



Minnesota Department of Transportation

Memo

Office of Audit
Mail Stop 190
395 John Ireland Blvd
St. Paul, Minnesota 55155

Office Tel: 651-366 4140
Fax: 651-366 4155

February 4, 2010

To: Thomas K. Sorel, Commissioner
Khani Sahebjam, Deputy Commissioner/Chief Engineer

From: Daniel E. Kahnke, CGFM
Audit Director

A handwritten signature in black ink that reads "Daniel E. Kahnke".

Subject: Audit of OMB Circular A-133
Single Audit Compliance Requirements
Fiscal Year 2009
Audit Report No. 10-800-60
(Responses Included)

This is the final audit report of the above stated subject. This includes the original audit report and the written responses from appropriate division directors.

This is being released in accordance with Administrative Procedure 2.84-3-P-1A on audit follow-up. Requests for copies of the audit report will be responded to by furnishing this final version of the audit report.



Department of Transportation

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December 22, 2009

To: Thomas K. Sorel, Commissioner
Khani Sahebjam, Deputy Commissioner/Chief Engineer

From: Daniel E. Kahnke, CGFM
Audit Director

Subject: Audit of OMB Circular No. A-133
Single Audit Compliance Requirements
Fiscal Year 2009
Audit Report No. 10-800-60

As agreed upon with the Office of the Legislative Auditor, we have audited the Minnesota Department of Transportation's (Mn/DOT's) compliance with specific Single Audit Compliance Requirements for the following federal financial assistance programs for the year ended June 30, 2009.

<u>Program</u>	<u>CFDA</u>	<u>Amount</u> <u>(Millions)</u>
Highway Planning and Construction	20.205	\$664.6
Airport Improvement Program	20.106	\$66.4
Federal Transit Investment Grants	20.500	\$32.0

In auditing compliance with regulations relating to federal award expenditures for the Highway Planning and Construction Program and Airport Improvement Program, we conducted a financial audit as described in the Government Auditing Standards 1.22(b), published by the Comptroller General of the United States.

The management of the Mn/DOT is responsible for Mn/DOT's compliance with these requirements. The Mn/DOT Office of Audit is responsible to express an opinion on compliance with these requirements based on the audit.

We audited the Single Audit Compliance Requirements for the following: Highway Planning and Construction, Airport Improvement, and Federal Transit Investment Grants as outlined in the Office of Management and Budget (OMB) Circular No. A-133, Audits of States, Local Governments, and Non-Profit Organizations.

The audit was conducted per discussion and agreement with the Office of the Legislative Auditor. This included a review for compliance with the Letter of Agreement and Stewardship Plan between the Federal Highway Administration and Mn/DOT.

The requirements and principles of OMB Circular No. A-87 (Cost Principles for State, Local, and Indian Tribal Governments) and 49 CFR Part 18, the "Common Rule" were part of the audit. The audit of compliance with these requirements was conducted in accordance with generally accepted government auditing standards; the Government Auditing Standards; and OMB Circular No. A-133.

Those standards and OMB Circular No. A-133 Compliance Supplement require the planning and performance of the audit to obtain reasonable assurance about whether material noncompliance with the requirements referred to above occurred. An audit includes examining, on a test basis, evidence about Mn/DOT's compliance with these requirements. We believe that our audit provides a reasonable basis for our opinion.

The audit included an assessment of internal controls over the collection and use of federal funds related to the following areas: Construction and Contract Administration, Federal Aid, Right of Way, Aeronautics, and selected Mn/DOT district and city/county highway construction projects.

In planning and performing the audit, we evaluated Mn/DOT's internal controls over compliance with requirements for the two federal financial assistance programs. The Mn/DOT management is responsible for establishing and maintaining effective internal control over compliance with requirements of laws, regulations, contracts, and grants applicable to federal programs. In fulfilling this responsibility, estimates and judgments by management are required to assess the expected benefits and related costs of internal control structure policies and procedures.

A sound internal control structure should provide management with reasonable, but not absolute, assurance that OMB Circular No. A-133 Compliance Supplement requirements are met and Mn/DOT policies and procedures are followed. The internal control structure can become inadequate or ineffective because of either changes in operating conditions or deterioration of the effectiveness of the design or implementation of policies and procedures.

Our audit finding statements relate specifically to the A-133 Compliance Supplement. These findings, observations, and other audit results were discussed as applicable with project management and personnel from Mn/DOT districts, as well as cities and counties.

We also discussed the findings, observations and other audit results as applicable with management and personnel from the following offices: Aeronautics, Construction and Innovative Contracting, Environmental Services, Finance, Land Management, Materials and Road Research, Technical Support, Transit, and the State Aid for Local Transportation Division.

Attachments and Exhibits

Exhibit I provides a list of the construction projects reviewed during the audit; a total of 18 projects were audited. Exhibit II describes specific items included in the construction project material testing review portion of the audit.

Attachment I summarizes Other Internal Control Issues Discussed With Management. These issues were considered significant enough to include in the Single Audit Report, but not rising to the level of significance of a finding. If left uncorrected, these issues could rise to the level of significance of a finding in future Single Audit reports.

We do not audit the same projects from the previous year's audit a second time when conducting follow-up on findings from the previous year's Single Audit. Instead, we audit different projects each year. If we identify the same findings, they are considered repeat findings at the Highway Planning and Construction Program or Airport Improvement Program level, applicable and of relevance to the entire Mn/DOT and state. Concerns repeated from the Fiscal Year 2008 Single Audit Report No. 09-800-71 are noted within and at Attachment II, Audit Follow up of Prior Year's Findings.

Note that 2 of 4 findings for this year, Grading and Base Materials Control and Concrete Materials Control, were repeated from last year. We noted significant improvements in environmental compliance.

Attachment III lists questioned costs, which totaled \$30.4 million. We questioned project costs for instances where improved compliance with requirements per state or federal law, project proposals, Mn/DOT requirements, or a combination thereof is needed. Attachment IV describes the applicability of the A-133 Compliance Supplement to the Single Audit in general and Findings I through VIII and Observations I and II for this year specifically.

Summary

In our opinion, except for the above concerns and the issues discussed in Findings I through VIII and Observations I and II, the Minnesota Department of Transportation substantially complied with the provisions referred to in the scope paragraphs and Attachment IV. With respect to items not tested, nothing came to our attention that caused us to believe that the Minnesota Department of Transportation had not complied, in all material respects, with those provisions.

cc:	N. S. Foster	File	Audited by:
	S. M. Mulvihill		Brian Cherry
	J. A. Skallman		Dave Christensen
	T. A. Henkel		Mike Johnson
	M. A. Barnes		Dave Wolvert
	B. J. Arseneau		
	P. R. Tschida		
	F. W. Pafko		
	T. D. Ravn		
	K. L. Shannon		
	S. M. Heurung		
	L. Davis-Johnson		
	T. L. Hatch		
	MaryAnn Frasczak		
	J. R. Nobles/J. S. Riebe, OLA		
	D. Turner, FHWA		

EXHIBIT I

Highway Construction Projects Audited Fiscal Year 2009

State Project Number	Federal Project Number	Project District	Location	Engineer	Contract Amount	Amount in FY 2009	Federal FY Authorized
TRUNK HIGHWAY PROJECTS							
6916-99	NH 0053 (311)	1	TH 53	Ted Sexton	\$5,369,559	\$6,282,132	2008
2901-18	BAP-STPX 2907 (104)	2	TH 34	Todd Vonasek	\$11,242,396	\$3,794,799	2007
8602-40	NH BRNH 0012 (302)	3	TH 12	Jim Labo	\$15,427,536	\$12,367,683	2008
6612-95	BRSTP 6608 (022)	6	TH 3	Jim Roberts	\$3,883,406	\$3,453,059	2008
4013-50	NH-BR 0169 (316)	7	TH 169	Chad Fowlds	\$17,930,588	\$4,422,189	2006
1003-28	STP-HSIP 8808 (063)	8	TH 7	Dave Johnston	\$13,381,251	\$12,149,865	2008
8608-21	BAP 8606 (002)	MW	TH 101	Dan Penn	\$56,415,615	\$11,558,380	2006
2713-83	NH 0012 (308)	MW	TH 12	Michael Beer	\$35,677,126	\$19,644,747	2007
1985-132	HPP BRNH (121)	ME	TH 494	Todd Grugel	<u>\$60,073,362</u>	<u>\$25,727,743</u>	2008
TRUNK HIGHWAY PROJECT TOTALS					\$219,400,839	\$99,400,597	
CITY/COUNTY PROJECTS							
170-115-08	STPX 5708 (173)	2	City of Thief River Falls	David Kildahl	\$3,162,450	\$2,069,984	2008
71-596-06	STP-HSIP86 (100)	3	Sherburne County	Rhonda Lewis	\$3,905,217	\$1,219,754	2007
14-611-20	BR 1408 (159)	4	Clay County	David Overbo	\$3,054,156	\$1,163,862	2008
159-080-13	STPX 5507 (056)	6	City of Rochester	Richard Freese	\$5,021,667	\$605,961	2008
07-682-04	STPX 0708 (007)	7	Blue Earth County	Alan Forsberg	\$4,271,769	\$4,194,449	2008
51-604-25	STPX 5108 (116)	8	Murray County	Randy Groves	\$1,126,005	\$1,071,315	2008
19-642-42	CA04 MN77 (100)	ME	Dakota County	Mark Krebsbach	\$16,292,448	\$5,375,715	2007
82-615-20	STPX 8207 (045)	ME	Washington County	Don Theisen	\$6,417,069	\$4,575,286	2008
13-614-06	STPX 1307 (155)	ME	Chisago County	Bill Malin	<u>\$3,079,802</u>	<u>\$2,463,842</u>	2008
CITY/COUNTY PROJECT TOTALS					\$46,330,583	\$22,740,168	
ALL PROJECTS REVIEWED GRAND TOTAL					\$265,731,422	\$122,140,765	

The above 18 highway construction projects were all field audited. The audit of State Project 1985-132 included costs associated with Post Tensioning Steel Strand used on State Project 8285-0080 and State Project 1985-132.

