



**Basic Materials
Inspection
for Local Agencies**

2015

**DISTRICT
MATERIALS STAFF**

DISTRICT 1 MATERIALS PERSONNEL

1/5/2015

Name	Job Responsibility	Work Phone	Cell Phone
Vacant	Materials Engineer		
Cheryl Barton	Materials Lead Technician	515-239-1756	515-290-6817
Jeffrey Brinkman	Iowa Falls, Prestress/N. Aggr. Area Inspection	641-648-4165	515-290-1375
Brian Burr	PCC Paving/Structures	515-239-1028	515-290-6904
Jeff DeVries	Acting District Materials Engineer	515-239-1926	515-681-8233
Rita Eichhorst	W. Aggr. Area Inspector/Lab	515-233-7854	515-370-0865
Chad Johnson	Profilograph/Story Co. Aggr. Inspector	515-239-1286	515-250-3373
Steve Kennedy	District Lab	515-233-7718	
Rex Kinkade	Ames Lab Chief/HMA Tech	515-239-1042	515-290-6975
Dan Miner	M'twn, Precast/E. Aggr. Area Inspection	515-986-5478	515-370-1359
Vicky Rink	Grimes Lab Chief/Polk Co. Aggr. Inspector/Des Moines, Precast/Misc. Technician	515-986-5473	515-250-2851
Des Moines RCE	Residency 12	515-261-9500	
Jefferson RCE	Residency 13	515-386-8166	
Marshalltown RCE	Residency 15	641-752-4659	
District 1 Materials Office Fax Number		515-239-1943	
District 1 Materials Lab Fax Number		515-239-1406	
Grimes Lab Fax Number		515-986-0727	
District Office Fax Number		515-239-1472	
DMACC, Boone - Kelli		515-433-5232	

DISTRICT 2 MATERIALS OFFICE

NAME	AREAS OF RESPONSIBILITY	LOCATION	WORK PHONE	CELL PHONE	FAX NUMBER	Summer Work Hours	Email Address
Keith Norris	Materials Engineer	Mason City	641-423-7676	641-425-2229	641-424-2203	7:45 - 4:30	keith.norris@dot.iowa.gov
Vacant	Secretary / TTCP Administration	Mason City	641-423-7676		641-424-2203	7:30 - 4:30	
Kelli Amburg	Lead Technician / Assistant to Engineer	Mason City	641-423-7676	641-430-2096	641-424-2203	8:00 - 4:30	kelli.amburg@dot.iowa.gov
Dale Harris	District Lab Chief	Mason City	641-423-7676		641-424-2203	7:30 - 4:00	dale.harris@dot.iowa.gov
Scott Boyle	Assistant to Lab Chief / Profilometer	Mason City	641-423-7676		641-424-2203	7:30 - 4:00	scott.boyle@dot.iowa.gov
Jon Kleven	Field HMA Technician	Mason City	641-423-7676	641-430-2097	641-424-2203	7:15 - 3:45	jon.kleven@dot.iowa.gov
Dane Bjugan	Field PCC Technician	Mason City	641-423-7676	641-430-2098	641-424-2203	7:15 - 3:45	dane.bjugan@dot.iowa.gov
Nancy Paulson	Fabrication / Precast / Structural Steel / Audits	Mason City	641-423-7676	641-430-2184	641-424-2203	8:00 - 5:00	nancy.paulson@dot.iowa.gov
Gene Welter	Waterloo Materials Area Inspector	Waterloo	319-233-4689	319-231-2297	319-232-5234	7:00 - 3:30	eugene.welter@dot.iowa.gov
Jason Ryan	Decorah Materials Area Inspector	Decorah	563-382-3633	563-380-5167	563-382-6264	7:00 - 3:30	jason.ryan@dot.iowa.gov
Steve Mariner	Mason City Materials Area Inspector	Mason City	641-423-7676	641-430-2329	641-424-2203	7:15 - 3:45	steven.mariner@dot.iowa.gov
	Clarion Lab	Clarion	515-532-2097	641-430-2329	515-532-2097	7:15 - 3:45	steven.mariner@dot.iowa.gov

AREA INSPECTOR COUNTRIES

- Steve Mariner Cerro Gordo, Hancock, Humboldt, Kossuth, Winnebago, Worth and Wright County
- Gene Welter Black Hawk, Bremer, Butler, South of US 18 & IA 24 in Chickasaw, Floyd and Franklin County
- Jason Ryan Allamakee, North of US 18 & IA 24 in Chickasaw, Clayton, Fayette, Howard, Mitchell, and Winneshiek County

