Iowa Department of Transportation

MINUTES
OF
IOWA DOT SPECIFICATION COMMITTEE MEETING

November 14, 2005

Members Present:	John Adam	Statewide Operations Bureau
	Tom Reis, Chair	Specifications Section
	Daniel Harness, Secretary	Specifications Section
	Keith Norris	District 2-Dist. Mat. Engineer
	Bruce Kuehl	District 6-Dist. Const. Engineer
	John Smythe	Office of Construction
	Roger Bierbaum	Office of Contracts
	Jim Berger	Office of Materials
	Doug McDonald	District 1 - Marshalltown RCE Office
Members Not Present:	Gary Novey	Office of Bridges & Structures
	Mike Kennerly	Office of Design
	Larry Jesse	Office of Local Systems
	Troy Jerman	Office of Traffic & Safety
Advisory Members Present:	Lisa Rold	FHWA
Advisory Members Not Present:	Jim Rost	Office of Location & Environment
	Larry Stevens	SUDAS
Others Present:	Deanna Maifield	Office of Design
	Bob Dawson	Office of Materials
	Donna Buchwald	Office of Local Systems
	George Perdue	District 2-Materials

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the agenda dated November 7, 2005, except the Office of Construction requested Item 13 be withdrawn:

1. Article 1109.05, Partial Payments .

The Office of Construction requests several changes to article 1109.05 that will clarify contractor requirements for prompt payment of subcontractors, including retainage, and eliminate the incremental acceptance provisions.

2. Article 1109.05, Partial Payments.

The Office of Contracts requests several changes to Article 1109.05 that will allow the use of joint checks by the Contractor to subcontractors and suppliers.

3. Article 1109.13, Claims Against Contractor.

The Office of Construction requests several changes to Article 1109.13 that will incorporate language from the Code of Iowa into the Standard Specifications concerning contract bonds and claims against a contractor.

4. Article 2301.10, Subgrade Construction.

The Specifications Section requests a change to Article 2301.10 that will clarify the intent of the specifications concerning subgrade construction tolerances.

5. Article 2319.02, B, 1, CRUSHED STONE.

The Office of Materials requests a change to Article 2319.02 that will change a reference due to the proposed implementation of the Division 41 Imperative Mood/Active Voice rewrite.

6. Article 2403.03, C, Proportions for Structural Concrete, .

The Office of Materials requests a change to Article 2403.03 that will not allow calcium chloride to be used when reinforcing steel is also being used.

7. Article 2407.02, A, Aggregates.

The Office of Materials requests a change to Article 2407.02 that will allow Class 2 aggregate to be used.

8. Article 2414.02, B, Concrete Open Railing.

The Office of Materials requests a change to Article 2414.02 that will require the same air content for the open railing as the barrier and retrofit rail.

9. Article 2513.03, B, Cast-in-Place and Slip Form (Concrete Barriers).

The Office of Materials requests several changes to Article 2513.03 that will require Class C concrete for cast in place barrier rail and Class BR for slip form barrier rail.

10. Article 2528.02, Signs.

The Office Construction requests a change to Article 2528.02 that will require all diamond shaped work zone signs to be 48 inches by 48 inches.

11. Article 2529.02, Materials (Full Depth Finish Patches).

The Office of Materials requests several changes to Article 2529.02 that will allow the use of Type I(SM) cement for patching.

12. Article 2530.03, Materials (Partial Depth Finish Patches).

The Office Materials requests several changes to Article 2530.03 that will allow the use of Type I(SM) cement for patching.

13. Section 2547, Contract Finalization.

The Office of Construction requests Section 2547 be added to the Standard Specifications in order to establish a contract item for administrative costs associated with project finalization.

14. Article 4109.02, Aggregate Gradation Table.

The Office of Materials requests several changes to Article 4109.02 that will split Gradation 12 into two separate gradations for crushed stone and gravel used for Granular Subbase in order to improve drainability and strength.

15. Section 4109, Aggregate Gradations.

The Office of Materials requests adoption of Section 4109 that incorporates the Active Voice/Imperative Voice rewrite and other changes to the Standard Specifications.

16. Section 4110, Fine Aggregate for Concrete.

The Office of The Office of Materials requests adoption of Section 4110 that incorporates the Active Voice/Imperative Voice rewrite and other changes to the Standard Specifications.

17. Section 4111, Class L Fine Aggregate for Concrete.

The Office of Materials requests adoption of Section 4111 that incorporates the rewrite to the Imperative Mood/Active Voice and other changes to the Standard Specifications.

18. Section 4112, Fine Aggregate For Mortar.

The Office of Materials requests deletion of Section 4112 because of insignificant need and adding contractor design mixes Section 4111.

19. Section 4115, Coarse Aggregate for Concrete.

The Office of Materials requests adoption of Section 4115 that incorporates the rewrite to the Imperative Mood/Active Voice, added limits of organic material at 0.01% maximum, and removed Article 4115.02 as it is now in Section 4111.

20. Section 4117, Class V Aggregate for Concrete.

The Office of Materials requests adoption of Section 4117 that incorporates the rewrite to the Imperative Mood/Active Voice and other changes to the Standard Specifications.

21. Section 4120, Granular Surfacing Material.

The Office of Materials requests adoption of Section 4120 that incorporates the rewrite to the Imperative Mood/Active Voice and other changes to the Standard Specifications.

22. Section 4121, Granular Subbase Material.
The Office of Materials requests adoption of Section 4121 that incorporates the rewrite to the Imperative Mood/Active Voice, removed sand from the list of materials to be added to aggregate or crushed PCC.

23. Section 4122, Crushed Stone Base Material.

The Office of Materials requests adoption of Section 4122 that incorporates the rewrite of the Imperative Mood/Active Voice and other changes to the Standard Specifications.

24. Section 4123, Modified Subbase Material.

The Office of Materials requests adoption of Section 4123 that incorporates the rewrite to the Imperative Mood/Active Voice and other changes to the Standard Specifications.

25. Section 4125, Cover Aggregate and Aggregate for Slurry Mixtures.

The Office of Materials requests adoption of Section 4125 that incorporates the rewrite to the Imperative Mood/Active Voice and other changes to the Standard Specifications.

26. Section 4126, Type B Aggregate for Hot Mix Asphalt.

The Office of Materials requests deletion of Section 4126 due to combining it with Section 4127.

27. Section 4127, Aggregate for Hot Mix Asphalt.

The Office of Materials requests adoption of Section 4127 that incorporates the rewrite of to the Imperative Mood/Active Voice, combining it with Section 4126, and placed a limit on organic material of 0.01%.

28. Section 4130, Revetment Stone and Erosion Stone.

The Office of Materials requests adoption of Section 4130 that incorporates the rewrite to the Imperative Mood/Active Voice and allow recycled PCC for erosion stone.

29. Section 4131, Porous Backfill Material.

The Office of Materials requests adoption of Section 4131 that incorporates the rewrite to the Imperative Mood/Active Voice.

30. Section 4132, Special Backfill Material.

The Office of Materials requests adoption of Section 4132 that incorporates the rewrite to the Imperative Mood/Active Voice and added crushed composite pavement as a special backfill material.

31. Section 4133, Granular Backfill Material.

The Office of Materials requests adoption of Section 4133 that incorporates the rewrite to the Imperative Mood/Active Voice, changes to the quality requirements for crushed stone, and voids between coarse particles was deleted.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe	**Office:** Construction	**Item 1**
Submittal Date: September 29, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 1109.05 **Title:** Partial Payments	**Other:**	

Specification Committee Action: Conditionally approved pending the outcome of the 11/2205 meeting with the FHWA.

Deferred:	**Not Approved:**	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text: After the November 22, 2005 meeting with the FHWA, the following language was recommended:

1109.05, A, PARTIAL PAYMENTS.

Replace the third sentence:

For work extending over a period of more than 1 month, the Contractor will receive monthly progress estimate payments based on the amount of work completed in an acceptable manner. For Primary and Secondary projects in which the Contracting Authority is the Department or a county Board of Supervisors, these progress payments will be bi-weekly if requested by the Contractor. For late payment, the Contracting Authority will pay a penalty of 1.0% per month (or part of a month), or a minimum of $250, whichever is the greater amount, on any work completed ~~and accepted, or any work completed that should have been accepted,~~ but not ~~paid~~ processed for payment ~~for~~ within ~~calendar~~ 14 calendar days after ~~the Contractor should have been paid~~ completion of the work. Completion of the work includes physical completion of the work and submittal of all paperwork required by the contract.

Delete the first sentence of the fourth paragraph:

~~The Engineer will certify that each payment is just and unpaid.~~

1109.05, B, PROMPT PAYMENT TO SUBCONTRACTORS.

Replace the third sentence of the first paragraph:

A ~~progress payment or final~~ payment, excluding retainage, to a subcontractor for satisfactory performance of the subcontractor's work shall be made by the Contractor no later than one of the following, as applicable:

1109.05, C, RETAINAGE.

Replace the first two paragraphs:

Three percent of each progress estimate will be deducted and held as retainage on the first $1,000,000 paid on a contract, with no additional retainage withheld on the remainder of the contract payment amount. ~~Additional money may be withheld from the progress estimate if claims are on file with the Department~~

The Contractor may withhold up to 5% of each progress estimate on work performed by subcontractors. ~~Within 14 calendar days after the completion of a subcontractor's work on~~

~~a project, the Contractor shall collect all required paperwork from the subcontractor (e.g. certified payrolls, materials certifications, sales and use tax forms for non-DOT contracts, etc.) and forward them to the Engineer. The Contractor shall notify the Engineer that the subcontractor's work has been completed in accord with their subcontract and request final acceptance of the subcontractor's work by the Engineer. Within 14 calendar days after receiving the Contractor's request for acceptance of the subcontractor's work and the required paperwork, the Engineer will inspect the work and furnish the final quantities to the Contractor of the items completed by the subcontractor. Agreement on these final quantities by the Contractor will constitute the acceptance of the subcontractor's work by the Engineer. The retained percentage~~ All retained funds due a subcontractor shall be payable by the Contractor within 30 calendar days after ~~the date of final acceptance~~ completion of the work by the subcontractor. Non-bonded subcontractors may be required to submit proof of payment for all material bills and wages to the Contractor before the Contractor is required to pay the retainage.

1109.05, D, COMPLAINTS.

Add a new article:

D. Complaints

Compliance with prompt payment is the responsibility of both the Contracting Authority and Contractor.

If the Contractor feels the Contracting Authority has not complied with the prompt payment provisions, the initial attempt to resolve the issue shall be with the Project Engineer. The attempt to resolve the issue shall include at least one written request to the Project Engineer, stating the project number, items of work, quantities, unit prices, dates work was performed, total amount owed, and signature of a representative of the Contractor.

If a subcontractor feels Contractor has not complied with the prompt payment provisions, the initial attempt to resolve the issue shall occur with the Contractor. The attempt to resolve the issue shall include at least one written request to the Contractor, stating the project number, items of work, quantities, unit prices, dates work was performed, total amount owed, and signature of a representative of the subcontractor.

If the initial attempt to resolve the issue does not result in satisfactory payment for completed work, the Contractor or subcontractor shall submit a written complaint to the Office of Contracts. The written complaint shall include copies of the correspondence with the Project Engineer or Contractor that provides the details stated above. The Department will investigate and provide written response to the complainant with 15 business days of receipt of the complaint.

Add a new article:

E. Required Records.

The Contractor shall retain records that document the date of completion of the work of each subcontractor and the date of final payment (including retained funds) to each subcontractor. Prior to receiving final payment, the Contractor shall provide to the Engineer the “Certification of Subcontractor Payments” (Form 518002). This form shall include the names of each approved subcontractor, the date of completion of the work, the date of final payment, the number of days between completion and final payment, and explanations for any final payments made after the 30 day period following completion.

Comments: The Office of Construction explained that several months ago the FHWA reviewed the Department's prompt payment provisions. Several action items were discussed. One item discussed was compliance with Federal regulations regarding prompt pay requirements. The Feds allow three options. Two options apply to states that do not withhold retainage. The third option applies to states that do. By state law, Iowa must withhold retainage, and so must conform to Federal requirements for doing so. Federal requirements for withholding retainage mandate an incremental payment procedure to pay retainage when the work is accepted. State law does not allow release until at least 95% of the work is completed. At the moment, the Department isn't able to completely comply with that. The current specification has language for incremental payment. The language was added in haste in March of 2000, and since then almost no incremental payment has been made. The Office of Construction wasn't sure if contractors were aware of this option, or weren't aware of the cost effectiveness of it. The Office of Construction wants to update the Specifications. Their hope is to implement a specification that is workable from a contract administration standpoint and will satisfy the spirit of the Federal regulations, though the Department is limited in satisfying them verbatim.

The Office of Construction proposes to eliminate the incremental acceptance language, but require Contractors to pay their subcontractors their retainage within 30 days after the work is completed. The Statewide Operations Bureau noted that they will be meeting with the FHWA November 22, 2005 to discuss options. The Office of Contracts noted that currently the only issues the Department and the FHWA aren't in agreement are release of retainage and incremental acceptance. The FHWA is requiring incremental acceptance, but the Department feels they don't have the resources. The AGCI was in favor of removing the incremental acceptance language. The Specifications Section asked if there will be final language as an outcome of the meeting on the 22nd. The Statewide Operations Bureau stated they aren't sure this will happen. They suggested the Specifications Committee conditionally approve the language as is, and if it needs to change as a result of the meeting on the 22nd, then the Committee will change the language.

District 6 Construction asked if any other language would change if the incremental acceptance language was added back in. The Office of Construction explained they have eliminated the language regarding acceptance of work. Subcontractors are paid after completion of the work. Incremental acceptance implies that the work is done and nobody is responsible for it. The Office of Construction and District 6 Construction agreed that this creates problems since issues could come up later after acceptance. This puts the risk on the Department, plus this puts a strain on existing staff resources. Incremental acceptance would be very difficult to accomplish.

The Office of Construction explained that one thing they have strived for is to make the prime contractor more accountable for all the work on a project. Eliminating incremental acceptance also requires the prime to acknowledge the work is complete by their subcontractor and pay them. The Department retains its responsibility to accept the work.

The changes were conditionally accepted by the Specification Committee with the condition that the language may change after the November 22, 2005 meeting with the FHWA.

Specification Section Recommended Text:

1109.05, A, PARTIAL PAYMENTS.

Replace the third sentence:

> For work extending over a period of more than 1 month, the Contractor will receive monthly progress estimate payments based on the amount of work completed in an acceptable manner. For Primary and Secondary projects in which the Contracting Authority is the Department or a county Board of Supervisors, these progress payments will be bi-weekly if requested by the Contractor. For late payment, the Contracting Authority will pay a penalty of 1.0% per month (or part of a month), or a minimum of $250, whichever is the greater

amount, on any work completed ~~and accepted, or any work completed that should have been accepted,~~ but not ~~paid~~ processed for payment ~~for~~ within ~~calendar~~ 14 calendar days after ~~the Contractor should have been paid~~ completion of the work. Completion of the work includes physical completion of the work and submittal of all paperwork required by the contract.

Delete the first sentence of the fourth paragraph:

~~The Engineer will certify that each payment is just and unpaid.~~

1109.05, B, PROMPT PAYMENT TO SUBCONTRACTORS.

Replace the third sentence of the first paragraph:

A ~~progress payment or final~~ payment, excluding retainage, to a subcontractor for satisfactory performance of the subcontractor's work shall be made by the Contractor no later than one of the following, as applicable:

1109.05, C, RETAINAGE.

Replace the first two paragraphs:

Three percent of each progress estimate will be deducted and held as retainage on the first $1,000,000 paid on a contract, with no additional retainage withheld on the remainder of the contract payment amount. ~~Additional money may be withheld from the progress estimate if claims are on file with the Department~~

The Contractor may withhold up to 5% of each progress estimate on work performed by subcontractors. ~~Within 14 calendar days after the completion of a subcontractor's work on a project, the Contractor shall collect all required paperwork from the subcontractor (e.g. certified payrolls, materials certifications, sales and use tax forms for non-DOT contracts, etc.) and forward them to the Engineer. The Contractor shall notify the Engineer that the subcontractor's work has been completed in accord with their subcontract and request final acceptance of the subcontractor's work by the Engineer. Within 14 calendar days after receiving the Contractor's request for acceptance of the subcontractor's work and the required paperwork, the Engineer will inspect the work and furnish the final quantities to the Contractor of the items completed by the subcontractor. Agreement on these final quantities by the Contractor will constitute the acceptance of the subcontractor's work by the Engineer. The retained percentage~~ All retained funds due a subcontractor shall be payable by the Contractor within 30 calendar days after ~~the date of final acceptance~~ completion of the work by the subcontractor. Non-bonded subcontractors may be required to submit proof of payment for all material bills and wages to the Contractor before the Contractor is required to pay the retainage.

1109.05, D, COMPLAINTS.

Add a new article:

D. Complaints

Compliance with prompt payment is the responsibility of both the Contracting Authority and Contractor.

If the Contractor feels the Contracting Authority has not complied with the prompt payment provisions, the initial attempt to resolve the issue shall be with the Project Engineer. The attempt to resolve the issue shall include at least one written request to the Project Engineer, stating the project number, items of work, quantities, unit prices, dates work was

performed, total amount owed, and signature of a representative of the Contractor.

If a subcontractor feels Contractor has not complied with the prompt payment provisions, the initial attempt to resolve the issue shall occur with the Contractor. The attempt to resolve the issue shall include at least one written request to the Contractor, stating the project number, items of work, quantities, unit prices, dates work was performed, total amount owed, and signature of a representative of the subcontractor.

If the initial attempt to resolve the issue does not result in satisfactory payment for completed work, the Contractor or subcontractor shall submit a written complaint to the Office of Contracts. The written complaint shall include copies of the correspondence with the Project Engineer or Contractor that provides the details stated above. The Department will investigate and provide written response to the complainant with 15 business days of receipt of the complaint.

Comments:

Member's Requested Change: (DO NOT USE "Track Changes," or "Mark-Up". Use ~~Strikeout~~/Highlight)

1109.05 PARTIAL PAYMENTS.

A. Progress Payments.
For work extending over a period of more than 1 month, the Contractor will receive monthly progress estimate payments based on the amount of work completed in an acceptable manner. For Primary and Secondary projects in which the Contracting Authority is the Department or a county Board of Supervisors, these progress payments will be bi-weekly if requested by the Contractor. For late payment, the Contracting Authority will pay a penalty of 1.0% per month (or part of a month), or a minimum of $250, whichever is the greater amount, on any work completed ~~and accepted, or any work completed that should have been accepted,~~ but not ~~paid~~ processed for payment ~~for~~ within ~~calendar~~ 14 calendar days after ~~the Contractor should have been paid~~ completion of the work. Completion of the work includes physical completion of the work and submittal of all paperwork required by the contract.

On contracts for which the contract sum is $10,000 or more, payments may be allowed based on value of processed or fabricated materials or rolled steel products which have been delivered on the work or 90% of the value of processed or fabricated material, or rolled steel products, reserved for the project and stored elsewhere within Iowa or in other locations where there is routine inspection by Departmental personnel, provided the materials are of acceptable quality and the manner of storage is satisfactory to the Engineer.

Should a reasonable doubt arise as to the integrity of any part of the completed work, the payment for that portion will not be allowed until the cause for such doubt has been removed. The Engineer's estimates of work completed will result in partial payments on the contract sum, and the allowance of a progress payment by the Contracting Authority does not constitute final acceptance of the work upon which the payments are based.

~~The Engineer will certify that each payment is just and unpaid.~~ The Contractor shall sign the final voucher certifying the quantities are just and unpaid.

B. Prompt Payment to Subcontractors.
The Contractor shall promptly pay each subcontractor. Any delay or postponement of payment among the parties may take place only for good cause, with written notification to the subcontractor. A ~~progress payment or final~~ payment, excluding retainage, to a subcontractor for satisfactory performance of the subcontractor's work shall be made by the Contractor no later than one of the following, as applicable:

1. 7 calendar days after the Contractor receives payment for the subcontractor's work.

2. 7 calendar days after the Contractor could have received payment for the subcontractor's work, if the reason for nonpayment is not the subcontractor's fault.

C. Retainage.
Three percent of each progress estimate will be deducted and held as retainage on the first $1,000,000 paid on a contract, with no additional retainage withheld on the remainder of the contract payment amount. ~~Additional money may be withheld from the progress estimate if claims are on file with the Department~~

The Contractor may withhold up to 5% of each progress estimate on work performed by subcontractors~~. Within 14 calendar days after the completion of a subcontractor's work on a project, the Contractor shall collect all required paperwork from the subcontractor (e.g. certified payrolls, materials certifications, sales and use tax forms for non-DOT contracts, etc.) and forward them to the Engineer. The Contractor shall notify the Engineer that the subcontractor's work has been completed in accord with their subcontract and request final acceptance of the subcontractor's work by the Engineer. Within 14 calendar days after receiving the Contractor's request for acceptance of the subcontractor's work and the required paperwork, the Engineer will inspect the work and furnish the final quantities to the Contractor of the items completed by the subcontractor. Agreement on these final quantities by the Contractor will constitute the acceptance of the subcontractor's work by the Engineer. The retained percentage~~ All retained funds due a subcontractor shall be payable by the Contractor within 30 calendar days after ~~the date of final acceptance~~ completion of the work by the subcontractor. Non-bonded subcontractors may be required to submit proof of payment for all material bills and wages to the Contractor before the Contractor is required to pay the retainage.

The retained percentage for the contract will not be due and payable prior to 30 calendar days after the date of final acceptance of the entire contract or following the release or adjudication of claims that may have been filed, or until the Contractor has filed the signed final voucher with the Contracting Authority.

D. Complaints

Compliance with prompt payment is the responsibility of both the Contracting Authority and Contractor.

If the Contractor feels the Contracting Authority has not complied with the prompt payment provisions, the initial attempt to resolve the issue shall occur with the Project Engineer. The attempt to resolve the issue shall include at least one written request to the Project Engineer, stating the project number, items of work, quantities, unit prices, dates work was performed, total amount owed, and signature of a representative of the Contractor.

If a subcontractor feels Contractor has not complied with the prompt payment provisions, the initial attempt to resolve the issue shall occur with the Contractor. The attempt to resolve the issue shall include at least one written request to the Contractor, stating the project number, items of work, quantities, unit prices, dates work was performed, total amount owed, and signature of a representative of the subcontractor.

If the initial attempt to resolve the issue does not result in satisfactory payment for completed work, the Contractor or subcontractor shall submit a written complaint to the Office of Contracts. The written complaint shall include copies of the correspondence with the Project Engineer or Contractor that provides the details stated above. The Department will investigate and provide written response to the complainant with 15 business days of receipt of the complaint.

Reason for Revision: Clarify Contractor requirements for prompt payment of subcontractors, including retainage, and eliminate the incremental acceptance provisions not currently used or desired.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes**	**No** X
Comments: There is a philosophical disagreement on payment of retainage to subcontractors before project acceptance.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Roger Bierbaum	**Office:** Contracts	**Item 2**
Submittal Date: September 22, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 1109.05 **Title:** Partial Payments	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: See Specification Committee Recommended Text.

Comments: The Office of Contracts explained that the Department has been allowing joint checks as long as they were only for the amount of materials supplied by a materials supplier to a subcontractor. The check is given to the subcontractor, who then releases it to the materials supplier. The process has been in place for several years, but never documented anywhere else except as part of the formal DBE program initiated to satisfy the new DBE regulations issued in 1999. In the Summer of 2005, the FHWA issued a memorandum expressing concern that joint checks were only being used with DBE subcontractors and not all subcontractors. The Office of Contracts wants to place the process for issuing joint checks in the Specifications to make it accessible to all subcontractors. The Specifications Section asked if this would be applicable to all projects or just Federal Aid projects. The Office of Contracts responded by saying this applies to all projects.

Specification Committee Recommended Text:

1109.05, B, Prompt Payment to Subcontractors.

Add as the last paragraph:

The use of joint checks for payment to subcontractors for their materials is acceptance under the following conditions:

1. The request for a joint check from the prime contractor is made by the materials supplier.
2. The joint check issued by the prime contractor is for an amount not to exceed the cost of unpaid invoice(s) from the materials supplier to a subcontractor on that contract.
3. The joint check is given to the subcontractor and the subcontractor must release the joint check to the material supplier.
4. The use of joint check by the prime contractor is applicable to all their subcontractors.

Comments: Is this applicable on all projects or just Federal Aid projects?

Member's Requested Change: **(DO NOT USE "Track Changes," or "Mark-Up". Use ~~Strikeout~~/Highlight)**

Add the following paragraph to the end of 1109.05B

The use of joint checks for payment to subcontractors for their materials is acceptance under the following conditions:

5. The request for a joint check from the prime contractor is made by the materials supplier.
6. The joint check issued by the prime contractor is for an amount not to exceed the cost of unpaid invoice(s) from the materials supplier to a subcontractor on that contract.
7. The joint check is given to the subcontractor and the subcontractor must release the joint check to the material supplier.
8. The use of joint check by the prime contractor is applicable to all their subcontractors.

Reason for Revision: To comply with the FHWA memorandum dated August 30, 2005 on the use of joint checks on Federal-aid highway projects our current DOT policy on prime contractors use of joint check must be included in our specifications

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes**	**No** X	
Industry Notified:	**Yes**	**No** X	**Industry Concurrence:**	**Yes**	**No** X
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe	**Office: Construction**	**Item 3**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 1109.13 **Title:** Claims Against Contractor	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

1109.13, CLAIMS AGAINST CONTRACTOR.

Replace the entire article:

The Contractor guarantees the payment of all just claims against the Contractor or any of the Contractor's subcontractors in connection with the work. If another contractor on the project submits a claim for alleged damages caused by delay due to the Contractor not having completed the work in a timely manner, the Contractor's bond shall remain in effect until payment of such claim is made or until litigation is ~~started~~ concluded, at which time the bond will be released.

Claims may be filed against the Contractor as provided Chapter 573, Code of Iowa. The claims shall be submitted on forms provided by the Contracting Authority. The amount of retainage held by the Contracting Authority is described in Article 1109.05, C.

For public improvement projects let and paid by the Department, the claims shall be submitted to the Project Accounting and Payables Section, Office of Finance, Iowa Department of Transportation. For public improvements let by the County, claims shall be filed with the county auditor. For public improvements let by the City, claims shall be filed with the officer, board, or commission authorized by law to let contracts for such improvements.

The contract bond required by Article 1103.05 stipulates that the principal and sureties agree to pay to all persons, firms, or corporations having contracts directly with the principal or with subcontractors, all just claims due them for labor performed or materials furnished, in the performance of the contract on account of which the bond is given, when the same are not satisfied out of the portion of the contract price which the public corporation is required to retain until completion of the public improvements, but the principal and sureties shall not be liable to said persons, firms, or corporations unless the claims of said claimants against said portion of the contract price shall have been established as provided by law.

Comments: District 6 Construction noted there are several projects that are difficult to define as "highway projects" (third sentence of third paragraph in Specification Section Recommended Text). The Office of Construction noted they believe that language is in the Code. District 2 Materials expressed concern with Farm to Market projects being included. The Office of Contracts explained that these projects are paid for through the Department. The Office of Construction further explained that the Office of Finance is interested in claim submittals only if the project is paid for out of our contractor pay system; otherwise, they go through the Contracting Authority paying for the project even if the Department is reimbursing them. The Office of Contracts noted that it is not stated clearly that for city

projects let by the Department, the claims should go to the City. They will also check the Code. If it doesn't say "highway projects", they will drop the word "highway".