EXHIBIT II

Material Testing Items Audited By Project By Bid Item Fiscal Year 2009

State Project Number	Location	Project Bid Items Reviewed
TRUNK HIGHWAY PROJECTS		
6916-99	TH 53	Structural Concrete
2901-18	TH 34	Type SP 12.5 Wearing and Non Wearing Course Mixtures Aggregate Base Class 6
8602-40	TH 12	Bridge Slab, Structural, and Wearing Course Concrete Aggregate Base Class 6
6612-95	TH 3	Bridge Slab, Structural, and Wearing Course Concrete Aggregate Base Class 5
4013-50	TH 169	Bridge Slab, Structural, and Wearing Course Concrete Aggregate Base Class 5
1003-28	TH 7	Type SP 12.5 Wearing Course Mixture Aggregate Base Class 3 and Class 5
8608-21	TH 101	Type SP 12.5 Wearing Course Mixture Aggregate Base Class 5
2713-83	TH 12	Aggregate Base Class 5 Common Excavation
1985-132	TH494	Select Granular Borrow and Granular Borrow Structural Concrete Post Tensioning Steel Strand
CITY/COUNTY PROJECTS		
170-115-08	City of Thief River Falls	Structural Concrete Aggregate Base Class 3 and Class 5
71-596-06	Sherburne County	Aggregate Base and Shouldering Class 5 Select Granular Borrow
14-611-20	Clay County	Bridge Slab and Structural Concrete Epoxy Coated Reinforcement Bars and Reinforcement Bars
159-080-13	City of Rochester	Concrete Curb and Gutter Aggregate Base Class 2 Select Granular Embankment
07-682-04	Blue Earth County	Structural Concrete Concrete Pavement Regular and Irregular Width Dowel Bars Concrete Coring Aggregate Base Class 5
51-604-25	Murray County	Type SP 12.5 Wearing Course Mixture Aggregate Base Class 5
19-642-42	Dakota County	Type SP 12.5 Wearing and Non Wearing Course Mixtures Aggregate Base Class 5
82-615-20	Washington County	Type SP 12.5 Wearing and Non Wearing Course Mixtures Aggregate Base Class 5 Select Granular Borrow
13-614-06	Chisago County	Aggregate Base Class 5 Select Granular Borrow

The above items were reviewed for compliance with materials testing requirements. Concerns were discussed with the State Aid Engineer, State Construction Engineer, Office of Materials and Road Research Director, and project personnel.

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Immediately address and obtain compliance with grading and base materials control requirements. **Finding I: Pages 1 through 6**

Concerns noted about material testing for post tensioning steel strand meeting requirements. **Finding II: Pages 7 through 9**

Improvements needed for concrete materials control. **Finding III: Pages 10 through 12**

Need to comply with requirements for bituminous materials control. **Finding IV: Pages 13 and 14**

Concerns noted for Northstar Commuter Rail materials control. **Finding V: Page 15**

Need to pay contract item Mobilization correctly. **Finding VI: Page 16**

Need to improve documentation to support Northstar Commuter Rail payments. **Finding VII: Page 17**

Review administratively approved costs to determine if they comply with federal acquisition regulations. **Finding VIII: Page 18**

Opportunity to improve the accuracy of costs charged to projects. **Observation I: Page 19**

Settling claims after contract change costs are fully known could improve opportunities to recover costs. **Observation II: Page 20**

Attachment I: Other Internal Control Issues Discussed With Management - Pages 21 through 23

Attachment II: Audit Follow up of Prior Year's Findings - Page 24

Attachment III: Questioned Costs - Pages 25 through 27

Attachment IV: A-133 Compliance Supplement – Pages 28 through 30

FINDINGS

The following findings are considered financial and compliance in nature. Findings are intended to assess if financial operations are properly conducted; if financial data is presented fairly; and if all applicable laws, regulations and administrative requirements are followed.

FINDING I – IMMEDIATELY ADDRESS AND OBTAIN COMPLIANCE WITH GRADING AND BASE MATERIALS CONTROL REQUIREMENTS

Immediate and significant improvement in compliance with requirements is needed for grading and base construction items. Project personnel did not appear to be familiar with requirements. After the audit was completed, State Project 07-682-04 personnel completed some testing and documentation.

Project personnel related to us that missed tests and reductions in payments were normally addressed during project finalization, after work was completed. Federal requirements call for costs eligible for federal reimbursement to be net of all applicable credits.

We feel that for instances of repeated and widespread noncompliance involving multiple requirements, project personnel Grading and Base technical certifications should be evaluated. This area was evaluated for 15 of the 18 total projects audited. Concerns were noted for 13 of the 15 projects. Questioned costs totaled \$9.9 million.

Payment reductions need to meet specifications

For State Project 07-682-04 Aggregate Base Class 5 valued at \$186,000, an Average of 4 No. 40 sieve aggregate gradations fell outside specification. A required 5% price reduction totaling \$5,000 had not been applied.

A gradation worksheet illustrated the gradation failure but did not document any project personnel awareness of the gradation failure. A Random Sampling Acceptance Report documenting average of 4 gradations was not completed. Project personnel we spoke to did not communicate awareness of the failure.

For State Project 8602-40 Aggregate Base Class 6 valued at \$142,000, Average of 4 and individual aggregate gradations fell outside specification on multiple sieves. Project personnel had not yet applied a \$2,900 price reduction.

Grading and Base Engineering Unit personnel explained that aggregate gradations provide an indication of uniformity and stability.

For State Project 19-642-42 Aggregate Base Class 5 valued at \$739,000, bitumen content ranging from 3.2% to 3.4% on 3 of 4 tests failed to meet specification. Following the 3 failing test results in April and May 2008, 90% of the aggregate base was placed with no additional testing and no price reductions.

Project personnel indicated that they had blended passing material with the failing material to meet requirements. Office of Materials and Road Research personnel explained that additional testing should have been done to verify that the blending was successful.

Bitumen content testing rates need review. In the specifications, bitumen content price reductions relate exponentially to very small (0.1%) increases in bitumen content. For this reason, we feel the Schedule of Materials Control should emphasize increased testing rates to verify corrective action for bitumen content exceeding specification. Bitumen content exceeding specification can impact drainage of Aggregate Base.

For State Project 19-642-42, we also noted 100% extra Quality Assurance (QA) gradations (80 taken compared to 40 needed), as well as Dynamic Cone Penetrometer (DCP) testing that was not required because the proposal special provisions required Quality Compaction.

Grading and Base Reports were inaccurate, incomplete, or not done

The Preliminary Grading and Base Report serves as a testing plan for project personnel. The Final Grading and Base Report compares tests actually taken to tests required. Grading and base item quantities, minimum test rates and tests required are calculated and entered into the Preliminary and Final Grading and Base Reports manually. State Aid Division developed an automated Grading and Base Report and was in the process of implementing it.

For State Project 07-682-04, project personnel did not complete any required Grading and Base Reports. Project personnel related that:

- a. They did not complete them on any of their other projects.
- b. The reports are not used or reviewed that often.
- c. The reports are redundant, since testing requirements are specifically defined in the Schedule of Materials Control.

Requirements in the Schedule of Materials Control are often specifically defined (such as the method of compaction) and can be modified in project proposal special provisions. The Schedule of Materials Control provides testing rates but not the specific number of tests needed for a given quantity. The Office of Materials and Road Research reviews Grading and Base Reports.

After the audit was completed, project personnel submitted the Preliminary and Final Grading and Base Reports. However, the number of required gradations listed in the reports was incorrect and required moisture content testing was described as not applicable.

For State Projects 07-682-04; 51-604-25; and 8608-21, Grading and Base Reports were not done properly and tests were missed. For State Projects 2901-18 and 8602-40, Grading and Base Reports were not done properly but tests were not missed.

The Certification of Aggregates and Granular Materials need to be completed and submitted correctly

For State Project 2901-18, the Contractor's Certification of Aggregates and Granular Materials was not provided by the Contractor to the Engineer prior to placement of and payment for Aggregate Base Class 5 valued at \$993,000 as required by specification.

Project personnel explained that they noticed the Contractor had not submitted the certification and spoke to them about it after placement and payment occurred. Project personnel described the pace of the work and project staging as contributing circumstances. The contractor subsequently forwarded the certification.

The Contractor's Certification of Aggregates and Granular Materials was not completed and submitted correctly for the following additional State Projects: 8608-21; 51-604-25; 4013-50; 170-115-08; 82-615-20; 71-596-06; 2713-83; and 19-642-42.

In the Certification of Aggregates and Granular Materials, the Contractor attests to the Engineer that grading and base materials delivered to the project conform to specifications. The certification includes a summary of the number of QC gradations and a statement that the contractor understands that the grading and base materials will be sampled and tested by the Agency, with any needed corrective action required at the Contractor's expense.

Quality Control gradations were not done as required

For State Project 8608-21 Aggregate Base Class 5 valued at \$1.3 million, 57 of 194 (29%) required Quality Control (QC) gradation tests were missed and not submitted by the contractor to project personnel. Only 4 QC gradations were noted through December 11, 2006 when 30% or 31,406 cubic yards of Aggregate Base Class 5 had been placed and paid for. The Schedule of Materials Control requires 1 QC gradation per 550 cubic yards or 58 gradations for 31,406 cubic yards.

The gradations must be submitted by the Contractor to the Engineer prior to placement of and payment for grading and base items per specification. Project personnel asked us if this was a change to the specifications. We indicated that the change occurred in the 2005 specifications and that change was also described in the project proposal special provisions. Project personnel indicated that they did not read the special provisions and were not sure about compliance on their other projects.

Reliance on Quality Assurance gradations in the absence of or shortage of Quality Control gradations raises questions regarding compliance with federal requirements to separate agency and contractor testing.

In submitting QC gradations prior to placement of and payment for aggregate base as required, the Contractor proactively provides evidence to the Engineer that the material meets specification. Quality Assurance (QA) testing is done after material is placed into the roadway.

Similar conditions (required QC gradations either short or not submitted prior to placement and/or payment) were noted for State Projects 2901-18; 51-604-25; 4013-50; 170-115-08; 13-614-06; 71-596-06; 2713-83; 82-615-20; and 19-642-42.

Quality Assurance gradations did not meet requirements for 4 projects

For State Project 8608-21 Aggregate Base Class 5, 10 of 80 (13%) Quality Assurance (QA) gradations were missed. Project personnel misinterpreted random sampling gradation and specification requirements and used 17 lots (4 gradations per lot) plus 2 individual gradations rather than the required 20 lots (4 gradations per lot).

Also, the Preliminary Grading and Base Report incorrectly listed the number of gradations required because project personnel did not convert the aggregate base cubic yards unit of measure to tons.

Quality Assurance gradations were also missed for State Projects 07-682-04; 51-604-25; and 71-596-06.

Extraction for Bitumen Content testing not done for 2 projects

An extraction for bitumen content was not performed for State Project 8608-21 Aggregate Base Class 5. This condition was also noted for State Project 6612-95 Aggregate Base Class 5. The extraction is required for aggregate base incorporating recycled asphalt pavement. Office of Materials and Road Research personnel indicated that excessive bitumen can negatively impact drainage of the aggregate base. Project personnel felt there would be no concerns with drainage.

Dynamic Cone Penetration tests

For State Project 8608-21 Aggregate Base Class 5, 167 of 214 (78%) of required Dynamic Cone Penetrometer (DCP) tests were not done. 62 tests were done but 15 of these were uncorrected failures. DCP tests serve as a control over compaction of the Aggregate Base. Office of Materials and Road Research personnel explained that uncorrected failures did not count towards compliance with testing requirements.

Project personnel indicated that the personnel assigned to perform the DCP tests were unable to do so. Project personnel indicated that other personnel may have performed the tests but testing documentation could not be located.

Relative Density and Relative Moisture tests

For State Project 2713-83 Common Excavation valued at \$3.3 million, 17 of 90 (19%) Relative Density tests and 9 of 90 (10%) Relative Moisture tests were not done. Also, for Select Granular Borrow valued at \$744,000, 5 of 42 (12%) Relative Density tests were not done. Office of Materials and Road Research personnel explained that Relative Density and Relative Moisture tests provide control over compaction and density to a standard, helping to prevent additional consolidation and settlement.