DISTRICT 3 MATERIALS OFFICE

4621 Hwy-75 North
 Sioux City, IA 51108
 712-239-4713
 Fax 712-239-4970

NAME	JOB RESPONSIBILITY	WORK PHONE	CELL PHONE
Materials Office	Main Office Number	712-239-4713	
Bill Dotzler	Materials Engineer	712-202-0806	712-261-0731
Alex Crosgrave	Assistant to Materials Engineer	712-202-0809	712-539-1318
Tim Grell	HTS / Area Inspector	712-202-0805	712-539-1742
Trudy Schroeder	Fab 1 / Area Inspector	712-732-1988	712-261-0332
Tom Dibble	HMA Paving Tech	712-202-0804	712-539-1312
Baron Hannah	PCC Paving Tech	712-202-0816	712-539-1314
Kie Ahrens	District Lab Chief	712-202-0813	712-539-1317
Randy Beaver	Highway Tech Senior	712-202-0814	
Kirk Montange	Highway Tech Senior	712-202-0801	712-539-1724
Tony Willman	Steel Inspector/Profilometer	712-202-0815	712-539-1315

Area Materials Coordinator County Assignments

Name: Tim Grell Counties: Lyon, Sioux, Plymouth, Woodbury, Monona
 NE Nebraska, SE South Dakota, Southern Minnesota

Name: Trudy Schroeder Counties: Osceola, Dickinson, Emmet, O'Brien, Cherokee, Buena Vista, Pocahontas
 Clay, Ida, Sac, Calhoun, Palo Alto, Crawford & Carroll
 Southern Minnesota

DISTRICT 4 MATERIALS OFFICE

Name	Job Responsibility	Work Phone	Cell Phone
Dan Redmond	Materials Engineer	712-243-7629	712-250-0480
Vacant	Asst. to the Engineer	712-243-7649	712-250-0324
Mike Magers	District Lab	712-243-7651	
James Murray	PCC Technician	712-243-7650	712-250-0332
Frank Reyna	Assurance Technician	712-243-7655	712-250-0336
Marcia Buthmann	HMA Technician	712-243-7653	712-250-0329
Bill Ihnen	Auditor/Assurance	712-243-7630	
Fred Schmidt	Area Inspector/Prestress/Co. Bluffs Area	712-366-0408	712-250-0338
Steve Forbes	Area Inspector/Prestress/Co. Bluffs Area	712-366-0408	712-250-0347
Roy Guyer	Area Inspector	712-243-7654	712-250-0220

Area Inspection

Fred Schmidt: Harrison, Pottawattamie, Mills, Page & Fremont Counties, Nebraska and Kansas
 Steve Forbes:

Roy Guyer: Shelby, Audubon, Guthrie, Dallas, Cass, Adair, Madison, Montgomery, Adams, Union, Taylor, Ringgold, Page, Pottawattamie Counties and Missouri

Fabrication Inspection

Fred Schmidt: Woener Wire Works, American Fence, Valmont, Coreslab Structures, American
 Steve Forbes: Concrete Products, Cretex, and Oden Enterprises

Bill Ihnen: Contech, Metal Culverts, and J&J Drainage Products

District 4 Materials Fax Number 712-243-5302
 Council Bluffs Lab Fax Number 712-366-0408

DISTRICT 5 MATERIALS OFFICE

Phone: 641-472-3103

Fax: 641-469-3427

Name	Job Responsibility	Work Phone	Cell Phone
Jim Webb	Materials Engineer	641-469-4045	641-919-8551
Clint Ammenhauser	Area Materials Coordinator, Chariton	641-472-3103	641-344-9810
Cathy Aplara	Administration/Auditing Technician/PCC Assistant	641-469-4034	641-919-2241
Helen Bailey	Area Materials Coordinator, West Burlington	319-752-0561	319-759-5408
Ellen Davidson	Secretary/Training Coordinator	641-472-3103	
Garry Dickey	PCC Technician/Assurance	641-469-4032	641-919-2248
Shane Fetters	Lab Chief	641-469-4044	641-919-2256
Scott Gettings	HMA Technician/Assurance	641-469-4042	641-919-2251
Joe Hovey	HMA Lab Assistant/PCC Assistant (Apr-Nov)	641-469-4035	641-919-2253
Jon Mason	Special Investigations/Profilometer	641-469-4043	641-919-2254
Lynn Reese	Assistant to Materials Engineer	641-469-4036	641-919-2257
Derek Sellars	Area Materials Coordinator, Oskaloosa	641-673-5109	641-660-3578

Area Materials Coordinator County Assignments

Helen Bailey: Des Moines, Henry, Lee, Louisa, Illinois, NE Missouri
Derek Sellars: Keokuk, Mahaska, Marion, Monroe, Wapello, Washington
Lynn Reese: Davis, Jefferson, Van Buren
Clint Ammenhauser: Appanoose, Clarke, Decatur, Lucas, Warren, Wayne, N Missouri