The Office of Construction submitted the wording above after the 11/14/05 meeting.

Specification Section Recommended Text:

1109.13, CLAIMS AGAINST CONTRACTOR.

Replace the entire article:

The Contractor guarantees the payment of all just claims against the Contractor or any of the Contractor's subcontractors in connection with the work. If another contractor on the project submits a claim for alleged damages caused by delay due to the Contractor not having completed the work in a timely manner, the Contractor's bond shall remain in effect until payment of such claim is made or until litigation is ~~started~~ concluded, at which time the bond will be released.

Claims may be filed against the Contractor as provided Chapter 573, Code of Iowa. The claims shall be submitted on forms provided by the Contracting Authority. The amount of retainage held by the Contracting Authority is described in Article 1109.05C.

For Primary, Interstate, and Farm to Marker projects, let by the Department, where the Department is the Contracting Authority, the claims shall be submitted to the Project Accounting and Payables Section, Office of Finance, Iowa Department of Transportation. For highway projects let by the County, claims shall be filed with the county auditor. For highway projects let by the City, claims shall be filed with the officer, board, or commission authorized by law to let contracts for such improvements.

The contract bond required by Article 1103.05 stipulates that the principal and sureties agree to pay to all persons, firms, or corporations having contracts directly with the principal or with subcontractors, all just claims due them for labor performed or materials furnished, in the performance of the contract on account of which the bond is given, when the same are not satisfied out of the portion of the contract price which the public corporation is required to retain until completion of the public improvements, but the principal and sureties shall not be liable to said persons, firms, or corporations unless the claims of said claimants against said portion of the contract price shall have been established as provided by law.

Comments:

Member's Requested Change: **(DO NOT USE "Track Changes," or "Mark-Up". Use ~~Strikeout~~/Highlight)**

1109.13 CLAIMS AGAINST CONTRACTOR.
The Contractor guarantees the payment of all just claims against the Contractor or any of the Contractor's subcontractors in connection with the work. If another contractor on the project submits a claim for alleged damages caused by delay due to the Contractor not having completed the work in a timely manner, the Contractor's bond shall remain in effect until payment of such claim is made or until litigation is ~~started~~ concluded, at which time the bond will be released.

Claims may be filed against the Contractor as provided Chapter 573, Code of Iowa. The claims shall be submitted on forms provided by the Contracting Authority. The amount of retainage held by the Contracting Authority is described in Article 1109.05, C.

For Primary, Interstate, and Farm to Marker projects, let by the Department, where the Department is the Contracting Authority, the claims shall be submitted to the Project Accounting and Payables Section, Office of Finance, Iowa Department of Transportation. For highway projects let by the County, claims shall be filed with the county auditor. For highway projects let by the City, claims shall be filed with the officer, board, or commission authorized by law to let contracts for such improvements.

The contract bond required by Article 1103.05 stipulates that the principal and sureties agree to pay to all persons, firms, or corporations having contracts directly with the principal or with subcontractors, all just claims due them for labor performed or materials furnished, in the performance of the contract on account of which the bond is given, when the same are not satisfied out of the portion of the contract price which the public corporation is required to retain until completion of the public improvements, but the principal and sureties shall not be liable to said persons, firms, or corporations unless the claims of said claimants against said portion of the contract price shall have been established as provided by law.

Reason for Revision: To incorporate Code and Bond requirements in the Specifications					
County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Tom Reis / Daniel Harness	**Office:** Specifications	**Item 4**
Submittal Date: November 7, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 2301.10 **Title:** Subgrade Construction	**Other:**	

Specification Committee Action: Approved.			
Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06
Specification Committee Approved Text: See Specification Section Recommended Text.			
Comments: See Reason for Revision			

Specification Section Recommended Text:

2301.10, Subgrade Construction.

Replace the second and third sentences of the second indented paragraph:

When the contract documents do not include a bid item for Class 10 excavation, it may be assumed that the subgrade has been or will be shaped and compacted by others. Acceptable tolerance for that work is described in Article 2102.12~~.~~, ~~E~~except that at ~~these~~ approaches to existing improvements or structures, corrections will be based on a practical minimum cut and fill for the project.

Comments:

Member's Requested Change (Redline/Strikeout):

Reason for Revision: For the August 11, 1994 Specification Committee meeting, the following changes were proposed (and eventually approved) for the second indented paragraph:

When the ~~proposal form~~ contract documents ~~for paving does not include a cubic yard meter~~ do not include a bid item for Class 10 excavation, it may be assumed that the subgrade has been or will be shaped and compacted by others~~,~~ ~~to within approximately 3 inches 75 mm of the proposed grade, except at approaches to existing improvements or structures.~~ Acceptable tolerance for that work is described in Article 2102 .12. Except at these approaches, corrections will be based on a practical minimum cut and fill for the project.

Striking out the language in the original first sentence regarding approaches to existing improvements and structures has created confusion with the last sentence, since now it isn't clear as to which approaches "these approaches" is referencing.

County or City Input Needed (X one)	**Yes**	**No** X
Comments:		
Industry Input Needed (X one)	**Yes**	**No** X

Industry Notified:	Yes	No X	Industry Concurrence:	Yes	No
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office**: Materials	**Item 5**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Article No.: 2319.02, B, 1 **Title:** Crushed Stone	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: See Reason for Revision.

Specification Section Recommended Text:

2319.02, B, 1, Crushed Stone.

Replace the entire article:

Crushed aggregates shall meet the requirements of ~~Article 4125.01, B~~ Section 4124.

Comments:

Member's Requested Change (Redline/Strikeout):

2319.02, B, 1. Crushed Stone.

Replace: change reference to 4124:

1. Crushed Stone.
Crushed aggregates shall meet the requirements of ~~Article 4125.01, B~~. Section 4124.

Reason for Revision: New Section 4124, Aggregate for Slurry Mixtures.

County or City Input Needed (X one)	**Yes**	**No**
Comments:		

Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Todd Hanson	**Office:** Materials	**Item 6**
Submittal Date: April 18, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 2403.03, C **Title:** Proportions for Structural Concrete	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: See Reason for Revision.

Specification Section Recommended Text:

2404.03, C, Other Admixtures.

Add as the fourth paragraph:

Calcium Chloride will not be allowed where reinforcing steel is used.

Comments:

Member's Requested Change (Redline/Strikeout):

C. Other Admixtures.
Other approved admixtures may be used with the approval of the Engineer.

Approved retarding admixture complying with Section 4103 may be required by the contract documents or by the Engineer. The retarding admixture shall be used in amounts recommended by the manufacturer for conditions which prevail on the project and as approved by the Engineer. When used, it shall be introduced into the mixer after all other ingredients are in the mixer. Other procedures may be approved by the Engineer.

All retarding admixtures used shall be compatible with the air entraining agent used. Previous experience, satisfactory to the Engineer, will be required to indicate the approximate adjustments necessary by the addition of the admixture and compatibility with other materials to be used. The retarding admixture shall be agitated prior to and during its use.

Calcium Chloride shall not be allowed where reinforcing steel is used.

Reason for Revision: Have had a few instances where calcium chloride was used on structural concrete. Although it is intuitive that calcium chloride should not be used with reinforcement, it is not stated anywhere in the specifications.

County or City Input Needed (X one)	**Yes**	**No**

Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 7**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 2407.02, A. **Title:** Aggregates	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: The Office of Materials explained that this isn't an actual change. They want to re-establish that Class 2 Durability aggregate may be used for precast concrete.

Specification Section Recommended Text:

2407.02, MATERIALS.

Delete second paragraph:

~~The course aggregate shall be either durability class 3 or 3i as described in Article 4115.04~~

Comments:

Member's Requested Change (Redline/Strikeout):

Article 2407.02, A. Aggregates.

Delete Second Paragraph

2407.02 MATERIALS.
The materials used in prestressed and precast concrete shall meet the requirements of Division 41 for the respective material, and the following:

A. Aggregates.
Sections 4110, 4111, and 4115 shall apply. The gradation of the coarse aggregate shall meet the requirements of Section 4109, Aggregate Gradation Table, Gradation No. 3, except that 100% shall pass the 1 inch (26.5 mm) sieve or Gradation No. 5. When the absolute volume of the coarse aggregate in a mixture is more than 55% of the absolute volume of the total aggregate, Gradation No. 5 shall be used. Aggregates similar to Class V shall be used only when 30% or more of the total weight (mass) of aggregate is limestone.

~~The course aggregate shall be either durability class 3 or 3i as described in Article 4115.04~~.

Reason for Revision: Precast may be Durability Class 2.

County or City Input Needed (X one)	**Yes**	**No**

Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Todd Hanson	**Office:** Materials	**Item 8**
Submittal Date: October 31, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 2414.02, B **Title:** Concrete Open Railing	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

2414.02, B CONCRETE OPEN RAILING.

Replace the second sentence:

Concrete open railing shall be constructed to the dimensions and length shown in the contract documents. The requirements of Sections ~~2404,and~~ 2406 and 2513 shall apply.

Comments: District 6 Construction noted that 2404 is referenced in 2406 and doesn't need to be referenced in 2414.02, B.

Specification Section Recommended Text:

2414.02, B CONCRETE OPEN RAILING.

Replace the second sentence:

Concrete open railing shall be constructed to the dimensions and length shown in the contract documents. The requirements of Sections 2404,~~and~~ 2406, and 2513 shall apply.

Comments:

Member's Requested Change (Redline/Strikeout):

2414.02 CONCRETE RAILINGS.

A. Concrete Barrier Railing.
Concrete barrier railing shall be constructed to the dimensions and length shown in the contract documents and in accordance with Sections 2406 and 2513.

B. Concrete Open Railing.
Concrete open railing shall be constructed to the dimensions and length shown in the contract documents. The requirements of Sections 2404 ,~~and~~ 2406, and 2513 shall apply.

C. Retrofit Concrete Barrier Railing.
Retrofit concrete barrier railing shall be constructed to the dimensions and length shown in the contract documents. The requirements of Sections 2406 and 2513 shall apply.

Reason for Revision: To require the same air content for the open railing as the barrier and retrofit rail. Current spec refers to 2403 for air content.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Todd Hanson	**Office:** Materials	**Item 9**
Submittal Date: October 31, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 2513.03, B **Title:** Cast-in-Place and Slip Form (Concrete Barriers)	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: Articles 2513.03, B; 2513.03, B, 2; 2513.03, B, 3; and 2513.03, B, 5; see Specification Section Recommended Text.

2513.03, B, Cast-in-Place and Slip Form.

Add as the first paragraph:

Class C concrete in accordance with Materials I.M. 529 shall be required for cast-in-place and Class BR in accordance with Materials I.M. 529 shall be required for slip form.

2513.03, B, 1, Cement.

Replace the entire article:

1. Cement for Class BR. Cement content shall be a minimum of 603 pounds per cubic yard (358 kg/m^3).

Comments: District 6 Construction asked where the cement content for Class C concrete is located. The Office of Materials responded by noting that information is included in Materials I.M. 529. District 2 Materials noted that the cement content for Class BR should be a minimum of 603 pounds per cubic yard. The Specifications Section asked if a reference is needed to Materials I.M. 529 for Class BR concrete. The Office of Materials verified this.

Specification Section Recommended Text:

2513.03, B, Cast-in-Place and Slip Form.

Add as the first paragraph:

Class C concrete in accordance with Materials I.M. 529 shall be required for cast-in-place and Class BR shall be required for slip form.

Delete the last paragraph:

~~Class D concrete may be substituted and Section 2403 shall apply.~~

2513.03, B, 1, Cement.

Replace the entire article:

1. Cement for Class BR. Cement content shall be 603 pounds per cubic yard (358 kg/m^3).

2513.03, B, 2, Water.

Replace the table:

Class of Concrete	Pounds (kg) of Water Per Pound (kg) Of Cementitious Material
BR (Slip Form) C~~BR~~ (Cast-in-Place)	0.450 0.488

2513.03, B, 3, Aggregates.

Replace the title:

3. Aggregates for Class BR.

2. 2513.03, B, 5, Fly Ash and GGBFS.

Replace the entire article:

5. Fly Ash and GGBFS. The conditions and allowable rates of fly ash and GGBFS substitution shall be as follows: ~~in accordance with Article 2403.03, D. GGBFS substitution will not be permitted in slip form barrier rail placed in the time period from October 16 through March 15.~~

Cement Type	**Maximum Allowable Substitution ***	**Time Period**
Type I, II	35% GGBFS 20% Fly Ash	March 16 to October 15
Type I(SM), IP	20% Fly ash	March 16 to October 15
Type I, II	20% Fly ash	October 16 to March 15
Type I(SM), IP	0%	October 16 to March 15

* Maximum total mineral admixture substitution shall be 50%.

Comments:

Member's Requested Change (Redline/Strikeout):

B. Cast-in-Place and Slip Form.

Class C concrete in accordance with Materials I.M. 529 shall be required for cast-in-place and Class BR shall be required for slip form.

Section 2403 shall apply, except the concrete shall meet the following mix design requirements:

1. Cement for Class BR. Cement content shall be 603 pounds per cubic yard (358 kg/m^3).

2. Water. The total mixing water and free moisture in the aggregate shall not exceed the following:

Class of Concrete	Pounds (kg) of Water Per Pound (kg) Of Cementitious Material
BR (Slip Form)	0.450

C~~BR~~ (Cast-in-Place)	0.488

3. Aggregates for Class BR. The combination of aggregates shall be well graded in accordance with Materials I.M. 532. The Contractor shall provide a target gradation and the following limits shall apply:

Sieves	Limits
No. 4 (4.75 mm) and larger	± 5%
No. 8 (2.36 mm) to No. 30 (600 µm)	± 4%
No. 50 (300 µm)	± 3%
No. 100 (150 µm)	± 2%
No. 200 (150 µm)	Maximum 1.5% Passing

A new target gradation will require approval by the Engineer.

4. Admixtures. Air entrainment shall be used. The air content of fresh, unvibrated concrete shall be 7.0%, as a target value, with a maximum variation of plus 1.5% or minus 1.0%. To improve workability and aid in air entrainment, water reducing or retarding admixtures may be used in accordance with Article 2513.02, C.

5. Fly Ash and GGBFS. The conditions and allowable rates of fly ash and GGBFS substitution shall be as follows: ~~in accordance with Article 2403.03, D. GGBFS substitution will not be permitted in slip form barrier rail placed in the time period from October 16 through March 15.~~

Cement Type	**Maximum Allowable Substitution ***	**Time Period**
Type I, II	35% GGBFS 20% Fly Ash	March 16 to October 15
Type I(SM), IP	20% Fly ash	March 16 to October 15
Type I, II	20% Fly ash	October 16 to March 15
Type I(SM), IP	0%	October 16 to March 15

* Maximum total mineral admixture substitution shall be 50%.

~~Class D concrete may be substituted and Section 2403 shall apply.~~

Reason for Revision: To require Class C concrete for cast in place barrier rail and Class BR for slip form barrier rail. Class C will give equal or better strength and permeability as compared to Class D concrete, especially when fly ash and ggbfs are used. This will eliminate the need for the plan note regarding cast in place and slip form rail.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe	**Office:** Construction	**Item 10**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 2528.02 **Title:** Signs	**Other:**	

Specification Committee Action: Approved adding in proposed language.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

2528.02, Signs.

Replace first paragraph:

Signs shall be of the size and type shown in the contract documents and shall utilize retroreflective sheeting meeting requirements of Article 4186.03. For Interstate and Primary projects, diamond shaped warning signs shall be 48 inch (1200 mm) by 48 inch (1200 mm) unless otherwise specified in the contract documents. Signs for traffic control zones in duration for 4 calendar days or more shall be mounted on fixed posts. Signs for traffic control zones in duration for less than 4 calendar days may be mounted on moveable skids or fixed posts. Fixed post mounted signs shall have the sign sheeting applied to rigid wood or metal and shall be mounted at a height of at least 7 feet (2.2 m), measured from the bottom of the sign to the near edge of the pavement. A secondary sign on the same post may be mounted 1 foot (0.3 m) lower than specified above. Post-mounted signs shall have a clear distance 2 feet (0.6 m) behind a curb or beyond the edge of the shoulder. ~~Until January 2002, moveable skid signs may use sheeting applied to rigid metal or wood, or flexible roll-up sheeting. After January 1, 2002, m~~Moveable skid mounted signs shall use flexible roll-up sheeting or other skid mounted sign systems that meet NCHRP 350 requirements. Moveable skid mounted signs shall be mounted at a height of at least 1 foot (0.3 m) above the roadway.

Comments: The Office of Construction explained that there are several signs contractors use that are not included in our Standard Road Plans with a sign size. They would like a default in the Specifications that unless shown elsewhere in the plans, diamond shaped signs are to be 48 inch by 48 inch. Even if a road standard is developed for signs that aren't currently dimensioned, the Office of Construction prefers this language to be in the Specifications to guarantee that all diamond shaped signs are 48 inch.

District 6 Construction asked if locals would be required to use 48 inch signs. The Specifications Section pointed out that locals aren't required to use Iowa DOT standards. The Specifications Section explained that the MUTCD allows smaller sign sizes than what the Iowa DOT calls for on several of their signs. The Office of Construction explained that this could create a problem with contractors trying to use the same

signs for local and Primary projects. Including sign size in the Specifications would provide a contractual basis for requiring 48 inch signs.

The Committee agreed to include the proposed language in the GS. The Office of Contracts pointed out that the seventh sentence of the first paragraph of Article 2528.02 can be deleted. The Specifications Section noted that they will also remove the date from the eighth sentence.

On 11/15/05, the Office of Local Systems visited with the Specifications Section and requested that this apply only to Interstate and Primary highway projects.

Specification Section Recommended Text:

No change.

Comments: The Specifications Section does not support this change for the following reasons:

1. Sign sizes are identified on the Road Standards and Signing Detail Sheets
2. The specifications do not address sizes for other shapes of signs.
3. Dimensions are best placed on the drawings they support.
4. The MUTCD allows several sizes of signs for many applications.
5. This would mandate counties and cities to use 48" inch signs.

Member's Requested Change (Redline/Strikeout):

2528.02 SIGNS.

Signs shall be of the size and type shown in the contract documents and shall utilize retroreflective sheeting meeting requirements of Article 4186.03. Diamond shaped warning signs shall be 48 inch (1200 mm) by 48 inch (1200 mm) unless otherwise specified in the contract documents. Signs for traffic control zones in duration for 4 calendar days or more shall be mounted on fixed posts. Signs for traffic control zones in duration for less than 4 calendar days may be mounted on moveable skids or fixed posts. Fixed post mounted signs shall have the sign sheeting applied to rigid wood or metal and shall be mounted at a height of at least 7 feet (2.2 m), measured from the bottom of the sign to the near edge of the pavement. A secondary sign on the same post may be mounted 1 foot (0.3 m) lower than specified above. Post-mounted signs shall have a clear distance 2 feet (0.6 m) behind a curb or beyond the edge of the shoulder. Until January 2002, moveable skid signs may use sheeting applied to rigid metal or wood, or flexible roll-up sheeting. After January 1, 2002, moveable skid mounted signs shall use flexible roll-up sheeting or other skid mounted sign systems that meet NCHRP 350 requirements. Moveable skid mounted signs shall be mounted at a height of at least 1 foot (0.3 m) above the roadway.

Reason for Revision: This specification revision is to clarify the requirement to use a 48 inch by 48 inch sign size for diamond shaped work zone signs used on Iowa projects.

County or City Input Needed (X one)	**Yes**	**No** x

Comments:					
Industry Input Needed (X one)			**Yes**	**No** x	
Industry Notified:	**Yes**	**No** x	**Industry Concurrence:**	**Yes**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Todd Hanson	**Office:** Materials	**Item 11**
Submittal Date: May 5, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 2529.02 **Title:** Materials (Full Depth Finish Patches)	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: See Item 3 of the July 14, 2005 minutes plus the change below to the table for patch types and minimum mix temperatures.

The cement types and maximum allowable substitution rates shall be as follows:

Patch Type	Cement Type	Maximum Allowable Substitution	Minimum Mix Temperature
5 Hour	Type I, Type II Type I(SM)	0% Fly Ash 0% Fly Ash	75°F (24°C) 80°F (27°C)*
10 Hour	Type I, Type II Type I(SM)	10% Fly ash 0% Fly Ash	65°F (18°C) 70°F (21°C)

* When a Type A Mid Range water reducing admixture is used, the minimum mix temperature shall be 75°F (24°C).

Comments: This was originally submitted and approved as Item 3 in the July 14, 2005 Specification Committee meeting. The Office of Materials notified the Specification Section to use that language for the General Supplemental Specifications. They also informed the Specifications Section that the IRMCA suggested an additional change to the table of patch types and minimum mix temperatures. The change involves adding a note to the table.

Specification Section Recommended Text:

2529.02, **B. Portland Cement Concrete.**

Delete the second paragraph:

~~Class M mixtures with a minimum 5 hour cure time shall not contain fly ash.~~

2529.02, **B, 1, Slump.**

Add as the second paragraph:

When a Type A Mid Range water reducing admixture is used, the slump shall be between 1 inch (25 mm) and 4 inches (100 mm) as a target range, allowing a maximum of 5 inches (125 mm).

2529.02, B, 3, Temperature.

Replace the first sentence:

The temperature of Full Depth Portland Cement Concrete patching material, as delivered on the job site, shall be as required in Article 2529.02, B, 4 ~~greater than 75°F (24°C) for a 5 hour patch and 65°F (18°C) for a 10 hour patch~~.

2529.02, B, 4, Cement.

Replace the entire article:

Cement for Class M mixes shall meet requirements of Section 4101. ~~Type I or Type II cement shall be used in patching concrete. Type IP, I (PM), IS, and I(SM) cement shall not be used in patching concrete unless approved in Materials I.M. 401.~~

~~At the Contractor's option, Class C fly ash may be substituted for up to 10%, by weight (mass), of the cement mixtures. Concrete mixtures with a 5 hour curing time shall not contain fly ash.~~

The cement types and maximum allowable substitution rates shall be as follows:

Patch Type	Cement Type	Maximum Allowable Substitution	Minimum Mix Temperature
5 Hour	Type I, Type II Type I(SM)	0% Fly Ash 0% Fly Ash	75°F (24°C) 80°F (27°C)*
10 Hour	Type I, Type II Type I(SM)	10% Fly ash 0% Fly Ash	65°F (18°C) 70°F (21°C)

* When a Type A Mid Range water reducing admixture is used, the minimum mix temperature shall be 75°F (24°C)

2529.02, B, 6, Water Reducer.

Replace the entire article:

A Type A Mid Range water reducing admixture may be used at the Contractor's option. It shall be one listed in Materials I.M. 403, and use shall be at the dosage recommended by the manufacturer.

2529.02, B, 8, Transit Mix Concrete Containing Type I or Type II Cement.

Replace the title and entire article:

8. Transit Mix Concrete ~~Containing Type I or Type II Cement~~.

Transit Mix Concrete~~, with Type I or Type II Cement,~~ shall be from a plant from which the concrete can be delivered and placed within 60 minutes from the time the cement is placed in contact with the aggregate. The time may be extended to 90 minutes when a retarding admixture, used in accordance with Materials I.M. 403, including temperature dosage guidelines, and at the Contractor's expense, is added at the plant. Continuous mixing equipment using volumetric proportioning may be used in accordance with Article 2001.20, D. The concrete shall be placed within 30 minutes after the introduction of the calcium chloride.

2529.02, B, 9, Concrete Mixtures.

Add as the second sentence:

The Engineer may waive the use of calcium chloride on patches cured longer than 10 hours.

Comments:

Member's Requested Change (Redline/Strikeout):

B. Portland Cement Concrete.
It is the intention to obtain concrete with a high early strength for early opening to traffic. The concrete shall meet the requirements of the current Materials I.M. 529 with the following modifications:

~~Class M mixtures with a minimum 5 hour cure time shall not contain fly ash.~~

1. Slump.
Slump, measured in accordance with Materials I.M. 317 prior to addition of calcium chloride solution, shall be between 1 inch (25 mm) and 2 1/2 inches (65 mm) as a target range, allowing a maximum of 3 inches (75 mm). If calcium chloride solution is not to be added, the slump shall be between 1 inch (25 mm) and 3 inches (75 mm) as a target range, allowing a maximum of 4 inches (100 mm).

When a Type A Mid Range water reducing admixture is used, the slump shall be between 1 inch (25 mm) and 4 inches (100 mm) as a target range, allowing a maximum of 5 inches (125 mm).

2. Air Entrainment.
The entrained air content of the unconsolidated concrete will be determined according to Materials I.M. 318, prior to addition of calcium chloride if it is to be added. The air entrainment, when calcium chloride is to be added, shall be 5.0%, with a tolerance of ± 2.0%. The air entrainment, when no calcium chloride is to be added, shall be 6.5%, with a tolerance of ± 1.5%.

3. Temperature.
The temperature of Full Depth Portland Cement Concrete patching material, as delivered on the job site, shall be as required in paragraph 4. ~~greater than 75°F (24°C) for a 5 hour patch and 65°F (18°C) for a 10 hour patch.~~ Heating of water, aggregate, or both, may be necessary to meet this requirement. The cost of heating shall be considered incidental to patching.

4. Cement.
Cement for Class M mixes shall meet requirements of Section 4101. ~~Type I or Type II cement shall be used in patching concrete. Type IP, I (PM), IS, and I(SM) cement shall not be used in patching concrete unless approved in Materials I.M. 401.~~

~~At the Contractor's option, Class C fly ash may be substituted for up to 10%, by weight (mass), of the cement mixtures. Concrete mixtures with a 5 hour curing time shall not contain fly ash.~~

The cement types and maximum allowable substitution rates shall be as follows:

Patch Type	Cement Type	Maximum Allowable Substitution	Minimum Mix Temperature
5 Hour	Type I, Type II Type I(SM)	0% Fly Ash 0% Fly Ash	75°F (24°C) 80°F (27°C)*
10 Hour	Type I, Type II Type I(SM)	10% Fly ash 0% Fly Ash	65°F (18°C) 70°F (21°C)

* When a Type A Mid Range water reducing admixture is used, the minimum mix temperature shall be 75°F (24°C)

5. Calcium Chloride.
When calcium chloride is required, it shall be furnished in water soluble form and added to the mixture, at the job site. The calcium chloride solution shall be a commercial 32% solution, or equivalent, prepared by the Contractor as follows:

PROPORTIONS FOR 32% CALCIUM CHLORIDE SOLUTIONS		
Type of Solid Calcium Chloride	Pounds (Grams) Solid per gallon (liter) of water	Solution produced per gallon (liter) of water
Type 1 - Regular Flake (77% material) Type 2 - Concrete Flake or pellets (94% material)	7 (840 g/L) 5 (600 g/L)	1.35 1.18

The solution shall be added at the rate of 2.75 gallons per cubic yard (13.6 L/m^3) of concrete. Alternate calcium chloride solutions of different concentrations may be approved by the Engineer, provided appropriate adjustments in the total concrete composition are made.

The mixture shall be agitated until the calcium chloride is completely in solution, and agitation shall be continued, as necessary, to maintain uniformity. The calcium chloride will crystallize out of a 32% solution at 20°F (-7°C), so the solution must be maintained at a higher temperature at all times.

Except when using continuous mixing equipment described in Article 2001.20, D, the calcium chloride solution shall be present in the mix for at least 2 minutes of mixing.