Percent crushing tests were not done as required for 3 projects

Quality Control and/or Quality Assurance Percent Crushing tests required by the Schedule of Materials Control were not done as required for aggregate base items used on State Projects 51-604-25; 4013-50; and 07-682-04. Office of Materials and Road Research personnel explained that performing the tests help to verify that the requirements are met, as well as addressing the risk of contractors screening out crushed aggregate for more profitable uses.

Aggregate quality tests were not completed as required for 4 projects

Aggregate Quality tests required by the Schedule of Materials Control were not completed for aggregate base items used on State Projects 82-615-20; 8608-21; 4013-50; 07-682-04. Conducting aggregate quality tests provides assurance that the requirements are met. Project personnel felt that they were familiar with aggregate sources and were confident that quality requirements were met.

Moisture content tests were not completed as required

Moisture content tests required by the Schedule of Materials Control were not done as required for State Project 8608-21. 10 tests were required; 1 passing test and an uncorrected failing test were noted. Project personnel indicated that they planned to explain the basis of acceptance on the Materials Certification Exception Summary.

Office of Materials and Road Research personnel explained that moisture content tests served to verify that base materials were moist enough to achieve compaction, and indicated that uncorrected failures did not count towards compliance with testing requirements. Moisture content tests were also missed on State Projects 07-682-04; 51-604-25; and 2713-83.

Materials Certification Exceptions Summaries need to correctly list exceptions to grading and base materials control requirements

For State Projects 6612-95; 8608-21; 51-604-25; and 07-682-04, exceptions to material testing requirements for grading and base construction items were not all listed on the Materials Certification Exception Summary. The Contract Administration Manual, Grading and Base Manual and State Aid for Local Transportation Division Technical Memorandum No. 02-SA-01 require these exceptions to be listed on the Materials Certification Exceptions Summary.

State Project 07-682-04 personnel sent us a Materials Certification Exception Summary after our discussion with them and after completion of the audit. The submitted Materials Certification Exception Summary failed to address the following missed tests: Quality Assurance gradations; missed Quality Control and Quality Assurance Percent Crushing; and aggregate quality.

Listing missed tests on the Materials Certification Exception Summary assures conformance with the approved plans, specifications, special provisions, and the Schedule of Materials Control, as well as documenting resolution to nonconformance.

Recommendations

1. Operations Division Director and State Aid for Local Transportation Division Director, in consultation with Policy, Safety & Strategic Initiatives Division Director, develop and carry out an effective plan so that cities, counties, and districts comply with requirements for grading and base materials control, including the following items.
 - a. Involve the Grading and Base Engineering Unit to ensure that payment reductions for failing materials are appropriate and timely.
 - b. Preliminary and Final Grading and Base Reports are completed correctly and are properly submitted.
 - c. Contractors complete and submit the current version of the Contractor's Certification of Aggregates and Granular Materials prior to placement of and payment for grading and base construction items.
 - d. Complete all required Quality Assurance and Quality Control gradations; as well as Moisture Content; Dynamic Cone Penetrometer, Percent Crushing, Relative Density and Moisture; and Aggregate Quality tests.
 - e. Document exceptions to material testing requirements on the Materials Certification Exceptions Summary.
 - f. Implement the automated Preliminary and Final Grading and Base Reports.
2. Policy, Safety and Strategic Initiatives Division Director consider revising the Schedule of Materials Control to increase testing frequency to verify corrective action for bitumen content not meeting specification.
3. Operations Division Director and State Aid for Local Transportation Division Director evaluate Grading and Base Technical Certifications for project personnel involved in repeated occurrences of noncompliance. Consult with Engineering Services Division Director and Policy, Safety & Strategic Initiative Division Director. Take appropriate action as necessary to hold responsible personnel accountable.

Responses to Recommendations

Recommendation 1 a. through e.

Operations Division

District 2, 3, 6, 7 and Metro have reviewed this finding and recommendation and have taken steps to avoid these errors and oversights in future projects. The districts will be instructed to emphasize the importance of compliance with the requirements for grading and base material controls at pre-construction conferences, district construction meetings and during grading and base technical certification training.

State Aid for Local Transportation Division

State Aid for Local Transportation (SALT) has included the above findings in the 2010 Construction Reminders Memo that is available at the SALT Construction Website (http://www.dot.state.mn.us/stateaid/sa_construction.html) The 2010 Construction Reminders Memo will also be emailed to all of the local agencies just prior to the 2010 construction season.

Responses to Recommendations (continued)

Recommendation 1 f.

State Aid for Local Transportation Division

State Aid for Local Transportation has developed a spreadsheet that will determine the testing rates for grading and base items. The Grading and Base Testing Rates is available at the SALT Construction website: http://www.dot.state.mn.us/stateaid/sa_construction.html. In addition, a separate automated gradation report, including deducts, will be available on the website for the 2010 construction season.

Policy, Safety and Strategic Initiatives Division

The implementation of the automated Preliminary and Final Grading and Base Reports has not been completed. Review is currently in progress for both the SALT and TRACS applications to determine compliance with the G&B requirements for automated reporting.

Recommendation 2

Policy, Safety and Strategic Initiatives Division

The Grading and Base Unit, Materials & Road Research Office, is of the opinion that enforcing the currently required 1 per source is adequate protection for the design integrity of a project. Recommendations conveyed by the Grading and Base Unit when failures occur define the options to project personnel which may include additional sampling, testing and analysis.

Recommendation 3

Operations Division

As indicated in the response for recommendation 1, the districts will take steps to emphasize the requirements for proper grading and base control testing and documentation with both the contractors and construction inspection personnel through pre-construction conferences, construction meetings and training.

State Aid for Local Transportation Division

Mn/DOT's Construction Office provides training and certification of local agency inspectors. The Construction Office also keeps lists of the certifications and provides them to cities and counties annually through SALT. It is the responsibility of the local agencies to maintain qualified staff and assign only certified personnel to projects.

FINDING II – CONCERNS NOTED ABOUT MATERIAL TESTING FOR POST TENSIONING STEEL STRAND MEETING REQUIREMENTS

For Post Tensioning Steel Strand (“Steel Strand”) used on State Projects 1985-132 and 8285-80, agency testing was not done as required. Steel Strand in tension holds bridge concrete in compression. Questioned Costs totaled \$4.7 million for State Project 8285-80 and \$3 million for State Project 1985-132.

Background

State Project 8285-80 was awarded to construct Bridge Nos. 82856 and 82855. Bridge No. 82856 (the “first bridge”) was constructed first. Before construction of Bridge No. 82855 (the “second bridge”) began, State Project 8285-80 was cancelled. Subsequently, State Project 1985-132 was awarded to construct the second bridge.

\$4.7 million in Steel Strand was initially purchased for both bridges. Metropolitan District Construction personnel planned to use \$1.1 million (in surplus material on hand) of the \$4.7 million for the second bridge on State Project 1985-132.

The project proposal special provisions for both bridges require use of Steel Strand complying with American Society for Testing and Materials (ASTM) A416. ASTM A416 describes the following testing for Steel Strand: breaking strength and elongation; yield strength; and relaxation properties.

The project proposal special provisions for both bridges also require Agency testing as well as certified reports covering Manufacturer’s testing. Federal requirements state that agency testing should be done separately and independently from contractor and vendor testing to verify contractor/vendor testing.

Breaking strength testing measures the tension force recorded when a Steel Strand sample is pulled and breaks. This test indicates how strong the Steel Strand is. Relaxation property testing indicates whether Steel Strand will, after initial tensioning and anchoring, lose a minimal amount of tensioning over time.

Elongation measures how much the strand sample stretched before breaking. Preferably, the Steel Strand will not be too brittle and will stretch before breaking. Yield strength testing measures the amount of tension force needed to stretch a Steel Strand sample by 1 percent. This testing indicates whether the Steel Strand is too stretchy.

Agency testing not done on Steel Strand for the first bridge

Agency testing for breaking and yield strength; elongation; and relaxation properties was not done on Steel Strand valued at \$4.7 million for the first bridge. Office of Materials and Road Research (OMRR) personnel who would have performed the Agency testing confirmed this. They also indicated that the department did not inspect the Steel Strand manufacturing plants. This is a potential compensating control.

Metropolitan District Construction personnel indicated that they relied on the Contractor's Certification of Materials required by the project proposal special provisions that ASTM A416 requirements were met for the Steel Strand.

Agency testing not complete on Steel Strand for the second bridge

For the second bridge, Steel Strand performance concerns occurred during field inspection. Based on these concerns, the department decided to conduct agency testing (excluding relaxation property testing).

Agency testing results for Steel Strand to be used on the second bridge did not meet ASTM A416 standards. This created doubt regarding the validity of the Contractor's Certification of Materials assertion that ASTM A416 requirements were met.

Metropolitan District Construction personnel provided documentation that the Steel Strand was recycled. District personnel are currently purchasing replacement Steel Strand, and initial agency testing (excluding relaxation property testing) appears to meet ASTM A416 requirements. A complete set of Agency testing documentation for Steel Strand is not yet available because construction of the second bridge is ongoing.

Agency relaxation property testing has not been done, as Mn/DOT does not have the laboratory facilities to perform Agency relaxation property testing. Also, no outside consultant performed the testing.

The Materials Certification Summaries for State Projects 8285-80 and 1985-132 did not explain the basis for acceptance of Steel Strand with missed tests or failing testing results. The missed tests and testing results not meeting ASTM A416 requirements are not addressed with a reduction in payment for the Steel Strand.

Not performing Agency testing until after Steel Strand was placed and accepted jeopardized potential opportunities to recover failing Steel Strand costs. Procuring new Steel Strand to replace Steel Strand not meeting ASTM A416 requirements will likely increase costs.

Recommendations

1. Operations Division Director perform the following actions:
 - a. Provide positive assurance that Post Tensioning Steel Strand used on Bridge Nos. 82855 and 82856 will function as designed. Coordinate with Policy, Safety & Strategic Initiative Division and Engineering Services Division Directors.
 - b. Provide statement addressing whether Steel Strand meeting requirements was used to replace recycled Post Tensioning Steel Strand not meeting requirements.
 - c. Verify performance of agency testing for steel strand on other existing bridges requiring agency testing per ASTM A416 and project proposal special provisions.
2. Engineering Services Division Director revise project proposal special provisions to emphasize the requirement to perform required tests on Post Tensioning Steel Strand called for by ASTM A416. Consult with Policy, Safety, and Strategic Initiatives Division Director and FHWA personnel.

Responses to Recommendations

Recommendation 1 a.

Operations Division

This is a joint response from the Engineering Services Division, Bridge Office and the Metro District Construction Office:

The steel post-tensioning strand that was installed on Bridge No. 82856 was supplied by the manufacturer with a Material Certification stating that the strand met the requirements of ASTM A416. As part of this Material Certification provided by the manufacturer, test results were provided for breaking strength, yield strength, and elongation properties of the strand with samples taken from the same lots of strand supplied to the project. Mn/DOT relied on this Material Certification and field measurements of elongations during stressing operations to accept the post-tensioning strand for Bridge No. 82856 and did not perform verification testing. Mn/DOT acknowledges that this practice was not in accordance with the project special provisions, which require one sample of each lot of strand to be tested and acceptance of each lot of strand based upon the breaking strength of the strand exceeding the required ultimate tensile strength.