DISTRICT 6 MATERIALS OFFICE

5455 Kirkwood Blvd. SW, Cedar Rapids, IA 52404
 Phone: 319-366-0446 Lab 319-366-1614
 Fax: 319-730-1565

Name	Job Responsibility	Work Phone	Direct Line	Cell Phone
Roger Boulet	Materials Engineer	319-366-0446	730-1551	319-350-2470
Terry Dunlay	Transportation Engineer	319-366-0446	730-1554	319-560-2225
Mary Godwin	Asst. to Engineer	563-391-5230		563-349-0968
Mardel Huebner	Materials Fabricator I	563-391-5230		563-349-2359
Hayder Salehoglou	ACC Lab Chief	319-366-1614	730-1515	319-560-3846
Kathy Miller	PCC Technician	319-366-0446	730-1556	319-560-3877
Mark Dutra	ACC Technician	319-366-0446	730-1553	319-560-2783
Shane Garrity	Area Inspector	563-875-2659		563-920-5284
Dave Staab	Auditor/Certification Program	319-366-0446	730-1557	
Kirby Salsbury	Area Inspector	319-366-0446	730-1519	319-560-3889
Joe Burns	Assurance/Nuclear	319-366-0446	730-1555	319-330-5668
Lynn Gemmer	Secretary	319-366-0446	730-1550	
Jay Schrock	Transportation Worker/Area Inspector	319-366-0446		319-560-4428

Shane Garrity: Dubuque, Jones, Buchanan, Delaware, Jackson
 Mary Godwin/ Mardel Huebner: Scott, Cedar, Clinton
 Kirby Salsbury: Linn, Benton, Iowa
 Jay Schrock: Johnson, Iowa

**I.M. 101
Review of Materials
Used in Const. &
Maint. Projects**



REVIEW OF MATERIALS USED IN CONSTRUCTION & MAINTENANCE PROJECTS

PURPOSE

The purpose of this memorandum is to provide guidance to the District Materials Offices and Project Engineers for reviewing documentation of materials accepted into construction and maintenance projects. These reviews are intended to determine compliance with the Contract Documents, prescribed methods of acceptance, sampling, testing and the requirements of Federal Regulation 23 CFR 637. The results of the District Materials Engineer's (DME's) final review of materials used provides the basis of certification of conformance with approved plans and Specifications by the Highway Division to the FHWA.

OBJECTIVES

To provide the following:

- Guidelines for identifying projects that require materials auditing
- Guidelines for small quantities of materials
- Guidance for maintaining and disposition of project materials files
- Description of the review process
- Identification of forms used in the materials review
- Guidelines for documenting non-compliance issues

PROJECTS REQUIRING A FINAL REVIEW BY DME

The District Materials Engineer will conduct a final review of materials used in all Interstate, and Primary construction and maintenance projects.

The District Materials Engineer will conduct a final review of materials used in construction and maintenance projects on Parks and Institutional Roads and roads for other State agencies only when Iowa DOT Standard Specifications are used for the project.

The level of review performed by the District Materials Engineer for local agency projects is determined by the type of funding and location of the project. The Administering Office (either Systems Planning or District Local Systems), in consultation with the District Materials Engineer, may either require a materials review of all local agency Federal-aid projects or review only selected local agency Federal-aid projects using the systems approach described below.

SYSTEM APPROACH TO FINAL MATERIALS REVIEW

A minimum of one federal aid project per local agency will be reviewed per year. The Administering Office, in consultation with the District Materials Engineer will determine if more than one project should be reviewed in any particular local agency due to issues found during a project's final review.

Ideally, the construction final records/quantity review and District Materials Engineer's final materials review should be conducted on the same project.

The District Materials Engineers will report annually to the Construction and Materials Engineer their findings on the final reviews performed on local agency projects. Findings will include shortages or acceptance of materials in manners that vary from IM 204, IM 204 Supplemental or the contract documents.

MATERIALS DOCUMENTATION NOT REQUIRING REVIEW

Certain materials incorporated into a project will not be included in the materials review when the quantities involved are below those listed in Appendix A. Typically, these are low-risk items that will not have a significant impact on the value, performance or longevity of the overall project. The effort needed to account for these quantities exceeds the purpose of the review.

The normal method of acceptance by the Project Engineer is not to vary from those described in IM 204 or other relevant IMs.

Appendix A provides a guide in determining what materials and the maximum quantities that may be waived from the final materials review.

MAINTENANCE & DISPOSITION OF PROJECT FILES

For active projects that require a final materials review, files with all materials documentation are to be maintained by both the Project Engineer and District Materials Engineer.

Project & District Materials Files: During the project, these files are to be kept current with all materials documentation needed for materials acceptance.

During the District Materials Engineer's final materials review, copies of materials documentation may need to be added to the District Materials file from the Project Engineer's file.

Upon completion of the District Materials Engineer's final materials review, the District Materials file is delivered to the Office of Construction and Materials. Once Central Materials Administration has completed either certification to FHWA and/or billing to counties/cities, the Project file is sent to Electronic Records Management System (ERMS) Support Team.

GUIDELINES FOR PERFORMING THE MATERIALS REVIEW

The District Materials Engineer compares the required method of acceptance as described in IM 204, IM 204 Supplemental and the contract documents with information on the material review sheets prepared by the Project Engineer.

