAM certification
- Quality Assurance
 - Coordinate with DB QAM and VDOT ACE for VDOT verification and IA sampling and testing and depth control testing
- Oversight
 - Verify minimum quality control and verification sampling and testing by Design-Builder and QAM
 - Provide project support when requested
 - Troubleshoot potential issues
 - Provide annual evaluations of technicians assigned to perform IA testing and evaluation

Contacts

- DB QAM
- ACE

- Project Manager
- Materials Division, Documentation Section

Resource

- [Design Build QA/QC Manual](#)

Guidance and Helpful Hints

- Ensure that the QAM and GEOR understands VDOT requirements
- Stay in contact with project personnel to coordinate sampling/testing when materials are available
- If considering alternative pavement designs, follow [MOI Chapter VI](#)
- When troubleshooting, answer what you know and check with other resources and contacts when you are unsure

Local Assistance Projects

Local Assistance projects come in a variety of forms: they may be federally funded, state funded, or locality funded; additionally they may be VDOT-maintained or locality-maintained. Testing requirements depend on the table listed in the [LAP Manual, Chapter 13.2.2.](#)

Responsibility

- Coordinate with the locality and VDOT Project Coordinator to support materials acceptance, provide quality assurance, and technical oversight

Actions

- Materials Acceptance
 - Attend Pre-Construction Meeting
 - Review initial [C-25 Source of Materials](#) (if used)
 - Review final materials notebook when requested
 - Provide [TL-131](#) certification when required
- Quality Assurance
 - Provide verification and independent assurance sampling and testing when required
 - Review materials certifications when required
- Oversight
 - Provide estimates for Materials personnel oversight costs
 - Provide technical consultation when requested by LAP Project Coordinator
 - Support troubleshooting when requested by LAP Project Coordinator

Resource

- [Locally Administered Project Manual Updates and Materials Quality Assurance Plan Requirements](#)

Contacts

- VDOT LAP Project Coordinator
- VDOT LAP ACE
- Locality Project Manager
- Locality Project personnel
- Contractor

Guidance and Helpful Hints

- Level of involvement can vary depending on the locality
- Ensure that the locality and contractor understand materials acceptance requirements for each particular project (see table referenced above)
- Stay in contact with project personnel to coordinate any required sampling/testing

Consultation/Technical Guidance and Expertise

DMEs act as the district's main contact for matters relating to the proper handling, use, and documentation of materials. With customer service as a priority, sharing vital and relevant information with internal and external partners builds trust and confidence in VDOT.

Internal customers DMEs support include:

- District Engineer
- Assistant District Administrators
- Materials Division Staff
- Virginia Transportation Research Council
- District Maintenance Engineers
- Residency staff (REs, Land Use, etc.)
- Construction Staff
- Pavement Management
- Other DMEs

External customers/organizations DMEs support include but are not limited to:

- Transportation Research Board
- Research Advisory Committees (RAC)
- Asphalt Regional Conference
- Virginia Education Center for Asphalt Technology (VECAT) / Community College Workforce Alliance (CCWA)
- Localities

Responsibilities

- Lead District industry Co-op meetings (i.e. asphalt, concrete and aggregate)
- Provide technical assistance to district and VDOT Divisions
- Represent the agency as a materials expert to professional groups and the public
- Ensure internal and external customers are aware of materials work performed on roadways that pertain to them in a consistent, reliable, timely and easy to understand manner

Actions

- Stay informed of and communicate planned projects, events, and emergency response within your district
- Support District Construction staff in project delivery
- Attend and represent the agency in private sector organizations, such as the Transportation Research Board and the Virginia Transportation Research Council
- Attend regional conferences and boards
- Maintain effective communication with internal/external customers to ensure their needs are met
- Create training materials and opportunities for Construction, Materials and locality staff to assist with successfully delivering projects

Resources

- Transportation Research Board
- [ASTMs / AASHTOs](#)
- [Virginia Test Methods \(VTMs\)](#)

- Documentation from previous projects (i.e. photos, videos, test reports, etc.)

Guidance and Helpful Hints

- You may be called on to do presentations at conferences or meetings within or outside of VDOT. It's important to stay engaged and look for ways to explain technical information in an easy to understand way
- Try to schedule training opportunities for late winter/ early spring timeframe to maximize attendance from field staff and provide timely information for the start of construction
- Make training fun, incorporate games when possible. Use a "Jeopardy" style game to reinforce specifications or testing requirements.
- Recommend creating meetings with industry to better understand industry standards and disseminate that information within your district

Land Development

For subdivisions and other land development projects where a portion of the proposed roadway will be submitted for inclusion into VDOT's roadway network, VDOT design requirements and specifications must be followed.