The steel post-tensioning strand that has been installed on Bridge No. 82855 was also accompanied by a Material Certification from the manufacturer stating that the strand met the requirements of ASTM A416. In addition, Mn/DOT has performed tests on the strand to verify that the breaking strength, yield strength, and elongation properties met the requirements of ASTM A416.

A portion of the strand supplied for Bridge No. 82855 as part of S.P. 1985-132 was excess material-on-hand from S.P. 8285-80. This strand had been stored in Mn/DOT's possession since construction of Bridge No. 82856 and the age of the strand was approximately four years old prior to Mn/DOT testing.

Responses to Recommendations (continued)

As post-tensioned elements began to be constructed on Bridge No. 82855, Mn/DOT verification testing of the strand indicated that a portion of the materials did not meet the requirements of ASTM A416. In addition, field elongation measurements from stressing operations of some of the first post-tensioned elements also were outside of tolerance.

A portion of the post-tensioning strand from nonconforming lots was incorporated into bridge No. 82855. This strand was limited to the Pier 1 footing, the Pier 4 pier table, and the first segment upstation of Pier 4. The strand installed at the Pier 1 footing was installed before final tests results were received. The strand installed at Pier 4 was placed in order to keep the project on schedule and avoid costly delays while the new replacement strand was being produced. In addition, there were contingency plans in place to accommodate the nonconforming strand as described below. In April of 2009, the Engineer of Record reviewed the elements containing the nonconforming strand and determined that the Pier 1 footing and Pier 4 pier table were adequate as constructed. The Engineer of Record recommended adding additional strand as a conservative measure to compensate for the nonconforming strand in the first segment upstation of Pier 4. Mn/DOT agreed to this recommendation and proceeded accordingly.

In response to the failing tests and excessive field elongations, Mn/DOT decided to discontinue using the remaining strand leftover as material-on-hand from the first contract. New strand was then supplied for Bridge No. 82855 to replace the strand that was recycled and verification tests were performed by Mn/DOT with all lots of strand meeting the requirements of ASTM A416.

Mn/DOT is confident that the post-tensioning strand installed on Bridge Nos. 82855 and 82856 will function as designed. The strand supplied to both projects was accompanied with the manufacturer's Materials Certification and test results indicating that the strand satisfies the requirements of ASTM A416. Despite the lack of verification testing by Mn/DOT on Bridge No. 82856, the field performance of the strand as determined by measured elongations and potential wire failures during stressing provide no evidence to suggest any issues with the strand material used in the bridge. In addition, strand was supplied for both projects from the same post-tensioning supplier and was produced with the same manufacturing processes. There have been no nonconforming lots of strand when tested by Mn/DOT as the material is delivered. The only nonconforming lots of strand were material that was in storage for a considerable amount of time prior to verification testing. The material in storage is in a non-tensioned state and is wound in a coil. This strand is in a different condition than that of strand incorporated in the bridge, which is tensioned and bonded to the surrounding grout. Mn/DOT is not aware of any research suggesting degradation of strand that is in tension and bonded to the surrounding grout, other than that provided by the introduction of corrosive elements. Mn/DOT has no concern with the performance of the strand once it is incorporated into the bridge and kept in a non-corrosive environment.

Responses to Recommendations (continued)

Recommendation 1 b.

Operations Division

Steel post-tensioning strand supplied for Bridge No. 82855 as replacement strand for the material-on-hand from Bridge No. 82856 was supplied and certified by the manufacturer as low-relaxation strand in accordance with ASTM A416. Mn/DOT sampled the strand supplied to the project and performed tests to determine the breaking strength, yield strength, and elongation properties of the strand per the project special provisions. There have been no lots of the replacement strand tested by Mn/DOT that have failed to meet the requirements of ASTM A416.

Recommendation 1 c.

Operations Division

Breaking strength, yield strength, and elongation properties of post-tensioning strand were tested by the Mn/DOT Office of Materials and Road Research in accordance with ASTM A416 on other post-tensioned bridges constructed after Bridge No. 82856. The bridges with test results include Bridge Nos. 27V65, 27V66, 27V73, 27V75, 27V76, 27V79, 27409, 27410, 27411, 27412, 27414, and 82855. The strand incorporated into these bridges had passing tests results except for the above mentioned elements on Bridge No. 82855. Relaxation properties of the post-tensioning strand were not tested by Mn/DOT.

ASTM A416 provides relaxation property limits for post-tensioning strand classified as low-relaxation strand based upon a test with a 1000 hour duration. Section 6.5.1 of ASTM A416 states that “if required, relaxation evidence shall be provided from the manufacturer’s records of tests on similarly dimensioned strand of the same grade.” The relaxation properties of strand are dependent on the strand size, grade, manufacturing process, and base materials to produce the strand.

Mn/DOT does not currently have the laboratory facilities to test the relaxation properties of the strand. Mn/DOT is aware of only three such facilities in the United States that perform relaxation tests on strands. Due to uniform manufacturing processes, it is not the industry standard to perform relaxation tests for each project as a method for acceptance of the strand. In addition, a 42 day test (1000 hr) is not practical for field acceptance of strand as it would cause unreasonable construction delays and additional risk of corrosion of the strand. Industry standard is to deliver the strand to the site as needed to reduce the storage time in field conditions.

Responses to Recommendations (continued)

In 2007, the Post-Tensioning Institute (PTI) established a certification program to provide independent certification of a factory's manufacturing capability to produce strand. As part of this program, PTI requires a full 1000-hour relaxation test every 3 years or when there is a change in the manufacturing process or base materials used to produce the strand. The strand manufacturer is not required to perform relaxation testing on each lot of strand produced to be PTI certified. Mn/DOT has contacted several strand manufacturers and they typically perform relaxation testing annually or if they change their manufacturing process or base materials.

Mn/DOT's post-tensioning special provisions used on recent projects, as well as the FHWA Post-Tensioning Tendon Installation and Grouting Manual, does not require relaxation properties to be tested on each project for acceptance of the strand material. Mn/DOT has requested and received relaxation evidence from the manufacturer for the strand supplied for Bridge Nos. 82855 and 82856 as stated in Section 6.5.1 of ASTM A416. On future projects, Mn/DOT will require the contractor to provide test results from an independent testing laboratory that demonstrate compliance with the relaxation properties of ASTM A416. These test results shall be performed on similarly dimensioned strand of the same grade and manufacturing process as strand to be supplied to the project and shall have been performed within the previous 12 months.

Recommendation 2

Engineering Services Division

The 2009 Materials Control Schedule was updated to include both pre-stressing and post-tensioning strand sampling and testing. The Special Provisions have been discussed with the Bridge Office (authors) and the sampling and testing of the strand will be highlighted to make the requirements consistent with the Materials Control Schedule. The same tests will be performed for both in accordance with ASTM A416. The relaxation test (200 – 1,000 hours) is not required, but may be considered for inclusion by the manufacturer in the future.

Operations Division

Mn/DOT agrees with the recommendation to revise the post-tensioning special provisions to emphasize verification testing by Mn/DOT. The revised provisions will specifically identify verification of breaking strength, yield strength, and elongation properties of post-tensioning strand to ASTM A416. Mn/DOT will include a requirement in the special provisions for the contractor to provide test results from an independent testing laboratory that demonstrate the strand meets the relaxation properties required by ASTM A416. These test results shall be performed on similarly dimensioned strand of the same grade and manufacturing process as strand to be supplied to the project and shall have been performed within the previous 12 months.

FINDING III – IMPROVEMENTS NEEDED FOR CONCRETE MATERIALS CONTROL

We noted exceptions to requirements for 3 of 9 projects audited for concrete materials control. Project personnel did not act to ensure requirements were met. After the audit was completed, State Project 07-682-04 personnel completed some testing and documentation. Questioned costs totaled \$2.1 million.

Cores for thickness

For State Project 07-682-04 Concrete Pavement Standard Width valued at \$328,000; Concrete Pavement Irregular Width valued at \$68,000 (contract concrete items); and Structural Concrete valued at \$544,000, project personnel did not take cores for thickness required by the Schedule of Materials Control. The project proposal special provisions include a schedule of deductions for concrete thickness deficiencies.

Project personnel preferred not to take cores, commenting as follows: it made the concrete pavement look bad; the concrete used to replace the cores was not as good as the original uncored concrete; and Mn/DOT should devise an alternative method for verifying concrete thickness. District personnel seconded these comments.

Project personnel also commented that they did not take cores for thickness on other projects. The personnel explained that they used alternative methods for verifying thickness and asked us if they should document these methods.

Office of Materials and Road Research (OMRR) personnel explained that concrete pavement thickness control impacts design and performance. OMRR personnel also commented that even if alternative methods are developed in the future, some coring for thickness would still be needed.

In an August 25, 2009 memorandum, county personnel indicated that they would request permission from the concrete office to not take cores. As of October 15, 2009, Office of Materials and Road Research personnel indicated that the county had not contacted them to discuss not taking cores.

Payment reduction for air content falling outside specification

For State Project 07-682-04 contract concrete items, an air content test result of 9.0% exceeded the 5-8% specification range with no reduction in payment. Project personnel did not document any action taken or awareness of this condition. After the audit was completed, project personnel felt that the test was advisory and indicated that they would apply the payment reduction. State Project 170-115-04 project personnel explained that they normally handled payment reductions in the winter.

For State Project 170-115-08 Structural Concrete with a total value of \$271,000, air content test results of 3.5% and 4.0% fell below the 5-8% specification range. Project personnel noted that the test results were subject to payment reduction in April 2009 per specification but had not applied the payment reduction as of June 2009.

Project personnel should apply payment reductions timely to comply with federal requirements that costs be net of all applicable credits. OMRR personnel explained that air content exceeding specification range could impact compressive strength, and air content falling below specification range could impact freeze-thaw cycle effects.

Coarse aggregate testing on No. 200 sieve

For State Project 07-682-04, agency Quality Assurance (QA) coarse aggregate testing on the No. 200 sieve was not done. The testing is required per the Schedule of Materials Control and per specification. After the audit was completed, project personnel provided documentation of contractor coarse aggregate testing on the No. 200 sieve that did not meet QA testing requirements.

District personnel felt that the risk of results not meeting specification for this type of test was greater given economic conditions, with an increased incentive for contractors to use coarse aggregate with more material passing the No. 200 sieve because such material might be less expensive to use.

Office of Materials and Road Research personnel explained that amounts passing the No. 200 sieve for coarse aggregate exceeding requirements could impact cement paste bonding to coarse aggregates, leading to potential loss of compressive strength. Coarse aggregate testing on the No. 200 sieve was also missed for State Projects 6612-95 and 170-115-08.

Quality Control (QC) verification companion sample gradations

For State Project 07-682-04 contract concrete items, contractor QC verification companion sample gradations were not performed. Contractor personnel present during the audit confirmed that they did not perform the gradations on this project or on other projects.