Combining more than one project onto one set of material review sheets may be allowed under the following conditions:

- Tied under one contract
- Similar types of work
- Materials or mixtures furnished to the projects are from a common plant or source, making it difficult to separate quantities to each individual project (i.e., HMA, PCC or aggregates).

NOTE: Projects should be maintained in separate files with a copy of the combined project review sheets placed in each project file.

The material review sheets are found on the Materials Office website http://www.iowadot.gov/Construction_Materials/materialsforms/auditforms.xls. They provide a format and guidance in summarizing the materials documentation for various types of work. These sheets are completed by the Project Engineer and submitted to the District Materials Engineer.

The Miscellaneous Materials sheet is used for documenting items that are not identified on the sheets representing specific types of work. The Miscellaneous Materials sheet may be used to supplement any of the review sheets.

Documentation on the review sheets should normally be prepared using the following form for the various methods of acceptance:

Approved Brand/Source	Identify only the brand or source of the material with no specific quantity.
Approved Brand/Source and/or Batch	Identify only the brand or source of the material and the lot or batch used with no specific quantity.
Certified Materials	Identify the quantity of the material certified by the supplier (except materials represented on a plant report).
Plant Reports	Identify the quantity of mixture required and the quantity represented on plant reports.
Tests	Identify the required number of tests and the actual tests reported to the project.
Fabrication Reports	Identify the number of units represented by fabrication reports (i.e., number of beams, lbs., etc.).

All materials are to be documented on the review sheet except materials considered as Small Quantities, (Appendix A). Small Quantity items need not be documented on the review sheets.

The review of a material item may be considered acceptable if at least 98% of the required documentation for the material used is accounted for in the project file. The agency person responsible for preparing the review quantities, in each category, shall date and sign the signature line representing the Project Engineer's Office.

NONCOMPLIANT TESTS

The Project Engineer furnishes the summary Noncompliant Tests or Measurements of Material Incorporated into the Project. The Project Engineer attaches this summary to the Final Payment Form #830436.

When acceptance of noncompliant materials is made by a means other than using established price adjustment schedules, the basis of acceptance requires an explanation by the District Materials Engineer.

Deviations from the prescribed sampling and testing frequency or the basis of acceptance as described in IM 204, also require an explanation.

Explanations for issues described above should be addressed to Materials Administration with copies to the Project Engineer and the project file.

**GUIDELINES FOR WAIVING MATERIAL FROM
THE FINAL MATERIALS REVIEW**

MATERIAL	UNITS	MAXIMUM QUANTITY BY ITEM
Aggregate	Tons	200
Asphalt, Cutback	Gal.	100
Asphalt, Emulsified	Gal.	100
Asphalt, Hot Mix	Tons	50
Aprons: RCP or CMP	Ea.	4
Base Repair: HMA or PCC	S.Y.	100
Conduit	Ft.	50
Culvert Pipe: RCP, CMP or PE	Ft.	30
Delineators	Ea.	10
Delineator Posts	Ea.	10
Dowel Baskets, Epoxy Coated	Ea.	10
Fabric Engineering, Erosion Control	S.Y.	100
Fabric Engineering, Silt Fence	Ft.	100
Iron Casting, Manhole Covers, Etc.	Ea.	1
Joint Filler, Preformed	Ft.	100
Lighting Material, Ground Rods	Ea.	2
Lighting Material, Wire/Cable	Ft.	250
Paint, Bridge	Sq.Ft.	250
Pavement	S.Y.	100
Pavement Markings	Sta.	25
Pipe, Rodent Guard for CMP	Ea.	5
Pipe, Rodent Guard for P.E. Pipe	Ea.	5
Seed, Fertilizer/Mulch	Acres	1
Signing Materials, Finished Sign	Sq. Ft.	20
Signing Materials, Wood Posts	Ft.	50
Steel Reinforcement, Epoxy Coated	Lbs.	500
Steel Reinforcement, Uncoated	Lbs.	500
Structural Concrete	C.Y.	25
Subdrain, CMP	Ft.	250

Subdrain, CMP Outlet	Ea.	5
Subdrain, P.E.	Ft.	250
Subdrain, P.E. Outlet	Ea.	5

I.M. 103
Inspection Services Provided
to Other Agencies



INSPECTION SERVICES PROVIDED TO COUNTIES, CITIES, AND OTHER STATE AGENCIES

INTRODUCTION

The purpose of this Instructional Memorandum is to outline the procedures to be followed for materials quality assurance inspection and other materials associated services performed for counties, cities, and other state agencies. This is in accordance with the Code of Federal Regulations, Code of Iowa, the Iowa Administrative Code, and the Iowa Department of Transportation Policies and Procedures Manual.