Responsibilities/Actions

- Ensure that VDOT pavement design and geotechnical investigation requirements are met
- Ensure that materials documentation is sufficient
- Provide final acceptance review when requested by District or residency land development staff
- Review submittals from Permit staff for support of excavation systems and trenchless crossings of VDOT roadways
- Support troubleshooting when requested

Resource

- [Subdivision and Secondary Roads Pavement Design Guide](#)
- [MOI Chapter VI: Pavement Design and Evaluation](#)

Contacts

- District and residency land development staff
- Residency Permits staff

Guidance and Helpful Hints

- Sampling/testing for pavement design should be performed prior to beginning construction. If you wait until subgrade is ready, this may result in further excavation or re-filling
- Check land development plans for geotechnical items not covered in Secondary Pavement Design Guide, such as retaining walls, large cut/fill slopes, structures, large pipes, karst, etc.

Emergency Response

Responsibility

- Provide appropriate materials expertise to district staff in emergency situations, such as soil and rock slope failures, rockfall, pavement failures, retaining wall failures, sinkholes, flooding, bridge failure, etc.
 - Resource: Refer to the appropriate MOI chapter in [PE section](#) of this job book for resources related to these areas

Actions

- Proactively identify potential emergency situations
- Respond to requests from other VDOT staff
- Make in-person site visits
- Assess the situation
- Perform investigations
- Document findings and provide recommendations to requester
- Provide construction assistance, support, and contract administration
- Engage expert VDOT or Consultant staff as warranted, based on the emergency situation

Resources

- Case Histories, Geology maps, Division of Mines Resources
- On-Call Contracts for Soil Nails, assist drilling and testing for soil nail contract
- [National Highway Institute \(NHI\) Manuals](#) - for various designs such as, gabion baskets, buttress walls, etc.
- [Rockfall Characterization and Control \(TRB\)](#) is a helpful resource for western region

Contacts

- DME Listserv - utilize for general questions and inquiries regarding emergency response
- Geotechnical Community of Practice Listserv
- Resident Engineer/Resident Administrator
- District Environmental staff
- Location & Design Division, Survey section
- Materials Division staff
- District Maintenance Staff

Guidance and Helpful Hints

- You are relying on your skills and experience in this area because there is no "playbook"; you may not know all the answers, but it's important to know who to call on for those answers
- Have emergency contacts in place in advance (e.g. contacts for each quarry, asphalt plant, concrete plant, etc.), know VDOT organizational structure, "who to call for what"
- Have on-call emergency contracts in place (e.g., sinkholes and slope repairs, etc.)
 - Use standard details for small slope repairs (most districts probably have these)
- Sometimes you may have to do a design "on the fly" to get the road open again, especially with sinkholes because there is no statewide design standard. Use an [Insertable Sheet](#) to get a general idea of how to do it.
- If you have a question about paint or chemistry, call on Materials Division Chemistry Lab
- Develop a "Top 10 List" of repairs so that District Maintenance can prioritize budget
- Ensure that Residencies/Sections know who to call in case of an emergency

Administrative Duties

General administration functions span the DME's other areas of responsibility that involve budget and inventory management, managing staff and consultant contracts, and managing records in accordance with applicable federal and state laws and regulations.

More information on general responsibilities are included in the following subsections

- Training
- Managing Staff
- Business Administration Functions
- Records Management

Training

DMEs provide training on various aspects of the Materials Program, from scoping to project acceptance. The timing and frequency of training varies based on the needs of the district.

Responsibilities

- Ensure District Materials and project staff are properly trained in their respective responsibilities beyond maintaining their materials certifications
- Ensure District Materials laboratory staff are trained in their respective test methods once annually, and documented per [AASHTO resource](#) requirements

Actions

- Provide hands-on training and learning opportunities for Materials staff, including conferences, webinars, professional memberships, etc.
- Maintain training documentation of your Materials staff
- Provide instruction and training to inspectors on proper use of equipment, field testing, etc.
- Maintain Independent Assurance (IA) personnel lists and assess materials certifications needed within the district
- Include training funds in annual budget requests
- Administer materials training within your district to a variety of parties; at times provide training outside your district (Asphalt seminars, conferences, etc.)
- Provide training and support to various district and statewide training programs, including VECAT, CCWA, EDGE, VDOT scholars, and VDOT internships
 - Provide classroom training, demonstrations, on-the-job training, meetings, conferences, and workshops
- Attend career day/career fairs as requested by District Human Resources