6. Water Reducer.
A Type A Mid Range water reducing admixture may be used at the Contractor's option. It shall be one listed in Materials I.M. 403, and use shall be at the dosage recommended by the manufacturer.

7. Aggregate Durability.
Unless otherwise specified, coarse aggregate shall have the proper class of durability as defined in Article 4115.04, C.

8. Transit Mix Concrete ~~Containing Type I or Type II Cement~~.
Transit Mix Concrete~~, with Type I or Type II Cement,~~ shall be from a plant from which the

contact with the aggregate. The time may be extended to 90 minutes when a retarding admixture, used in accordance with Materials I.M. 403, including temperature dosage guidelines, and at the Contractor's expense, is added at the plant. Continuous mixing equipment using volumetric proportioning may be used in accordance with Article 2001.20, D. The concrete shall be placed within 30 minutes after the introduction of the calcium chloride.

9. Concrete Mixtures.
Concrete for PCC patches shall be Class M mixtures with calcium chloride. The engineer may waive the use of calcium chloride on patches cured longer than 10 hours.

10. Curing and Opening Time.
PCC patches placed on multi-lane sections shall be cured a minimum of ten hours before opening to traffic. PCC patches placed on two-lane sections shall be cured a minimum of 5 hours before opening to traffic. These restrictions may be modified in the plans or by the Engineer for specific situations.

Reason for Revision: A large number of ready mix plants only have Type I(SM) cement available. Research in the Materials Laboratory has shown that Type I(SM) achieves equal strength to Type I/II cements if the cure temperature is increased or when a mid range water reducer is used. This change will accommodate all sources of Type I(SM) for patching.

It is requested that this specification be allowed retroactive as a mutual benefit.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Todd Hanson	**Office:** Materials	**Item 12**
Submittal Date: May 5, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 2530.03 **Title:** Materials (Partial Depth Finish Patches)	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: See Item 4 of the July 14, 2005 minutes plus the change below to the table for patch types and minimum mix temperatures with the additional suggested change made by District 6 Construction.

The cement types and maximum allowable substitution rates shall be as follows:

Patch Class	Cement Type	Maximum Allowable Substitution	Minimum Mix Temperature
B	Type I, Type II Type I(SM)	0% Fly Ash 0% Fly Ash	75°F (24°C) 80°F (27°C) *
C	Type I, Type II Type I(SM)	10% Fly ash 0% Fly Ash	65°F (18°C) 70°F (21°C)

* When a Type A Mid Range water reducing admixture is used, the minimum mix temperature shall be 75°F (24°C)

Comments: This was originally submitted and approved as Item 4 in the July 14, 2005 Specification Committee meeting. The Office of Material notified the Specification Section to use that language for the General Supplemental Specifications. They also informed the Specifications Section that the IRMCA suggested an additional change to the table of patch types and minimum mix temperatures. The change involves adding a note to the table. District 6 Construction noted that for Class C patches with Type I(SM) and 0% Fly Ash, the minimum mix temperature should be 70ºF, not 65 ºF. The Office of Materials verified this.

Specification Section Recommended Text:

2530.03, MATERIALS.

Replace "~~15~~ minutes" with "30 minutes "in the indented paragraph.

2530.03, B, 4, a, Slump.

Add as the second paragraph:

When a Type A Mid Range water reducing admixture is used, the slump shall be between 1 inch (25 mm) and 4 inches (100 mm) as a target range, allowing a maximum of 5 inches (125 mm).

2530.03, B, 4, c, Temperature.

Replace the first sentence:

The temperature of Class B patching material, as delivered to the job site, shall be as required in paragraph d ~~greater than 75°F (24°C)~~.

2530.03, B, 4, d, Cement.

Replace the entire article:

Cement for Class M concrete mixtures shall meet the requirements of Section 4101. ~~Type IP, I(PM), IS, and I(SM) cement shall not be used in patching concrete unless approved in Materials I.M 401.~~

~~At the Contractor's option, Class C fly ash may be substituted for up to 10%, by weight (mass), of the cement. Concrete mixtures with a 5 hour curing time shall not contain fly ash.~~

The cement types and maximum allowable substitution rates shall be as follows:

Patch Class	Cement Type	Maximum Allowable Substitution	Minimum Mix Temperature
B	Type I, Type II Type I(SM)	0% Fly Ash 0% Fly Ash	75°F (24°C) 80°F (27°C) *
C	Type I, Type II Type I(SM)	10% Fly ash 0% Fly Ash	65°F (18°C) 65°F (21°C)

* When a Type A Mid Range water reducing admixture is used, the minimum mix temperature shall be 75°F (24°C)

2530.03, B, 4, f, Water Reducer.

Replace the entire article:

A Type A Mid Range water reducing admixture may be used at the Contractor's option. It shall be one listed in Materials I.M. 403, and use shall be at the dosage recommended by the manufacturer.

2530.03, B, 4, h, Transit Mix Concrete Containing Type I Cement.

Replace the title and first sentence:

h. Transit Mix Concrete ~~Containing Type I Cement~~.
Transit mix concrete ~~containing Type I cement~~ shall be from a plant from which the concrete can be delivered and placed within 60 minutes from the time the cement is placed in contact with the aggregate.

Comments:

Member's Requested Change (Redline/Strikeout):

2530.03 MATERIALS.
Materials for partial depth finish patches shall meet the requirements for the type of material specified.

A. Hot Mix Asphalt Patching Material.
The patching material for HMA patches shall meet the requirements of Section 2303. The mixture size shall be 3/8 or 1/2 inch (9.5 mm or 12.5 mm) unless otherwise designated in the contract documents. The mixture shall meet or exceed 300,000 ESAL HMA criteria.

Tack coat bitumen for HMA patches shall be as specified in Article 2303.02, E.

B. Portland Cement Concrete Patching Material.
The patching material for PCC patches shall meet one of the following requirements. When patching encroaches on an adjacent lane which is open to traffic or when there is patching on two lane pavements or other locations where overnight closures are not permitted, Class A or Class B patching material shall be used. On pavements with three or more lanes and where overnight closure is permitted, Class C patching material shall be used.

1. Class A Patching Material.
Class A patching material shall be a modified Portland cement type manufactured to provide rapid set and high early strength. It shall meet the requirements of Materials I.M. 491.20.

When a mortar is furnished, coarse aggregate shall be added in the quantity recommended by the manufacturer.

2. Class B Patching Material.
Class B patching material shall be high early strength rapid set (5 hour) PCC meeting the requirements of Materials I.M. 529 and the following requirements:

The patching material shall be a Class M mixture with calcium chloride. Class M mixtures with calcium chloride shall not contain fly ash. When calcium chloride is used in a mixture, the concrete shall be placed within ~~15~~ 30 minutes after the introduction of the calcium chloride. Coarse aggregate shall meet the requirements of Article 4115.06 and Section 4109, Gradation No. 5.

When Class B patching material is furnished for partial depth patches, it may also be furnished for full depth patches.

3. Class C Patching Material.
Class C patching material shall be a PCC mixture with an early set that will allow time of opening to traffic in 24 hours to 36 hours as directed by the Engineer. Coarse aggregate shall meet the requirements for Class B patching material. Class M mixture meeting the requirements of the current Materials I.M. 529 without the addition of calcium chloride shall be used.

When Class C patching material is furnished for partial depth patches, it may also be furnished for full depth patches.

4. Modifications to Mixtures for Class B and Class C Patching Material.
The following modifications shall apply to the PCC mixtures for Class B and Class C patching material:

a. Slump.
Slump, measured in accordance with Materials I.M. 317 prior to addition of calcium chloride solution, shall be between 1 inch and 2 1/2 inches (25 mm and 65 mm) as a target range, allowing a maximum of 3 inches (75 mm). If calcium chloride solution is not to be added, the slump shall be between 1 inch and 3 inches (25 mm and 75 mm) as a target range, allowing a maximum of 4 inches (100 mm).

When a Type A Mid Range water reducing admixture is used, the slump shall be between 1 inch (25 mm) and 4 inches (100 mm) as a target range, allowing a maximum of 5 inches (125 mm).

b. Air Entrainment.
The entrained air content of the unconsolidated concrete will be determined according to Materials I.M. 318, prior to addition of calcium chloride if it is to be added. The air entrainment when calcium chloride is to be added shall be 5.0%, with a tolerance of ±

2.0%. The air entrainment when no calcium chloride is to be added shall be 6.5%, with a tolerance of ± 1.5%.

c. Temperature.
The temperature of Class B patching material, as delivered to the job site, shall be as required in paragraph d. ~~greater than 75°F (24°C).~~ The temperature of Class C patching material, as delivered to the job site, shall be greater than 65°F (18°C). Heating of water, aggregate, or both may be necessary to meet this requirement. The cost of heating shall be considered incidental to patching.

d. Cement.
Cement for Class M concrete mixtures shall meet the requirements of Section 4101. ~~Type IP, I(PM), IS, and I(SM) cement shall not be used in patching concrete unless approved in Materials I.M 401.~~

~~At the Contractor's option, Class C fly ash may be substituted for up to 10%, by weight (mass), of the cement. Concrete mixtures with a 5 hour curing time shall not contain fly ash.~~

The cement types and maximum allowable substitution rates shall be as follows:

Patch Class	Cement Type	Maximum Allowable Substitution	Minimum Mix Temperature
B	Type I, Type II Type I(SM)	0% Fly Ash 0% Fly Ash	75°F (24°C) 80°F (27°C) *
C	Type I, Type II Type I(SM)	10% Fly ash 0% Fly Ash	65°F (18°C) 65°F (21°C)

* When a Type A Mid Range water reducing admixture is used, the minimum mix temperature shall be 75°F (24°C)

e. Calcium Chloride.
Where calcium chloride is required, it shall be furnished in water solution form and added to the mix, at the job site. The calcium chloride solution shall be a commercial 32% solution, or equivalent, prepared by the Contractor:

PROPORTIONS FOR 32% CALCIUM CHLORIDE SOLUTIONS (ENGLISH)		
Type of Solid Calcium Chloride	Pounds Solid per gallon of water	Solution produced per gallon of water
Type 1 - Regular Flake (77% material) Type 2 - Concrete Flake or pellets (94% material)	7 5	1.35 1.18

PROPORTIONS FOR 32% CALCIUM CHLORIDE SOLUTIONS (METRIC)		
Type of Solid Calcium Chloride	Grams Solid per liter of water	Solution produced per liter of water
Type 1 - Regular Flake (77% material) Type 2 - Concrete Flake or pellets (94% material)	840 g/L 600 g/L	1.35 1.18

The solution shall be added at the rate of 2.75 gallons per cubic yard (13.6 L/m^3) of concrete. Calcium chloride solutions of different concentrations may be approved by the Engineer, provided appropriate adjustments in the total concrete composition are made.

Caution. The mixture shall be agitated until the calcium chloride is completely in solution, and agitation shall be continued, as necessary, to maintain uniformity. The calcium chloride will crystallize out of a 32% solution at 20°F (-7°C), so the solution must be maintained at a higher temperature at all times.

Except when using continuous mixing equipment described in Article 2001.20, D, the calcium chloride solution shall be present in the mix for at least 2 minutes of mixing.

f. Water Reducer.
A Type A Mid Range water reducing admixture may be used at the Contractor's option. It shall be one listed in Materials I.M. 403, and use shall be at the dosage recommended by the manufacturer.

g. Aggregate Durability.
Unless otherwise specified, coarse aggregate shall have the proper class of durability, as defined in Article 4115.04, C.

h. Transit Mix Concrete ~~Containing Type I Cement~~.
Transit mix concrete ~~containing Type I cement~~ shall be from a plant from which the concrete can be delivered and placed within 60 minutes from the time the cement is placed in contact with the aggregate. The time may be extended to 90 minutes when a retarding admixture, used in accordance with Materials I.M. 403 including temperature dosage guidelines and at the Contractor's expense, is added at the plant. Continuous mixing equipment using volumetric proportioning may be used in accordance with Article 2001.20, D.

i. Prepackaged Mixture.
A prepackaged mixture, proportioned as specified above for Class B or Class C matching material may be furnished as a Class B or Class C patching material with the approval of the Engineer. The coarse aggregate for prepackaged mixtures shall be limited to that meeting requirements of Article 4115.06. The prepackaged mixtures shall be mixed in an on-site paddle type mixer or proportioned and mixed with continuous mixing equipment using volumetric proportioning in accordance with Article 2001.20, D.

Reason for Revision:

A large number of ready mix plants only have Type I(SM) cement available. Research in the Materials Laboratory has shown that Type I(SM) achieves equal strength to Type I/II cements if the cure temperature is increased or when a mid range water reducer is used. This change will accommodate all sources of Type I(SM) for patching.

It is requested that this specification be allowed retroactive as a mutual benefit.

County or City Input Needed (X one)	**Yes**	**No**
Comments:		
Industry Input Needed (X one)	**Yes**	**No**

Industry Notified:	**Yes**	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: John Smythe	**Office:** Construction	**Item 13**
Submittal Date: September 26, 2005	**Proposed Effective Date:** April, 2006	
Section No.: 2547 **Title:** Contract Finalization	**Other:**	

Specification Committee Action: Withdrawn.

Deferred:	**Not Approved:** X	**Approved Date:**	**Effective Date:**

Specification Committee Approved Text: Item withdrawn.

Comments: The Office of Construction explained that they worked with the DCEs to develop this specification with the hope of providing contractors with monetary incentives to get final documentation and change orders agreed to and to address deficiencies. They noted that this proposed change has not been well received either by counties or by industry. Industry is primarily opposed to the bid item. The Office of Construction explained that they plan to withdraw the bid item, but would like for the some of the proposed requirements to be included in the Specifications. The Specifications Section noted that if there will be no bid item, perhaps this text should be placed in Division 11.

The Office of Construction explained that they would like to pursue the concepts of the proposed changes even without the bid item. The Statewide Operations Bureau agreed, but stated that the Committee should look at including these with the October 2006 GS. They added that the bid item probably won't be accepted.

District 6 Construction noted that the Department needs to get a handle on project management. The Office of Construction noted that the Project Management special provision for I-235 is showing promise. The Statewide Operations Bureau noted that contractors who have experience with the Project Management special provision have been generally satisfied with it. The Office of Construction explained that they would like to establish expectations for contractors to get documentation submitted in a timely manner without prompting.

The Office of Construction moved to withdraw and rework the proposed changes. The Committee agreed.

Specification Section Recommended Text:

2547, Contract Finalization

Add new section:

Section 2547, Contract Finalization.

2547.01 DESCRIPTION
The Contractor shall be responsible for cleanup in accordance with Article 1104.08, and submittal of all paperwork necessary to finalize the contract. For Primary and Interstate projects, the proposal may include an item for Contract Finalization that will be paid following satisfactory completion of all work, and submittal of all documentation required for the contract. The Contractor shall not subcontract any portion of this item.

2547.02 FINAL QUANTITIES
The Contractor shall accept the final quantities as determined by the Engineer or provide a written notice indicating the reason for disagreement within 30 calendar days of receiving the

Engineer's list of final quantities. The list of final quantities will not be provided by the Engineer prior to project acceptance described in Article 1109.09. If no notice of disagreement is received, then final payment will be based on the Engineer's list of final quantities.

2547.03 DOCUMENTATION
The Contractor shall furnish all material certifications and test reports required by Materials I.M. 204 before the material is incorporated in the work. If deficiencies in material certifications or test reports for quantities incorporated in the work are identified by the Engineer, the Contractor shall submit the required documentation within 30 calendar days of receiving written notice from the Engineer of the deficiency.

The Contractor shall also furnish fully completed and signed final documentation required by the contract, or provide written notice indicating the reason for disagreement, within 30 calendar days of receiving written notice by the Engineer. Final documentation may include, but is not limited to:

- Contract Modifications
- Certification of DBE Accomplishment,
- Form FHWA-47 Statement of Materials and Labor, required for Federal Aid projects greater than $1,000,000 on the National Highway System,
- Delinquent certified payrolls or required revised payrolls

Failure to submit the completed documents will result in an administrative fee of $100 per calendar day for each day that the documents remain delinquent.

2547.04 METHOD OF MEASUREMENT.
This item is paid for on a Lump Sum basis and no direct measurement will be made.

2547.05 BASIS OF PAYMENT
When the proposal has a lump sum item for Contract Finalization, the proposal will also contain a predetermined lump sum price. Contractor costs exceeding this amount for compliance with this item shall be included in the cost of other items of work.

When the proposal does not have a lump sum item for Contract Finalization, all costs incurred by the Contractor for cleanup, and submittal of all documentation shall be incidental to other work.

Payment will be made for this contract item upon completion of all work and submittal of all required documentation.

Comments:

Member's Requested Change: **(DO NOT USE "Track Changes," or "Mark-Up". Use ~~Strikeout~~/Highlight)**

Add section 2547, Contract Finalization

Section 2547

2547.01 DESCRIPTION
The Contractor shall be responsible for cleanup in accord with Article 1104.08, and submittal of all paperwork necessary to finalize the contract. For Primary and Interstate projects, the proposal may include an item for Contract Finalization that will be paid following satisfactory completion of all work, and submittal of all documentation required for the contract. The Contractor shall not subcontract any portion of this item.

2547.02 FINAL QUANTITIES
The Contractor shall accept the final quantities as determined by the Engineer or provide a written notice indicating the reason for disagreement within 30 Calendar Days of receiving the Engineer's list of final quantities. The list of final quantities will not be provided by the Engineer prior to project acceptance described in Article 1109.09. If no notice of disagreement is received, then the final payment will be based on the Engineer's list of final quantities.

2547.03 DOCUMENTATION
The Contractor shall furnish all material certifications and test reports required by Materials IM 204 before the material is incorporated in the work. If deficiencies in material certifications or test reports for quantities incorporated in the work are identified by the Engineer, the Contractor shall submit the required documentation within 30 Calendar Days of receiving written notice from the Engineer of the deficiency.

The Contractor shall also furnish fully completed and signed final documentation required by the contract, or provide written notice indicating the reason for disagreement, within 30 Calendar Days of receiving written notice by the Engineer. Final documentation may include, but is not limited to:

- Contract Modifications
- Certification of DBE Accomplishment,
- Form FHWA-47 Statement of Materials and Labor, required for Federal Aid projects greater than $1,000,000 on the National Highway System,
- Delinquent certified payrolls or required revised payrolls

Failure to submit these acceptably completed documents will result in an administrative fee of $100 per Calendar Day for every day that any of the required documents remain delinquent.

2547.02 METHOD OF MEASUREMENT AND BASIS OF PAYMENT
When the proposal has a lump sum item for Contract Finalization, the proposal will also contain a predetermined lump sum price. Contractor costs exceeding this amount for compliance with this item shall be included in the cost of other items of work.

When the proposal does not have a lump sum item for Contract Finalization, all costs incurred by the Contractor for cleanup, and submittal of all documentation shall be incidental to other work.

Payment will be made for this contract item upon completion of all work and submittal of all required documentation.

Reason for Revision: Establish a contract item for administrative costs associated with project finalization.					
County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes**	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 14**
Submittal Date: October 21, 2005	**Proposed Effective Date:** April 18, 2006	
Article No.: 4109.02 **Title:** Aggregate Gradation Table	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

4109.02, Aggregate Gradation Table.

Replace the English and Metric Aggregate Gradation Tables. (See Attached Tables.)

Comments: The Office of Materials explained that they felt the control for the #50 screen was probably unnecessary for crushed stone. In addition, producers suggested splitting the gradations for granular subbases into two gradations: one for crushed stone, and one for gravel. The feeling was that more control screens are needed for gravels to increase stability. In addition, producers can produce crushed products a little coarser realizing they will break down somewhat during handling.

The question was raised which gradation recycled PCC falls under. The Office of Materials responded that it would fall under Gradation No. 12a. The Office of Materials also investigated further and determined that Note 6 should be worded as above and that it does not apply to Gradation No. 12b.

During the discussion of Item 21, the decision was made to delete Gradation No. 16 from the Aggregate Gradation Table.

In a discussion on 11/21/05, District 2 Materials notified the Specifications Section that the first sentence of Note 6 should be deleted. In addition, the decision was made to delete Gradation 2 because of lack of use.

Specification Section Recommended Text:

4109.02, Aggregate Gradation Table.

Replace Gradation No. 12 with the following:

Grad. No.	Section No.	Intended Use	1.5" (37.5 mm)	0.500" (12.5 mm)	#8 (2.36 mm)	#50 (300 µm)	#200 (75 µm)	Note
12a	4121	Granular Subbase	100	40-80	5-25	-	0-6	6
12b	4121 (Gravel)	Granular Subbase	100	50-80	10-30	5-15	3-7	6

6. ~~The gradation requirement for the #8 sieve shall be 8% to 30% when either gravel or crushed stone, without blending sand, is supplied~~. The gradation requirement for the #8 (2.36 mm) sieve shall be 5% to 25% when recycled material is supplied.

Comments: Split gradation 12 into two gradations for crushed stone and gravel.

Member's Requested Change (Redline/Strikeout):

Article 4109.02, Aggregate Gradation Table.

Replace: selected sieved and note 6.

See attached

AGGREGATE GRADATION TABLE – ENGLISH

Percent Passing

12a	4121	Granular Subbase	100	-	-	40-80	-	-	~~10-20~~5-25	-	~~0-15~~	-	0-6	6
12b	4121 (Gravel)	Granular Subbase	100	-	-	50-80	-	-	10-30~~20~~	-	~~0~~5-15	-	3-7~~0-6~~	6

6. ~~The gradation requirement for the #8 sieve shall be 8% to 30% when either gravel or crushed stone, without blending sand, is supplied~~.

6. The gradation requirement for the #8 sieve shall be 5% to 25% when recycled material is supplied.

Reason for Revision: Split gradation 4121 into two gradations for crushed stone and gravel.

Separate gradations were needed crushed stone and gravel to improve drainability and strength.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: The gradations were adjusted per recommendations from aggregate producers.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 15**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4109 **Title:** Aggregate Gradations	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: for Articles 4109.01 and 4109.03, see Specification Section Recommended text.

4109.02 GRADATION.

(See attached English and Metric Aggregate Gradation Tables.)

Comments: The primary discussion related to this item was the proposal to delete the Aggregate Gradation Table from the Standard Specifications. Currently it is located in Article 4109 of the Specifications and in Materials I.M. 209, Appendix D. The tables don't quite match. The idea was to place the table in only one location to avoid problems (e.g. the tables not matching) that can arise from placing it in two locations. The argument in favor of removing the table from the Specifications and leaving it in the Materials I.M.s is that the primary users of the table (aggregate producers) will go to the Materials I.M.s to find that information rather than the Specifications. The main argument against removing the table from the Standard Specifications was the Specification Committee would lose control over the table.

The idea of placing the entire table back in the GS was proposed. In the past, the whole table was produced in each GS; however, with the initiation of the Electronic Reference Library (ERL) it was removed from the GS and placed in the ERL. The Office of Materials still wants the table placed in the I.M.s for the benefit of producers, so the idea of placing a duplicated copy of the table in Materials I.M. 209, Appendix D was proposed. This way the Specifications Committee still has control over the table and the table will still be located in a document the primary users will commonly have. The Committee agreed to this idea. The table will be produced by the Specifications Section for the GS. The Specifications Section will provide a copy to the Office of Materials to place in Materials I.M. 209, Appendix D.

District 2 mentioned that Iowa uses certified aggregate as basis for acceptance. The Office of Materials wants to identify information in Section 4109 that goes beyond the gradation table and is more global. Article 4109.03 provides the Engineer with decision making on sources that are marginal in production of any aggregate. Producers may mix aggregate from poor quality beds with aggregate from better quality beds to produce product that passes. The Engineer now will be able to work with the producer to identify poor beds and eliminate bad material. The Engineer will also have the option of rejecting previously certified stockpile if dissatisfied after examining the stockpile. Article 1106.01 is a bit more general than what the Office of Materials desired. Article 4109.03 parallels Article 1106.01, but is specific to aggregates.

Specification Section Recommended Text:

4109, Aggregate Gradations.

Replace title and entire section:

Section 4109. Certified Aggregates.

4109.01 DESCRIPTION.

A. Coarse Aggregate.
Particles retained on the No. 4 (4.75 mm) or larger sieve.

B. Fine Aggregate.
Particles passing the No. 4 (4.75 mm) sieve.

4109.02 GRADATION.
Meet the gradation requirements of specification article for the particular material.

4109.03 UNACCEPTABLE MATERIALS.
Article 1106.04 shall apply. Stockpiles contaminated with organic or other foreign materials may be cause for rejection of the aggregate. The Engineer will determine acceptability by visual examination or other methods.

The Engineer may reject the use of material from ledges or beds that individually do not pass the quality requirements for the intended aggregate product. Specific production methods may be required to permit the use of material from marginal ledges or beds.

Comments: The Specifications Engineer does not support removing the Aggregate Gradation Table from the Standard Specifications due to possible confusion, consistency, and philosophical placement of quality requirements in specifications and testing and approved products in the Material I.M.s. All other state and national specifications contain individual gradations in the specifications.

Reference to AASHTO M 92 is needed as it contains manufacturing tolerances for wire cloth used for sieves. Could this lead to sieves of other materials being used? What about material suppliers and contractors from other states doing business in Iowa versus other states or for other entities?

Member's Requested Change (Redline/Strikeout):

Section 4109, Aggregate Gradations.

Replace: entire section.

~~**Section 4109. Aggregate Gradations.**~~

~~**4109.01 DESCRIPTION.**~~
~~Gradations for various aggregates are shown in the Aggregate Gradation Table. Each gradation in the table is identified by number. When the aggregate is tested by means of laboratory sieves, the sieve analysis shall show a gradation within the range permitted for the Gradation Number specified.~~

~~**4109.02 TESTING SIEVES.**~~
~~Sieves used for testing materials shall be woven with wire cloth sieves meeting requirements of AASHTO M 92.~~

~~All gradation testing shall be done using sieves with nominal openings of 1 inch and 0.500 inches (25.0 mm and 12.5 mm) in lieu of 1.06 inch and 0.530 inch (26.5 mm and 13.2 mm) respectively. The specification limits in the Aggregate Gradation Table will not change (only the appropriate column headings).~~

~~During the transition, any deviation in gradation results, attributed to this change, will be investigated and handled on a case by case basis.~~

(Also strike out gradation tables.)

Section 4109. Certified Aggregates.

4109.01 DESCRIPTION.

A. Coarse Aggregate.
Particles retained on the No. 4 (4.75mm) or larger sieve.

B. Fine Aggregate.
Particles passing the No. 4 (4.75mm) sieve.

4109.02 GRADATION.
Meet the requirements of Materials I.M. 209.

4109.03 UNACCEPTABLE MATERIALS.
The requirements of 1106.04 will apply. Stockpiles contaminated with organic or other foreign materials may be cause for rejection of the aggregate. The Engineer will determine acceptability by visual examination or other methods.

The Engineer may reject the use of material from ledges or beds that individually do not pass the quality requirements for the intended aggregate product. Specific production methods may be required to permit the use of material from marginal ledges or beds.

Reason for Revision: Specification in the imperative mood. This specification now describes certified aggregates rather than just gradations. Moved gradation table from 4109 to IM 209 appendix D. Generalized statement about unacceptable materials. Other Information in 4109.02 (sieve size) is considered common industry practice so was removed.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 16**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4110 **Title:** Fine Aggregate for Concrete	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

4110, Fine Aggregate for Portland Cement Concrete.

Replace title and entire section:

4110.01 DESCRIPTION.
Natural sands resulting from disintegration of rock through erosional processes. Acquire mineral aggregate from an approved source as described in Materials I.M. 409.