The level and type of review required depends on the category to which the project belongs, as defined below:

Category:

1. Federally Funded County and City Road, Street, and Bridge Projects.
 - Surface Transportation Program (STP-S, STP-U, STP-A, CS-TS-STP-U, STP-S-TS)
 - Highway Demonstration Program (HDP, DE, DPI, DE-RP, DPR)
 - Highway Bridge Reconstruction and Rehabilitation Program (BROS, BHOS, BRM, BHM, BRS, BHS, BR-RP)
 - Innovative Bridge Research and Construction Program (IBRC)
 - National Historic Covered Bridge Preservation Program (HCBP)
 - Highway Safety Improvement Program (HSIP, HSIPX)
 - High Risk Rural Roads (HRRR)
 - Emergency Relief (ER)
 - Economic Stimulus / Recovery Act (ESFM, ESFTA, ESIM, ESIMX, ESL, ESP, ESR)
 - Transportation Community System Preservation Program (TCSP)
2. Federally Funded County and City Non-highway Projects.
 - Transportation Enhancement (STP-E, STP-ES, STP-ES-E)
 - Federal Recreational Trails (NRT)
 - Safe Routes to School (SRTS, SRTS-S, SRTS-U)
 - National Scenic Byways (SB-IA)
 - Transportation Enhancement Earmarks (EDP)
 - Transportation Alternatives (TAP-T, TAP-U, TAP-R)
3. State-assisted projects or cooperative projects involving through traffic lanes on primary roads, including turn lanes and other work within the primary right-of-way that will be owned and maintained by the Department.
 - U-STEP/C-STEP (UST, CST)
 - RISE (RC, RM, RFM, RP, RPX, RCX, RFMX, RP-M)
 - Traffic Safety Improvement Program (CS-TSF, FM-TSF)
 - Parks and Institutional Roads and other State agencies (SP, BR, DHS, DC, SFB, SCG)
4. Farm-to-Market, Local, or State-assisted projects on county roads or city streets that do not involve any work on primary highway through traffic lanes or turn lanes that will be owned and maintained by the Department.
 - Farm-to-Market (FM, LFM)

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- RISE (RC, RCX, RM, RMX, RFM, RFXM, RP-M)
 - Traffic Safety Improvement Program (FM-TSF, L-TSF, CS-TSF)
 - State Bridge (SBRC, SBRM, SBRFM)
 - State Recreational Trails (RT)
 - Curb Ramp Program (ADA)
 - 100% Locally funded city or county projects let at the Department (L, CS). Note: 100% locally funded city or county projects that are let locally have no Department involvement in any aspect of the project development or construction.

QUALITY ASSURANCE PROCEDURES

Project materials quality assurance inspection services and other materials associated services provided to counties, cities, and other state agencies will be billed to them. For Category 2-4 projects, a written request outlining the services requested must be submitted from the contracting authority to the DME. A copy will be forwarded to the Office of Construction and Materials. For Category 1 projects no written request is required.

A. Invoicing for Materials Inspection.

The Office of Construction and Materials will invoice counties and cities as follows:

1. Invoicing for project inspection costs will be based on a cost per test basis, which is calculated at the beginning of the calendar year using a running average of the previous four years' cost and work experience. These rates shall apply to inspection performed during that calendar year. Invoicing for requested investigations or surveys for location, quantity, or quality of material resources will be based on actual total time, mileage and expense costs incurred in the investigation or survey.
2. For Federal Aid and County Farm to Market and qualifying State-Assisted Projects, the invoices will be prepared and forwarded to the Office of Finance for all inspection performed upon processing of the project final estimates.
3. For other projects, except when other arrangements are made, an invoice will be prepared at the end of the calendar year and forwarded to the Office of Finance invoices for all inspection performed to date on the basis of contract quantities. If a county or city wishes to be billed at the completion of a project they must notify the District Materials Engineer of the project completion and request a billing.
4. When source inspection is performed by other agencies or by consultant, the local agency will be invoiced the actual costs incurred.

B. Equipment Calibration

The DME will assist the local agency in witnessing the calibration of PCC and HMA equipment for Category 1-3 Projects and Category 4 projects (FM projects only).

C. Source Inspection

The DME and the Office of Construction and Materials will assist the local agency with the

source inspection listed in IM 204 as well as aggregate sources. When required or requested the Office of Construction and Materials will arrange for inspection of materials furnished from outside the State of Iowa in areas where normal routine inspection service is available either by Iowa DOT personnel, other agencies, or consulting firms.

1. For Category 1 Projects, the source inspection requirements of IM 205 and IM 204 will be followed.
2. For Category 2 Projects, the DME, when requested, will perform the source inspection tasks in IM 204.
3. For Category 3 Projects except FM, the DME, when requested, will perform the source inspection tasks in IM 204.
4. For Category 4 Projects (All Projects), the DME, when requested, will perform the source inspection tasks in IM 204.

D. Project Inspection

1. For Category 1 Projects, the inspection requirements of IM 205 and IM 204 will be followed.
2. For Category 2 Projects, the DME, when requested, will perform the DME tasks in IM 204.
3. For Category 3 Projects except FM, the DME, when requested, will perform the DME tasks in IM 204.
4. For Category 4 Projects (FM projects only), the DME, when requested, will perform limited testing.
 - a) HMA mix design paper review or evaluation of test strip results.
 - b) Verification testing of un-compacted mixture will be done the first day and then one test per week maximum.
 - c) Verification testing of asphalt binder will be done the first day and then one test per week maximum.
 - d) Verification testing of compacted mixture will be done the first day and then one test per week maximum.
 - e) Verification testing of smoothness will be done at the rate in IM 204.

