A Report on Ohio=s Construction Monitoring In its Non-Emergency AML Program

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A Review of Ohio's Construction Monitoring in Its Non-emergency AML Program

Purpose and Scope: The purpose of the review is to evaluate Ohio's AML construction monitoring in its non-emergency program to determine if inspections are at an adequate frequency and level of detail to monitor construction projects and document construction activity. The scope of the review concerns projects that were substantially completed after October 1, 2000.

Background: OSM has reviewed Ohio's AML construction monitoring several times over the years. In 1985, the first review revealed significant problems, including no set policy on monitoring, sporadic inspections, and infrequent reporting. Follow-up reviews in 1987 and 1988 showed significant improvements. We did not note any significant problems. The last review in 1990, while finding monitoring to be adequate, suggested improvements in monitoring inspection frequency, distributing the inspection workload more evenly, and photo documentation of projects. In 1992, Ohio issued Policy/ Procedure Directive (PPD) 92-1 concerning AML construction monitoring. This PPD specifies how the inspection schedule is established; how inspections are documented, including photo documentation; and how a variety of other requirements are documented. Since that time, Ohio's AML section has undergone several reorganizations and procedural changes, including the use of job diaries in lieu of loose-leaf inspection reports. However, none of these changes were formalized by new PPD's or changes to the 1988 Procedures Manual. In January 2002, Ohio adopted changes to its entire AML procedures manual, including those that involve construction monitoring. The manual will be reviewed on an annual basis and revised as needed.

Methodology: OSM selected one completed project from each of Ohio's eight project officers for review. The project officers provided access to their files and digital photo documentation. OSM reviewed each project file, noting the frequency of inspection, the level of documentation, the verification of requirements such as wage rates, material suppliers and subcontractors, contract quantities, and inspection during critical periods. We also discussed construction monitoring practices and procedures with the AML Program Manager, AML Environmental Supervisors for the North and South Regions, and the AML Engineers for the North and South Regions.

Discussion of Project Reviews:

Camp Zimmerman Project - The Camp Zimmerman Project involved placing 1700 lineal feet of chain link fence between a dangerous highwall and a recreational camp. The project cost was $29,528.40. It was substantially completed 231 days after it was authorized. The actual time it took to complete the contract could not be determined because the job was 80 percent completed with only site restoration left to do when Ohio was notified that work had begun. On three previous occasions, the contractor had notified Ohio that work was to begin, and inspections were conducted showing no work had started. As a result of this inadequate notification process, the inspector could not observe the critical work of anchoring the posts. The top strands of barbed wire were also installed in the direction of the highwall rather than the camp. The direction of the

barbed wire was not specified in the plans or specifications, so it was too late to change it without incurring additional costs. There were five inspection reports in the file on loose-leaf copies of the inspection diary. There were undated digital photos of the completed project that showed the fence and access areas. Field Order #1 and Change Order #1 were issued for a quantity deduct. Field Order #2 was issued to the contractor on the day of OSM's file review for the contractor's failure to submit his final paperwork, including payroll certifications, and lien waivers. The inspector, as of that date, could not verify these items. The appropriate weight tickets, and invoices for materials and supplies were in the file, however.

Depriest Project – This project involved constructing mine drains and stabilizing a slope around a private residence. The project cost was $49,011.35. It was substantially completed 72 days after receiving written authorization. The actual number of days worked on the project was 46 days. Ohio did 16 inspections during this 46-day period (every 2.9 calendar days). A substitute inspector did one inspection when the assigned inspector could not be there. These inspections were recorded in the job diary in addition to other contract information. Dated digital photos were also kept on a floppy disk. Field Order #1 and Change Order #2 were for a quantity deduction. The payroll certifications match the days and the number of personnel shown in the inspection reports. Certifications, weight tickets, and invoices were present in the file.

El Camino Drive Project – This project involved drilling and grouting in streets and around multiple residences in a neighborhood setting. The project cost was $243,069.50. The project was substantially completed within 91 days of authorization, with 52 days when work was actually done. The inspector was present for all work performed. Fifty-two daily inspections were done in this period (every 1.75 calendar days). Inspection reports were recorded in a waterproof notebook considerably larger than the job diaries normally provided. The inspector opted to use the notebook, as this type of project required extensive note taking that would not easily fit in the diary. The inspector kept a daily tally of casing, drilling, and grouting completed, and weight slips, compression tests, and drill hole reports, with house maps filed in chronological order. Payroll certifications matched up with the days and type of work reported. There were six field orders and two change orders issued for this project. The project file also contained a good project summary.