Office of Materials and Road Research (OMRR) personnel explained that the QC verification companion sample gradations were required so contractors could test the same sampled material as the department and maintain awareness of results falling outside specification. OMRR personnel specifically felt the practice of contractors testing the same sampled material as the department reduced the risk of differences of opinion that could arise if agency sampled material did not meet specification and contractor sampled material did meet specification.

QC moisture testing for aggregates

For State Project 07-682-04 contract concrete items, contractor QC moisture testing for aggregates required by the Schedule of Materials Control was either not done or short the required number of tests for 11 of 18 production days involving 87% of the concrete.

OMRR personnel explained that QC moisture testing for aggregates is required to help control the water to cement ratio in concrete mixtures. The durability of concrete depends on maintaining a low water to cement ratio. Contractor personnel confirmed the missed tests. Project personnel felt the tests were a Contractor responsibility. No concerns were noted with concrete mixture water content.

Cementitious materials testing

For State Project 07-682-04, testing required by the Schedule of Materials Control was not done for the cement or fly ash used in producing the contract concrete items. Project personnel felt that fly ash, cement, air entraining agents, and water reducers come from certified sources. State Aid Division personnel felt that the ready mix concrete plants were certified but the materials used were not certified.

Cement and fly ash were also not tested for State Project 170-115-08. Cement and fly ash samples at the project office during the audit had not been sent to the Office of Materials and Road Research for testing. Office of Materials and Road Research personnel explained that testing of cementitious materials is needed to help ensure that the materials perform as designed.

Admixtures for concrete testing

For State Project 07-682-04 contract concrete items, testing required by the Schedule of Materials Control was not done for air entraining agents and water reducers used in producing the contract concrete items. Project personnel confirmed that the testing should have been done.

Air entraining agent used for State Project 170-115-08 Structural Concrete valued at \$271,000 was not tested. A sample of the air entraining agent at the project office during the audit had not been sent to the Office of Materials and Road Research for testing. Office of Materials and Road Research personnel explained that testing of admixtures for concrete is needed to help ensure that the admixtures perform as designed.

Recommendations

1. Operations Division Director and State Aid for Local Transportation Division Director develop and implement a plan to ensure that districts, cities, and counties complete the following requirements:
 - a. Conduct coring for thickness.
 - b. Assess payment reductions for materials not meeting air content specification.
 - c. Perform coarse aggregate testing on the No. 200 sieve.
 - d. Test cementitious materials and admixtures for concrete.
 - e. Direct contractors to perform Quality Control verification companion sample gradations and moisture testing for aggregates.
2. State Aid for Local Transportation Division Director, in consultation with Policy, Safety, and Strategic Initiatives Division Director, instruct Blue Earth County to document concrete pavement thickness in accordance with the Schedule of Materials Control and project proposal special provisions.

Responses to Recommendation

Recommendation 1 a. through e.

Operations Division

The Operations Division in consultation with the State Aid for Local Transportation Division will continue to work with the cities, counties and districts to emphasize the requirements for concrete material controls. The districts will be instructed to discuss these requirements at district construction, resident engineer and construction management group meetings. In addition we will request that the concrete materials requirements and controls be emphasized in the Technical Certification Program.

State Aid for Local Transportation Division

State Aid for Local Transportation has included the above findings in the 2010 Construction Reminders Memo that is available at the SALT Construction Website at: http://www.dot.state.mn.us_stateaid/sa_construction.html The 2010 Construction Reminders were presented at the January County and City Engineers' meetings and will be emailed to all of the local agencies just prior to the 2010 construction season.

Recommendation 2

State Aid for Local Transportation Division

Blue Earth County has determined the required pavement thickness as detailed in specification 2301.3P2 – Thickness Requirements. Braun Intertec was hired to cut the cores and measure the pavement thickness. The reports are on file in the Engineer's Office.

FINDING IV – NEED TO COMPLY WITH REQUIREMENTS FOR BITUMINOUS MATERIALS CONTROL

For State Projects 19-642-42 and 82-615-20, additional management attention would improve compliance with materials control requirements for bituminous mixtures. Project personnel did not take action to ensure compliance. Questioned costs totaled \$4.2 million.

Cores for Density and Thickness

For State Project 19-642-42 SuperPave (SP) Wearing Course Mixture valued at \$1.2 million, 28 of 168 (17%) cores for density and thickness were not taken. For State Project 19-642-42 SP Non Wearing Course Mixture valued at \$895,000, 36 of 111 (32%) cores for density and thickness were not taken. After the audit was completed, project personnel submitted additional cores for testing.

Office of Materials and Road Research (OMRR) explained that density testing provided an indication of pavement strength and durability. OMRR personnel indicated that thickness measurements provide a degree of assurance that bituminous mixture was delivered to the roadway.

Verification Testing

For State Project 19-642-42 SP Wearing Course Mixture, verification testing was missed for 3 of 30 (10%) paving days affecting 2,966 of 25,223 tons (12%) placed. For State Project 19-642-42 SP Non Wearing Course Mixture, verification testing was missed for 3 of 26 (12%) paving days affecting 4,784 of 20,197 (24%) tons placed.

Agency verification testing, required by specification, verifies Contractor Quality Control (QC) testing. Contractor QC testing is used for acceptance when QC test results are verified by Agency verification test results.

Asphalt Binder Performance Grade Substitution

For State Project 82-615-20 SP Wearing Course Mixture valued at \$1.3 million, project personnel allowed the contractor to use performance grade (PG) 58-34 asphalt binder. The project proposal special provisions called for PG 64-34 asphalt binder. As of May 2009, PG 64-34 asphalt binder cost 5% more than PG 58-34 asphalt binder.

For State Project 82-615-20 SP Non Wearing Course Mixture valued at \$872,000, project personnel allowed the contractor to use PG 58-28 asphalt binder. The project proposal special provisions called for PG 58-34 asphalt binder. As of May 2009, PG 58-34 asphalt binder cost 31% more than PG 58-28 asphalt binder.

Office of Materials and Road Research personnel explained that asphalt binder PG 58-34 asphalt binder provides more protection from thermal cracking than PG 58-28 asphalt binder. OMRR personnel explained that PG 64-34 asphalt binder provides more protection from pavement rutting than PG 58-34 asphalt binder.

A Supplemental Agreement was not done as required to document the change in asphalt binder performance grade. After the audit was completed, project personnel processed a Supplemental Agreement documenting the changes in asphalt binder performance grade for the SuperPave (SP) Wearing and Non Wearing Course Mixtures.

Asphalt Binder Performance Grade Testing

For State Projects 19-642-42 and 82-615-20 SP Wearing and Non Wearing Course Mixtures, asphalt binder performance grade testing required by the Schedule of Materials Control to verify performance grade characteristics was not done.

A July 9, 2008 letter from an asphalt supplier describes decreasing polymer supplies. Polymers are used for several types of performance grade asphalt binders, including 58-34 and 64-34. Polymers are not used for the more common asphalt binder performance grade 58-28, which is also generally less expensive because it does not include polymers.

When polymer supplies decrease, the risk of contractor substitution of less expensive Performance Grade (PG) 58-28 asphalt binder that does not include polymers for more expensive asphalt binders such as PG 58-34 that do include polymers could increase. We feel this increases the importance of asphalt binder grade testing.

Recommendation

State Aid for Local Transportation Division Director develop and implement a plan to ensure cities and counties perform the following actions:

- a. Comply with bituminous core density, agency verification, and asphalt binder grade testing requirements. Consult with Policy, Safety, and Strategic Initiatives Division Director as needed.
- b. Document changes to asphalt binder performance grade use as required.

Responses to Recommendation

State Aid for Local Transportation Division

State Aid for Local Transportation has included the above findings in the 2010 Construction Reminders Memo that is available at the SALT Construction Website at: http://www.dot.state.mn.us/stateaid/sa_construction.html. The 2010 Construction Reminders were presented at the January County and City Engineers' meetings and will be emailed to all of the local agencies just prior to the 2010 construction season.

FINDING V – CONCERNS NOTED FOR NORTHSTAR COMMUTER RAIL MATERIALS CONTROL

For the Northstar Commuter Rail project, required Certified Mill Test Reports and Welder's Certificates for Structural Steel were not available. Questioned costs totaled \$1.6 million. Submitting Certified Mill Test Reports and Welder's Certificates would aid Northstar Project Office personnel in verifying the quality of work in accordance with the contract.

The project contract requires certificates of testing, inspection or approval to be secured by the Contractor and promptly delivered to the Architect. The contract indicated that the Architect has the authority to reject work not conforming to the contract.

The contract explains that certifying an application for payment constitutes a representation by the Architect to the Owner, based on the Architect's evaluation of the work and the data comprising the application for payment, that the work has progressed to the point indicated and that the quality of work is in accordance with the contract.

Recommendation

Operations Division Director retain an additional \$1.6 million from payment until the Contractor provides Certified Mill Test Reports and Welder's Certificates applicable to Structural Steel.

Response to Recommendation

Operations Division

The Northstar Quality Coordinator recently performed a review and produced a Quality Assurance Report to address this finding. The report concluded that the submittal requirements of specification section 05120 – Structural Steel Framing for certified mill tests reports and welder's certificates for structural steel has been met. This additional information is available and on file.

FINDING VI – NEED TO PAY CONTRACT ITEM MOBILIZATION CORRECTLY

For State Projects 07-682-04; 6612-95; 8602-40; 4013-50; 51-604-25; and 8608-21, contract item Mobilization is not paid in a manner required by specification. In paying Mobilization, project personnel did not succeed in understanding and applying the specification. Questioned costs totaled \$4.7 million.

No overpayments of mobilization were noted. Instead, payments were either early or late according to specification.

Incorrect payment of Mobilization has been addressed in the Other Internal Control Issues Discussed With Management section of several past Single Audit Reports as well as with project personnel during field audits. This section of the audit report describes exceptions to requirements considered less significant than audit findings. Because compliance is not yet achieved, we address it as an audit finding this year.

During this year's Single Audit, the Office of Finance, Office of Construction and Innovative Contracting, and Office of Audit collaborated to produce a flow chart describing the correct payment method for Mobilization. Office of Construction and Innovative Contracting personnel also agreed to consider simplifying the Mobilization specification.

Recommendations

1. Operations Division Director and State Aid for Local Transportation Division Director instruct cities, counties, and districts to comply with requirements for Mobilization. Consult with Engineering Services Division Director.
2. Engineering Services Division Director consider simplifying the Mobilization specification.

Responses to Recommendations

Recommendation 1

Operations Division

As indicated in the Audit finding, the Office of Finance, Office of Construction and Innovative Contracting and the Office of Audit collaborated to produce a flow chart describing the correct payment method for mobilization. The Office of Construction and Innovative Contracting has revised Standard Specification 2021 Mobilization to be simpler and easier to interpret. In addition to the new tabular form indicating the amount of partial payments to be made, references to "Major contract items" have been removed. These changes should result in less confusion as to the partial payment amounts due the contractor for the lump sum bid item mobilization.

These revised specifications will be included in the special provisions for future projects and in the re-write of Mn/DOT's 2011 Standard Specification for Construction.