CERTIFICATION PROCEDURES

Certification by the DME on form 830436 or 640003 will be based on the category. The form 830436 has qualifying statements that are to be used by the DME depending on the level of audit. The Office of Construction and Materials does not send a certification to the FHWA on local agency projects.

A. Certification

1. For Category 1 Projects, the local agency will certify the work was completed in substantial compliance with the plans and specifications, including the materials incorporated.

The DME will sign the form 830436 with the qualifying statement marked if appropriate based on the level of audit performed.
2. For Category 2 Projects, the local agency will certify the work was completed in substantial compliance with the plans, specifications, and agreements (when applicable).

- If required, the DME will sign the form 830436 with the qualifying statement marked if appropriate based on the level of audit performed.
3. For Category 3 Projects, the local agency will certify the work was completed in substantial compliance with the plans and specifications, including the materials incorporated.
The DME may be required to sign form 640003. The DME may designate specific materials or contract items that have been reviewed.
 4. For Category 4 Projects that are state assisted, the local agency will certify the work was completed in substantial compliance with the plans, specifications, and agreements (when applicable).
No DME signature is required.

*****GENERAL REWRITE – PLEASE READ CAREFULLY.*****

IOWA DOT INSPECTION COSTS

Function Description	No. of Tests in 2013	2014 Avg. Cost Per Test
Aggregate		
853 Certified Aggregate	4,941	154.90
856 Freeze - Thaw Tests	1,081	86.51
857 Abrasion Test	1,788	54.56
858 Coarse Aggregate Specific Gravity & Absorption	1,814	26.71
859 Fine Aggregate Specific Gravity & Absorption	532	47.34
860 Sieve Analysis & Plasticity Index	1,421	127.21
861 Deleterious Material Determination	2,016	8.36
862 AC Aggregate Specific Gravity & Absorption	235	185.26
863 Aggregate Miscellaneous	339	141.70
Asphalt Materials		
841 Materials Lab QMA	148	276.83
865 AC Binder Analysis Complete	244	229.23
866 DSR or Penetration or Viscosity	535	89.19
867 Liquid Asphalt Complete Analysis	28	383.69
868 Liquid Asphalt Partial Analysis	146	89.23
870 Asphalt Type Joint	51	207.76
872 Asphalt Mix Lab Density	1,708	77.69
873 Asphalt Mix Max. Density	1,592	52.89
874 Asphalt Mix Extraction & Gradation	168	702.55
876 Asphalt Mix Special	31	1,022.86
877 Asphalt Mix Design	0	1,271.22
878 Asphalt Plant Calibration & Inspection	16	1,582.51
879 Ignition Oven	201	68.51
Cement		
882 Physical Cement Test	294	332.58
883 Fine Aggregate Mortar Strength	32	109.74
884 Lime - Fly Ash Physical Test	99	261.28
885 Miscellaneous	14	380.21
Chemical		
887 Concrete - Soil Chloride Determination	0	28.09
890 Lime - Fly Ash	115	107.87
891 Portland Cement	290	413.90
892 Calcium & Sodium Chloride & Deicers	4	300.13
893 Aggregate – Aluminum Oxide	1,463	68.31
894 Concrete Admixtures	354	76.48
895 Air Entraining Admixture	216	90.70

Function Description	No. of Tests in 2013	2014 Avg. Cost Per Test
Concrete		
840 Flowable Mortar	0	76.37
900 Coring, Strength & Air	242	97.98
901 Concrete Admixture Physical Test	50	29.39
902 Concrete Durability	0	4,263.67
903 Concrete Coring	330	165.82
904 Precast Bridge Beams	880	173.60
905 Precast Piling	72	48.94
906 Miscellaneous Precast Units	5	227.94
907 Concrete & Clay Pipe	223	164.36
908 Concrete Coating & Seal	2	426.76
909 Concrete Miscellaneous	85	942.87
910 Concrete Plant Calibration - Inspection	1,248	282.70
Field Testing		
898 Asbestos S & T	553	48.30
922 Nuclear Test Materials & Construction	3	447.92
923 Profile Measurement (Bridge Decks)	23	1,231.33
Lighting & Signal		
930 Lighting Materials	143	313.61
931 Standard Light Poles	55	15.93
932 Tower Light Poles	23	35.21
Metals		
934 Calibration of Tension & Compression Testers	17	434.74
936 Physical Test Structural Steel- Aluminum	15	735.47
937 Reinforcing Steel	246	266.91
938 Prestress Cables	75	261.70
939 Casting	6	810.65
940 Guardrail Cable, Rails & ACC	22	312.12
941 Calibration of Beam Breakers	0	254.58
942 Fence Material	4	142.34
943 Weld Tests Operator	221	198.88
945 Fasteners High Strength	575	47.89
946 Fasteners Miscellaneous	581	38.21
947 Steel & Aluminum Fabrication	4,696	114.78
951 Radiograph Exams	7	181.89
952 Miscellaneous Metals Testing	174	82.36