4110.02 GRADATION.
Meet the requirements for Gradation No. 1 of the Aggregate Gradation Table in Section 4109.

4110.03 QUALITY.

TABLE 4110.03

Fine Aggregate Quality	Test Limits	Test Method
Shale and Coal	2.0% (maximum)	Materials I.M. 344
Mortar Strength [(a)]	1.5 (minimum)	Iowa DOT Materials Laboratory Test Method 212
Fineness Modulus	2.75 (minimum)	Materials I.M.302

(a) An annual mortar strength test result of 1.5 or greater is required for continued approval of a source with a fineness modulus less than 2.75.

The Engineer may require additional mortar strength testing for sources where quality changes.

Comments: The Committee recommended changing the title to Fine Aggregate for Portland Cement Concrete. This specification has always been intended for use with PC concrete. They also recommended removing the reference to manufactured sands since manufactured sands should not be used in PC concrete.

Specification Section Recommended Text:

4110, Fine Aggregate for Concrete.

Replace entire section:

4110.01 DESCRIPTION.
Natural sands resulting from disintegration of rock through erosional processes. Acquire mineral aggregate from an approved source as described in Materials I.M. 409.

For concrete floors, overlays, and pavements use only natural sands. For other uses, manufactured sand may be used only with approval of the Engineer.

4110.02 GRADATION.
Meet the requirements for Gradation No. 1 as shown below:

Gradation No. 1
Table 4110.02

Sieve Size	% Passing
3/8" (9.5 mm)	100
#4 (4.75 mm)	90-100
#8 (2.36 mm)	70-100
#30 (600 µm)	10-60
#50 (300 µm)	--
#100 (150 µm)	--
#200 (75 µm)	0-1.5
NOTE: When the fine aggregate is sieved through the following number sieves, 4, 8, 30, 50, and 100, not more than 40% shall pass one sieve and be retained on the sieve with the next higher number.	

4110.03 QUALITY.

Table 4110.03

Fine Aggregate Quality	Test Limits	Test Method
Shale and Coal	2.0% (maximum)	Materials I.M. 344
Mortar Strength [(a)]	1.5 (minimum)	Iowa 212
Fineness Modulus	2.75 (minimum)	Materials I.M.302

(a) An annual mortar strength test result of 1.5 or greater is required for continued approval of a source with a fineness modulus less than 2.75.

The Engineer may require additional mortar strength testing for sources where quality changes.

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4110. Fine Aggregate for Concrete.

Replace entire section:

~~**Section 4110. Fine Aggregate for Concrete.**~~

~~**4110.01 DESCRIPTION.**~~
~~Fine aggregate for concrete shall consist of clean, hard, durable, mineral aggregate particles free from injurious amount of silt, shale, coal, organic matter, or other objectionable material and shall comply with the following requirements:~~

~~Fine aggregate for concrete floors, overlays, and pavements shall be natural sands. Natural sand is defined as fine aggregate resulting from disintegration of rock through erosional processes.~~

~~Manufactured sand may be used only with approval of the Engineer.~~

~~**4110.02 SHALE.**~~
~~Fine aggregate from an approved source shall have a historical record of not more than 2.0% shale and coal particles retained on a No. 16 (1.18 mm) sieve.~~

~~**4110.03 GRADATION.**~~
~~Fine aggregate for concrete shall meet the requirements for Gradation Number 1 of the Aggregate Gradation Table referenced in Section 4109. When the fine aggregate is sieved through the following sieves: No. 4, No. 8, No. 16, No. 30, No. 50, and No. 100 (4.75 mm, 2.36 mm, 1.18 mm, 600 µm, 300 µm, and 150 µm), not more than 40% shall pass one sieve and be retained on the sieve with the next higher number.~~

~~**4110.04 MORTAR STRENGTH.**~~
~~Fine aggregate from an approved source shall have an initial mortar strength, determined by Iowa DOT Materials Laboratory Test Method 212, of not less than 1.5 times the strength of mortar in which standard sand is used.~~

~~An annual mortar strength test result of not less than 1.5 is required for continued approval of a source with a fineness modulus of less than 2.75 as determined in accordance with AASHTO T 27. The Engineer may require re-approval and additional mortar strength testing for sources where the quality of the sand changes or for sources where there has been a history of change in the quality.~~

Section 4110. Fine Aggregate for Concrete

4110.01 DESCRIPTION.
Natural sands resulting from disintegration of rock through erosional processes. Acquire mineral aggregate from an approved source as described in Materials I.M. 409.

For concrete floors, overlays, and pavements use only natural sands. For other uses, manufactured sand may be used only with approval of the Engineer.

4110.02 GRADATION.
Meet the requirements for Gradation No. 1 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D.

4110.03 QUALITY.

Fine Aggregate Quality	Test Limits	Test Method
Shale and Coal	2.0% (maximum)	I.M. 344
Mortar Strength [(a)]	1.5 (minimum)	Iowa 212
Fineness Modulus	2.75 (minimum)	I.M.302

(a) An annual mortar strength test result of 1.5 or greater is required for continued approval of a source with a fineness modulus of less than 2.75.

The Engineer may require additional mortar strength testing for sources where quality changes.					
Reason for Revision: Specification in the imperative mood. Gradation information moved to IM 209 appendix D.					
County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 17**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April 18, 2006	
Section No.: 4111 **Title:** Class L Fine Aggregate for Concrete	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date: 4/18/06**

Specification Committee Approved Text:

Section 4111, Class L Fine Aggregate for Concrete

Delete the entire Section.

Comments: District 2 Materials noted that using Class L sand increases costs because extra cement is required to offset the fineness of the aggregate. Class L isn't used anymore: contactors aren't interested in using it because of the associated extra costs for the cement. Since SS-01035 already describes material requirements for concrete design mixtures, the Office of Materials is withdrawing the proposed changes to Article 4111. Instead, they want to delete this section.

Specification Section Recommended Text:

Section 4111, Class L Fine Aggregate for Concrete

Replace title and entire article:

Section 4111, Aggregate For PC Concrete Design Mixtures (CDM).

4111.01 DESCRIPTION.
Natural sands resulting from disintegration of rock through erosional processes and crushed stone from an approved source as described in Materials I.M. 409.

4111.02 GRADATION.

A. Coarse and Fine Aggregate
The Aggregate Gradation Table 4111.02 shown below will not apply to coarse or fine aggregate. Fine aggregate sources shall meet the requirements of Section 4110, except those approved as Class 2, 3, or 3I gravel sources.

1. Develop gradation limits for sources with a coarse aggregate Durability Class Approval the same as or higher than that specified for the coarse aggregate.

2. For sources with a Durability Class Approval specified for the coarse aggregate, develop gradation limits for the designed mix with the following restrictions:

Table 4111.02

Sieve Size	% Passing
1/2“ (12.5 mm)	100
3/8“ (9.5 mm)	90 – 100
No. 4 (4.75 mm)	75 – 95
No. 8 (2.36 mm)	60-90
No. 30 (600 µm)	10 – 60
No. 200 (75µm)	750 – 1.5

B. Intermediate Aggregate.
Acquire limestone intermediate aggregate material from approved beds and meet the durability class required for the coarse aggregate. For gradations and correlations, intermediate aggregate is considered coarse aggregate. Uncrushed pea gravel produced from an approved Class 2 or Class 3 gravel source and meeting the quality requirements of Section 4110 the following shall apply:

1. 10% of the total aggregate for a Class 2 gravel source, or
2. 15% of the total aggregate for a Class 3 gravel source.

4111.03 QUALITY.

Table 411.03

Fine Aggregate Quality	Test Limits	Test Method
Shale	2.0% (maximum)	Materials I.M. 344

Comments: Removing Class L as a product. In 2544.02 and 4149.07 should now reference 4110. Use spec number for Concrete Design Mixtures (CDM).

Member’s Requested Change (Redline/Strikeout):

Section 4111. Class L Fine Aggregate for Concrete~~.~~

Replace entire section:

~~**Section 4111. Class L Fine Aggregate for Concrete.**~~

~~**4111.01 DESCRIPTION.**~~
~~Class L fine aggregate for concrete may only be used in Class L concrete mixtures. Class L fine aggregate shall meet the requirements of Articles 4110.01 and 4110.02.~~

~~**4111.02 GRADATION.**~~
~~Class L fine aggregate for concrete shall meet the requirements for Gradation Number 1 of the Aggregate Gradation Table referenced in Section 4109. When the fine aggregate is sieved through the following sieves: No. 4, No. 8, No. 16, No. 30, No. 50, and No. 100 (4.75 mm, 2.36 mm, 1.18 mm, 600 µm, 300 µm, and 150 µm), not more than 45% shall pass one sieve and be retained on the sieve with the next higher number.~~

~~**4111.03 MORTAR STRENGTH.**~~
~~Class L fine aggregate from an approved source shall have a historic record of mortar strength determined by Iowa DOT Materials Laboratory Test Method 212, of not less than 1.3 times the strength of mortar in which standard sand is used.~~

Section 4111. Aggregate For PC Concrete Design Mixtures (CDM).

4111.01 DESCRIPTION.
Natural sands resulting from disintegration of rock through erosional processes and crushed stone from an approved source as described in Materials I.M. 409.

4111.02 GRADATION.

A. Coarse and Fine Aggregate
The Aggregate Gradation Table in Materials I.M 209, Appendix D will not apply to coarse or fine aggregate. Fine aggregate sources shall meet the requirements of Section 4110, except those approved as Class 2, 3, or 3I gravel sources.

1. Develop gradation limits for sources with a coarse aggregate Durability Class Approval the same as or higher than that specified for the coarse aggregate.

2. For sources with a Durability Class Approval specified for the coarse aggregate, develop gradation limits for the designed mix with the following restrictions:

Sieve Size	% Passing
1/2 inch	100
3/8 inch	90 – 100
No. 4	75 – 95
No. 8	60-90
No. 30	10 – 60
No. 200	0 – 1.5

B. Intermediate Aggregate.
Acquire limestone intermediate aggregate material from approved beds and meet the durability class required for the coarse aggregate. For gradations and correlations, intermediate aggregate is considered coarse aggregate. For uncrushed pea gravel produced from an approved Class 2 or Class 3 gravel source and meeting the quality requirements of Section 4110 of the Standard Specifications, do not exceed:

3. 10% of the total aggregate for a Class 2 gravel source, or
4. 15% of the total aggregate for a Class 3 gravel source.

4111.03 QUALITY.

Fine Aggregate Quality	Test Limits	Test Method
Shale	2.0% (maximum)	I.M. 344

Section 4112, Fine Aggregate For Mortar.

Delete: entire section:

~~**Section 4112. Fine Aggregate for Mortar.**~~

~~**4112.01 DESCRIPTION.**~~
~~Fine aggregate for mortar shall consist of natural sand as defined in Articles 4110.01 and 4111.01, unless otherwise permitted or specified.~~

~~**4112.02 OBJECTIONABLE SUBSTANCES.**~~
~~Shale and coal particles retained on a No. 16 (1.18 mm) sieve shall not be more than 2.0%. Organic matter, other than coal, shall not be more than that indicated by the standard reference color when tested according to ASTM C 40.~~

~~**4112.03 GRADATION.**~~
~~Fine aggregate for mortar shall meet the requirements for Gradation Number 2 of the Aggregate Gradation Table referenced in Section 4109. When mortar joints are 1/4 inch (6 mm) or less in width, 100% of the particles shall pass the No. 8 (2.36 mm) sieve.~~

~~**4112.04 MORTAR STRENGTH.**~~
~~When tested as prescribed in Article 4110.04, the mortar strength of the aggregate shall not be less than 0.9 times the strength of mortar made from graded standard sand.~~

Reason for Revision:

Specification in the imperative mood. Deleting 4111 and 4112 because of insignificant need. Adding contractor design mixes which were in the supplemental specification (ss-1035).

County or City Input Needed (X one)	**Yes**	**No**
Comments:		

Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 18**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April 18, 2006	
Section No.: 4112 **Title:** Fine Aggregate for Mortar	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

Comments: See Reason for Revision.

Specification Section Recommended Text:

Section 4112, Fine Aggregate For Mortar.

DELETE the entire section:

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4112, Fine Aggregate For Mortar.

Delete the entire section:

~~**Section 4112. Fine Aggregate for Mortar.**~~

~~**4112.01 DESCRIPTION.**~~
~~Fine aggregate for mortar shall consist of natural sand as defined in Articles 4110.01 and 4111.01, unless otherwise permitted or specified.~~

~~**4112.02 OBJECTIONABLE SUBSTANCES.**~~
~~Shale and coal particles retained on a No. 16 (1.18 mm) sieve shall not be more than 2.0%. Organic matter, other than coal, shall not be more than that indicated by the standard reference color when tested according to ASTM C 40.~~

~~**4112.03 GRADATION.**~~
~~Fine aggregate for mortar shall meet the requirements for Gradation Number 2 of the Aggregate Gradation Table referenced in Section 4109. When mortar joints are 1/4 inch (6 mm) or less in width, 100% of the particles shall pass the No. 8 (2.36 mm) sieve.~~

~~**4112.04 MORTAR STRENGTH.**~~
~~When tested as prescribed in Article 4110.04, the mortar strength of the aggregate shall not be less than 0.9 times the strength of mortar made from graded standard sand.~~

Reason for Revision: Deleting Section 4112 because of insignificant need.					
County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office**: Materials	**Item 19**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4115 **Title:** Coarse Aggregate for Concrete	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: For Tables 4115.02-1, 4115.02-2, 4115.06-1, and 4115.06-2, see below. In the first sentence of Article 4115.06, "Class 2" is to be replaced with "Class 2B". For Article 4115.06, B, Gradation see below. Delete Table 4115.06 - 3. See Specification Section Recommended Text for remainder of Section 4115.

TABLE 4115.02 - 1

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion (Cr. Stone)	50	AASHTO T 96
Abrasion (Gravel)	35 (may be increased by 0.1% for each 1% of particles with at least one fractured face)	AASHTO T 96
Alumina (a)	0.5	Iowa DOT Materials Laboratory Test Method 222
A Freeze	6	Iowa DOT Materials Laboratory Test Method 211, Method A
Clay Lumps and Friable Particles	0.5	Materials I.M. 368

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa DOT Materials Laboratory Test Method 222 does not apply to gravel.

TABLE 4115.02 - 2

Maximum Permissible Amounts of Objectionable Materials	Maximum Percent Allowed	Test Method
Coal and carbonaceous shale	0.5	Materials I.M. 372
Total of all shale, similar objectionable materials, and coal combined.	1.0	Materials I.M. 372
Organic materials, except coal.	0.01	Iowa DOT Materials Laboratory Test Method 215
Unsound chert particles retained on 3/8 inch (9.5 mm) sieve (Nonstructural concrete)	3.0	Materials I.M 372

Unsound chert particles retained on 3/8 inch (9.5 mm) sieve (Structural concrete)	2.0	Materials I.M 372

Note: Chert particles which break into three or more pieces when subjected to the freezing and thawing test will be considered unsound.
Chert in aggregate produced from limestone sources is defined as unsound when any of the fractions of the crushed or uncrushed chert do not meet the soundness requirements.

TABLE 4115.06 - 1

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40	AASHTO T 96
Alumina (a)	0.4	Iowa DOT Materials Laboratory Test Method 222
A Freeze	4	Iowa, DOT Materials Laboratory Test Method 211, Method A
Absorption	2.5	Iowa DOT Materials Laboratory Test Method 202

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa DOT Materials Laboratory Test Method 222 does not apply to gravels.

TABLE 4115.06 – 2
Maximum Permissible Amounts of Objectionable Materials

Unsound chert particles retained on No. 4 (4.75 mm) sieve	0.5%	Materials I.M. 372
Total of all unsound chert, shale, coal, and iron combined.	1.0%	Materials I.M. 372
Organic material except coal	0.01%	Iowa DOT Materials Laboratory Test Method 215

Note: unsound chert particles, defined in Article 4115.03.

B. Gradation.
Meet the gradation requirements for Gradation No. 6 of the Aggregate Gradation Table in Section 4109.

Comments: There was some confusion regarding the asterisks in TABLE 4115.04. All asterisks will be a single asterisk. There will be only one note. District 2 Materials noted in TABLE 4115.04 there is now a distinction between prestressed concrete units (which require Class 3 or 3i durability) and precast units (e.g. box culverts). This now matches up with items in Section 2407. The Office of Materials notified the Specifications Section that in the first sentence of Article 4115.06, “Class 2” is to be replaced with “Class 2B”. They also recommended the above changes for Tables 4115.02-1, 4115.02-2, 4115.06-1, and 4115.06-2.

Specification Section Recommended Text:

Section 4115, Coarse Aggregate for Concrete.

Replace title and entire section:

Section 4115, Coarse Aggregate for Concrete.

4115.01 DESCRIPTION.
Gravel or crushed stone particles meeting one of the following Aggregate Durability Classes:

A. Class 2 Durability.
No deterioration of pavements of the non-Interstate segments of the road system after 15 years and only minimal deterioration in pavements after 20 years of age.

B. Class 3 Durability.
No deterioration of pavements of non-Interstate segments of the road system after 20 years of age and less than 5% deterioration of the joints after 25 years.

C. Class 3i Durability.
No deterioration of pavements of the Interstate Road System after 30 years of service and less than 5% deterioration of the joints after 35 years.

Acquire aggregates from an approved source meeting the requirements of Materials I.M. 409.

4115.02 QUALITY.

TABLE 4115.02 - 1

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion (Cr. Stone)	50	AASHTO T 96
Abrasion (Gravel)	35 (may be increased by 0.1% for each 1% of particles with at least one fractured face)	AASHTO T 96
Alumina (a)	0.5	Iowa 222
A Freeze	6	Iowa 211, Method A
Clay Lumps	0.5	Materials I.M. 368

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa 222 does not apply to gravel.

TABLE 4115.02 - 2

Maximum Permissible Amounts of Objectionable Materials	Maximum Percent Allowed	Test Method
Coal and carbonaceous shale	0.5	AASHTO T 113
Total of all shale, similar objectionable materials, and coal combined.	1.0	AASHTO T 113
Organic materials, except coal.	0.01	Materials I.M. 215
Unsound chert particles retained on 3/8 inch (9.5 mm) sieve (Nonstructural concrete)	3.0	Materials I.M 372
Unsound chert particles retained on 3/8 inch (9.5 mm) sieve (Structural concrete)	2.0	Materials I.M 372

Note: Chert particles which break into three or more pieces when subjected to the freezing and thawing test will be considered unsound.

Chert in aggregate produced from limestone sources is defined as unsound when any of the fractions of the crushed or uncrushed chert do not meet the soundness requirements.

4115.03 GRADATION.

TABLE 4115.03

Mix Class	Mix Number	Gradation Numbers
D	57, 57-6	3 or 5
A, B, C	2 to 8, V47B	3, 4, or 5
M	4	3, 4, or 5
A, B, C, M	V	7

4115.04 AGGREGATE USE DURABILITY REQUIREMENTS.

TABLE 4115.04 Aggregate use durability requirements.

Specification Section Number	Minimum Durability Class Required			Use
	3i	3	2	
2122, 2212, 2213 Interstate System Primary System Other*	X**	X**	X	PCC Paved Shoulders, Base, Base Repair, Base Widening
2301, 2302, 2310, 2530 Interstate Primary Other*	X**	X**	X	PCC Pavement, Widening, Bonded Overlay, Finish Patches, and Bridge Approaches
2403			X	Structural Concrete
2405 (See 2403)			X	Foundations and Substructures
2406 (See 2403)			X	Concrete Structures
2407 ~~(See 2407.03)~~			X	Precast Units
2407 ~~(See 2407.03)~~		X		Prestressed Units
2412 (See 2403)			X	Concrete Bridge Floors
2413 (See 2413.02A)			X	Surfacing, Repair & Overlay of Bridge Floors
2414 (See 2403)			X	Concrete Railings
2415 (See 2403)			X	Concrete Box, Arch & Circular Culverts
2416 (See 4145)			X	Rigid Pipe Culverts

2501 (See 2407)			X	Concrete Piles & Sheet Piles
2503 (See 2403)			X	Storm Sewers (Catch Basins, Intakes & Utility Access)
2504 (See 2403)			X	Sanitary Sewers (Utility Access)
2505 (See 2403)			X	Guardrails (Concrete End Anchorage)
2511 (See 2403)			***	PCC Sidewalks
2512 (See 2403)			***	PCC Curb & Gutter
2522 (See 2403)			X	Tower Lighting (Concrete Footings & Foundations)
2523 (See 2403)			X	Highway Lighting (Concrete Footings & Foundations)
2524 (See 2403)			X	Highway Signing (Concrete Footings & Foundations)

Notes:

***——For PCC base repair, pavement repair, sidewalks and curb and gutters, Class 2 durability or better aggregate will be required if the existing pavement was constructed of Class 2 or lower durability aggregate. If the existing pavement was constructed of Class 3 or Class 3i durability aggregate, the aggregate used in the repair shall be Class 3 or better and Class 3i, respectively.

~~For PCC base repair or PCC pavement repair, Class 2 durability or better aggregate will be required if the existing pavement was constructed of Class 2 or lower durability aggregate. If the existing pavement was constructed of Class 3 or Class 3i durability aggregate, the aggregate used in the repair shall be Class 3 or better and Class 3i, respectively.~~

~~***For PCC sidewalks and PCC curb and gutters, the aggregate durability requirements are the same as for the project. See Article 4115.04, C.~~

4115.06 COARSE AGGREGATE FOR SURFACING AND REPAIR AND OVERLAY.
Acquire from a Class 2 durability or better source meeting the following requirements:

A. Quality.

TABLE 4115.06 - 1

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion (Cr. Stone)	40	AASHTO T 96
Abrasion (Gravel)	40	AASHTO T 96
Alumina (a)	0.4	Iowa 222
A Freeze	4	Iowa 211, Method A
Absorption	2.5	Iowa 202

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa 222 does not apply to gravels.

TABLE 4115.06 - 2
Maximum Permissible Amounts of Objectionable Materials

Unsound chert particles retained on No. 4 (4.75 mm) sieve	0.5%
Total of all unsound chert, shale, coal, and iron combined.	1.0%
Organic material except coal	0.01%

Note: unsound chert particles, defined in Article 4115.03.

B. Gradation.
Meet Gradation No. 6 as follows.

TABLE 4115.06 - 3
GRADATION NO. 6

Sieve Size	% Passing
3/4" (19 mm)	100
1/2" (12.5 mm)	97-100
3/8" (9.5 mm)	40-90
#4 (4.75 mm)	0-30
#200 (75 µm)	0-1.5

Comments: Changed the section title to reflect PC Concrete. TABLE 4115.04 shows changes to the table.

Member's Requested Change (Redline/Strikeout):

Section 4115. Coarse Aggregate for Concrete

Replace entire section:

~~**Section 4115. Coarse Aggregate for Concrete.**~~

~~**4115.01 DESCRIPTION.**~~
~~Coarse aggregate for PCC shall consist of gravel or crushed stone particles, or combinations of these materials.~~

~~**4115.02 COMBINATIONS OF AGGREGATES.**~~
~~Uniform mixtures of crushed stone and gravel meeting the requirements of Article 4115.05 may be used, subject to approval of the Engineer.~~

~~Gravel pebbles combined with fine aggregate in the form of unscreened gravel or combined sand and gravel may be used alone or in combination with a separate coarse aggregate to produce one of the proportions specified for concrete. The proposed source of supply and methods of preparing and handling unscreened gravel shall be approved by the Engineer before the material is delivered to the site of the work.~~

~~**4115.03 QUALITY.**~~

~~**A. Abrasion Loss.**~~
~~The percent of wear, determined in accordance with AASHTO T 96, Grading A or B, shall not exceed 35% for gravel and 50% for other crushed stone. The maximum limit for gravel may be increased by 0.1% for each 1% of the particles which have at least one fractured face.~~

~~**B. Clay Content.**~~
~~The clay content of limestone and/or dolomite coarse aggregate will be determined based on the~~

shall have a historical record of containing not more than 0.5% by weight (mass) aluminum oxide. Aluminum oxide will be determined by x-ray fluorescence analyses (Iowa DOT Materials Laboratory Test Method 222) of representative samples.

If the aggregate exceeds 0.5% by weight (mass) aluminum oxide or if there is a performance history which indicates that aluminum oxide is an unreliable indication of aggregate durability in concrete, a freeze thaw test will be performed. The percentage loss will be determined in accordance with the Iowa DOT Materials Laboratory Test Method 211, Method A, and shall not be greater than 6%.

The Iowa DOT Materials Laboratory Test Method 211, Method A, will be performed on gravels, instead of x-ray fluorescence analysis, and shall not exceed 6%.

At least 95% of all gravel particles and 95% of the vertical dimension of the working face of the rock ledge providing crushed rock must conform to these requirements.

C. Maximum Permissible Amounts of Objectionable Material.
Coarse aggregate from an approved source shall have a historical record of containing not more than the following percentages of these materials:

English Units	**Percent**
Clay lumps and friable particles	0.5
Coal and carbonaceous shale	0.5
Total of all shale, similar objectionable materials, and coal combined	1.0
Sticks (wet weight) and other organic materials, except coal	0.1
Unsound chert particles retained on 3/8 inch sieve (Nonstructural concrete)	3.0
Unsound chert particles retained on 3/8 inch sieve (Structural concrete)	2.0
Unsound chert particles retained on the No. 4 sieve (Gradation No. 6) 1/2 inch nominal maximum size	0.5
(Metric Units)	**Percent**
Clay lumps and friable particles	0.5
Coal and carbonaceous shale	0.5
Total of all shale, similar objectionable materials, and coal combined	1.0
Sticks (wet weight) and other organic materials, except coal	0.1
Unsound chert particles retained on 9.5 mm sieve (Nonstructural concrete)	3.0
Unsound chert particles retained on 9.5 mm sieve (Structural concrete)	2.0
Unsound chert particles retained on the 4.75 mm sieve (Gradation No. 6) (13.2 mm) nominal maximum size	0.5
Note: Chert particles which break into three or more pieces when subjected to the freezing and thawing test will be considered unsound. Chert in aggregate produced from limestone sources is defined as unsound when any of the fractions of the crushed or uncrushed chert do not meet the soundness requirements.	