Responses to Recommendations (continued)

State Aid for Local Transportation Division

State Aid for Local Transportation has included the above finding in the 2010 Construction Reminders Memo that is available on the SALT Construction Website at: http://www.dot.state.mn.us/stateaid/sa_construction.html The 2010 Construction Reminders were presented at the January County and City Engineers' meetings and will be emailed to all of the local agencies just prior to the 2010 construction season.

SALT Finance has worked with the Mn/DOT Construction office to revise the spec' book to clarify Std Spec 2021 - MOBILIZATION - they anticipate the revised spec to be in effect for the 2011 season, but in the meantime a handout depicting a flowchart for the process has been given to the county accountants and is posted on the SALT website for the local agencies' reference at: http://www.dot.state.mn.us/stateaid/sa_construction.html

Recommendation 2

Engineering Services Division

The Office of Construction and Innovative Contracting (OCIC) has revised Standard Specification 2021 Mobilization to be simpler and easier to interpret. In addition to the new tabular form indicating the amount of partial payments to be made, references to "Major contract items" have been removed. These changes should result in less confusion as to the partial payment amounts due the contractor for the lump sum bid item Mobilization. OCIC will work with the Office of Technical Support to include these specification revisions in the special provisions for future projects and in the rewrite of Mn/DOT's Standard Specifications for Construction.

FINDING VII – NEED TO IMPROVE DOCUMENTATION TO SUPPORT NORTHSTAR COMMUTER RAIL EXPENDITURES

Improvements in documentation and invoicing are needed in two areas for Northstar Commuter Rail project expenditures. Questioned costs totaled \$154,000.

A \$59,000 railway company invoice for June 2008 flagging costs did not document employee names or overhead rates. Also, actual flagger wage rates appeared high relative to required minimum flagger wage rates per contract wage minimums. The Office of Management and Budget (OMB) Circular A-87 indicates that where employees work on multiple activities or cost objectives, a distribution of their salaries or wages will be supported by a monthly report signed by each employee showing activity by employee and total activity for each employee.

Calculation of interest expense valued at \$95,000 billed by and paid to Anoka, Hennepin, and Sherburne Counties, as well as the Metropolitan Council is not all documented on provided invoicing or elsewhere. Documentation of interest expense calculation as well as verification and attestation that there are no required offsets is needed to verify reasonableness of the interest expense. OMB Circular A-87 requires interest earned to be offset against current costs or capitalized interest as appropriate.

Northstar project personnel did not verify the existence of earnings on debt service reserve funds or interest earned on borrowed funds pending payment of the construction or acquisition costs that may need to be used to offset the interest expense.

Recommendation

Operations Division Director obtain required documentation to support payment of flagging and interest costs.

Response to Recommendation

Operations Division

This finding is focusing on a \$59,463.57 June 2008 invoice from the Burlington Northern Santa Fe Railway (BNSF) for flagging. Flagging work began by BNSF in April of 2008. Northstar staff reviewed each invoice in detail, comparing the invoice and hours worked with the days and hours the Northstar contractor did work. BNSF ran reports using their standard billing until, due to several irregularities and for ease of review, Northstar requested additional information in the bills. BNSF was able to provide additional detail by switching to Type 7 Authority but could only provide this information on billing moving forward, July 2008 and on. BNSF did correct the irregularities in the billing, in accordance with Northstar's comments, and was able to provide additional cross-referencing to make the June 2008 billing more usable.

The invoice in question does not include names, but rather a personnel code that identifies each employee (flagperson). Each entry includes a personnel number, date, number of hours charged, rate of pay (Rate), and a total cost. The Rate includes the actual labor rate plus overhead additive. No further labor additives are applied. For example, the first three entries on the subject invoice for June 5 are for employee number 37626. This employee worked a total of 16 hours, eight at regular rate and eight hours of overtime. The first eight hours are charged at regular time Rate of \$75.435 per hour.

Response to Recommendation (continued)

Most flagger rates are between \$22 and \$24 per hour. The BNSF overhead additive for flaggers, as evidenced by subsequent invoices, is 223.22 percent. Applying this overhead rate to the \$75.435 overhead burdened hourly rate yields a base hourly rate of \$23.38. The overhead rate is 1.5 times the base rate.

While there were many challenges to the total hours worked, the flaggers are paid from portal to portal from St. Cloud to jobsite (Coon Rapids, Anoka, Elk River, or Big Lake). In addition, they must arrive and depart before and after the contractor begins work in order to secure the work site. These operating constraints make for long hours with significant overtime.

Project staff has verified that the rates for June are reasonable by using additional documentation from subsequent months. No additional documentation is being sought – finding addressed.

Calculation of interest expense valued at \$95,000 billed by and paid to Anoka, Hennepin, and Sherburne Counties, as well as the Metropolitan Council is not all documented on provided invoicing or elsewhere.

This finding is for interest paid to project funding partners totaling \$94,723.60 who helped to cashflow Northstar. Prior to the payment of interest, the bills were reviewed by project staff, verified for reasonableness, and paid. Requests have been made of the funding partners for additional information; the status of those requests is as follows:

Sherburne County – Reasonableness check within 1% of \$4110.47 billed. The county provided additional documentation in the form of proof of payments, amounts, dates (by including a copy of their vendor payments recap from their general ledger accounting system), interest rate, calculations, and interest amounts for the principal funding time period. No additional information needed.

Anoka County – Reasonableness check showed Anoka’s \$15,857.27 interest payment was 10% less than anticipated. A spreadsheet recap was provided showing all principal amounts funded, dates, federal funds target interest rates used, time periods, and calculations of interest earned. Anoka also provided proof of payments, payment amounts, and dates by including a copy of their vendor payments recap from their general ledger accounting system. No additional information needed.

Hennepin County – Reasonableness check within 1% of \$24,176.03 billed. Provided spreadsheet recap of all principal amounts funded, dates, interest rates, time periods, and calculations of interest earned. No additional information needed.

Metropolitan Council – Charged \$39,426.62 of interest and \$11,153.21 of unrealized gain for a total finance charge of \$50,579.83 in 2007. Provided spreadsheet recap of financed cash balanced, interest rates, and interest calculated each month. They also provided a reasonableness check on unrealized gain using their general ledger accounting system showing investment earnings and the unrealized gain – within 10% of amount paid. No additional information needed.

Response to Recommendation (continued)

Northstar project personnel did not verify the existence of earnings on debt service reserve funds or interest earned on borrowed funds pending payment of the construction or acquisition costs that may need to be used to offset the interest expense.

An additional request has been made to each funding partner to verify the existence of earnings on debt service reserve funds or interest on borrowed funds that may have been used offset interest expenses.

Sherburne County attested that there were no interest earnings on borrowed funds. The other three funding partners have contacted and they indicate that they will be providing a response in the near future.

FINDING VIII – REVIEW ADMINISTRATIVELY APPROVED COSTS TO DETERMINE IF THEY COMPLY WITH FEDERAL ACQUISITION REGULATIONS

Federal project IVH 9127 (504) consultant agreements included \$38,000 in administratively approved costs that did not meet Federal Acquisition Regulations (FAR). For \$35,000 of the \$38,000 involving Agreement No. 72079 Work Order No. 3, costs were incurred prior to an executed agreement required by FAR between a consultant and a sub consultant. Questioned costs totaled \$38,000.

The FAR states that advance agreements may be negotiated either before or during a contract but should be negotiated before incurrence of invoiced costs. The agreements must be in writing specified by both contracting parties and incorporated into applicable current and future contracts.

The FAR also states that the contracting officer is not authorized to agree to a treatment of costs inconsistent with these requirements. This means that the costs are not eligible for federal reimbursement per the FAR and the Circular A-87. Office of Finance personnel agreed the concern about compliance with FAR is valid, but felt they could not address whether the costs in question were reasonable.

Compliance with FAR has been a concern on other federal projects. The department needs to establish procedures to ensure that only costs complying with the FAR are billed for federal reimbursement.

Recommendation

Chief Financial Officer, Operations Division Director, and Engineering Services Division Director ensure that costs billed for federal reimbursement comply with the Federal Acquisition Regulations.

Response to Recommendation

Operations Division

The Operations Division Director agrees that all costs billed for reimbursement must comply with Federal Acquisition Regulations (FAR). Mn/DOT's Chief Financial Officer has instructed the Office of Financial Operations staff to review the questioned costs for Federal Project IVH 9127 and correct if necessary.

Chief Financial Officer (CFO)

The CFO concurs that all costs billed for reimbursement must comply with Federal Acquisition Regulations; this requirement was defined as a part of the contract, however, the sub-consultant was reimbursed without a written agreement being executed. The CFO has instructed Financial Operations staff to determine whether this was billed as federal participating, and if so, recommends that the billing be amended to federal non-participating.

The CFO also suggests that the Contract Management Section send periodic reminders of FAR requirements to those who are responsible for contract administration.

OBSERVATIONS

The following observations are considered performance/operational in nature. Observations are intended to assess the economy and efficiency of an audited entity's operations, and the extent to which program objectives are being attained.

OBSERVATION I – OPPORTUNITY TO IMPROVE THE ACCURACY OF COSTS CHARGED TO PROJECTS

Costs totaling \$8.7 million charged to State Project 8285-80 should be charged to State Project 1985-132. Project personnel and accounting personnel did not provide adequate input and documentation for costs charged to State Project 8285-80 that should be charged to State Project 1985-132. There may be costs beyond the \$8.7 million specified below currently charged to State Project 8285-80 that should be charged to State Project 1985-132.

\$1.1 million of \$1.4 million in Steel Strand material on hand currently charged to State Project 8285-80 was brought forward for use on State Project 1985-132. The \$1.1 million should be charged to State Project 1985-132 because the strand was to be used on Bridge No. 82855, the main item constructed on the project.

Project personnel chose to charge the costs to State Project 8285-80 because the costs represented surplus material from State Project 8285-80. Office of Construction personnel preferred not to change coding of costs from State Project 8285-80.

Supplemental Agreement No. 61 of January 2009 for State Project 8285-80 includes \$5.3 million in costs associated with Bridge No. 82855 due to elimination of work; these costs should be charged to State Project 1985-132. In a December 2006 letter to the Contractor, work applicable to Bridge No. 82855 was eliminated.

\$2.3 million in participating costs for Bridge No. 82855 charged to State Project 8285-80 should be charged to State Project 1985-132. These costs were not transferred from State Project 8285-80 to State Project 1985-132 by other means brought to our attention.

Office of Finance personnel explained that they charged costs to projects based on information from partial estimate payment cover sheets. Partial estimate cover sheets did not fully document non-participating costs.

Recommendations

1. Chief Financial Officer, in consultation with Operations Division Director, correct errors in costs charged to as well as any errors in federal aid billing for State Projects 8285-80 and 1985-132.
2. Chief Financial Officer and Operations Division Director develop and implement policy to ensure that future cost charging to projects and federal aid billing is correct.

Responses to Recommendations

Recommendation 1

Chief Financial Officer

The CFO has directed finance staff to ensure that any billing errors associated with these projects have been corrected. The CFO concurs that steps should be taken to ensure that future projects' costs should reflect correct and accurate federal aid billing requirements.