Function Description	No. of Tests in 2013	2014 Avg. Cost Per Test
Pavement Evaluation		
955 Pavement Ride Testing	3,488	35.86
956 Pavement Friction Testing	6,639	44.65
957 Pavement Deflection	731	153.74
959 Test Equipment Calibrations	1	2,741.66
961 California Profilometer (Paving)	462	325.76
Physical Tests		
968 Neoprene Bearing Pad	14	1,443.23
969 Neoprene Joint Seals	20	118.97
972 Curing Compounds Non-AC	66	643.15
Physico-Chemical		
978 Paint & Ingredients	33	170.77
979 Protective Coating Tests	562	31.44
980 Mixing Water	38	66.59
982 Preform & Form Joint Filler	0	0.00
983 Carbon Analysis of Soil	29	24.68
985 Fabrics	0	0.00
Soils		
990 Plasticity Index	262	40.75
991 Proctor Tests	87	55.03
992 Mechanical Analysis	262	12.72
993 Triaxial - UU	75	107.42
994 Consolidation	49	108.57
995 Triaxial – CU	72	160.55
996 Soil Cores	95	10.49

I.M. 202
Procedure for
Rounding



******THIS IS A NEW IM. – PLEASE READ CAREFULLY.******

PROCEDURE FOR ROUNDING DATA

SCOPE

When comparing test data to the specification limit, a uniform method is used to round the data. When a rounding method is not specified elsewhere for the test data, the method to be used is the Rounding Method in ASTM E29 except that the rounding procedure in section 6.4.3 is replaced as below and 6.4.4 is eliminated.

6.4.3 When the digit next beyond the last place to be retained is 5, and there are no digits beyond this 5, or only zeros, increase by 1 the digit in the last place retained.

When the Iowa DOT provides a computer program or spreadsheet for reporting test results, the rounding procedure will be as reported by the computer software.

PROCEDURE

The modified ASTM E29 rounding procedures and rounding method are:

A. Determine the last digit to be used.

1. The last digit to be used may be specified in the test procedure.

An example of this would be in IM 316, “Report the modulus of rupture to the nearest 5 psi”.

2. For comparing a test result to the specification, the last digit in the specification limit is used to round the test result (unless noted in the specification).

An example of this would be the slump for structural concrete in Article 2403, “...allowing a maximum of 4 inches as a tolerance.” If the test result for a slump test was 4 ¼”, the result would be within the tolerance because it rounds to 4. If the maximum was stated as, “...allowing a maximum of 4.0 inches as a tolerance”; then the result 4 ¼” would be outside the tolerance.

B. Rounding Procedure

1. If the digit following the last digit to be used is less than 5, do not change the last digit used.

Example: 1.861 would round to 1.86 for the nearest 0.01

2. If the digit following the last digit to be used is more than 5, raise the last digit used one number.

Example: 1.861 would round to 1.9 for the nearest 0.1

3. If the digit following the last digit to be used is exactly 5, raise the last digit used one number.

Example: 1.851 would round to 1.9 for the nearest 0.1

- C. Rounding Procedure for 50, 5, 0.5, 0.05, etc.

To round to the nearest 50, 5, 0.5, or 0.05:

1. Double the number you are rounding.
2. Round that number to the nearest 100, 10, 1, or 0.1 using the procedure in B above.
3. Divide this rounded number by 2.

Example: Round 1.811 to 0.05

$$1.811 \times 2 = 3.622$$

3.622 rounds to 3.6

$$3.6 / 2 = 1.80 \text{ is the result of rounding 1.811 to the nearest 0.05.}$$

- D. Rounding Procedure for other increments; 0.02, 0.25, etc.

To round to the nearest 0.02, or 0.25:

1. Divide the number you are rounding by the increment.
2. Round that number to the nearest whole number using the procedure in B above.
3. Multiply this rounded number by the increment.

Example: Round 1.811 to 0.25

$$1.811 / 0.25 = 7.244$$

7.244 rounds to 7

$$7 \times .25 = 1.75 \text{ the result of rounding 1.811 to the nearest 0.25.}$$

- E. Rounding Procedure for fractions.

To round fractions, they must first be converted to a decimal. Then the procedures B through D can be used.

I.M. 203
Consultation by Materials
on Construction Projects



CONSULTATION PROVIDED BY MATERIALS PERSONNEL ON CONSTRUCTION PROJECTS

INTRODUCTION

In addition to the routine duties associated with the inspection of materials, assurance sampling and testing, and certain laboratory operations, the District Materials Engineer (DME) is required to monitor Quality Control and acceptance procedures, and provide consultation when difficulties are encountered.