4115.04 DURABILITY IN PORTLAND CEMENT CONCRETE.

A. General.
At least 95% of carbonate coarse aggregate particles produced by crushing rock shall be derived from ledges in which the rock complies with the requirements for the durability class for which it is being produced. The carbonate fraction of gravel shall meet the durability class for which it is

~~being produced.~~

~~Aggregate will be considered durable when it does not contribute to the premature deterioration in concrete. Durability classes will be assigned on the basis of qualifying performance in air entrained concrete pavements of appropriate age. Aggregate sources without qualifying performance records will be provisionally assigned to a durability class based on physical and chemical tests.~~

~~A carbonate aggregate source without performance history or satisfactory similarity to any approved source shall meet the following requirements to receive a Class 2 durability rating:~~

~~1. Salt susceptibility quality number of less than 4.5 (Iowa DOT Test Method 223)~~

~~2. Iowa Pore Index secondary number of less than 30 (Iowa DOT Test Method 219-C) or a durability factor of 80 or higher.~~

~~A carbonate aggregate source without performance history or satisfactory similarity to any approved source shall meet the following requirements to receive a Class 3 durability rating:~~

~~1. Salt susceptibility quality number of less than 1.5~~

~~2. Iowa Pore Index secondary number of less than 25 or a durability factor of 90 or higher.~~

~~A carbonate aggregate source without performance history or satisfactory similarity to any approved source shall meet the following requirements to receive a Class 3i durability rating:~~

~~1. Salt susceptibility quality number of less than 1.0~~

~~2. Iowa Pore Index secondary number of less than 20 or a durability factor of 95 or higher.~~

~~Durability ratings may also be based on aggregate performance history in accordance with Article 4115.04, B, or satisfactory similarity to any approved source with no aggregate related deterioration as determined by the Department through pavement coring and petrographic examination.~~

~~On the basis of physical tests, chemical and petrographic analysis, and other tests as might be appropriate, the Engineer may restrict the use and type of material or method of production, or both, to assure that aggregate of proper durability designation is being produced. The durability class designations and limitations on production methods or use, such as class of mix or proportions, will be established in the approval, or revisions of approval for each source. Limitations that affect the contract usage will be periodically listed in the Materials I.M. T203.~~

~~**B. Classes of Aggregate Durability.**~~
~~Coarse aggregate durability, based on freeze thaw and salt susceptibility, will be designated as follows:~~

~~**1. Class 2 Durability.**~~
~~Class 2 durability aggregates will produce no deterioration of pavements of the non-Interstate segments of the road system after 15 years and only minimal deterioration in pavements after 20 years of age.~~

~~**2. Class 3 Durability.**~~
~~Class 3 durability aggregates will produce no deterioration of pavements of non-Interstate segments of the road system after 20 years of age and less than 5% deterioration of the joints after 25 years.~~

~~**3. Class 3i Durability.**~~

Road System after 30 years of service and less than 5% deterioration of the joints after 35 years.

C. Requirements for Use.

Coarse aggregate of Class 3i durability will be required for all Interstate PCC pavement and thin-bonded PCC overlay, and repair thereof, (Sections 2301, 2310, and 2212). Unless otherwise specified, coarse aggregate of Class 3 durability or better will be required for all other Primary projects and Class 2 durability or better will be required for all other (non-Primary) projects for all PCC base, PCC base repair, PCC base widening, PCC pavement repair, PCC pavement, PCC pavement widening, thin bonded PCC overlay, and PCC curb and gutter. (Sections 2201, 2212, 2213, 2301, 2302, 2310, and 2512). These durability requirements include the paving and sidewalks, utility access, driveways, intakes, medians, and parts of local roads and streets associated with the project work. Class 3 durability or better will be required for all prestressed concrete units. Class 2 durability or better will be required for structural concrete and all precast concrete units, in accordance with Section 2403 and Section 2407, respectively. Unless otherwise specified, coarse aggregate for PCC shoulders shall be of the same durability class as the adjacent pavement.

Temporary pavement, which will be removed following the completion of construction, may be constructed using Class 2 durability aggregate on a road system, unless otherwise specified in the contract documents.

A Class 2 durability or better aggregate will be required for PCC base repair or PCC pavement repair (Sections 2212) if Class 2 or lower durability aggregate was used in the existing pavement. Unless otherwise specified, Class 3 durability aggregate will be required for PCC base repair or PCC pavement repair (Sections 2212) if Class 3 durability aggregate was used in the existing pavement to be repaired. Unless otherwise specified, Class 3i durability aggregate will be required for PCC base repair or PCC pavement repair (Sections 2212) if Class 3i durability aggregate was used in the existing pavement to be repaired.

Table 4115.04 identifies uses for aggregates.

TABLE 4115.04

Specification Number	Minimum Durability Class Required			Use
	3i	3	2	
2122, 2212, 2213 Interstate System Primary System Other*	X**	X**	X	PCC Paved Shoulders, Base, Base Repair, Base Widening
2301, 2302, 2310, 2530 Interstate Primary Other*	X**	X**	X	PCC Pavement, Widening, Bonded Overlay, Finish Patches, and Bridge Approaches
2403	-	-	X	Structural Concrete
2405 (See 2403)	-	-	X	Foundations and Substructures
2406 (See 2403)	-	-	X	Concrete Structures
2407 (See 2407.03)	-	-	X	Precast Units
2407 (See 2407.03)		X	-	Prestressed Units

2412 (See 2403)	-	-	X	Concrete Bridge Floors
2413 (See 2413.02A)	-	-	X	Surfacing, Repair & Overlay of Bridge Floors
2414 (See 2403)	-	-	X	Concrete Railings
2415 (See 2403)	-	-	X	Concrete Box, Arch & Circular Culverts
2416 (See 4145)	-	-	X	Rigid Pipe Culverts
2501 (See 2407)	-	-	X	Concrete Piles & Sheet Piles
2503 (See 2403)	-	-	X	Storm Sewers (Intakes & Utility Access)
2504 (See 2403)	-	-	X	Sanitary Sewers (Utility Access)
2505 (See 2403)	-	-	X	Guardrails (Concrete End Anchorage)
2511 (See 2403)	-	-	***	PCC Sidewalks
2512 (See 2403)	-	-	***	PCC Curb & Gutter
2522 (See 2403)	-	-	X	Tower Lighting (Concrete Footings & Foundations)
2523 (See 2403)	-	-	X	Highway Lighting (Concrete Footings & Foundations)
2524 (See 2403)	-	-	X	Highway Signing (Concrete Footings & Foundations)

Notes:

**For PCC base repair or PCC pavement repair, Class 2 durability or better aggregate will be required if the existing pavement was constructed of Class 2 or lower durability aggregate. If the existing pavement was constructed of Class 3 or Class 3i durability aggregate, the aggregate used in the repair shall be Class 3 or better and Class 3i, respectively.

***For PCC sidewalks and PCC curb and gutters, the aggregate durability requirements are the same as for the project. See Article 4115.04, C.

4115.05 GRADATION.

Coarse aggregate shall meet requirements of the Aggregate Gradation Table referenced in Section 4109 for the gradation number appropriate for the type, class, and mix number of the concrete and the class of durability of the aggregate.

Mix Class	Mix Number	Gradation Numbers
D A, B, C M A, B, C, M	57, 57-6 2 to 8, V47B 4 V	3 or 5 3, 4, or 5 3, 4, or 5 7

The maximum percent passing the No. 200 (75 m) sieve for any coarse aggregate may be increased to 2.5% provided the documented production limit agreed to and maintained is 1.0% or less and any increase up to 2.5% consists of limestone or dolomite rather than deleterious soil or clay minerals.

4115.06 COARSE AGGREGATE FOR SURFACING AND REPAIR AND OVERLAY.

Coarse aggregate for surfacing and repair and overlay of PCC bridge floors shall be gravel or crushed stone from a source approved for Class 2 durability with the following additional requirements:

A. Abrasion Loss.

The percent of wear, determined in accordance with AASHTO T 96, Grading C, shall not exceed 40%.

~~**B. Clay content and Freeze and Thaw Loss.**~~
~~Carbonate aggregate shall have an aluminum oxide content not exceeding 0.4 weight (mass) percent, as determined by x-ray flourescence. If the carbonate aggregate exceeds 0.4 weight (mass) percent aluminum oxide as determined by the Iowa DOT Materials Laboratory Test Method 222, the Iowa DOT Materials Laboratory Test Method 211, Method A, will be performed and the loss shall not exceed 4%. Gravel shall have a freeze and thaw loss not exceeding 4% when tested in accordance with Iowa DOT Materials Laboratory Test Method 211, Method A. Any uniform combination of materials may be used provided each material meets these requirements.~~

~~The Engineer may restrict the method of production differently from the restriction described in Article 4115.04.~~

~~**C. Absorption.**~~
~~The percent absorption, determined in accordance with Iowa DOT Materials Laboratory Test Method 202, shall not exceed 2.5%.~~

~~**D. Objectionable Materials.**~~
~~For material retained on the No. 4 (4.75 mm) sieve, unsound chert particles, defined in Article 4115.03, shall not exceed 0.5%, and the total of all unsound chert, shale, coal, and iron combined shall not exceed 1.0%.~~

~~**E. Gradation.**~~
~~The aggregate shall meet requirements for Gradation No. 6 of the Aggregate Gradation Table referenced in Section 4109. The maximum percent passing the No. 200 (75 µm) sieve for any coarse aggregate may be increased to 2.5% provided the documented production limit agreed to and maintained is 1.0% or less and any increase up to 2.5% consists of limestone or dolomite rather than deleterious soil or clay minerals.~~

Section 4115. Coarse Aggregate for PC Concrete

4115.01 DESCRIPTION.
Gravel or crushed stone particles meeting one of the following Aggregate Durability Classes:

A. Class 2 Durability.
No deterioration of pavements of the non-Interstate segments of the road system after 15 years and only minimal deterioration in pavements after 20 years of age.

B. Class 3 Durability.
No deterioration of pavements of non-Interstate segments of the road system after 20 years of age and less than 5% deterioration of the joints after 25 years.

C. Class 3i Durability.
No deterioration of pavements of the Interstate Road System after 30 years of service and less than 5% deterioration of the joints after 35 years.

Acquire aggregates from an approved source meeting the requirements of Materials I.M. 409.

4115.02 QUALITY.

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion (Cr. Stone)	50%	AASHTO T96
Abrasion (Gravel)	35% (may be increased by 0.1% for each 1% of particles with at least one fractured face)	AASHTO T96

Alumina (a)	0.5%	Iowa 222
A Freeze	6%	Iowa 211, Method A
Clay Lumps	0.5%	I.M. 368

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa 222 does not apply to gravel.

Maximum Permissible Amounts of Objectionable Materials	Maximum Percent Allowed	Test Method
Coal and carbonaceous shale	0.5%	AASHTO T113
Total of all shale, similar objectionable materials, and coal combined.	1.0%	AASHTO T113
Organic materials, except coal.	0.01%	I.M. 215
Unsound chert particles retained on 3/8 inch sieve (Nonstructural concrete)	3.0%	I.M 372
Unsound chert particles retained on 3/8 inch sieve (Structural concrete)	2.0%	I.M 372

Note: Chert particles which break into three or more pieces when subjected to the freezing and thawing test will be considered unsound.

Chert in aggregate produced from limestone sources is defined as unsound when any of the fractions of the crushed or uncrushed chert do not meet the soundness requirements.

4115.03 GRADATION.

Mix Class	Mix Number	Materials IM 209 App. D Gradation Numbers
D	57, 57-6	3 or 5
A, B, C	2 to 8, V47B	3, 4, or 5
M	4	3, 4, or 5
A, B, C, M	V	7

4115.04 AGGREGATE USE DURABILITY REQUIREMENTS.

TABLE 4115.04 Aggregate use durability requirements.

Specification Number	Minimum Durability Class Required			Use
	3i	3	2	
2122, 2212, 2213 Interstate System Primary System Other*	X**	X**	X	PCC Paved Shoulders, Base, Base Repair, Base Widening
2301, 2302, 2310, 2530 Interstate Primary Other*	X**	X**	X	PCC Pavement, Widening, Bonded Overlay, Finish Patches, and Bridge Approaches
2403			X	Structural Concrete
2405 (See 2403)			X	Foundations and Substructures

2406 (See 2403)			X	Concrete Structures
2407 ~~(See 2407.03)~~			X	Precast Units
2407 ~~(See 2407.03)~~		X		Prestressed Units
2412 (See 2403)			X	Concrete Bridge Floors
2413 (See 2413.02A)			X	Surfacing, Repair & Overlay of Bridge Floors
2414 (See 2403)			X	Concrete Railings
2415 (See 2403)			X	Concrete Box, Arch & Circular Culverts
2416 (See 4145)			X	Rigid Pipe Culverts
2501 (See 2407)			X	Concrete Piles & Sheet Piles
2503 (See 2403)			X	Storm Sewers (Catch Basins, Intakes & Utility
2504 (See 2403)			X	Sanitary Sewers (Utility Access)
2505 (See 2403)			X	Guardrails (Concrete End Anchorage)
2511 (See 2403)			~~*~~***	PCC Sidewalks
2512 (See 2403)			~~*~~***	PCC Curb & Gutter
2522 (See 2403)			X	Tower Lighting (Concrete Footings & Foundations)
2523 (See 2403)			X	Highway Lighting (Concrete Footings &
2524 (See 2403)			X	Highway Signing (Concrete Footings & Foundations)

Notes:

~~*~~*** For PCC base repair, pavement repair, sidewalks and curb and gutters, Class 2 durability or better aggregate will be required if the existing pavement was constructed of Class 2 or lower durability aggregate. If the existing pavement was constructed of Class 3 or Class 3i durability aggregate, the aggregate used in the repair shall be Class 3 or better and Class 3i, respectively.

~~For PCC base repair or PCC pavement repair, Class 2 durability or better aggregate will be required if the existing pavement was constructed of Class 2 or lower durability aggregate. If the existing pavement was constructed of Class 3 or Class 3i durability aggregate, the aggregate used in the repair shall be Class 3 or better and Class 3i, respectively.~~

~~***For PCC sidewalks and PCC curb and gutters, the aggregate durability requirements are the same as for the project. See Article 4115.04, C.~~

4115.06 COARSE AGGREGATE FOR SURFACING AND REPAIR AND OVERLAY.

Acquire from a Class 2 durability or better source meeting the following requirements:

A. Quality.

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion (Cr. Stone)	40%	AASHTO T96
Abrasion (Gravel)	40%	AASHTO T96
Alumina (a)	0.4%	Iowa 222
A Freeze	4%	Iowa 211, Method A
Absorption	2.5%	Iowa 202

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa 222 does not apply to gravels.

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Maximum Permissible Amounts of Objectionable Materials

Unsound chert particles retained on No. 4 sieve	0.5%
Total of all unsound chert, shale, coal, and iron combined.	1.0%
Organic material except coal	0.01%

Note: unsound chert particles, defined in Article 4115.03.

B. Gradation.
Meet Gradation No. 6 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D.

Reason for Revision: Specification in the imperative mood. Moved source approval language into IM 409. Added limits of organic material at 0.01% max and removed 4115.02 because it is now in 4111.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 20**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4117 **Title:** Class V Aggregate for Concrete.	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: For Articles 4117.01, 4117.03, and 4117.04 see Specification Section Recommended Text.

4117.02, Gradation.
Meet the gradation requirements for Gradation No. 6 of the Aggregate Gradation Table in Section 4109.

4117.04, A, Fine Limestone.
Meet the gradation requirements for Gradation No. 8 of the Aggregate Gradation Table in Section 4109.

Section 4117. Class V Aggregate for Concrete.

Add new article:

4117.05 Cement Requirements.
For Interstate and Primary projects, use the cement types and substitutions of Table 4117.05 when Class V aggregate is used.

TABLE 4117.05

Cement Type	Min. Required Substitution	Max. Allowable Substitution
Type I, Type II	20% Class F Fly Ash	25% Class F Fly Ash
Type I, Type II	25% GGBFS	35% GGBFS
Type I(SM), IP	--------	20% Class C Fly ash

Comments: Article 4117.05 was added with the 9/8/05 Specification Committee meeting (Item 6). It has been included here, rewritten in the imperative mood/active voice.

Specification Section Recommended Text:

4117, Class V Aggregate for Concrete.

Replace title and entire section:

Section 4117. Class V Aggregate for PC Concrete.

4117.01 DESCRIPTION.
A mixture of fine and coarse particles of feldspathic rocks from an approved source as described in Materials I.M. 409.

4117.02 GRADATION.
Meet gradation as shown below:

TABLE 4117.02
AGGREGATE GRADATION NO. 7

Sieve Size	% Passing
1.5" (37.5 mm)	100
1.0" (25 mm)	--
3/4" (19 mm)	--
1/2" (12.5 mm)	--
3/8" (9.5 mm)	--
#4 (4.75 mm)	80-92
#8 (2.36 mm)	60-75
#30 (600 µm)	20-40

4117.03 QUALITY.
The portion retained on the No. 4 (4.75 mm) sieve shall meet the following requirements:

TABLE 4117.03 - 1

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40	AASHTO T 96
A Freeze	6	Iowa DOT Materials Laboratory Test Method 211, Method A
Clay Lumps	0.5	Materials I.M. 368

The portion of Class V aggregate passing the No. 4 (4.75 mm) sieve shall meet the following requirements for fine aggregate for concrete:

TABLE 4117.03 - 2

Fine Aggregate Quality	Test Limits	Test Method
Shale and Coal	2.0% (maximum)	Materials I.M. 344
Mortar Strength (a)	1.5 (minimum)	Iowa DOT Materials Laboratory Test Method 212
Fineness Modulus	2.75 (minimum)	Materials I.M.302

(a) An annual mortar strength test result of 1.5 or greater is required for continued approval of a source with a fineness modulus of less than 2.75.

4117.04 COMBINATIONS OF AGGREGATES.
Use Class V aggregate for PC concrete only in combination with limestone as specified in Materials I.M. 529. Acquire limestone from sources meeting the specified coarse aggregate durability for PC concrete.

A. Fine Limestone
Meet gradation as shown below:

TABLE 4117.04
AGGREGATE GRADATION NO. 8

Sieve Size	% Passing
3/8" (9.5 mm)	100
#4 (4.75 mm)	90-100
#8 (2.36 mm)	--
#30 (600 mµ)	--
#50 (300 µm)	--
#100 (150 µm)	--
#200 (75 µm)	0-30

B. Coarse Limestone
Meet the requirements of Section 4115.

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4117. Class V Aggregate for Concrete.

Replace entire section:

~~**Section 4117. Class V Aggregate for Concrete.**~~

~~**4117.01 DESCRIPTION.**~~
~~Class V aggregate shall consist of a mixture of fine and coarse particles of feldspathic rocks.~~

~~**4117.02 GRADATION.**~~
~~Class V aggregate shall meet requirements for Gradation No. 7 of the Aggregate Gradation Table referenced in Section 4109.~~

~~In all other respects except gradation, the portion of Class V aggregate passing the No. 4 sieve shall meet requirements for fine aggregate for concrete, Sections 4110 and 4111, and the portion retained on the No. 4 (4.75 mm) sieve shall meet requirements of Section 4115, except the abrasion loss shall not exceed 40%.~~

~~**4117.03 FINE LIMESTONE.**~~
~~Class V aggregate meeting the requirements of this section shall be used for concrete only in combination with limestone in proportions specified for the class of concrete required. Such limestone shall be produced from sources which are acceptable as coarse aggregate for concrete and may be a byproduct of the crusher. The limestone shall meet requirements for Gradation Number 8 of the Aggregate Gradation Table referenced in Section 4109. The Engineer may reject material containing objectionable amounts of clay, shale, or other objectionable material.~~

~~**4117.04 OTHER COARSE AGGREGATE.**~~
~~When Class V aggregate is used in combination with other coarse aggregate, Section 4115 shall apply in lieu of this section.~~

Section 4117. Class V Aggregate for PC Concrete.

4117.01 DESCRIPTION.
A mixture of fine and coarse particles of feldspathic rocks from an approved source as described in Materials I.M. 409.

4117.02 GRADATION.
Meet Gradation No. 7 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D.

4117.03 QUALITY.
The portion retained on the No. 4 (4.75 mm) sieve shall meet the following requirements:

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40%	AASHTO T96
A Freeze	6%	Iowa 211, Method A
Clay Lumps	0.5%	I.M. 368

The portion of Class V aggregate passing the No. 4 sieve shall meet the following requirements for fine aggregate for concrete:

Fine Aggregate Quality	Test Limits	Test Method
Shale and Coal	2.0% (maximum)	I.M. 344
Mortar Strength (a)	1.5 (minimum)	Iowa 212
Fineness Modulus	2.75 (minimum)	I.M.302

(a) An annual mortar strength test result of 1.5 or greater is required for continued approval of a source with a fineness modulus of less than 2.75.

4117.04 COMBINATIONS OF AGGREGATES.
Use Class V aggregate for PC concrete only in combination with limestone as specified in Materials I.M. 529. Acquire limestone from sources meeting the specified coarse aggregate durability for PC concrete.

A. Fine Limestone
Meet Gradation No. 8 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D.

B. Coarse Limestone
Meet the requirements of Section 4115.

Reason for Revision:

Specification in the imperative mood.

County or City Input Needed (X one)	**Yes**	**No**
Comments:		

Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 21**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4120. **Title:** Granular Surfacing Material	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

4120, Granular Surfacing Material.

Replace title and entire section:

Section 4120. Granular Surfacing and Granular Shoulder Aggregate

4120.01 DESCRIPTION.

Uniform mixture of fine and coarse particles of crushed stone, gravel, or a combination of these materials with sand. Crushed recycled concrete may be used as aggregate for Granular Shoulders.

4120.02 GRANULAR MATERIAL.

A. Granular Surfacing

Furnish material meeting the requirements of Article 4120.04. When specified in the contract documents, meet the requirements of Article 4120.03, 4120.05, or 4120.06.

B. Granular Shoulders

Furnish material meeting the requirements of Article 4120.04 or recycled materials. When specified by the contract documents, meet the requirements of Article 4120.05 or 4120.06.

For recycled materials, meet the following requirements:

- Recycle PCC, RAP, or Composite pavements to meet the requirements of Materials I.M. 209.
- Crush PCC or composite pavements to meet the requirements for Gradation No. 11 of the Aggregate Gradation Table in Section 4109.
- Process RAP to pass the 1.5 inch (37.5 mm) sieve.

The contract documents may allow a Class C gravel and crushed aggregate mixture for granular shoulders meeting the following below:

- 30% to 50% crushed stone meeting soundness and abrasion requirements of Article 4120.04 or 4120.05. Meet the requirements for Gradation No. 10 of the Aggregate Gradation Table in Section 4109 with the exception of 8% to 16% percent passing the No. 200 (75 µm) sieve.
- 30% to 50% recycled crushed PCC or composite materials meeting the above requirements for Granular Shoulders. Meet the requirements for Gradation No. 10 of the Aggregate Gradation Table in Section 4109 with the exception of 8% to 16% percent passing the No. 200 (75 µm) sieve.

- 30% to 50% RAP processed to pass the 1.5 inch (37.5 mm) sieve.

4120.03 CLASS C GRAVEL.
Meet the requirements for Gradation No. 10 of the Aggregate Gradation Table in Section 4109 and the following:

TABLE 4120.03

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
C Freeze	15	Iowa DOT Materials Laboratory Test Method 211, Method C
Shale (+ No. 4 (4.75 mm) sieve)	10	Materials I.M. 372
Total of Clay lumps and friable particles, plus % passing. No. 200 (75 µm) sieve	15	Materials I.M.s 368, and 306
Total of Shale, Clay lumps and friable particles, plus % passing. No. 200 (75 µm) sieve	20	Materials I.M.s 372, 368, and 306

4120.04 CLASS A CRUSHED STONE.
Meet the requirements for Gradation No. 11 of the Aggregate Gradation Table in Section 4109 and the following:

TABLE 4120.04

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	45	AASHTO T 96
C Freeze	15	Iowa DOT Materials Laboratory Test Method 211, Method C
Clay lumps and friable particles	4	Materials I.M. 368

Note: Abrasion limits may be raised to 55 if Alumina does not exceed 0.7 or A Freeze does not exceed 10.

4120.05 CLASS B CRUSHED STONE.
Meet the requirements for Gradation No. 11 of the Aggregate Gradation Table in Section 4109 and the following:

TABLE 4120.05

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	55	AASHTO T 96
C Freeze	20	Iowa DOT Materials Laboratory Test

		Method 211, Method C
Total of Abrasion & C Freeze	65	
Clay lumps and friable particles	4	Materials I.M. 368

4120.06 CLASS D CRUSHED STONE.
Refer to the contract documents for gradation and quality requirements.

4120.07 AGGREGATE FOR PAVED SHOULDER FILLETS.
Crushed stone or recycled materials meeting the requirements for Gradation No. 11 of the Aggregate Gradation Table in Section 4109 and meeting the quality requirement of Article 4120.03. For recycled materials, meet the requirements of Article 4120.02, B.

Comments: Included the option to mix recycled materials with Class C gravels. The committee moved to remove Gradation No. 16 and use Gradation No 11 instead. Gradation No. 16 will be removed from the Aggregate Gradation Table. District 6 Construction noted that material meeting Gradation No. 16 doesn't stay in place.

Specification Section Recommended Text:

4120, Granular Surfacing Material.

Replace title and entire section:

Section 4120. Granular Surfacing and Granular Shoulder Aggregate

4120.01 DESCRIPTION.
Uniform mixture of fine and coarse particles of crushed stone, gravel, or a combination of these materials with sand. Crushed recycled concrete may be used as aggregate for Granular Shoulders.

4120.02 GRANULAR MATERIAL.

A. Granular Surfacing
Furnish material meeting the requirements of Article 4120.04. When specified in the contract documents, meet the requirements of Article 4120.03, 4120.05, or 4120.06.

B. Granular Shoulders
Furnish material meeting the requirements of Article 4120.04 or recycled materials. When specified by the contract documents, meet the requirements of Article 4120.05 or 4120.06.

For recycled materials, meet the following requirements:

- Recycled PCC, RAP, or Composite pavements: meet the requirements of Materials I.M. 209.
- Crush PCC or composite pavements: meet Gradation No. 11 as shown below.

TABLE 4120.02-1
GRADATION NO. 11

Sieve Size	% Passing
1.0" (25 mm)	100
3/4" (19 mm)	95-100
1/2" (12.5 mm)	70-90
3/8" (9.5 mm)	--
#4 (4.75 mm)	30-55
#8 (2.36 mm)	15-40
#30 (600 µm)	--
#50 (300 µm)	--
#100 (150 µm)	--
#200 (75 µm)	6-16

Notes:
- See specifications for combination of gravel and limestone screenings.
- Unwashed air-dried samples of crushed composite material shall be tested for gradation compliance except that no gradation determination will be made for the material passing the #200 (75 µm) sieve.

- RAP: process to pass the 1.5 inch (37.5 mm) sieve.

The contract documents may allow a Class C gravel and crushed aggregate mixture for granular shoulders meeting the following below:

- 30% to 50% crushed stone meeting soundness and abrasion requirements of Article 4120.04 or 4120.05. Meet Gradation No. 10 as shown in Table 4120.02-2 with the exception of 8% to 16% percent passing the No. 200 (75 µm) sieve.
- 30% to 50% recycled crushed PCC or composite materials meeting the above requirements for Granular Shoulders. Meet Gradation No. 10 as shown in Table 4120.02-2 with the exception of 8% to 16% percent passing the No. 200 (75 µm) sieve.
- 30% to 50% RAP processed to pass the 1.5 inch (37.5 mm) sieve.

TABLE 4120.02-2
GRADATION NO. 10

Sieve Size	% Passing
3/4" (19 mm)	100
1/2" (12.5 mm)	--
3/8" (9.5 mm)	--
#4 (4.75 mm)	50-80
#8 (2.36 mm)	25-60

Note: When compaction of material is a specification requirement, the minimum percent passing the #200 (75 µm) sieve is 6%.

4120.03 CLASS C GRAVEL.
Meet the requirements for Gradation No. 10 as shown in Table 4120.03-2 and the following:

TABLE 4120.03-1

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
C Freeze	15	Iowa 211, Method C
Shale (+ No. 4 (4.75 mm) sieve)	10	Materials I.M. 345
Total of Clay lumps and friable particles, plus % passing. No. 200 (75 µm) sieve	16	Materials I.M. 368 and 306
Total of Shale, Clay lumps and friable particles, plus % passing. No. 200 (75 µm) sieve	20	

TABLE 4120.03-2
GRADATION NO. 10

Sieve Size	% Passing
3/4" (19 mm)	100
1/2" (12.5 mm)	--
3/8" (9.5 mm)	--
#4 (4.75 mm)	50-80
#8 (2.36 mm)	25-60
Note: When compaction of material is a specification requirement, the minimum percent passing the #200 (75 µm) sieve is 6%.	