Resources

- Materials Certification Courses (VECAT and CCWA)
- [VDOTU](#)
- [UVA Transportation Training Academy \(TTA\)](#)
- [AASHTO Transportation Curriculum Coordination Council \(TC3\)](#)
- National Highway Institute, FHWA, TRB, etc. - free webinars count as professional development credits for your PE
- VDOT Learning Partnership Program (LPP)

Contacts

- District Learning Manager
- District HR Manager
- Materials Division
- Industry Representatives (TRB, FHWA, VECAT, CCWA, etc.)- for current listing, refer to Materials Division
- District Contacts for industry representatives - internal document you will maintain
- Other DMEs

Guidance and Helpful Hints

- Get to know your HR and Learning Manager; develop good working relationships to help meet training needs
- Develop a training plan for EDGE, scholars, and interns based on their available schedule and your available work to ensure that important topics are covered
 - It's important to leverage these participants because they can assist when your staff are spread thin
- Recommend developing your own lessons learned documents to help clarify processes and provide training tools
- District co-operative meetings such as an annual Geotechnical Co-Op can improve communication and understanding between VDOT and industry partners
- District industry co-operative meetings (e.g. asphalt, aggregate) and annual District Inspector Conferences are great venues to disseminate training information/requirements
- Just-in-Time training on new technologies or specification/policy changes can help disseminate information and prepare project staff
- Many other opportunities to disseminate information (new specifications, changes to VDOT policy, contacts, etc.) are available
- Don't forget to keep yourself knowledgeable on new technology and emerging topics
- Use Pre-Construction Meetings and materials notebook reviews as learning opportunities for project staff
- Provide training opportunities for Materials staff to support current roles, develop new capabilities, and promote career growth/engagement

Managing Staff

Leading and managing your Materials team is critical to the successful completion of your job. More information on responsibilities, actions, resources, contacts, guidance, and helpful hints for managing staff are addressed in the [VDOT Employee Handbook](#).

Responsibility

- Manage staff, including overseeing staff performance, development, training, and succession planning according to VDOT policies

Actions

- Recruit, hire, and mentor for your staff
- Monitor work and productivity of Materials section staff
- Complete annual performance plans, and evaluations for direct-report employees
- Verify that staff time and leave are submitted and approved on time in [Cardinal](#)
- Approve employee travel expenses and reimbursements in [Cardinal](#)

- Meet with your staff and consultants on a regular basis to ensure deliverables/deadlines are met

Resources

- [VDOT Travel Guidelines](#)
- [Human Resources SharePoint Site](#)
- [MyCareerConnect](#)
- [VDOT University](#)
- [VDOT Organization Guide](#)
- [VDOT Payroll site](#)
- [VDOT Materials Certification School](#)

Contacts

- District Human Resource staff
- District Learning Manager
- District Payroll staff

Guidance and Helpful Hints

- Advocate succession planning and continuity through mentoring, nurturing talent, staff development and growth

Business Administrative Functions

Responsibility

- Ensure your Materials section has the materials, supplies, and labor needed for Materials activities

Actions

- Develop annual administrative budget for District Materials Section
- Proactively manage the Materials section administrative budget to ensure full utilization of allocations within a fiscal year
 - Resource: [Fiscal Division Procedures and Guidelines](#)
- Coordinate with appropriate Materials Division staff to ensure that consultant contracts are available to support the necessary services required for a project
 - Contact: Materials Division Contract Administrator or Business Manager
- Coordinate with other Districts or Sections within the District for other available consultant contracts to support the necessary services required for a project
- Coordinate and approve the purchasing of equipment and supplies for Materials section staff
 - Resource: [ASD Procurement Procedures Manual](#)
- Review and oversee materials inventory

Contacts

- District Procurement section
- District Inventory Manager
- District Equipment Manager

Guidance and Helpful Hints

- Establish and maintain relationships with staff in other District sections and Residency leadership. Encourage running questions by those people
- Perform budget reviews monthly to track current expenditures versus budget

Records Management

Responsibility

- Ensure necessary decision documents are retained in accordance with law, regulation, agreements, and policy
 - Resource: [Records and Information Management](#)—a site that includes policies and procedures, forms, retention schedules, contacts, and other helpful information

Actions

- Verify staff save appropriate project documentation in SharePoint and/or ProjectWise
- Work with District Records Coordinator to fulfill retention and disposal requirements

Guidance and Helpful Hints

- Copies containing confidential information need to be shredded. The agency's copy of the Form RM-3 is a record of authorized disposal and should be maintained according to the district's record management procedures
- Get to know your District Records Coordinator
- Use digital records as much as possible to save cost and space
- Discard soil samples and asphalt cores after engineering reports are complete; maintain rock cores for one year after construction is complete (verify that no claims are outstanding); some universities (or DMME) are willing to take rock cores in lieu of discarding these