Operations Division

I concur with the audit recommendation and will instruct the Metro Division to work with the Mn/DOT Office of Financial Management Staff to review the questioned costs for State Project 8285-80 and 1985-12 and make corrections if required in the Federal Aid billing.

Recommendation 2

Operations Division

The Districts will be instructed to emphasize the importance of the accuracy of costs charged to construction Projects. The Division will continue to work with the Office of Financial Management to ensure that departmental policies and procedures are followed

OBSERVATION II - SETTling CLAIMS AFTER CONTRACT CHANGE COSTS ARE FULLY KNOWN COULD IMPROVE OPPORTUNITIES TO RECOVER COSTS

In October 2008, Mn/DOT settled with the design consultant for \$20 million regarding design issues applicable to Bridge No. 82856 for S.P. 8285-0080. Related non participating supplemental agreement costs incurred applicable to the retrofit done to correct the design issues totaled \$29.6 million, leaving \$9.6 million in unrecovered costs.

Supplemental Agreements Nos. 39, 40, 49, 52 and 61 were not fully executed until after Mn/DOT had settled with the design consultant. The above five Supplemental Agreements were fully executed in January and February 2009, up to 4 months after Mn/DOT had settled with the design consultant in October 2008.

Recommendation

Engineering Services Division Director, in consultation with the Chief Financial Officer and Operations Division Director, develop a policy to defer contract claim settlements until construction changes needed to correct design issues and associated costs are known and fully executed.

Response to Recommendation

Engineering Services Division

Engineering Services will conduct further discussion with Mn/DOT's legal staff to determine validity to create a policy of this kind.

ATTACHMENT I

OTHER INTERNAL CONTROL ISSUES DISCUSSED WITH MANAGEMENT

Project Costs

For State Projects 8285-80 and 1985-132, costs overran up to \$71 million. The original contract amount of \$120 million for State Project 8285-80 increased by \$11 million to \$131 million. State Project 1985-132, awarded to complete work unfinished from State Project 8285-80, has a contract amount of \$60 million. Design concerns contributed to the \$71 million cost overrun.

23 Code of Federal Regulations (CFR) 635.205b indicates that plans and specifications shall describe the location and design features and the construction requirements in sufficient detail to facilitate the construction, the contract control, and the estimation of construction costs of the project. CFR 635.205b also states that the estimate shall reflect the anticipated cost of the project in sufficient detail to provide an initial prediction of the financial obligations to be incurred by the State and FHWA and to permit an effective review and comparison of the bids received.

QC fine aggregate gradations

Memorandums dating from 1994 to 1997 documented reduced required testing rates for concrete aggregate. Specifications allow for a reduction in testing rates if past results warrant, subject to approval by the Mn/DOT Concrete Engineer. This approval is based on extraordinary procedures performed by the aggregate supplier and ready-mix producer to insure consistency and quality control.

We feel that the department should consider approval of the reduced testing rates on a more frequent basis. A more frequent evaluation would help address the risk of changes in aggregate quality because more desirable aggregate is used first.

Reports not submitted to the Concrete Engineering Unit

For State Project 07-682-04 contract concrete items, the Weekly Certified Ready Mix Plant Reports and Test Beam Data were not submitted to the Concrete Engineering Unit as required by the Concrete Manual. The Concrete Engineering Unit uses these reports to monitor Quality Assurance gradations and concrete flexural strength. Required reports were not all submitted to the Concrete Engineering Unit for the following additional State Projects: 6612-95, 4013-50, 170-115-08, and 8602-40.

The Concrete Manual states that the reports provide information regarding progress of project work and material source history to track changes in sources used. Office of Materials and Road Research personnel indicated that they review the reports to identify test results falling outside specification and communicate with project personnel as needed.

ATTACHMENT I

OTHER INTERNAL CONTROL ISSUES DISCUSSED WITH MANAGEMENT

Page 2

Test Summary Sheets

For State Projects 51-604-25 and 19-642-42, Test Summary Sheets, used to document bituminous mixture Contractor Quality Control and Agency verification test results, did not include review signatures and did not include all Agency verification test results. Review of the Test Summary Sheets would readily identify missed verification tests, a condition noted for State Project 19-642-42 and discussed further in Finding IV.

Recycled Materials and Polymer Availability for Asphalt Binder

State Project 2901-18 personnel expressed concern about asphalt binder meeting performance grade requirements. Asphalt binder test results met 58-34 requirements, but the special provisions called for performance grade 64-34. Project personnel also expressed a generic concern about asphalt binder from recycled shingles meeting performance grade requirements. Office of Materials and Road Research (OMRR) personnel felt that even with use of recycled asphalt pavement and shingles, performance grade test results should meet requirements.

During the audit, we noted correspondence documenting a polymer shortage. Polymers are used in producing asphalt binders with properties that resist rutting and thermal cracking. OMRR personnel felt that the polymer shortage was temporary and had been resolved.

Material on Hand

An invoice was not provided \$390,000 in material on hand for Post Tensioning Materials for State Project 1985-132. The specifications require the Contractor to provide an invoice to substantiate payment for material on hand items. After we brought this condition to the attention of project personnel, the \$390,000 payment for material on hand was removed from partial payments.

Purchase Order Cost Coding

For State Project 1985-132, project documentation expressed concern about the correctness of cost coding for Post Tensioning Steel Strand purchase order procurement. Project personnel need to ensure that the cost coding is correct.

Erodible Acres

For State Projects 07-682-04; 8608-21; 51-604-25; and 170-115-08, 4 of 13 projects requiring withholding for erodible acres, the withholding was not taken. Project personnel need to act to ensure that withholding for erodible acres is taken as required.

ATTACHMENT I

OTHER INTERNAL CONTROL ISSUES DISCUSSED WITH MANAGEMENT

Page 3

Soil and Water Conservation District Inspection Report

For State Project 1003-28, a July 2008 Carver County Soil and Water Conservation District Inspection Report described a violation involving discharge from a hose into a creek. Project personnel indicated that this condition was brought to their attention and corrected before the inspection report was completed.

Stipulated Agreement

For State Project 2713-83, a September 2009 Stipulation Agreement letter from the Minnesota Pollution Control Agency indicated that Mn/DOT and the Contractor completed required actions and paid \$20,000 in fulfillment of the agreement. The Stipulation Agreement addressed National Pollutant Discharge Elimination System (NPDES) compliance concerns.

Field Compliance Review on Labor Provisions

For State Project 8608-21, 9 of 25 (36%) required field compliance reviews were missed. Project personnel indicated that the reviews were not done monthly because the same contractor personnel were working.

Field compliance reviews were also missed for State Projects 07-682-04; 4013-50; 170-115-08; and 2901-18. Contract Administration Manual 5-591.320, Labor, requires project personnel to ensure compliance with the contract provisions by randomly interviewing employees (including subcontractor employees) each month and including the required information on the Field Compliance Review on Labor Provision form.

Poster Board

For State Project 8602-40, the poster board was down but work was not yet completed. For State Project 14-611-20, the federal wages were not posted. For State Project 2713-83, the federal wages and Fraud Poster were not posted. The Contract Administration Manual 5-591.320 requires use of a poster board on all highway construction projects from the first day of work until the project is 100 percent complete.

Contract Changes

For State Project 1985-132, 16 millimeter Post Tensioning Steel strand was substituted for most 15 millimeter Post Tensioning Steel Strand. This change is not documented on a supplemental agreement or change order as required.

ATTACHMENT II

AUDIT FOLLOW UP OF PRIOR YEAR'S FINDINGS

Identified Concern in Fiscal Year 2008 Single Audit Report No. 09-800-71	Status Code	Notes
Grading and Base Materials Control	2	A
Prepayment of Insurance and Bond Costs	4	
Concrete Materials Control	2	B
Environmental Compliance	1	

Notes:

- A - Grading and Base Materials Control is discussed this year in Single Audit Report No. 10-800-60, Finding I.
- B - Concrete Materials Control is discussed this year in Single Audit Report No. 10-800-60, Finding III.

Explanation of Status Codes

- 1 - Findings have been fully corrected.
- 2 - Findings not corrected or only partially corrected; discussed in this year's Single Audit Report.
- 3 - Findings not corrected or only partially corrected; discussed verbally with management.
- 4 - Findings are no longer valid or do not warrant further action.

ATTACHMENT III

QUESTIONED COSTS

Finding	State Project	Contract Items	Amount	Explanations
I	07-682-04	Aggregate Base Class 5	\$186,000	Preliminary Grading and Base Report not done (Grading and Base Manual and technical certification training); 6 of 12 required Quality Assurance (QA) gradations not done (2 done after audit was completed); 2 lots used instead of required 3 lots; 100% payment for material with Average of 4 failure on #40 sieve; Random Sampling Acceptance Report not completed; QA moisture content; percent crushing; and aggregate quality testing not done; Quality Control (QC) percent crushing tests short; testing exceptions and basis for acceptance not all listed on Materials Certification Exceptions Summary; most exceptions to requirements related to contract items cited under Finding I are repeat findings from the FY 2007-2008 Single Audits
I	6612-95	Aggregate Base Class 5	\$29,000	Extraction to determine bitumen content required by Schedule of Materials Control not done; testing exception not listed on Materials Certification Exceptions Summary
I	2901-18	Aggregate Base Class 6	\$993,000	Contractor's Certification of Aggregates and Granular Materials not submitted until after placement and payment; Contractor's Certification of Aggregates and Granular Materials did not document use of recycled concrete; Preliminary Grading and Base Report listed QC testing requirements rather than the correct QA testing requirements
I	8602-40	Aggregate Base Class 6	\$142,000	Preliminary Grading and Base Report minimum test rate and number of tests required for moisture content incorrect; 100% payment for material with multiple sieve failures for multiple average of 4 gradations
I	4013-50	Aggregate Base Class 5	\$122,000	Contractor's Certification of Aggregates and Granular Materials not submitted until after placement and payment; Random Sampling Gradations Report not completed; QC and QA percent crushing not done for all aggregate sources; aggregate quality testing not done
I	51-604-25	Aggregate Base Class 5	\$212,000	Preliminary and Final Grading and Base Reports not done; Contractor's Certification of Aggregates and Granular Materials not submitted until after placement and payment; QA moisture content and gradations as well as QC percent crushing tests short; QA percent crushing tests not done; testing exceptions not listed on Materials Certification Exceptions Summary
I	8608-21	Aggregate Base Class 5	\$1,381,000	Preliminary Grading and Base Reports list incorrect number of gradations required and did not convert cubic yards to tons; Contractor's Certification of Aggregates and Granular Materials not submitted until after placement and payment; short QC and QA gradations; DCP tests; and moisture content tests; extraction to determine bitumen content not done; aggregate quality testing not done
I	170-115-08	Aggregate Base Class 3	\$8,000	Contractor's Certification of Aggregates and Granular Materials not submitted; QC gradations not done
I	170-115-08	Aggregate Base Class 5	\$2,000	See explanation above for Aggregate Base Class 3
I	19-642-42	Aggregate Base Class 5	\$739,000	Contractor's Certification of Aggregates and Granular Materials form not completed as required; QC gradations short (obtained during the audit); bitumen content exceeding specification not addressed with price reduction
I	82-615-20	Aggregate Base Class 5	\$468,000	Contractor's Certification of Aggregates and Granular Materials and Quality Control tests not submitted by the Contractor to the Engineer prior to placement and payment; aggregate quality testing not done
I	13-614-06	Aggregate Base Class 5	\$404,000	QC gradations short
I	71-596-06	Aggregate Base Class 5	\$464,000	Contractor's Certification of Aggregates and Granular Materials not correct; QC gradations short
I	71-596-06	Select Granular Borrow	\$181,000	QC and QA gradations missed/short

