

MATES

MICHIGAN DEPARTMENT OF TRANSPORTATION

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THE CHANGING ROLE OF MDOT IN MANAGING THE DESIGN AND CONSTRUCTION OF LOCAL ROADS

Most readers know that MDOT is somehow involved in administering the construction of county roads and city streets, but the details of this involvement are probably not well known. The source of financing for a project determines whether or not MDOT will be involved. Money for county road and city street projects can be raised locally, from state gas tax and license fees, from Federal aid, or a combination of the three. The engineering on local agency construction projects without Federal aid is, for the most part, not controlled by MDOT; however, Federal aid projects—by law—are controlled by MDOT. Exceptions to projects not involving Federal aid but administered by MDOT engineering are so called A, C, D and F funds under the Michigan Economic Development Program, which are controlled in a fashion similar to those with Federal aid.

Funding

Where do the funds come from for local agency road construction? State law says the county road system is the responsibility of each county road commission; city and village streets are the responsibility of the cities and villages and they may assess local property owners. County local roads must be financed at least 50 percent by local funds; townships may use general township funds, special township millage or property taxes. State gas tax and license fees are collected by the Secretary of State and distributed to local agencies by MDOT in accordance with state law. Finally there is Federal aid. Federal aid funds are provided for Federal aid secondary roads, and all 83 counties receive a portion based upon land area, rural population, and total road mileage. There are also funds for Federal aid urban roads based on population and funds for the critical bridge program. This article will not discuss funding to any further extent because it becomes very complicated and would require an article itself.

FHWA Responsibility

What about the responsibility for Federal aid work? The Federal Aid Highway Program Manual states that "The State highway agency has responsibility for the construction of all Federal aid projects and is not relieved of such responsibilities by authorizing performance of the work by or under the supervision of a county, city or other local public agency." This clearly assigns MDOT the responsibility for the use of Federal aid in the construction of local agency roads. Consequently, the Federal Highway Administration deals with MDOT in the administration of Federal aid work; it does not deal directly with the local agencies. If something goes wrong with a Federal aid project, even though it may be a local agency job, MDOT is held responsible.

The Manual also says "The state (or county or city under agreement with the state) cannot be relieved of its responsibility to ensure that the work is performed in accordance with the approved project plans, specifications and estimate. Therefore a full time publicly employed engineer must be assigned to be in responsible charge of the project at all times. Although the publicly employed engineer need not be assigned solely to that project."

Getting the Job Done

Now let us see how this works. First, the local agency selects the project, then makes its own determination as

to what work needs to be done and where. MDOT then reviews the project to ensure that it conforms with FHWA and MDOT guidelines. Upon approval, the local agency is then responsible for design of the project using a consultant or local forces, and then the MDOT reviews the design. At that point a grade inspection is conducted by a team that includes a staff engineer from MDOT Local Services Division, the project engineer from the local agency, and the MDOT resident engineer. The State's resident engineers on local agency jobs are the same resident engineers who are located in MDOT resident offices throughout the State and are responsible for MDOT projects. Project engineers employed by local agencies must meet certain requirements, included is the requirement that he or she be a registered professional engineer by the State of Michigan. The engineer may be employed part time by the agency or may be a consultant. If a consultant is used, the same consultant cannot be retained to perform the construction engineering activities; that is, the testing or other inspection and staking on the job. After the grade inspection is complete, the Local Services Division of MDOT puts the proposal together using MDOT standard specifications along with appropriate supplemental specifications and special provisions. Any deviations from the standard specifications requested by the local agency must be supported by special provisions approved by the Local Services Division.

MDOT then advertises and lets the contract. The contract is signed by the contractor, MDOT, and the local agency. The contract is between the contractor and the Department, as FHWA funds go only to MDOT. After the contract has been let, the Local Services Division generally has no further responsibility for the project, and the MDOT resident engineer assumes responsibility for administration of its construction. He or she must ensure that independent assurance tests are made, oversee the testing and inspection and do a project review. During construction, the local agency is responsible for signing construction documents for inspection, sampling, and testing. The local agency's project engineer is considered by MDOT to be in responsible charge of the project. The state reimburses counties for up to \$10,000 per year for the services of a professional engineer.

A Major Legislative Change

Most local agencies don't have large staffs of engineers, inspectors, and technicians, so how can they do their sampling and testing? At one time the MDOT Testing Laboratory did most local agency sampling and testing at standard fees whenever requested by a local agency. In 1983, however, the legislature passed a resolution mandating that MDOT no longer do testing for local agencies since such services were in competition with private industry (consultants). MDOT immediately ceased providing these services and the result was chaos on local agency projects. Many local agencies simply had no experience in dealing with anyone other than MDOT with respect to sampling and testing. There were not enough qualified consultants to do the work, especially in the northern part of the State. Subsequently, legislators from the Upper Peninsula requested that MDOT relax the mandate and provide sampling and testing services in areas where consultants were not available. Following that, certain other areas of the state requested the same consideration. The Testing Lab then required that MDOT district engineers provide a written statement, when requesting testing services for local agencies, declaring

that specific consulting services either were not available or could not be obtained by the time they were needed, and requesting that MDOT provide these services. The problem in determining which services should be provided by consultants and in what areas, and which services are to be provided by MDOT and in what areas, has not been completely resolved. The dividing of sampling and testing work between the State and consultants is still in an evolutionary process.