4120.04 CLASS A CRUSHED STONE.

Meet the requirements for Gradation No. 11 as shown on Table 4120.04-2 and the following:

TABLE 4120.04-1

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	45	AASHTO T 96
C Freeze	15	Iowa 211, Method C
Clay lumps and friable particles	4	Materials I.M. 368

Note: Abrasion limits may be raised to 55 if Alumina does not exceed 0.7 or A Freeze does not exceed 10.

TABLE 4120.04-2
GRADATION NO. 11

Sieve Size	% Passing
1.0" (25 mm)	100
3/4" (19 mm)	95-100
1/2" (12.5 mm)	70-90
3/8" (9.5 mm)	--
#4 (4.75 mm)	30-55
#8 (2.36 mm)	15-40
#30 (600 µm)	--
#50 (300 µm)	--

#100 (150 µm)	--
#200 (75 µm)	6-16

Notes:
●See specifications for combination of gravel and limestone screenings.
●Unwashed air-dried samples of crushed composite material shall be tested for gradation compliance except that no gradation determination will be made for the material passing the #200 (75 µm) sieve.

4120.05 CLASS B CRUSHED STONE.
Meet the requirements for Gradation No. 11 as shown in Table 4120.04-2:

TABLE 4120.05

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	55	AASHTO T 96
C Freeze	20	Iowa 211, Method C
Total of Abrasion & C Freeze	65	
Clay lumps and friable particles	4	Materials I.M. 368

4120.06 CLASS D CRUSHED STONE.
Refer to the contract documents for gradation and quality requirements.

4120.07 AGGREGATE FOR PAVED SHOULDER FILLETS.
Crushed stone or recycled materials meeting the requirements for Gradation No. 16 as shown in Table 4120.07 and meeting the quality requirement of Article 4120.03. For recycled materials, meet the requirements of Article 4120.02, B.

TABLE 4120.07
GRADATION NO. 16

Sieve Size	% Passing
1.5” (37.5 mm)	100
1.0” (25 mm)	--
3/4” (19 mm)	--
1/2” (12.5 mm)	0-50
3/8” (9.5 mm)	--
#4 (4. 75 mm)	0-10

Notes:
Gradation 3 or 4 may be substituted at the Contractor’s option.

Comments: Title change, need change of 2121.02 to remove requirements for recycled materials.

Member’s Requested Change (Redline/Strikeout):

Granular Surfacing Material.

Replace: title and entire section:

~~**Section 4120. Granular Surfacing Material.**~~

~~**4120.01 DESCRIPTION.**~~
~~Material for granular surfacing of roadbeds, referred to in Sections 2312 and 2315, shall consist of a uniform~~

This material or combination of materials shall meet the following requirements for the class of material specified in the contract documents.

Except as modified in this section, when gravel or crushed stone material is subjected to the freezing and thawing test, Iowa DOT Materials Laboratory Test Method 211, Method C, the loss shall not exceed 15%.

4120.02 AGGREGATE FOR GRANULAR SHOULDERS.
This aggregate shall be either crushed stone or a gravel limestone mixture.

Crushed stone shall meet requirements of Article 4120.04 or, when specifically designated, Articles 4120.05 or 4120.06.

A gravel/limestone aggregate mixture may be allowed as an option for granular shoulders when noted in the contract documents. When the material is furnished according to this option, the aggregate shall be a combination of gravel and limestone screenings. Except for the minimum percentage passing the No. 200 sieve (75 µm), the gravel shall meet requirements of Article 4120.03. Limestone screenings shall be produced from ledges meeting freezing and thawing and percent of wear requirements of Article 4120.04 or Article 4120.05. The combination shall have 30% to 50% limestone

screenings. The proportions shall be adjusted between these limits so that the combined aggregate percentage passing the No. 200 (75 µm) sieve is between 8% and 16%.

4120.03 CLASS C GRAVEL.
Class C gravel shall consist of a natural gravel or a mixture of sand with gravel or crushed stone or both meeting requirements for Gradation No. 10 of the Aggregate Gradation Table referenced in Section 4109 and the following additional requirements

-	Percent
Max. % shale particles in fraction ret. on No. 4 (4.75 mm) sieve	10
Max. % clay lumps and friable particles and particles passing No. 200 (75 µm) sieve	15
Max. % of combination of foregoing two items	20
When compaction of material is a specification requirement, the minimum % passing No. 200 (75 µm) sieve	6

4120.04 CLASS A CRUSHED STONE.
Class A crushed stone shall consist of a uniform mixture of coarse and fine particles produced by crushing limestone, dolomite, or quartzite. The percentage of wear, when tested according to AASHTO T 96, Grading B, shall not exceed 45%.

For shoulders only, Class A crushed stone which has a freeze and thaw loss not exceeding 10% when tested in accordance with Iowa DOT Materials Laboratory Test Method 211, Method A, or an aluminum oxide value not exceeding 0.7 weight (mass) percent as determined by x-ray fluorescence analysis (Iowa DOT Materials Laboratory Test Method 222) may have an abrasion loss not exceeding 55% when tested in accordance with AASHTO T 96, Grading B may be provided.

The material shall meet the requirements for Gradation No. 11 of the Aggregate Gradation Table referenced in Section 4109 and the following additional requirements:

-	Percent
Max. % clay lumps and friable particles When compaction of material is a specification requirement, the minimum % passing No. 200 (75 µm) sieve	4 6

4120.05 CLASS B CRUSHED STONE.
Class B crushed stone shall consist of a uniform mixture of coarse and fine particles produced by crushing limestone, dolomite, or quartzite. The percent of wear shall be determined in accordance with AASHTO T 96, Grading B, and the loss from freezing and thawing will be determined by Iowa DOT Materials Laboratory Test Method 211, Method C. The freezing and thawing loss plus the abrasion loss shall not exceed 65%, but in no case shall the freezing and thawing loss exceed 20% or the abrasion loss exceed 55%.

~~The material shall meet the requirements for Gradation No. 11 of the Aggregate Gradation Table referenced in Section 4109 and the additional requirements in the table in Article 4120.04.~~

~~4120.06 CLASS D CRUSHED STONE.~~

~~Class D crushed stone shall consist of a uniform mixture of coarse and fine particles produced by crushing limestone, dolomite, or quartzite. The percent of wear determined in accordance with AASHTO T 96 and the maximum permissible freeze and thaw loss, as determined by Iowa DOT Materials Laboratory Test Method 211, Method C, shall be specified in the contract documents. The gradation and the maximum allowable percent of clay lumps and friable particles will be specified in the contract documents.~~

~~4120.07 AGGREGATE FOR PAVED SHOULDER FILLETS.~~

~~Aggregate for the fillet at the edge of paved shoulders shall meet the quality requirements of Article 4120.04 and shall meet requirements for Gradation No. 16 of the Aggregate Gradation Table referenced in Section 4109.~~

Section 4120. Granular Surfacing and Granular Shoulder Aggregate

4120.01 DESCRIPTION.

Uniform mixture of fine and coarse particles of crushed stone, gravel, or a combination of these materials with sand. Crushed recycled concrete may be used as aggregate for Granular Shoulders.

4120.02 GRANULAR MATERIAL.

A. Granular Surfacing

Furnish material meeting the requirements of Article 4120.04. When specified in the contract documents, meet the requirements of Article 4120.03, 4120.05, or 4120.06.

B. Granular Shoulders

Furnish material meeting the requirements of 4120.04 or recycled materials. When specified by the contract documents, meet the requirements of Article 4120.05, or 4120.06.

For recycled materials, meet the following requirements:

5. Recycled PCC, RAP, or Composite pavements: meet the requirements of Materials I.M. 209.
6. Crush PCC or composite pavements: meet Gradation No. 11 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D.
7. RAP: process to pass the 1.5 inch sieve.

The contract documents may allow a Class C gravel and crushed aggregate mixture for granular shoulders meeting the following below:

8. 30% to 50% crushed stone meeting soundness and abrasion requirements of Article 4120.04 or 4120.05. Meet Gradation No. 10 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D with the exception of 8% to 16% percent passing the No. 200 sieve.
9. 30% to 50% recycled crushed PCC or composite materials meeting the above requirements for Granular Shoulders. Meet Gradation No. 10 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D with the exception of 8% to 16% percent passing the No. 200 sieve.
10. 30% to 50% RAP processed to pass the 1.5 inch sieve.

4120.03 CLASS C GRAVEL.

Meet the requirements for Gradation No. 10 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D, and the following:

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
C Freeze	15%	Iowa 211, Method C
Shale (+ No. 4)	10%	I.M. 345
Total of Clay lumps and friable particles,	16%	I.M. 368 and 306

plus % passing. No. 200 sieve		
Total of Shale, Clay lumps and friable particles, plus % passing. No. 200 sieve	20%	

4120.04 CLASS A CRUSHED STONE.
Meet the requirements for Gradation No. 11 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D, and the following:

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	45%	AASHTO T96
C Freeze	15%	Iowa 211, Method C
Clay lumps and friable particles	4%	I.M. 368

Note: Abrasion limits may be raised to 55 if Alumina does not exceed 0.7 or A Freeze does not exceed 10.

4120.05 CLASS B CRUSHED STONE.
Meet the requirements for Gradation No. 11 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D, and the following:

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	55%	AASHTO T96
C Freeze	20%	Iowa 211, Method C
Total of Abrasion & C Freeze	65%	
Clay lumps and friable particles	4%	I.M. 368

4120.06 CLASS D CRUSHED STONE.
Refer to the contract documents for gradation and quality requirements.

4120.07 AGGREGATE FOR PAVED SHOULDER FILLETS.
Crushed stone or recycled materials meeting the requirements for Gradation No. 16 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D, and meeting the quality requirement of 4120.03. For recycled materials, meet the requirements of Article 4120.02, B.

Reason for Revision: Specification in the imperative mood. Addition of recycled materials. Recycled materials blended with Class C gravels meeting the above requirements for Granular Shoulders. Recycled materials for shoulder fillets.

County or City Input Needed (X one)	**Yes**	**No**
Comments:		

Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 22**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4121 **Title:** Granular Subbase Material	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

4121, Granular Subbase Material.

Replace entire section:

4121.01 Description.

- Crushed stone,
- Gravels of which 30% or more of the particles retained on the 3/8 inch (9.5 mm) sieve have at least one fractured face as defined in Materials I.M. 305,
- Crushed PCC pavement meeting the requirements of Materials I.M. 209, or
- Uniformly blended combinations of these materials.

4121.02 Gradation.

A. Crushed material: meet the requirements for Gradation No. 12a of the Aggregate Gradation Table in Section 4109.

B. Gravel: meet the requirements for Gradation No. 12b of the Aggregate Gradation Table in Section 4109.

4121.03 Quality.

The following requirements apply to the individual virgin aggregates before combining:

TABLE 4121.03

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	50	AASHTO T 96
Alumina (a)	1.5	Iowa DOT Materials Laboratory Test Method 222
A Freeze	25	Iowa DOT Materials Laboratory Test Method 211, Method A

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa DOT Materials Laboratory Test Method 222 does not apply to gravel.

Comments: See Reason for Revision. A request was made to change the verbiage of 4121.01: the language seemed too simple.

Specification Section Recommended Text:

4121, Granular Subbase Material.

REPLACE entire section:

4121.01 DESCRIPTION.

A. Crushed stone.

B. Gravels: 30% or more of the particles retained on the 3/8 inch (9.5 mm) sieve shall have at least one fractured face as defined in Materials I.M. 305.

C. Crushed PCC pavement meeting the requirements of Materials I.M. 209.

D. Uniformly blended combinations of these materials.

4121.02 GRADATION.

A. Crushed material: meet Gradation No. 12a.

TABLE 4121.02-1
GRADATION NO. 12a

Sieve Size	% Passing
1.5” (37.5 mm)	100
1.0” (25 mm)	--
3/4” (19 mm)	--
1/2” (12.5 mm)	--
3/8” (9.5 mm)	--
#4 (4.75 mm)	--
#8 (2.36 mm)	10-20
#30 (600 µm)	--
#50 (300 µm)	0-15
#100 (150 µm)	--
#200 (75 µm)	0-6
Note: The gradation requirement for the #8 sieve shall be 8% to 30% when either gravel or crushed stone, without blending sand, is supplied.	

B. Gravel: meet Gradation No. 12b.

TABLE 4121.02-2
GRADATION NO. 12b

Sieve Size	% Passing
1.5” (37.5 mm)	100
1.0” (25 mm)	--
3/4” (19 mm)	--
1/2” (12.5 mm)	--
3/8” (9.5 mm)	--
#4 (4.75 mm)	--
#8 (2.36 mm)	10-20

#30 (600 µm)	--
#50 (300 µm)	0-15
#100 (150 µm)	--
#200 (75 µm)	0-6
Note: The gradation requirement for the #8 sieve shall be 8% to 30% when either gravel or crushed stone, without blending sand, is supplied.	

4121.03 QUALITY.

The following requirements apply to the individual virgin aggregates before combining:

TABLE 4121.03

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	50	AASHTO T 96
Alumina (a)	1.5	Iowa 222
A Freeze	25	Iowa 211, Method A

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa 222 does not apply to gravel.

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4121. Granular Subbase Material.

Replace: entire section:

~~**Section 4121. Granular Subbase Material.**~~

~~**4121.01 DESCRIPTION.**~~

~~Granular subbase material shall meet the following requirements for the respective type or use specified. It shall be the Contractor's responsibility to furnish material that has a sufficiently stable quality to resist distortion during construction of succeeding courses and provides satisfactory drainage.~~

~~Granular subbase material shall consist of crushed PCC pavement from sources as described in Article 2111.02, sand, gravel, or crushed stone particles, or combinations of these materials meeting requirements for Gradation No. 12 of the Aggregate Gradation Table referenced in Section 4109. Sand meeting the quality requirements of Section 4110 or 4111 and the gradation requirements of Gradation No. 1 of the Aggregate Gradation Table referenced in Section 4109 may be blended with granular subbase, either virgin aggregate or crushed PCC pavement, in an amount not to exceed 15% by either volume or weight (mass). The following requirements apply to virgin materials before combining:~~

~~**A. Abrasion and Clay Content.**~~

~~Aggregates shall have a percentage of wear, Grading A or B, not exceeding 50%, determined in accordance with AASHTO T 96. Carbonate aggregate shall have an aluminum oxide content not exceeding 1.5% by weight (mass), as determined by x-ray fluorescence. If the carbonate aggregate exceeds 1.5% by weight (mass), aluminum oxide (determined by the Iowa DOT Materials Laboratory Test Method 222), the Iowa DOT Materials Laboratory Test Method 211, Method A, will be performed and the loss shall not exceed 25%. Gravel shall have a freeze and thaw loss not exceeding 25% when tested in accordance with Iowa DOT Materials Laboratory~~

~~Test Method 211, Method A. Any uniform combination of materials may be used provided each material meets these requirements.~~

Section 4121 Granular Subbase Material

4121.01 DESCRIPTION.

A. Crushed stone.

B. Gravels: 30% or more of the particles retained on the 3/8 inch sieve shall have at least one fractured face as defined in Materials I.M. 305.

C. Crushed PCC pavement meeting the requirements of Materials I.M. 209.

D. Uniformly blended combinations of these materials.

4121.02 GRADATION.

A. Crushed material: meet Gradation No. 12a of the Aggregate Gradation Table in Materials I.M. 209, Appendix D.

B. Gravel: meet Gradation No. 12b of the Aggregate Gradation Table in Materials I.M. 209, Appendix D.

4121.03 QUALITY.

The following requirements apply to the individual virgin aggregates before combining:

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	50%	AASHTO T96
Alumina (a)	1.5%	Iowa 222
A Freeze	25%	Iowa 211, Method A

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa 222 does not apply to gravel.

Reason for Revision: Specification in the imperative mood. Removed sand from the list of materials to be added to aggregate or crush PCC. At one time it was used to improve results on Plasticity Index Test but this is no longer required.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 23**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4122 **Title:** Crushed Stone Base Material	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: For Articles 4122.01 and 4122.03 see Specifications Section Recommended Text.

4122.02 GRADATION.
Produce Macadam Crushed Stone with a nominal maximum size of 3 inches (75 mm). Screen over a 3/4 inch (19 mm) screen, or when specified by the contract documents, a 1 inch (25 mm) screen. This is identified as Gradation No. 13 of the Aggregate Gradation Table in Section 4109.

The aggregate passing the 3/4 inch (19 mm) or 1 inch (25 mm) screen may be furnished as the Choke Stone material; however, 6% to 16% of the material must pass the No. 200 (75 µm) sieve.

Comments: See Reason for Revision.

Specification Section Recommended Text:

4122, Crushed Stone Base Material.

Replace entire section:

4122.01 DESCRIPTION.
Crushed stone meeting the following requirements:

4122.02 GRADATION.
Produce Macadam Crushed Stone with a nominal maximum size of 3 inches (75 mm). Screen over a 3/4 inch (19 mm) screen, or when specified by the contract documents, a 1 inch (25 mm) screen. This is identified as Gradation No. 13 in Table 4122.02.

TABLE 4122.02
GRADATION NO. 13

3” nominal maximum size -- screen over 3/4” or 1” screen.

The aggregate passing the 3/4 inch (19 mm) or 1 inch (25 mm) screen may be furnished as the Choke Stone material; however, 6% to 16% of the material must pass the No. 200 (75 µm) sieve.

4122.03 QUALITY.
For Macadam Stone Base and Choke Stone, meet the following requirements as detailed in Section 4109 when crushed to a 3/4 inch (19 mm) or 1 inch (25 mm) nominal size for testing:

TABLE 4122.03-1

Macadam Quality	Maximum Percent Allowed	Test Method
Abrasion	45	AASHTO T 96
C Freeze	10	Iowa DOT Materials Laboratory Test Method 211, Method C

Choke Stone that is a byproduct of the Macadam production need not be tested. For Choke Stone that is not a byproduct of Macadam production, meet the following requirements:

TABLE 4122.03-2

Choke Stone Quality	Maximum Percent Allowed	Test Method
Abrasion	45	AASHTO T 96
C Freeze	15	Iowa DOT Materials Laboratory Test Method 211, Method C

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4122. Crushed Stone Base Material.

Replace: entire section:

~~**Section 4122. Crushed Stone Base Material.**~~

~~**4122.01 DESCRIPTION.**~~
~~Material for crushed stone base courses shall meet the following requirements for the material specified in the contract documents.~~

~~**4122.02 MACADAM STONE BASE MATERIAL.**~~
~~This aggregate shall be the product of crushing limestone, dolomite, or quartzite and shall meet the following requirements:~~

~~**A. Abrasion Loss.**~~
~~The percentage of wear, determined in accordance with AASHTO T 96, Grading A or B, shall not exceed 45%.~~

~~**B. Freeze and Thaw Loss.**~~
~~When subjected to the freezing and thawing test, Iowa DOT Materials Laboratory Test Method 211, Method C, the percentage loss shall not exceed 10%.~~

~~**C. Gradation.**~~
~~The aggregate for both base course and choke stone course may be produced from the same source. The coarse material shall be produced with a nominal maximum size of 3 inches (75 mm),~~

~~and screened over a 3/4 inch (19 mm) screen. When specified in the contract documents, this material shall be screened over a 1 inch (25 mm) screen. The aggregate retained on the 3/4 inch (19 mm) or 1 inch (25 mm) screen shall be furnished as the macadam base course material. This is identified as Gradation No. 13 of the Aggregate Gradation Table referenced in Section 4109.~~

~~The aggregate passing the 3/4 inch (19 mm) or 1 inch (25 mm) screen may be furnished as the choke stone material; however, the material shall have from 6% to 16% passing the No. 200 (75 µm) sieve.~~

Section 4122. Crushed Stone Base Material

4122.01 DESCRIPTION.
Crushed stone meeting the following requirements:

4122.02 GRADATION.
Produce Macadam crushed stone with a nominal maximum size of 3 inches. Screen over a 3/4 inch screen, or when specified by the contract documents, a 1inch screen. This is identified as Gradation No. 13 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D.

The aggregate passing the 3/4 inch or 1 inch screen may be furnished as the Choke Stone material; however, 6% to 16% of the material must pass the No. 200 sieve.

4122.03 QUALITY.
For Macadam Stone Base and Choke Stone, meet the following requirements as detailed in Section 4109 when crushed to a 3/4 or 1 inch nominal size for testing:

Macadam Quality	Maximum Percent Allowed	Test Method
Abrasion	45%	AASHTO T96
C Freeze	10%	Iowa 211, Method C

Choke Stone that is a byproduct of the Macadam production need not be tested. For Choke Stone that is not a byproduct of Macadam production, meet the following requirements:

Choke Stone Quality	Maximum Percent Allowed	Test Method
Abrasion	45%	AASHTO T96
C Freeze	15%	Iowa 211, Method C

Reason for Revision: Specification in the imperative mood.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 24**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4123 **Title:** Modified Subbase Material	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: For Article 4123.03, see Specification Section Recommended Text.

4123.01 DESCRIPTION.

- Crushed stone,
- Gravels for which 75% or more of the particles retained on the 3/8 inch (9.5 mm) sieve have at least one fractured face as defined in Materials I.M. 305,
- Recycled pavements meeting Materials I.M. 209, or
- Uniformly blended combinations of these materials with a maximum of 50% RAP.

4123.02 GRADATION.
Meet the requirements for Gradation No. 14 of the Aggregate Gradation Table in Section 4109.

Process RAP to pass the 2 inch (50 mm) sieve.

Uncrushed gravel and/or sand may be uniformly blended with crushed recycled pavement or crushed stone at a maximum rate of 50% to meet gradation requirements.

Comments: A request was made to change the verbiage of 4123.01: the language seemed too simple. The question was raised if reclaimed and recycled are the same thing. The Office of Materials determined that “reclaimed” should be replaced with “recycled”.

Specification Section Recommended Text:

4123, Modified Subbase Material

REPLACE entire section:

4123.01 DESCRIPTION.

A. Crushed stone.

B. Gravels: 75% or more of the particles retained on the 3/8 inch (9.5 mm) sieve shall have at least one fractured face as defined in Materials I.M. 305.

C. Reclaimed pavements meeting Materials I.M. 209.

D. Uniformly blended combinations of these materials with a maximum of 50% RAP.

4123.02 GRADATION.
Meet Gradation No. 14 as shown in Table 4123.02.

TABLE 4123.02
GRADATION NO. 14

Sieve Size	% Passing
1.5" (37.5 mm)	100
1.0" (25 mm)	--
3/4" (19 mm)	70-90
1/2" (12.5 mm)	--
3/8" (9.5 mm)	--
#4 (4.75 mm)	--
#8 (2.36 mm)	10-40
#30 (600 µm)	--
#50 (300 µm)	--
#100 (150 µm)	--
#200 (75 µm)	3-10

Note: Unwashed air-dried samples of crushed composite material shall be tested for gradation compliance except that no gradation determination will be made for the material passing the #200 (75 µm) sieve.

Process RAP to pass the 2 inch (50 mm) sieve.

Uncrushed gravel and/or sand may be uniformly blended with crushed recycled pavement or crushed stone at a maximum rate of 50% to meet gradation requirements.

4123.03 QUALITY.
The following requirements as detailed in Section 4109 apply to blended and non-blended virgin materials:

TABLE 4123.03

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	45	AASHTO T 96
C Freeze	15	Iowa DOT Materials Laboratory Test Method 211, Method C
Alumina (a)	0.7 (Abrasion loss 46% to 55%)	Iowa DOT Materials Laboratory Test Method 222
A Freeze	10 (Abrasion loss 46% to 55%)	Iowa DOT Materials Laboratory Test Method 211, Method A
Alumina (No. 40 (425 µm) material)	4.7	Iowa DOT Materials Laboratory Test Method 222

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa DOT Materials Laboratory Test Method 222 does not apply to gravel.

Acquire gravel or gravel/non-gravel blended products from a gravel source with a plasticity index not exceeding 7.

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4123. Modified Subbase Material.

Replace: entire section:
~~**Section 4123. Modified Subbase Material.**~~

~~**4123.01 DESCRIPTION.**~~
~~Material for modified subbase shall consist solely, or in combinations, of crushed PCC pavement, crushed composite pavement, crushed stone, sand, or gravel meeting the requirements for Gradation No. 14 of the Aggregate Gradation Table in Section 4109.~~

~~Recycled crushed PCC pavement, crushed composite pavement, and salvaged HMA shall be reclaimed from an Interstate or Primary roadbed under the jurisdiction of the Contracting Authority. Recycled PCC roadway pavement or recycled composite roadway pavement obtained from secondary roads or municipal streets may be used if the source of the aggregate is known and the PCC coarse aggregate durability is class 2 or better. When the source or quality of the material from the secondary or municipal pavement is unknown, the material shall meet the requirements of Article 4123.01, A. Certified RAP may be used.~~

~~Crushed products meeting the requirements of this specification may be uniformly blended with a maximum of 50% RAP pavement meeting the requirements of Article 2303.02. RAP shall be processed such that 100% of the material is a nominal 2 inches (50 mm) maximum size. It shall be the Contractor's responsibility to furnish material that has a sufficiently stable quality to resist distortion during subbase and pavement construction and to provide satisfactory drainage.~~

~~Not more than 50% sand and/or uncrushed gravel may be uniformly blended with crushed PCC pavement, crushed composite pavement, or crushed stone to meet the required gradation. If gravel only is provided no less than 75% of the material retained on 3/8 inch (9.5 mm) or larger sieves must be crushed. Crushed content of gravel, for purposes of this specification, is defined as the percentage of particles, by weight (mass), as visually observed to have a minimum of one fractured face, as determined by Materials I.M. 305.~~

~~The following requirements apply to both blended and non-blended virgin materials:~~

> ~~**A. Freeze and Thaw, Clay Content, and Abrasion Loss.**~~
> ~~Aggregates shall have a percentage of wear, Grading A or B, not exceeding 45%, determined in accordance with AASHTO T 96, and loss not exceeding 15% when subjected to freezing and thawing test, Iowa DOT Materials Laboratory Test Method 211, Method C. Crushed stone with an aluminum oxide content not greater than 0.7% as determined by x-ray fluorescence (Iowa DOT Materials Laboratory Test Method 222) or a freeze and thaw loss not exceeding 10% when tested in accordance with Iowa DOT Materials Laboratory Test Method 211, Method A, may have an abrasion loss not exceeding 55% when tested in accordance with AASHTO T 96, Grading A or B, may be provided.~~
>
> ~~**B. Clay Content.**~~
> ~~Carbonate aggregate passing a No. 40 (4.25 mm) sieve shall not exceed 4.7% by weight (mass) of aluminum oxide as determined by x-ray fluorescence. Crushed carbonate aggregates may be blended to achieve an aluminum oxide content of 4.7% or less.~~
>
> ~~For gravel or gravel/non-gravel blended products, the plasticity index of each individual source shall not exceed 7. An aluminum oxide content of 4.7 or less as determined by x-ray fluorescence may be applied in lieu of plasticity index determination for carbonate aggregates when blended with gravels.~~

Section 4123. Modified Subbase

4123.01 DESCRIPTION.

A. Crushed stone.

B. Gravels: 75% or more of the particles retained on the 3/8 inch sieve shall have at least one fractured face as defined in Materials I.M. 305.