ATTACHMENT III

QUESTIONED COSTS

Page 2

Finding	State Project	Contract Items	Amount	Explanation
I	71-596-06	Aggregate Shouldering Class 5	\$37,000	Contractor's Certification of Aggregates and Granular Materials not correct; QC gradations short
I	2713-83	Common Excavation	\$3,348,000	Relative Density and Relative Moisture tests short
I	2713-83	Select Granular Borrow	\$744,000	Relative Density tests short
I	2713-83	Aggregate Base Class 5	\$413,000	Contractor's Certification of Aggregates and Granular Materials not submitted by the Contractor to the Engineer prior to placement and payment; Quality Control (QC) gradations short; Moisture Content tests missed
II	8285-80	Post Tensioning Steel Strand	\$4,658,000	Agency yield strength and relaxation property testing required by ASTM A416 and the project proposal special provisions not done
II	1985-132	Post Tensioning Steel Strand	\$2,981,000	Agency relaxation property testing required by ASTM A416 and the project proposal special provisions not done as required.
III	07-682-04	Concrete Pavement Standard	\$328,000	Air Content test falling outside specification range not addressed with price reduction; Cores for Thickness not taken; Coarse Aggregate Testing on No. 200 Sieve not done; Quality Control (QC) Moisture Testing for Aggregates missed affecting 87% of cubic yards placed; QC Verification Companion Sample Gradations not done; testing missed for Cementitious Materials and Admixtures for Concrete
III	07-682-04	Concrete Pavement Irregular	\$68,000	See explanation above for Concrete Pavement Standard
III	07-682-04	Structural Concrete	\$544,000	See explanation above for Concrete Pavement Standard
III	6612-95	Structural Concrete	\$503,000	Agency Coarse Aggregate Testing on No. 200 Sieve not done
III	6612-95	Bridge Slab Concrete	\$424,000	See explanation for Structural Concrete above
III	170-115-08	Structural Concrete	\$271,000	Cementitious Materials and Admixtures for Concrete testing missed; Air Content tests falling outside specification range not addressed with price reduction; Coarse Aggregate Testing on No. 200 Sieve not done
IV	19-642-42	SP Wearing Course Mixture	\$1,206,000	28 of 168 (17%) of cores for density and thickness not taken; verification testing was missed for 3 of 30 (10%) paving days; asphalt binder testing not done
IV	19-642-42	SP Non Wearing Course Mixture	\$895,000	36 of 111 (32%) of cores for density and thickness not taken; verification testing was missed for 3 of 26 (12%) paving days; asphalt binder testing not done
IV	82-615-20	SP Wearing Course Mixture	\$1,270,000	Substitution of PG 58-34 asphalt binder for required PG 64-34 asphalt binder; asphalt binder testing not done
IV	82-615-20	SP Non Wearing Course Mixture	\$872,000	Substitution of PG 58-28 asphalt binder for required PG 58-34 asphalt binder; asphalt binder testing not done
V	Northstar Commuter Rail	Structural Steel	\$1,554,000	Certified Mill Test Reports and Welder's Certificates not provided
VI	07-682-04	Mobilization	\$50,000	Mobilization not paid in accordance with Specification 2021
VI	4013-50	Mobilization	\$890,000	Mobilization not paid in accordance with Specification 2021
VI	6612-95	Mobilization	\$192,000	Mobilization not paid in accordance with Specification 2021

ATTACHMENT III

QUESTIONED COSTS

Page 3

Finding	State Project	Contract Items	Amount	Explanation
VI	8602-40	Mobilization	\$767,000	Mobilization not paid in accordance with Specification 2021
VI	51-604-25	Mobilization	\$15,000	Mobilization not paid in accordance with Specification 2021
VI	8608-21	Mobilization	\$2,800,000	Mobilization not paid in accordance with Specification 2021
VII	Northstar Commuter Rail	Flagging Costs	\$59,000	Invoice did not detail employee names or overhead rates
VII	Northstar Commuter Rail	Interest Expenses	\$95,000	Interest expense calculation not documented, not verified as net of offsets, and not always invoiced
VIII	Federal Project IVH 9127 (504)	Sub consultant Intelligent Transportation System Costs	\$38,000	Costs did not comply with Federal Acquisition Regulations because they were incurred prior to a written agreement between a consultant and sub consultant
		Grand Total	\$30,353,000	

Note:

The amount column represents the entire contract item amount for each questioned cost contract item. The federal amount is typically 70-90% of this total. The entire contract item amount for design bid build projects is questioned for each contract item described in the Findings because requirements from the Standard Specifications for Construction, Schedule of Materials Control, and project proposal special provisions that are used in conducting the audit are organized by specification number and for each project by contract item. Design build project item questioned costs are calculated from activities. Questioned cost contract items often involve multiple exceptions to requirements that are in some cases repeated from past Single Audits. Occasionally, contract items with only 1 exception to requirements are included in the questioned costs if the exception is considered significant and a high risk to the program audited. Isolated and less significant instances of noncompliance with requirements are discussed verbally with project personnel in the field or are listed in Attachment II, Other Internal Control Issues Discussed With Management.

ATTACHMENT IV

A-133 COMPLIANCE SUPPLEMENT

The A-133 Compliance Supplement Part 1 indicates that the audit should recognize that there may be provisions of contract and grant agreements that are not specified in law or regulation and, therefore, the specifics of such are not included in the Compliance Supplement. Accordingly, the audit includes reasonable procedures to ensure that compliance requirements are current and to determine whether there are any additional provisions of contract and grant agreements that should be covered by the audit. Reasonable procedures consist of discussion with Mn/DOT personnel and review of contract and grant agreements and compliance with the associated requirements.

A-133 Compliance Supplement suggested audit procedures apply to many different federal programs and are necessarily general in nature. We are expected to exercise judgment to determine whether the Compliance Supplement suggested audit procedures are sufficient, or whether additional or alternative audit procedures are needed. The Compliance Supplement can only be considered “safe harbor” if additional provisions of contract and grant agreements are identified and considered as part of the audit.

A-133 Compliance Supplement Part 1 also states that we have responsibility under Generally Accepted Government Auditing Standards (GAGAS) for other requirements when specific information comes to our attention that provides evidence concerning the existence of possible noncompliance that could materially affect Mn/DOT’s major programs. American Institute of Certified Public Accountants (AICPA) Audit Guide - Government Auditing Standards and Circular A-133 Audits, requires us to include in the findings and questioned costs material noncompliance (\$10,000 or more) with laws, regulations, and contracts related to the Highway Planning and Construction and Airport Improvement programs.

A-133 Compliance Supplement Part 3

The A-133 Compliance Supplement Part 3 reiterates that suggested audit procedures are provided to assist auditors in planning and performing the audit, and advises us to exercise judgment to determine if additional or alternative audit procedures are needed.

A-133 Compliance Supplement Part 3 A. Activities Allowed or Unallowed

The A-133 Compliance Supplement Part 3, A. Activities Allowed or Unallowed requires the audit to identify the types of activities which are either specifically allowed or prohibited by the laws, regulations, and the provisions of contract or grant agreements pertaining to the program. On this basis, the conditions cited in all of the Findings are considered to be activities unallowed.

ATTACHMENT IV

A-133 COMPLIANCE SUPPLEMENT

Page 2

A-133 Compliance Supplement Part 3 B. Allowable Costs/Cost Principles

The A-133 Compliance Supplement Part 3 B. Allowable Costs/Cost Principles, through OMB Circular A-87, requires us to evaluate if costs are reasonable and necessary; conforming to any limitations or exclusions set forth in the circulars, Federal laws, State or local laws, sponsored agreements, or other governing regulations such as Generally Accepted Accounting Principles (GAAP); and adequately documented. On this basis, the conditions cited in all of the Findings are not considered to constitute allowable costs and are described in Attachment III as questioned costs.

A-133 Compliance Supplement Part 3 M. Subrecipient Monitoring

The A-133 Compliance Supplement Part 3 M. Subrecipient Monitoring requires the monitoring of subrecipient activities to provide reasonable assurance that subrecipients of federal funding (airports, cities, and counties) administer Federal awards in compliance with requirements. The Single Audit includes an evaluation of compliance with requirements for the Airport Improvement Program, in addition to the Highway Planning and Construction Program.

For the Highway Planning and Construction Program, the Letter of Agreement and Stewardship Plan between Federal Highway Administration (FHWA) and Mn/DOT indicates that Mn/DOT retains its responsibilities under federal law and regulations for all activities delegated to cities and counties. The Letter of Agreement and Stewardship Plan also indicates that Mn/DOT will provide the necessary processes, approvals, oversight, and review to ensure that delegated projects receive adequate supervision and inspection, and that they are completed in conformance with approved plans and specifications and applicable federal requirements.

The State Aid for Local Transportation Division provides technical assistance to cities and counties for highway construction. This assistance could improve future compliance with requirements.

Ongoing subrecipient monitoring is needed to achieve compliance with requirements by cities and counties, especially since personnel with less experience and knowledge regarding the requirements are becoming increasingly involved in project management. Findings I, III, IV, and VI fall under this part of the Compliance Supplement.

A-133 Compliance Supplement Part 3 N. Special Tests and Provisions

The A-133 Compliance Supplement Part 3 N. Special Tests and Provisions states that specific requirements unique to each Federal program are found in the laws, regulations, and the provisions of contract or grant agreements pertaining to the program.

ATTACHMENT IV

A-133 COMPLIANCE SUPPLEMENT

Page 3

Part 3 N. Special Tests and Provisions requires us to identify any additional compliance requirements which could be material, and indicates that reasonable procedures to identify such compliance requirements would be inquiry of non-Federal entity management and review of the contract and grant agreements pertaining to the program. Any such requirements which may have a direct and material effect on a major program shall be included in the audit.

The A-133 Compliance Supplement Part 3 N. Special Tests and Provisions also refers to the A-133 Compliance Supplement Part 4, Agency Program Requirements, for specific compliance requirements, audit objectives, and suggested audit procedures.

The A-133 Compliance Supplement Part 4 requires Mn/DOT to have a have a sampling and testing program for construction projects to ensure that materials and workmanship generally conform to approved plans and specifications. The Part 4 also requires an evaluation of the sampling and testing program. Findings I, II, III, IV, and V fall under this part of the Compliance Supplement.

We also considered whether the department was managing or utilizing its resources in an economical and efficient manner and whether the department was effective in achieving its program objectives.