'Real World' Problems in Inspection and Testing

Let's now discuss some of the problems that we are faced with in ensuring that adequate sampling and testing is done on local services projects. First, the Bureau of Highways has been gradually reducing its number of employees and the MDOT Laboratory cannot provide the former level of services because it no longer has the staff. Next, when MDOT did the testing, trained inspectors were always available within a reasonable time. Now cities and counties must hire consultants to provide inspection services and there is no easy way to evaluate their abilities to provide services. The MDOT Laboratory uses the AASHTO Materials Reference Laboratory to evaluate its tests and testing equipment; however, the cost of such services is significant and most consultants will not become accredited until it is required. If it is required, there will be a number of smaller consultants who will probably not want to spend the money, meaning that the shortage of consultants will become even more acute. Consultants, of course, work for a profit and through necessity carry only enough staff to cover the average workload. If workloads increase, the existing staff will try to cover multiple jobs; often meaning that none of the jobs will receive proper inspection, or untrained personnel will be hired to take up the slack. We have had cases where inspections by contractors were submitted as though a consultant had done the inspection. We have had incidents where an inspector, in trying to cover both commercial and government work, became confused as to which requirements apply to which job. Sometimes private inspectors don't know the specifications to start with and can't take the time to learn them. As a result, material can be improperly inspected or tested and approved.

There have been problems with consultants trying to provide services on jobs where specialized material was used. One example is with steel 'see-through' bridge railings which must be made of a special steel tubing with very restrictive requirements in order to meet Federal impact strength specifications. Material must be specially ordered to meet a MDOT special provision. Testing is complex and time consuming and no commercial laboratories in this area have the capability for this specialized testing. MDOT has made arrangements with producers to set aside specific identified lots of material which are pretested by MDOT and then used for individual projects as needed. On local agency projects, unless the MDOT Laboratory is authorized to test the material, it would not be tested

and thus would not meet requirements for Federal participation in the cost.

Another problem relates to small projects in isolated areas, where there have been cases where estimates for inspection services by a consultant are greater than the construction costs. There have been problems where local agency consultant contracts did not contain adequate definition of the services to be provided by the consultant. In such contracts, there had been no statement as to whether the inspector would be on a project full time while work is in progress or if periodic visits would be sufficient. For unsatisfactory work, was the inspector supposed to reject, obtain a reject decision from the owner at the time, or simply mention the defective work or material in a report submitted after the fact? These issues are just a few of those that are often missed in a consultant/owner contract.

Sometimes a plant produces items for more than one project for different agencies at the same time. For example, prestressed beams are sometimes manufactured in a single plant and are used in projects in two or three different counties or cities. When the MDOT Laboratory does the inspection, they will inspect all the beams regardless of which county or city they are going to, or in some cases, if they are going to State jobs. If local agencies are contracting for their own inspection services, there will be multiple inspectors in the plant, there will be different qualities of inspectors, there will be excessive overhead as each inspector travels to the plant site, and there will be considerable idle time for inspectors while the plant is on other work.

The final problem to be discussed is one that seems to occur naturally with multiple party involvement. The FHWA authorizes funds to MDOT which then distributes them to local government agencies. Each local agency engages a consulting engineer to supervise the work, the consulting engineer then may hire a testing consultant for on and off-site materials and/or construction inspection. In that system, there are several layers of organizations involved in the job and, when something goes wrong, it is difficult to determine responsibility and there is often no clear way to assign the responsibility.

The preceding problems are just a few of those that we have encountered during the past few years as we have changed from an organization that does virtually all sampling and testing on local agency jobs to one that does only a small proportion. Problems that are still to be resolved include determining which jobs MDOT should legitimately do to comply with the spirit of the legislative resolution and determining which jobs should be done by consultants. After deciding which jobs should be done by consultants, we still have to determine how to evaluate them for competency and that in itself is a large problem.

-Fred Copple

-Lou Cook, Local Services Division

TECHADVISORIES

The brief information items that follow here are intended to aid MDOT technologists by advising or clarifying, for them, current technical developments, changes or other activities that may affect their technical duties or responsibilities.

SPECIFICATION UPDATE

Curing Compound on Concrete Patches, 4.52(4), dated 01-06-89. This specification requires the use of transparent curing compound for concrete patches which are to receive a bituminous overlay as part of the contract. The white curing compound tends to inhibit a good bond with asphalt resurfacing.

NEW MATERIALS ACTION

The New Materials Committee recently:

Approved

Duragrout
Greenstreak Street Drain and Geocomposite Deck Drain
Geoblock
Reinco Mulch Binder, Plus

Approved for Trial Installation

Red Hawk Full Depth Rubber Crossing

It should be noted that some products may have restrictions regarding use. For details please contact Don Malott at (517) 322-5687.

This document is disseminated as an element of MDOT's technical transfer program. It is intended primarily as a means for timely transfer of technical information to those MDOT technologists engaged in transportation design, construction, maintenance, operation, and program development. Suggestions or questions from district or central office technologists concerning MATES subjects are invited and should be directed to M&T's Technology Transfer Unit.

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