C. Reclaimed pavements meeting Materials I.M. 209.

D. Uniformly blended combinations of these materials with a maximum of 50% RAP.

4123.02 GRADATION.

11. Meet Gradation No. 14 of the Aggregate Gradation Table referenced in Materials I.M 209, Appendix D.
12. Process RAP to pass the 2 inch sieve.

Uncrushed gravel and/or sand may be uniformly blended with crushed recycled pavement or crushed stone at a maximum rate of 50% to meet gradation requirements.

4123.03 QUALITY.

The following requirements as detailed in Section 4109 apply to blended and non-blended virgin materials:

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	45%	AASHTO T96
C Freeze	15%	Iowa 211, Method C
Alumina (a)	0.7% (Abrasion loss 46% to 55%)	Iowa 222
A Freeze	10% (Abrasion loss 46% to 55%)	Iowa 211, Method A
Alumina (No. 40 material)	4.7%	Iowa 222

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa 222 does not apply to gravel.

Acquire gravel or gravel/non-gravel blended products from a gravel source with a plasticity index not exceeding 7.

Reason for Revision: Specification in the imperative mood.

County or City Input Needed (X one)	**Yes**	**No**
Comments:		

Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**

Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 25**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Article No.: Section 4125. **Title:** Cover Aggregate and Aggregate for Slurry Mixtures	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: For Articles 4124.01 and 4124.03 and for Section 4125, see Specification Section Recommended Text.

4124.02 GRADATION.
Meet requirements for Gradation No. 22 or No. 23 (as specified in the contract documents) of the Aggregate Gradation Table in Section 4109.

Comments: Replaced friction Type 4D with Type 4 since the use of 4d is almost non-existent.

Specification Section Recommended Text:

Section 4124. Aggregate for Slurry Mixtures

Add a new section:

4124.01 DESCRIPTION.
Crushed stone.

4124.02 GRADATION.
Meet requirements for Gradation No. 22 (Table 4124.02-1) or No. 23 (Table 4124.02-2) as specified in the Contract Documents.

TABLE 4124.02-1
GRADATION NO. 22

Sieve Size	% Passing
3/8" (9.5 mm)	100
#4 (4.75 mm)	85-100
#8 (2.36 mm)	40-95
#30 (600 µm)	20-60
#50 (300 µm)	14-35
#100 (150 µm)	10-25
#200 (75 µm)	5-25
Note: Gradation limitations for the 30, 50 and 100 (600 µm, 300 µm, and 150 µm) sieves shall not apply when slurry mixture is applied by hand lutes, such as for slurry leveling.	

TABLE 4124.02-2
GRADATION NO. 23

Sieve Size	% Passing
3/8" (9.5 mm)	100
#4 (4.75 mm)	70-90
#8 (2.36 mm)	45-70
#30 (600 µm)	19-34
#50 (300 µm)	12-25
#100 (150 µm)	7-18
#200 (75 µm)	5-15

4124.03 QUALITY.
Type 4 or better friction classification aggregate as shown in Materials I.M. T203.
Meet the following requirements based on aggregate crushed to 3/4 inch nominal size:

TABLE 4124.03

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40	AASHTO T 96
A Freeze	10	Iowa DOT Materials Laboratory Test Method 211, Method A
Alumina (a)	0.7	Iowa DOT Materials Laboratory Test Method 222
Sand Equivalence	45 (Minimum)	AASHTO T 176
Organic materials	0.01	Iowa DOT Materials Laboratory Test Method 215

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance.

Section 4125. Aggregate for Bituminous Sealcoat

Replace title and entire section:

4125.01 DESCRIPTION.
Crushed stone, gravel, or sand.

- Must be washed.
- Crushed aggregate is required for primary and interstate roadways and may be specified for other projects.
- Produce crushed gravel as a separate operation by crushing the gravel particles retained on a screen at least 1/4 inch (6 mm) larger than the aggregate size specified.

4125.02 GRADATION.
Meet aggregate gradation requirements for the gradation number specified. Unless otherwise specified, use the 1/2 inch (12.5 mm) sieve size.

TABLE 4125.02

Size	Gradation No.
1/2 inch (12.5 mm) Crushed Gravel or Stone	19

Screened Gravel	20
3/8 inch (9.5 mm)Crushed Gravel or Stone	21(a)
Sand Cover Aggregate	1(b)

(a) 1/2 inch (12.5 mm) size may be used when 3/8 inch (9.5 mm) size is specified except for Primary Road applications.

(b) For a crushed stone product allow up to 4% passing the #200 (75 µm) sieve.

4125.03 QUALITY.

- Free from objectionable clay coatings that prevent emulsions from fully coating the aggregate when determined using Materials I.M. 349.
- Type 4 or better frictional classification as shown in Materials I.M. T203.
- For cover aggregate for bituminous sealcoat, meet the following requirements:

TABLE 4125.03

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40	AASHTO T 96
C Freeze	10	Iowa DOT Materials Laboratory Test Method 211, Method C
Shale (+ No.4 (4.75 mm) sieve)	5.0	Materials I.M.372
Shale (+ No.16 (1.18 mm) sieve) (Sand cover aggregate)	2.0	Materials I.M. 344

Comments: Split 4125 into two separate sections (4124 and 4125)

Member's Requested Change (Redline/Strikeout):

Section 4125. Cover Aggregate and Aggregate for Slurry Mixtures.

Replace: entire section:

~~**Section 4125. Cover Aggregate and Aggregate for Slurry Mixtures.**~~

~~**4125.01 DESCRIPTION.**~~

~~This section describes cover aggregate for bituminous seal coats, and aggregate for slurry mixtures.~~

~~**A. Cover Aggregate for Bituminous Seal Coats.**~~
~~Aggregate for bituminous seal coat, Section 2307, shall be composed of hard, durable rock, sand, or combinations thereof, washed and free from objectionable clay coatings, and shall meet the requirements for the size designated in the contract documents. Aggregate for bituminous seal coat shall be Type 4D, or better, friction classification aggregate as shown in Materials I.M. T203.~~

~~Unless otherwise specified, the 1/2 inch (12.5 mm) size shall be used. The 1/2 inch (12.5 mm) and 3/8 inch (9.5 mm) sizes may be crushed stone, gravel, or a mixture of these materials with sand.~~

~~For 1/2 inch (12.5 mm) or 3/8 inch (9.5 mm) sizes, crushed cover aggregate may be specified. When crushed or uncrushed gravel is furnished to meet this requirement, it shall be produced as a separate operation, whereby the gravel is prescreened prior to crushing, and the cover aggregate is produced by crushing particles retained on a screen at least 1/4 inch (6 mm) larger than the maximum particle size specified.~~

~~1. Abrasion Loss.~~
~~The percentage of wear as determined by AASHTO T 96, Method C, shall not exceed 40%.~~

~~2. Freeze and Thaw Loss.~~
~~When the particles retained on the No. 4 (4.75 mm) sieve in all sizes, except sand, are subjected to the freezing and thawing test, Iowa DOT Materials Laboratory Test Method 211, Method C, the loss shall not exceed 10%.~~

~~3. Shale.~~
~~For 1/2 inch (12.5 mm) and 3/8 inch (9.5 mm) sizes, shale particles in the portion retained on the No. 4 (4.75 mm) sieve shall not exceed 5.0% of the particles retained on that sieve. Sand cover aggregate shall not contain more than 2.0% shale particles retained on the No. 16 (1.18 mm) sieve.~~

~~4. Gradation.~~
~~Cover aggregate shall meet requirements of the Aggregate Gradation Table referenced in Section 4109 for the gradation number appropriate for the size designated or required and the aggregate furnished.~~

~~Mixture Size~~	**~~Gradation~~**
~~½ inch (12.5 mm) Crushed Gravel or Stone~~	~~19~~
~~Screened Gravel~~	~~20~~
~~3/8 inch (9.5 mm) Crushed Gravel or Stone~~	~~21[(1)]~~
~~Sand~~	~~1~~

~~[(1)] 1/2 inch (12.5 mm) size may be used when 3/8 inch (9.5 mm) is specified except for Primary Road applications.~~

~~B. Aggregate for Slurry Mixture.~~
~~The mineral aggregate shall be composed of a combination of crushed stone and mineral filler meeting the following requirements:~~

~~1. Crushed Stone.~~
~~Crushed stone shall be produced from sources which normally show an abrasion loss with a percentage of wear, determined in accordance with AASHTO T 96, Grading A or B to not exceed 40%. When subjected to the freezing and thawing test, Iowa DOT Materials Laboratory Test Method 211, Method A, the percentage shall not exceed 10%, using aggregate crushed to 3/4 inch (19 mm) maximum size. It shall be free of organic matter and other deleterious materials. The aggregate shall be Type 4 or better friction classification aggregate as shown in Materials I.M. T203. The aggregate shall have a sand equivalent of not less than 45, as determined in accordance with AASHTO T 176.~~

~~2. Mineral Filler.~~
~~Mineral filler is required to obtain the necessary gradation and the desired mixture consistency, and the addition rate will be established by the Engineer, based on~~

~~laboratory or field trials. A minimum of 1.0% will be required. Mineral filler shall meet requirements for Type I Portland Cement.~~

~~**3. Gradation.**~~
~~The composite aggregate, excluding mineral filler, shall meet requirements for Gradation No. 22 or No. 23 of the Aggregate Gradation Table referenced in Section 4109.~~

Section 4124. Aggregate for Slurry Mixtures

4124.01 DESCRIPTION.
Crushed stone.

4124.02 GRADATION.
Meet requirements for Gradation No. 22 or No. 23 (as specified in the Contract Documents) of the Aggregate Gradation Table referenced in I.M. 209, Appendix D.

4124.03 QUALITY.
Type 4 or better friction classification aggregate as shown in Materials I.M. T-203.
Meet the following requirements based on aggregate crushed to 3/4 inch nominal size:

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40%	AASHTO T96
A Freeze	10%	Iowa 211, Method A
Alumina (a)	0.7%	Iowa 222
Sand Equivalence	45 (Minimum)	AASHTO T176
Organic materials	0.01	I.M. 215

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance.

Section 4125. Aggregate for Bituminous Sealcoat

4125.01 DESCRIPTION.
Crushed stone, gravel, or sand.
13. Must be washed.
14. Crushed aggregate is required for primary and interstate roadways and may be specified for other projects.
15. Produce crushed gravel as a separate operation by crushing the gravel particles retained on a screen at least 1/4 inch larger than the aggregate size specified.

4125.02 GRADATION.
Meet requirements of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D for the gradation number specified. Unless otherwise specified, use the 1/2 inch size.

Size	Gradation No.
1/2 inch Crushed Gravel or Stone	19
Screened Gravel	20
3/8 inch Crushed Gravel or Stone	21(a)
Sand Cover Aggregate	1(b)

(a) 1/2 inch size may be used when 3/8 inch size is specified except for Primary Road applications.
(b) For a crushed stone product allow up to 4% passing the 200 sieve.

4125.03 QUALITY.

16. Must be free from objectionable clay coatings that prevent emulsions from fully coating the aggregate when determined using Materials I.M. 349.
17. Type 4 or better frictional classification as shown in Materials I.M. T-203.
18. For cover aggregate for bituminous sealcoat, meet the following requirements:

Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	40%	AASHTO T96
C Freeze	10%	Iowa 211, Method C
Shale (+ No.4 sieve)	5%	I.M.345
Shale (+ No.16 sieve) (Sand cover aggregate)	2%	I.M. 344

Reason for Revision: Specification in the imperative mood. Changes include: The aggregate shall be Type 4 or better frictional classification as shown in Materials I.M. T-203. (removed 4D).

Bituminous seal coat: Must be free from objectionable clay coatings that prevent emulsions from fully coating the aggregate when determined using Materials I.M. 349
Crushed aggregate is required for primary and interstate roadways and may be specified for other projects.

Aggregate for slurry, placed a limit on organic material of 0.01% instead of ”to be free of objectionable clay coatings” and specified IM 349 to determine the content.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 26**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April 18, 2006	
Section No.: 4126 **Title:** Type B Aggregate for Hot Mix Asphalt	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

Comments: See Reason for Revision.

Specification Section Recommended Text:

4126, Type B Aggregate for Hot Mix Asphalt.

Delete the entire section.

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4126, Type B Aggregate for Hot Mix Asphalt.

Delete the entire section:

~~**Section 4126. Type B Aggregate for Hot Mix Asphalt.**~~

~~**4126.01 DESCRIPTION.**~~
~~The aggregate shall consist of gravel, crushed stone, or both, and may be combined with sand and filler, and shall meet the following requirements.~~

~~**4126.02 AGGREGATE.**~~
~~Aggregate shall consist of durable rock or gravel and sand particles meeting the following additional requirements:~~

~~**A. Abrasion Loss.**~~
~~Aggregate retained on the No.4 (4.75 mm) sieve and crushed aggregate passing the No. 4 (4.75 mm) sieve shall be produced from sources which normally show an abrasion loss not exceeding 45%, as determined in accordance with AASHTO T 96.~~

~~**B. Clay Content and Freezing and Thawing Loss**~~
~~Unless otherwise provided, limestone and/or dolomite aggregate shall be produced from sources which normally show an aluminum oxide content (determined by Iowa DOT Materials Laboratory Test Method 222) not exceeding the following weight percentages and a freezing and thawing loss not exceeding the following percentages when tested in accordance with the Iowa DOT Materials Laboratory Test Method 211, using aggregate crushed or screened to 3/4 inch (19 mm) nominal size:~~

1. For Primary projects:

1.5% by weight (mass) of aluminum oxide
10% loss for Method C freeze and thaw

If the aggregate exceeds the 1.5% by weight (mass) of aluminum oxide or if there is performance history which indicates that aluminum oxide is an unreliable indication of aggregate durability in HMA, the Iowa DOT Materials Laboratory Test Method 211, Method A, freeze thaw test will be performed, and results shall not exceed 25.

Iowa DOT Materials Laboratory Test Method 211, Method 211, Method A, will be performed on gravels, instead of x-ray fluorescence analysis. Freezing and thawing loss shall not exceed 25.

2. For other projects:

2.5% by weight (mass) of aluminum oxide
10% loss for Method C freeze and thaw

If the aggregate exceeds the 2.5% by weight (mass) of aluminum oxide or if there is performance history which indicates that aluminum oxide is an unreliable indication of aggregate durability in HMA, the Method A freeze and thaw test will be performed, and results shall not exceed 45.

Iowa DOT Materials Laboratory Test Method 211, Method A, will be performed on gravels, instead of x-ray fluorescence analysis. Freeing and thawing loss shall not exceed 45.

C. Absorption.
Aggregates shall be produced from sources for which historical records show an absorption of 6.0% or less. When such records are not available, the aggregates produced will be tested for absorption and shall meet this requirement.

The Engineer may waive these requirements for sand and gravel when the amount retained on the No. 4 (4.75 mm) sieve is less than 5% of the material.

D. Shale.
The fine aggregate portion passing the No. 4 (4.75 mm) sieve of the combined materials shall not contain more than 5.0% shale retained on the No. 16 (1.18 mm) sieve.

4126.03 MINERAL FILLER.
Fine material added to the mixture without heating shall meet requirements for mineral filler in AASHTO M 17 except the gradation shall be determined in accordance with AASHTO T 11.

4126.04 COMPOSITE AGGREGATE.
The composite aggregate shall be free from organic matter and from adherent films of clay or other matter which will prevent coating of particles with bitumen. Silt and clay naturally occurring in aggregate will not be considered objectionable provided they remain finely divided and uniformly distributed. Natural sand used for wearing course mixtures shall be graded such that when sieved through the following sieves: No. 8, No. 16, No. 30, No. 50, and No. 100 (2.36 mm, 1.18 mm, 600 µm, 300 µm, 150 µm), not more than 50% shall pass one sieve and be retained on the next higher numbered sieve. The composite aggregate shall meet the following requirements for the class and mixture size specified:

A. Plasticity Index.
The composite aggregate shall have a plasticity index not exceeding 4.

B. Gradation.
The composite aggregate mixture for the job mix formula aggregate shall meet requirements of

~~the Aggregate Gradation referenced in Article 2303.02 .~~

~~**C. Crushed Particles.**~~
~~All mixtures required by Section 2303, shall have a minimum of 45% crushed particles if used for Primary projects. The percentage of crushed particles shall be adjusted or controlled to meet requirements of the mix design.~~

~~Crushed particles may be obtained from crushed stone, mineral filler, or crushed sand or gravel. When crushed sand or gravel is used in the mix, it shall be produced as a separate operation by crushing a gravel aggregate which is retained on a screen at least 1/4 inch (6 mm) larger than the aggregate size specified.~~

Reason for Revision: Combined 4126 and 4127 into 4127. Combined fine and coarse gradations are now in IM 510.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**
Comments:					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 27**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April 18, 2006	
Section No.: 4127 **Title:** Aggregate for Hot Mix Asphalt	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text: See Specification Section Recommended Text.

Comments: See Reason for Revision.

Specification Section Recommended Text:

4127, Aggregate for Hot Mix Asphalt.

Replace the entire section:

4127.01 DESCRIPTION.

Crushed stone, gravel, slag, sand, and filler from an approved source. Crushed gravel may be used to satisfy crushed particle requirements. Produce crushed gravel as a separate operation by crushing a gravel aggregate retained on a screen at least 1/4 inch (6 mm) larger than the aggregate size specified.

4127.02 COARSE AGGREGATE.

Meet the following requirements:

TABLE 4127.02

Coarse Aggregate Quality	Type A, Maximum %	Type B, Maximum %		Test Method
		Primary	Other	
Abrasion	45	45	45	AASHTO T 96
Absorption	6.0	6.0	6.0	Iowa DOT Materials Laboratory Test Method 201
Alumina (a)	0.7	1.5	2.5	Iowa DOT Materials Laboratory Test Method 222
A Freeze	10	25	45	Iowa DOT Materials Laboratory Test Method 211, Method A
C Freeze	N/A	10	10	Iowa DOT Materials Laboratory Test Method 211, Method C
Clay Lumps/Friable Particles	0.5	N/A	N/A	Materials I.M. 368

Organic Material	0.01	0.01	0.01	Iowa DOT Materials Laboratory Test Method 215

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa 222 does not apply to gravels.

4127.03 FINE AGGREGATE.

Use:

A. Natural sand. A gradation for wearing course mixtures shall not have more than 50% retained between two consecutive standard sieves below the No. 4 (4.75 mm).

B. Crushed gravel or stone processed from coarse aggregate meeting the requirements of Article 4127.02.

Fine aggregate shall contain no more than 0.01% organic matter when tested using Materials I.M. 215.

4127.04 COMBINED AGGREGATES.

Use aggregate, which does not contain adherent films of clay or other matter, which will prevent coating of particles with asphalt binder. Meet gradations of Materials I.M. 510.

Maximum shale allowed in the fine portion of the combined materials:

TABLE 4127.04

Aggregate Type	Maximum Percent Allowed	Test Method
Type A	2.0	Materials I.M. 344
Type B	5.0	Materials I.M. 344

4127.05 MINERAL FILLER.

For fine material added to the mixture, separate from cold feed, meet the requirements for mineral filler in AASHTO M 17, except determine the gradation according to AASHTO T 11.

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4127, Aggregate for Hot Mix Asphalt.

Replace: the entire section:

~~**Section 4127. Type A Aggregate for Hot Mix Asphalt.**~~

~~**4127.01 DESCRIPTION.**~~

~~Type A Aggregate for HMA shall consist of crushed stone, gravel, or both and may be combined with sand and filler. Particles retained on the No. 4 (4.75 mm) sieve shall be considered coarse aggregate, and particles passing the No. 4 (4.75 mm) sieve shall be considered fine aggregate.~~

~~Aggregates shall be produced from sources or ledges for which historical records show an absorption of 6.0% or less. When such records are not available, the aggregates produced will be tested for absorption and shall meet this requirement.~~

4127.02 MINERAL FILLER.
Fine material added to the mixture without heating to secure the desired percentage passing the No. 200 (75 µm) sieve shall meet requirements of AASHTO M 17 except the gradation shall be determined in accordance with AASHTO T 11.

4127.03 FINE AGGREGATE.
The fine aggregate portion of the combined material shall consist of durable grains of natural sand, crushed stone, or crushed gravel, reasonably free from deleterious substances. The fine aggregate portion of the combined materials shall not contain more than 2.0% shale retained on the No. 16 (1.18 mm) sieve.

Material from each separate source to be used as fine aggregate, before being delivered to the stockpile from which the mixing plant will be supplied, shall be screened and processed to the extent that it will contain no clay lumps and friable particles, foreign material, or particles which will be retained on a 1 1/2 inch (37.5 mm) sieve.

Crushed fine aggregate shall be produced from sources complying with the freezing and thawing and abrasion loss requirements for coarse aggregates. Fine aggregate produced by crushing gravel shall be produced by methods prescribed for the production of coarse aggregate.

4127.04 COARSE AGGREGATE.
Coarse aggregate shall consist of crushed limestone and/or dolomite, gravel, or mixtures of crushed limestone and/or dolomite and gravel. When crushed gravel is used in the mix, it shall be produced as a separate operation by crushing a gravel aggregate which is retained on a screen at least 1/4 inch (6 mm) larger than the aggregate specified.

The clay content of a limestone and/or dolomite coarse aggregate will be determined based on the concentration of aluminum oxide in the aggregate determined by Iowa DOT Materials Laboratory Test Method 222. Coarse aggregate from an approved source shall have a historical record of containing not more than 0.7% by weight (mass) aluminum oxide. Aluminum oxide will be determined by x-ray fluorescence analyses of representative samples.

If the aggregate exceeds the 0.7% by weight (mass) of aluminum oxide or if there is performance history which indicates that aluminum oxide is an unreliable indication of aggregate durability in HMA, a freeze and thaw test will be performed. The percentage loss will be determined in accordance with the Iowa DOT Materials Laboratory Test Method 211, Method A, using aggregate crushed to 3/4 inch (19 mm) nominal size, and the loss shall not be greater than 10%.

Iowa DOT Materials Laboratory Test Method 211, Method A, will be performed on gravels, instead of x-ray fluorescence analysis.

Course aggregate abrasion loss shall not exceed 45% as determined in accordance with AASHTO T 96. Coarse aggregate shall not contain more than 0.5% clay lumps and friable particles, organic material, and other deleterious materials.

4127.05 COMBINATION OF AGGREGATES.
The combination of aggregates to be used from the various sources shall meet requirements of Article 2303.02 and the following:

A. Gradation.
The composite aggregate mixture for the job mix formula aggregate shall meet requirements of the Aggregate Gradation referenced in Article 2303.02.

B. Crushed Particles.
Of the material delivered to the dryer, not less than 60% shall be crushed gravel, crushed stone, or a combination of these materials unless otherwise noted in the contract documents.

~~**C. Natural Sand.**~~

~~Natural sand used for wearing course mixtures shall be graded such that when sieved through the following sieves: No. 8, No. 16, No. 30, No. 50, and No. 100 (2.36 mm, 1.18 mm, 600 µm, 300 µm, 150 µm), not more than 50% shall pass one sieve and be retained on the next higher numbered sieve.~~

Section 4127. Aggregate for Hot Mix Asphalt

4127.01 DESCRIPTION.

Crushed stone, gravel, slag, sand, and filler from an approved source. Crushed gravel may be used to satisfy crushed particle requirements. Produce crushed gravel as a separate operation by crushing a gravel aggregate retained on a screen at least 1/4 inch (6 mm) larger than the aggregate size specified.

4127.02 COARSE AGGREGATE.

Meet the following requirements:

Coarse Aggregate Quality	Type A	Type B		Test Method
		Primary	Other	
	Maximum %	Maximum %		
Abrasion	45%	45%	45%	AASHTO T96
Absorption	6.0%	6.0%	6.0%	Iowa 201
Alumina (a)	0.7%	1.5%	2.5%	Iowa 222
A Freeze	10%	25%	45%	Iowa 211 Method A
C Freeze	N/A	10%	10%	Iowa 211 Method C
Clay Lumps/Friable Particles	0.5%	N/A	N/A	I.M. 368
Organic Material	0.01%	0.01	0.01	Iowa 215

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa 222 does not apply to gravels.

4127.03 FINE AGGREGATE.

Use:

A. Natural sand. A gradation for wearing course mixtures shall not have more than 50% retained between two consecutive standard sieves below the No. 4.

C. Crushed gravel or stone processed from coarse aggregate meeting the requirements of Section 4127.02.

Fine aggregate shall contain no more than 0.01% organic matter when tested using Materials IM 215.

4127.04 COMBINED AGGREGATES.

Use aggregate which does not contain adherent films of clay or other matter, which will prevent coating of particles with asphalt binder. Meet gradations of Materials I.M. 510.

Maximum shale allowed in the fine portion of the combined materials:

Aggregate Type	Maximum Percent Allowed	Test Method
Type A	2%	Materials I.M. 344
Type B	5%	Materials I.M. 344

4127.05 MINERAL FILLER.
For fine material added to the mixture, separate from cold feed, meet the requirements for mineral filler in AASHTO M 17, except determine the gradation according to AASHTO T 11.

Reason for Revision: Combined Sections 4126 and 4127. Rewritten in the imperative mood. Combined fine and coarse gradations are now in IM 510. Placed a limit on organic material of 0.01%.

County or City Input Needed (X one)			**Yes**	**No** X	
Comments:					
Industry Input Needed (X one)			**Yes** X	**No**	
Industry Notified:	**Yes** X	**No**	**Industry Concurrence:**	**Yes** X	**No**

Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 28**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4130 **Title:** Revetment Stone and Erosion Stone	**Other:**	

Specification Committee Action: Approved			
Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

4130, Revetment Stone and Erosion Stone

Replace entire section:

4130.01 REVETMENT DESCRIPTION.

A. Broken limestone, dolomite, quartzite, or granite from an approved source as described in Materials I.M. 409.

B. Recycled PCC revetment meeting the requirements of Materials I.M. 209 may be used with the approval of the Engineer.

- Trim steel so that protrusions are less than 1/2 inch (12 mm).
- A minimum of 50% of the stone or broken concrete revetment shall be composed of beds or slabs more than 5 inches (125 mm) thick.
- A minimum of 10% of the beds or slabs shall be thick enough to produce the required weight (mass) of either the stone or concrete with the greatest dimension not more than 2 times the smallest dimension.

4130.02 REVETMENT GRADATION.

Gradation compliance is determined by visual inspection, monitored by the Engineer. The Engineer may designate material as too fine or too coarse.

A. Class A Revetment.

- Nominal top size of 400 pounds (180 kg).
- At least 75% of the stones shall weigh more than 75 pounds (35 kg).
- None less than 50 pounds (25 kg).
- Stones shall have at least one flat face with one dimension at least 15 inches (375 mm).

B. Class B Revetment.

- Nominal top size of 650 pounds (300 kg).
- At least 20% of the stones shall weigh more than 500 pounds (225 kg).
- At least 50% of the stones shall weigh more than 275 pounds (125 kg).
- At least 90% of the stones shall weigh more than 25 pounds (10 kg).

C. Class D and Class E Revetment.

- Nominal top size of 250 pounds (115 kg).
- At least 50% of the stones shall weigh more than 90 pounds (40 kg).
- At least 90% of the stones shall weigh more than 5 pounds (2 kg).
- The Engineer may approve using riprap containing material larger than 250 pounds (115 kg).

Additional processing is not required for Class D material. After visual inspection and prior to loading, the Engineer may designate material as too fine or too coarse. Mechanically process Class E material to remove material 3 inches (75 mm) and less.