Freedom Coal Phase I/III Project - This project involved the reclamation of 46 acres of highly erodable strip mine land, construction of a sediment pond, channel cleaning, and repair of a breeched impoundment. The project cost was $497,635.90. It was substantially completed 515 days after authorization. This included a winter shut-down period of 116 days. The first work period covered 105 days and the second 232 days, for a total actual work period of 337 days. There were 66 inspections done in this period (every 5.1 calendar days). Inspection reports were recorded in the job diary. There were no reports shown for the winter shutdown period. In several instances, several days of inspections were combined in one diary entry, making it difficult to determine which day a reported activity was done. Digital photos were used to document construction activity, but many were not dated, which again made tying an activity to a particular date difficult.

This project had an inordinate amount of field and change orders, with 35 field orders and 14 change orders. This was mainly due to design inadequacies. Payroll certifications match up with the days and work reported, and the appropriate weight slips, certifications, and invoices were in the file. The file also contained a detailed account of a material substitution of lime screenings for commercial agricultural lime.

Mary Mahoney Shafts Project – This project involved constructing a long access road to two mineshafts, removing trash, and backfilling the shafts with rock. The contract cost was $23,864.75. The project was substantially completed 38 days after authorization. The period of actual construction occurred in a 21-day period where nine inspections were done (every 2.3 calendar days). The inspections were recorded using the job diary. Entries included arrival and departure times, photographic notations, and conversations with the landowner. The digital photos were also dated. There were two field orders and two change orders involving quantity deducts and extras. Payroll certifications match with the days and work done, and weight tickets and material invoices were on file.

Midvale Burning Gob Project – This project involved extinguishing approximately 200 cubic yards of burning coal refuse, regrading about three acres of spoil, installing rip rap, a temporary pond, culverts, and site restoration. The project cost was $44,850.50. It was completed 124 days after being authorized. The period when actual construction occurred was 57 days, during which 22 inspections were done (every 2.6 calendar days). Inspections were thoroughly recorded in the job diary, and dated digital photos of construction were also done. One report stated the contractor was directed to keep a bucket count of the burning refuse. There was an extra for this line item for 100 cubic yards, but from the reports it was not clear how this was verified. Payroll certifications matched up with the days and type of work reported, and the appropriate weight tickets and invoices were in the file. There were two field orders, and two change orders for this project.

Pauline Mine Project – This project involved reclaiming approximately 15 acres of old spoil, disposing of coal refuse, filling a mineshaft, rip rapping, and underdrain construction. The contract cost was $174,699.94. It was completed 157 days after being authorized. The period of actual construction covered 99 days, during which 33 inspections were done (every 3.0 calendar days). One inspection, done on July 17, 2001, was in a different printing style, but was unsigned so it was not clear if this was a substitute inspector. Inspections recorded in the job diary were brief, and photo documentation consisted of dated digital photos and unlabeled slides and prints. There were seven field orders and four change orders for this project, which were well documented. Payroll certifications matched the days and type of work done, and the appropriate weight slips and invoices were in the file. There was also documentation of landowner consent to leave brush piles on the site.

State Route 124 Seeps Project – This project involved dewatering strip pits, reclaiming approximately 15 acres of spoil, extensive rip rapping, construction of rock dams, and the use of paper mill sludge for resoiling. The project cost was $315,800.18. It was completed 254 days after being authorized. The period of actual work covered 212 days,

during which 51 inspections were done (every 4.1 calendar days). Only six of these inspections were recorded in the job diary. The rest were noted as visits in the inspector's logbook. However, they lacked narrative content. Digital photos of the site were sorted by date for six dates, but two of those dates were not listed as inspection dates (January 29, 2001, and April 12, 2001). There were four field orders and three change orders for this project. One of the field orders involved work stoppage for lack of traffic control. Weight slips and invoices were in the file, and payroll certifications matched the performance period.

Findings and Recommendations:

Finding: Ohio's inspection frequency on its non-emergency AML projects is adequate.