4130.03 EROSION STONE DESCRIPTION.
Broken limestone, dolomite, quartzite, granite, or broken concrete with steel removed.

4130.04 EROSION STONE GRADATION.
Gradation compliance is determined by visual inspection, monitored by the Engineer. The Engineer may designate material as too fine or too coarse.

- Nominal 6 inch (150 mm) size.
- 100% passing the 9 inch (225 mm) screen.
- 100% retained on the 3 inch (75 mm) screen.

4130.05 EROSION STONE QUALITY.

TABLE 4130.05

Aggregate Quality	Maximum Allowed Percent	Test Method
C Freeze	15	Iowa DOT Materials Laboratory Test Method 211, Method C
Abrasion	50	AASHTO T 96
Clay lumps and friable particles	5	Materials I.M. 368

Note: Tests are performed on product crushed to 3/4 inch (19 mm) or 1 inch (25 mm) top size.

There are no quality requirements for recycled concrete.

Comments: The Office of Materials explained that since recycled PCC is already allowed for revetment, it should also be allowed for erosion stone. Source approval language has been moved to Materials I.M. 409.

Specification Section Recommended Text:

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4130. Revetment Stone and Erosion Stone.

Replace: entire section:

Section 4130. Revetment Stone and Erosion Stone.

4130.01 DESCRIPTION.

All revetment shall come from an approved source. Material for revetment shall be sound and durable broken limestone, dolomite, quartzite or broken concrete. A minimum of 50% of the stone or broken concrete revetment shall be composed of beds or slabs more than 5 inches (125 mm) thick. A minimum of 10% of the beds or slabs shall be thick enough to produce the required weight (mass) of either the stone or concrete with the greatest dimension not more than 2 times the smallest dimension.

Sources will be considered suitable for all classes of revetment when no more than 25% of the stones or concrete representative of the product crack or split in service after an exposure of 24 months in actual stream bank rip-rap service or in a natural weathering test plot which simulates an actual stream bank. Sources may also be approved based on the service histories of comparable stone.

When the source test plot or service history is not available, the stone shall meet the freeze thaw test requirements (Iowa DOT Materials Laboratory Test Method 211), aluminum oxide by x-ray fluorescence (Iowa DOT Materials Laboratory Test Method 222), and the Iowa Pore Index Test (Iowa DOT Materials Laboratory Test Method 219) on stone crushed to 3/4 inch to 1 1/2 inch (19 mm to 37.5 mm) nominal maximum size for class designation as defined below:

For Primary projects:	
For Class A and B revetment:	shall not exceed 0.7 weight (mass) percent aluminum oxide by x-ray fluorescence (or 10% freeze and thaw loss as determined by Iowa DOT Materials Laboratory Test Method 211, Method A) and 25 secondary pore index number
For all projects:	
For Class D revetment:	shall not exceed 10%, Method C
For Class E revetment:	shall not exceed 0.7 weight (mass) percent aluminum oxide by x-ray fluorescence (or 10% freeze and thaw loss as determined by Iowa DOT Materials Laboratory Test Method 211, Method A) and 25 secondary pore index number
For Erosion Stone:	15%, Method C
For non-Primary projects:	
For Class A and B revetment:	5%, Method C

The abrasion loss for all revetment stone shall not exceed 50% when tested in accordance with AASHTO T 96.

~~PCC revetment shall have all steel trimmed so that protrusions are less than 1/2 inch (12 mm). All materials shall meet additional requirements for the class of revetment if specified in the contract documents.~~

~~4130.02 CLASS A REVETMENT.~~

~~Individual stones of Class A revetment shall weigh not less than 50 pounds (25 kg) and not more than 400 pounds (180 kg). At least 75% of the stones shall weigh more than 75 pounds (35 kg). The Engineer shall visually examine selected samples of Class A Revetment. The stones shall have at least one flat face with one dimension at least 15 inches (375 mm).~~

~~Revetment shall have a nominal top size of 400 pounds (180 kg) and meet the following size limitations;~~

~~Stone Weight, lbs. (Mass, kilograms)~~	~~Minimum % Larger Than Stone Weight (Mass)~~
~~75 (35)~~ ~~50 (25)~~	~~75~~ ~~100~~

~~4130.03 CLASS B REVETMENT.~~

~~The Engineer will visually examine selected samples of Class B revetment. Revetment shall have a nominal top size of 650 pounds (300 kg) and meet the following size limitations:~~

~~Stone Weight, lbs. (Mass, kilograms)~~	~~Minimum % Larger Than Stone Weight (Mass)~~
~~500 (225)~~ ~~275 (125)~~ ~~25 (10)~~	~~20~~ ~~50~~ ~~90~~

~~4130.04 CLASS D AND CLASS E REVETMENT.~~

~~Class D and Class E revetment stone shall be taken from blasted rock or broken concrete. Class D material shall not require additional processing. After visual inspection and prior to loading, the Engineer may designate material as too fine or too coarse. Class E material shall be processed to the extent that most of the material 3 inches (75 mm) and less shall be removed.~~

~~Revetment shall be a well-graded material with a nominal top size of 250 pounds* and meeting the following additional size limitations:~~

~~Stone Weight, lbs. (Mass, kilograms)~~	~~Minimum % Larger Than Stone Weight (Mass)~~
~~90 (40)~~ ~~5 (2)~~	~~50~~ ~~90~~
~~* Note: The Engineer may approve using riprap containing material larger than 250 pounds (115 kg).~~	

~~4130.05 EROSION STONE OR BUTTRESS STONE.~~

~~Stone for erosion control or as a buttress shall consist of a nominal 6 inch (150 mm) mixture, by visual examination, with 100% passing the 9 inch (225 mm) screen and 100% retained on the 3 inch (75 mm) screen. The stone shall meet the requirements of Article 4130.01, and not have more than 5% maximum clay lumps and friable particles.~~

Section 4130. Revetment and Erosion Stone.

4130.01 REVETMENT DESCRIPTION.

A. Broken limestone, dolomite, quartzite, or granite from an approved source as described in Materials I.M. 409.

B. Recycled PCC revetment meeting the requirements of Materials I.M. 209 may be used with the approval of the Engineer.

19. Trim steel so that protrusions are less than 1/2 inch (12 mm).
20. A minimum of 50% of the stone or broken concrete revetment shall be composed of beds or slabs more than 5 inches (125 mm) thick.
21. A minimum of 10% of the beds or slabs shall be thick enough to produce the required weight (mass) of either the stone or concrete with the greatest dimension not more than 2 times the smallest dimension.

4130.01 REVETMENT GRADATION.

Gradation compliance is determined by visual inspection, monitored by The Engineer. The Engineer may designate material as too fine or too coarse.

A. Class A Revetment.

22. Nominal top size of 400 pounds (180 kg).
23. At least 75% of the stones shall weigh more than 75 pounds (35 kg).
24. None less than 50 pounds (25 kg).

The stones shall have at least one flat face with one dimension at least 15 inches (375 mm).

B. Class B Revetment.

25. Nominal top size of 650 pounds (300 kg).
26. At least 20% of the stones shall weigh more than 500 pounds (225 kg).
27. At least 50% of the stones shall weigh more than 275 pounds (125 kg).
28. At least 90% of the stones shall weigh more than 25 pounds (10 kg).

C. Class D and Class E Revetment.

29. Nominal top size of 250 pounds (115 kg).
30. At least 50% of the stones shall weigh more than 90 pounds (40 kg).
31. At least 90% of the stones shall weigh more than 5 pounds (2 kg).
32. The Engineer may approve using riprap containing material larger than 250 pounds (115 kg).

Additional processing is not required for Class D material. After visual inspection and prior to loading, the Engineer may designate material as too fine or too coarse. Mechanically process Class E material to remove material 3 inches (75 mm) and less.

4130.02 EROSION STONE DESCRIPTION.

Broken limestone, dolomite, quartzite, granite, or broken concrete with steel removed.

4130.03 EROSION STONE GRADATION.

Gradation compliance is determined by visual inspection, monitored by The Engineer. The Engineer may designate material as too fine or too coarse.

33. Nominal 6 inch (150 mm) size.
34. 100% passing the 9 inch (225 mm) screen.
35. 100% retained on the 3 inch (75 mm) screen.

4130.04 EROSION STONE QUALITY.

Aggregate Quality	Maximum Allowed Percent	Test Method
C Freeze	15	Iowa 211, Method C
Abrasion	50	AASHTO T 96
Clay lumps and friable particles	5	Materials I.M. 368

Note: Tests are performed on product crushed to 3/4 or one inch top size.

There are no quality requirements for recycled concrete.					
Reason for Revision: Specification in the imperative mood. Will allow recycled PCC for erosion stone.					
County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 29**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4131 **Title:** Porous Backfill Material	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/06	**Effective Date:** 4/18/06

Specification Committee Approved Text: For Articles 4131.01 and 4131.03, see Specification Section Recommended Text.

4131.02 GRADATION.
Meet the requirements Gradation No. 29 of the Aggregate Gradation Table in Section 4109.

Comments:

Specification Section Recommended Text:

4131, Porous Backfill Material

Replace entire section:

4131.01 DESCRIPTION.
Gravel or crushed stone.

4131.02 GRADATION.
Meet Gradation No. 29 as shown in Table 4131.02.

TABLE 4131.02
Gradation No. 29

Sieve Size	% Passing
3/4" (19 mm)	100
1/2" (12.5 mm)	95-100
3/8" (9.5 mm)	50-100
#4 (4.75 mm)	10-50
#8 (2.36 mm)	0-8

4131.03 QUALITY.
No visible clay lumps, friable particles, and clay coatings. Meet the following requirements:

TABLE 4131.03

Aggregate Quality	Maximum Allowed Percent	Test Method
Abrasion	45	AASHTO T 96
Alumina (a)	0.7	Iowa DOT Materials Laboratory Test Method 222

A Freeze	10	Iowa DOT Materials Laboratory Test Method 211, Method A
Shale	5	Materials I.M. 345

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa DOT Materials Laboratory Test Method 222 does not apply to gravel.

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4131. Porous Backfill Material.

Replace: entire section:

~~**Section 4131. Porous Backfill Material.**~~

~~**4131.01 DESCRIPTION.**~~
~~Porous backfill material shall be a granular material to be used as a pervious filling around drain tile, longitudinal drains, and elsewhere to intercept the flow of ground water.~~

~~**4131.02 QUALITY.**~~
~~Aggregate for this material shall be limestone and/or dolomite or gravel; free of visible clay lumps, friable particles, and objectionable clay coating. The abrasion loss, as determined by AASHTO T 96, Method C, shall not exceed 45%. The limestone and/or dolomite, retained on a No. 4 (4.75 mm) sieve, shall contain not more than 0.7% by weight (mass) aluminum oxide determined by x-ray fluorescence analyses (Iowa DOT Materials Laboratory Test Method 222) of representative samples. If the aggregate exceeds 0.7% by weight (mass) aluminum oxide the Iowa DOT Materials Laboratory Test Method 211, Method A, will be performed on gravels instead of x-ray fluorescence analyses, and the loss shall not exceed 10%. The aggregate shall not contain more than 5% shale particles retained on the No. 16 (1.18 mm) sieve.~~

~~**4131.03 GRADATION.**~~
~~The aggregate shall meet gradation requirements for Gradation No. 29 of the Aggregate Gradation Table referenced in Section 4109.~~

Section 4131. Porous Backfill

4131.01 DESCRIPTION.
Gravel or crushed stone.

4131.02 GRADATION.
Meet Gradation No. 29 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D.

4131.03 QUALITY.
No visible clay lumps, friable particles, and clay coatings. Meet the following requirements:

Aggregate Quality	Maximum Allowed Percent	Test Method
Abrasion	45%	AASHTO T96
Alumina (a)	0.7%	Iowa 222
A Freeze	10%	Iowa 211, Method A
Shale	5%	Materials I.M. 345

(a) If the Alumina value fails, the A Freeze value shall be determined for specification compliance. Iowa 222 does not apply to gravel.

Reason for Revision: Specification in the imperative mood.					
County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 30**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4132 **Title:** Special Backfill Material	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

4132, Special Backfill Material.

Replace entire section:

4132.01 DESCRIPTION.

- Crushed stone, crushed PCC, crushed composite pavement, or reclaimed HMA,
- Mixtures of gravel, sand, and soil, or
- Uniformly blended combinations of the above.

4132.02 GRADATION.

Meet the following gradations:

TABLE 4132.02-1

Material	Gradation (Aggregate Gradation Table, Section 4109)
Crushed Stone Crushed PCC Crushed Composite Pavement	#30
Gravel or Gravel blends with Crushed stone, PCC, or Composite.	#31

TABLE 4132.02-2

Material	Gradation
Reclaimed HMA	Nominal top size of 2 inches (50 mm)

4132.03 QUALITY.

For gravel mixture, do not exceed the following:

TABLE 4132.03

Maximum Permissible Amounts of Objectionable Materials	Maximum Percent Allowed	Test Method
Plasticity index	10	Iowa DOT Materials Laboratory Test Method 109
Carbon	1.0	Iowa DOT Materials Laboratory Test Method 111

Comments: The Office of Materials noted that they brought in language for recycled material (crushed composite pavement) from Section 2102. The third and fourth paragraphs of Article 2102.04, B can be removed, except for the last sentences of both paragraphs. The Office of Materials noted the wrong test is referenced for plasticity index. After investigating further, they discovered this should be Iowa DOT Materials Laboratory Test Method 109. The test for organic material should be a test for carbon using Iowa DOT Materials Laboratory Test Method 111.

Specification Section Recommended Text:

4132, Special Backfill Material.

Replace entire section:

4132.01 DESCRIPTION.

A. Crushed stone, crushed PCC, crushed composite pavement, or reclaimed HMA.

B. Mixtures of gravel, sand, and soil.

C. Uniformly blended combinations of the above.

4132.02 GRADATION.

Meet the following gradations:

TABLE 4132.02-1

Material	Gradation (Materials I.M. 209 App. D)
Crushed Stone Crushed PCC Crushed Composite Pavement	#30
Gravel or Gravel blends with Crushed stone, PCC, or Composite.	#31

TABLE 4132.02-2
GRADATION NO. 30

Sieve Size	% Passing
1.5” (37.5 mm)	100
1.0” (25 mm)	--
3/4” (19 mm)	--
1/2” (12.5 mm)	--
3/8” (9.5 mm)	--
#4 (4.75 mm)	--
#8 (2.36 mm)	15-45
#30 (600 µm)	--
#50 (300 µm)	--
#100 (150 µm)	--
#200 (75 µm)	0-10
Note: Unwashed air-dried samples of crushed composite material shall be tested for gradation compliance except that no gradation determination will be made for the material passing the #200 (75 µm) sieve.	

TABLE 4132.02-3
GRADATION NO. 31

Sieve Size	% Passing
1.0” (25 mm)	100
3/4” (19 mm)	90-100
1/2” (12.5 mm)	75-90
3/8” (9.5 mm)	--
#4 (4.75 mm)	--
#8 (2.36 mm)	30-55
#30 (600 µm)	--
#50 (300 µm)	--
#100 (150 µm)	--
#200 (75 µm)	3-7

TABLE 4132.02-4

Material	Gradation
Reclaimed HMA	Nominal top size of 2 inches (50 mm)

4132.03 QUALITY.
For gravel mixture, do not exceed the following:

TABLE 4132.03

Maximum Permissible Amounts of Objectionable Materials	Maximum Percent Allowed	Test Method
Plasticity index	10%	AASHTO T 113
Organic material	1.0%	Iowa Test 215

Comments:

Member's Requested Change (Redline/Strikeout):

Section 4132. Special Backfill Material.

Replace: entire section:

~~**Section 4132. Special Backfill Material.**~~

~~**4132.01 DESCRIPTION.**~~
~~Material used for special backfill shall be a uniform mixture of coarse and fine particles of crushed PCC salvaged or unclassified reclaimed HMA, crushed limestone, or a mixture of gravel, sand, and soil; or a mixture of crushed limestone, gravel, sand, and soil.~~

~~**4132.02 CRUSHED STONE AND CRUSHED PCC SPECIAL BACKFILL.**~~
~~Crushed limestone or crushed PCC special backfill shall meet requirements for Gradation No. 30 of the Aggregate Gradation Table referenced in Section 4109.~~

~~When these materials are combined with gravel, sand, and soil the mixture shall meet the requirements for Gradation No. 31 of the Aggregate Gradation Table referenced in Section 4109.~~

~~**4132.03 GRAVEL SPECIAL BACKFILL.**~~
~~Material used for gravel special backfill shall be a mixture of gravel, sand, and soil particles meeting requirements for Gradation No. 31 of the Aggregate Gradation Table referenced in Section 4109.~~

~~The mixture shall have a plasticity index not exceeding 10. The fraction passing the No. 40 sieve (425 µm) shall contain not more than 1.0% carbon.~~

~~**4132.04 SALVAGED OR UNCLASSIFIED HOT MIX ASPHALT SPECIAL BACKFILL.**~~
~~Salvaged or unclassified reclaimed hot mix asphalt used as special backfill shall meet the requirements of Article 2102.04, B.~~

Section 4132. Special Backfill Material

4132.01 DESCRIPTION.

A. Crushed stone, crushed PCC, crushed composite pavement, or reclaimed HMA.

B. Mixtures of gravel, sand, and soil.

C. Uniformly blended combinations of the above.

4132.02 GRADATION.

Meet the following gradations:

Material	Gradation (Materials I.M. 209 App. D)
Crushed Stone Crushed PCC Crushed Composite Pavement	#30
Gravel or Gravel blends with Crushed stone, PCC, or Composite.	#31

Material	Gradation
Reclaimed HMA	Nominal top size of 2 inches

4132.03 QUALITY.
For gravel mixture, do not exceed the following:

Maximum Permissible Amounts of Objectionable Materials	Maximum Percent Allowed	Test Method
Plasticity index	10%	AASHTO T113
Organic material	1.0%	Iowa Test 215

Reason for Revision: Specification in the imperative mood. Added crushed composite pavement as a special backfill material.

County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					

SPECIFICATION REVISION SUBMITTAL FORM

Submitted by: Jim Berger / Keith Norris	**Office:** Materials	**Item 31**
Submittal Date: October 19, 2005	**Proposed Effective Date:** April18, 2006	
Section No.: 4133 **Title:** Granular Backfill Material	**Other:**	

Specification Committee Action: Approved.

Deferred:	**Not Approved:**	**Approved Date:** 11/14/05	**Effective Date:** 4/18/06

Specification Committee Approved Text:

4133, Granular Backfill Material,

Replace entire section:

4133.01 DESCRIPTION.
Crushed stone or natural sand and gravel.

4133.02 GRADATION.
Meet the requirements for Gradation No. 32 of the Aggregate Gradation Table in Section 4109, except when used as backfill under flowable mortar or as floodable backfill.

4133.03 QUALITY.
For crushed stone, meet the following requirements:

TABLE 4133.03

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	55	AASHTO T 96
C Freeze	20	Iowa DOT Materials Laboratory Test Method 211, Method C
Total of Abrasion & C Freeze	65	-
Clay lumps and friable particles	4	Materials I.M. 368

4133.04 BACKFILL UNDER FLOWABLE MORTAR.
Use one of the following:

A. Natural sand complying with the requirements for Gradation No.1 of the Aggregate Gradation Table in Section 4109, with a maximum of 4% passing the No. 200 (75 µm) sieve.

B. Material complying with the requirements for Gradation No.12. of the Aggregate Gradation Table in Section 4109.

C. Material complying with Article 4133.05.

4133.05 FLOODABLE BACKFILL.

A. For natural sand and gravel use Gradation No. 33 of the Aggregate Gradation Table in Section 4109.

B. For natural sand use Gradation No. 34 of the Aggregate Gradation Table in Section 4109.

Comments: Defined types of granular backfill. Removed requirements for meeting 4120.04 and 4120.05. Placed requirements for 4120.05 in this specification – it was the least restrictive. The original text required meeting 4120.04 or 4120.05, which are slightly different. The Office of Materials decided to use just 4120.05, the least restrictive.

Specification Section Recommended Text:

4133, Granular Backfill Material,

Replace entire section:

4133.01 DESCRIPTION.
Crushed stone or natural sand and gravel.

4133.02 GRADATION.
Meet Gradation No. 32 as shown in Table 4132.02 except when used as backfill under flowable mortar or as floodable backfill.

TABLE 4127.02
GRADATION NO. 32

Sieve Size	% Passing
100% passing the 3” (75 mm) screen	
#8 (2.36 mm)	20-100
#30 (600 µm)	--
#50 (300 µm)	--
#100 (150 µm)	--
#200 (75 µm)	0-10

Notes:
- Crushed stone shall have 100% passing the 1 inch (25 mm) sieve.
- When granular backfill is used under Flowable mortar, one of the following alternative materials shall be used: natural sand compliant with Section 4110, except the percent passing the #200 (75 µm) sieve shall not exceed 4%; gravel, crushed stone, or crushed concrete meeting the gradation requirements of Section 4121.

4133.03 QUALITY.
Crushed stone meet the following requirements:

TABLE 4127.02
GRADATION NO. 32

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	55%	AASHTO T 90

C Freeze	20%	Iowa 211, Method C
Total of Abrasion & C Freeze	65%	
Clay lumps and friable particles	4%	Materials I.M. 368

4133.04 BACKFILL UNDER FLOWABLE MORTAR.
Use one of the following:

A. Natural sand complying with Gradation No.1 with a maximum of 4% passing the No. 200 (75 µm) sieve.

TABLE 4133.04-1
GRADATION NO. 1

Sieve Size	% Passing
3/8" (9.5 mm)	100
#4 (4.75 mm)	90-100
#8 (2.36 mm)	70-100
#30 (600 µm)	10-60
#50 (300 µm)	--
#100 (150 µm)	--
#200 (75 µm)	0-1.5
NOTE: When the fine aggregate is sieved through the following sieves: #4, #8, #30, #50, and #100 (4.75 mm, 2.36 mm, 600 µm, 300 µm, and 150 µm); not more than 40% shall pass one sieve and be retained on the sieve with the next higher number.	

B. Material complying with Gradation No.12.

TABLE 4133.04-2
GRADATION NO. 12

Sieve Size	% Passing
1.5" (37.5 mm)	100
1.0" (25mm)	--
3/4" (19 mm)	--
1/2" (12.5 mm)	--
3/8" (9.5 mm)	--
#4 (4.75 mm)	--
#8 (2.36 mm)	10-20
#30 (600 µm)	--
#50 (300 µm)	0-15
#100 (150 µm)	--
#200 (75 µm)	0-6
Note: The gradation requirement for the #8 (2.36 mm) sieve shall be 8% to 30% when either gravel or crushed stone, without blending sand, is supplied.	

C. Material complying with Article 4133.05.

4133.05 FLOODABLE BACKFILL.
Use one of the following:

A. Natural sand and gravel with the following gradation:

TABLE 4133.05-1
GRADATION NO. XX

Sieve Size	% Passing
1.5” (37.5 mm)	100
1.0” (25mm)	--
3/4” (19 mm)	--
1/2” (12.5 mm)	--
3/8” (9.5 mm)	--
#4 (4.75 mm)	--
#8 (2.36 mm)	20-90
#30 (600 µm)	--
#50 (300 µm)	--
#100 (150 µm)	--
#200 (75 µm)	0-4

B. Natural sand with the following gradation:

TABLE 4127.02
GRADATION NO. XX

Sieve Size	% Passing
1.5” (37.5 mm)	--
1.0” (25mm)	--
3/4” (19 mm)	--
1/2” (12.5 mm)	--
3/8” (9.5 mm)	--
#4 (4.75 mm)	--
#8 (2.36 mm)	100
#30 (600 µm)	--
#50 (300 µm)	--
#100 (150 µm)	--
#200 (75 µm)	0-2

Comments: .

Member’s Requested Change (Redline/Strikeout):

Section 4133. Granular Backfill Material.

Replace: entire section:

~~**Section 4133. Granular Backfill Material.**~~

~~**4133.01 DESCRIPTION.**~~
~~Granular backfill shall be composed of sand, gravel, or crushed stone. Granular Backfill shall meet one of the following requirements for each specific use. Gradation requirements shall meet either the indicated gradation number of the Aggregate Gradation Table of Article 4109.02 or other gradations described as follows:~~

~~**A. Flowable Mortar.**~~
~~For use under flowable mortar, one of the following materials shall be used: natural sand complying with Gradation No. 1, with the exception of allowing a maximum of 4% passing the No. 200 (75 µm) sieve; material complying with Gradation No. 12; or material complying with the requirements for use in floodable applications described below.~~

~~**B. Floodable Applications.**~~

~~For floodable applications one of the following materials shall be used: natural sand and gravel with 100% passing the 1.5 inch (37.5 mm) screen, 20-90% passing the No. 8 (2.36 mm) sieve, and 0-4% passing the No. 200 (75 µm) sieve or natural sand with 100% passing the No. 8 (2.36 mm) sieve and a maximum of 2% passing the No. 200 (75 µm) sieve.~~

~~**C. Other Applications.**~~
~~For all other applications requiring granular backfill, material shall be composed of particles passing the No. 8 (2.36 mm) sieve or these particles in combination with coarser particles passing the 3 inch (75 mm) sieve with fine particles predominating so that voids between coarse particles are not likely to occur. This is described as Gradation No. 32.~~

~~Crushed stone shall meet the quality requirements of Articles 4120.04 or 4120.05 and shall be crushed to pass the 1 inch (25 mm) sieve.~~

Section 4133. Granular Backfill Material

4133.01 DESCRIPTION.
Crushed stone or natural sand and gravel.

4133.02 GRADATION.
Meet Gradation No. 32 of the Aggregate Gradation Table referenced in Material I.M. 209, Appendix D except when used as backfill under flowable mortar or as floodable backfill.

4133.03 QUALITY.
Crushed stone meet the following requirements:

Coarse Aggregate Quality	Maximum Percent Allowed	Test Method
Abrasion	55%	AASHTO T90
C Freeze	20%	Iowa 211, Method C
Total of Abrasion & C Freeze	65%	
Clay lumps and friable particles	4%	I.M. 368

4133.04 BACKFILL UNDER FLOWABLE MORTAR.
Use one of the following:

A. Natural sand complying with Gradation No.1 of the Aggregate Gradation Table referenced in Materials I.M. 209, Appendix D with a maximum of 4 percent passing the No. 200 sieve.

B. Material complying with Gradation No.12 of the Aggregate Gradation Table referenced in Materials I.M. 209 Appendix D.

C. Material complying with Article 4133.05.

4133.05 FLOODABLE BACKFILL.
Use one of the following:

A. Natural sand and gravel with the following gradation:

	Sieve Size		
	1.5" (37.5 mm)	**#8 (2.36 mm)**	**#200 (75µm)**
Percent passing	100	20-90	0-4

B. Natural sand with the following gradation:

		Sieve Size.			
		#8 (2.36mm)	**#200 (75µm)**		
	Percent passing	100	0-2		
Reason for Revision: Specification in the imperative mood. Quality requirements for crushed stone are now only based on 4120.05. Voids between coarse particles was deleted because it was too subjective.					
County or City Input Needed (X one)			**Yes**	**No**	
Comments:					
Industry Input Needed (X one)			**Yes**	**No**	
Industry Notified:	**Yes X**	**No**	**Industry Concurrence:**	**Yes X**	**No**
Comments: Limestone, gravel, and sand producers are strongly in favor of rewrite to imperative mood.					