Discussion: Ohio's 1988 Policy and Procedures Manual, the 1992 PPD on AML Construction Monitoring, and the recently revised draft procedures manual, all require management to determine the expected number of inspections each week for a project that is under construction. Discussions with the AML Manager, the AML Field Supervisors, and the Construction Engineers revealed that no formalized frequency was pre-established. However, it was generally expected that sites would be inspected two to three times per week. The project reviews showed that inspections occurred from every 1.75 calendar days (daily during construction) to every 5.1 calendar days (one to two times a week). The reviews also showed that inspection frequency was greatest on projects with larger amounts of critical work requiring inspection, such as the drilling and grouting project or projects involving buried underdrains. The frequency decreased on projects that involved more earthwork, as those require less extensive inspection. The frequencies noted in the project reviews appear to be adequate in most instances.

Recommendation: Instead of establishing an arbitrary inspection frequency up front, management should focus on identifying critical work items that require inspection, and ensure that these work items are observed and documented. Ohio has indicated that this is what normally occurs, and that the procedures manual will be revised accordingly.

Finding: The level of project documentation is adequate in most cases.

Discussion: The level of documentation varied from excellent to poor. However, the majority of the documentation was adequate to record and verify the progression of project work, and to document those critical work items being performed. Of course, on the project where the contractor failed to notify the inspector that work had begun, this was not possible. And, for the project where the inspector failed to provide written reports, the documentation was inadequate. However, six of the eight projects reviewed had adequate documentation. Most of the reports were descriptive enough to give a third party a good idea of the job progress and site activities. It should be noted that these inspection reports are seldom requested or reviewed by management. However, the field supervisors are routinely updated on project status through conversations with the project officers, in addition to staff meeting updates. The majority of digital photos were dated

so they could be tied to the date of the inspection report. Some inspectors reported their arrival and departure times in their reports. Critical work items were reported and, in one case, arrangements were made for a substitute inspector when the assigned inspector could not be there. However, the project reviews could not verify that all critical work was inspected. On the project where the contractor was instructed to keep a bucket count of excavated material, it was not clear if or how the inspector verified this quantity. Weight slips, material invoices, certifications, lien waivers, and payroll certifications were appropriately contained in all files reviewed, except for the Camp Zimmerman project where the contractor failed to file his final paperwork. The true test of project documentation is when the contractor files a claim against the state. This seldom, if ever, occurs in Ohio's AML program, so it is impossible for this review to determine that project documentation would be sufficient to withstand this test. However, it appears that Ohio is adequately documenting most projects.

Recommendation: Ohio should develop an enforceable procedure to have contractors provide a timely notice of the commencement of work, and critical work items in particular. Ohio has indicated that bid documents will be amended to incorporate this suggestion.

Ohio managers should decide what level of documentation they want on their projects, and review inspection reports to ensure it is being achieved.

Finding: The job diary is inadequate to provide a legally defensible record of the project construction.

Discussion: The purpose of the job diary is to provide a permanent, unalterable record of construction activities. The bound pages do not allow for insertion of new or altered information that could occur with loose-leaf reports or computer records. As such, it should be legally admissible evidence in court. However, every project diary reviewed was falling apart, and many were water-stained. The dairies are also too small to provide sufficient space for the narrative, thus discouraging more detailed documentation.

Recommendation: Ohio should work with its inspection staff to devise a better way to record inspections, such as a larger, waterproof, permanently bound inspection book. Ohio has indicated that a committee has been established to revise the diary.

Finding: Ohio's inspection workload is still uneven.

Discussion: The inspectors for five of the eight projects reviewed had no other federal AML projects underway during the duration of the projects being reviewed. However, the inspector for the Pauline Project had four other federal projects underway during the duration of the Pauline Project. Two of these projects are still underway. The inspector for the Midvale Burning Gob Project also had one other project underway during the last 60 days of the Midvale Burning Gob Project. While this did not pose a problem, the

inspector with four jobs going simultaneously was stretched too thin. When critical work is being done on two projects at the same time, it is impossible for the inspector to be two places at once. There are also many times inspectors go long periods without an assigned project. During these periods, they investigate complaints, work on project development, and do other work such as coordinating with watershed groups.

Recommendation: Ohio should avoid having too many projects assigned to one inspector at the same time. Ohio has indicated that inspectors are often capable of inspecting three projects simultaneously. However, they will consider inspection frequencies and capabilities when scheduling construction, and assigning projects.

APPENDIX A

DMRM'S COMMENTS