CONSULTATION

Plant inspectors are by instruction required to consult the DME through the Resident Construction or County Engineer when the contractor encounters difficulty with regard to specification compliance and satisfactory plant operations. Consultations are also required when technical problems become evident to personnel performing sampling and testing and other specialized functions. The DME should provide the necessary assistance and guidance when conditions indicate action is required.

GUIDELINES FOR CONSULTATION

In many cases plant equipment operation and maintenance practices are directly related to problems associated with the work. Materials handling and storage procedures also cause difficulty at times. Sampling, testing and related inspection functions require re-evaluation when difficulties are encountered on a project. The following guidelines should be observed when Materials personnel are consulted for guidance:

1. Determine who is responsible for the problem and advise the appropriate party.
2. If the difficulty is associated with sampling, testing or related inspection functions provide the necessary guidance or instruction if practical and advise the engineer in charge of action taken.
3. If the difficulty is associated with the contractor's equipment or procedures, reaffirm the responsibility and requirements assigned to the contractor by the contract documents. The DME should then assist the contractor in identifying the problem by performing additional tests, calibrations, or other measurements as provided for in the specifications and appropriate instructions.
4. In the event that the standard procedures do not properly identify the factors causing the difficulties encountered, the DME may provide additional guidance, if requested, with the clear understanding that such further consultation will not relieve or reduce the contractor's responsibility for solving problems associated with the work. Assistance so provided shall not include management services associated with the operation and maintenance of the contractor plant equipment and the direction of the contractor personnel.

**I.M. 205
Quality Assurance
Program**



**QUALITY ASSURANCE PROGRAM FOR CONSTRUCTION
OVERVIEW & DESCRIPTION**

INTRODUCTION

The Iowa Department of Transportation (DOT) has established the following Quality Assurance Program to assure that the quality of materials and construction in all highway construction projects is in reasonable conformity with the requirements of the approved plans and Specifications, including approved changes. The program reflects conformance with the criteria contained in the regulation for Quality Assurance Procedures for Construction, published as 23CFR 637(B) on June 29, 1995. It consists of an Acceptance Program and an Independent Assurance Program (IAP), both of which are based on test results obtained by qualified persons and equipment.

This Quality Assurance Program allows for the use of the Contractor's test results as part of the acceptance decision if satisfactory validation is achieved by the Agency in accordance with IM 216, IM 511, and IM 530. The IAP, as presently structured, is conducted exclusively by the Contracting Agency. The acceptance of all materials and workmanship is the responsibility of the Engineer.

In order to avoid an appearance of a conflict of interest, any qualified non-DOT laboratory shall perform only one of the following types of testing on the same project: Verification testing, quality control testing, IAP testing, or dispute resolution testing.

ACCEPTANCE PROGRAM

Materials incorporated into highway construction projects shall be subject to sampling and testing, including Quality Control (QC) sampling and testing when required by specification. Sampling and testing shall be performed in accordance with location, frequency and procedures identified in IM 204.

A. Quality Control Sampling & Testing

Contractor-performed QC sampling and testing may be used as part of an acceptance decision when required or allowed by specifications. Contractor QC sampling and testing personnel, laboratories, and equipment shall be qualified in accordance with the Iowa DOT Technical Training & Certification Program (IM 213) and the Materials Laboratory Qualification Program (IM 208), and shall be evaluated under the Independent Assurance Program.

If the Contracting Authority eliminates contractor quality control testing from the contract documents, the Contracting Authority shall perform the quality control testing at the frequencies identified in IM 204. Validation of these test results is not required.

B. Verification Sampling & Testing

Verification of quality is performed on critical materials, through independent sampling and testing, at a frequency identified in IM 204. Verification sampling and testing is done by Agency personnel or personnel hired by the Agency excluding the Contractor or vendor. Agency sampling and testing personnel, laboratories, and equipment will be qualified in accordance with the Iowa DOT Technical Training & Certification Program (IM 213) and the Materials Laboratory Qualification Program (IM 208), and will be evaluated under the Independent Assurance Program.

Verification samples will be obtained by agency sampling. For some sampling identified in IM 204, the Contractor shall assist with sampling as directed and witnessed by certified Agency personnel. The sample location and time will be randomly selected by the Agency (except when noted elsewhere) and will only be given to the Contractor immediately prior to sampling. To maintain the integrity of the sample, it will either be transported by Agency personnel or secured by a tamper proof method and transported by the Contractor.

QC test results to be used as part of the acceptance decision will be validated by verification test results. Validation of Contractor test results will be done in accordance with IM 216, IM 511, and IM 530. Contractor test results that fail the lot validation shall not be used for acceptance of that lot unless the dispute resolution system resolves the discrepancy. Verification test results will be used for lot acceptance pending the dispute resolution.

C. Quality Control Plans

When required by the Specifications, a Quality Control Plan (QCP) must be developed by the Contractor or producer and submitted to the Engineer for review. Minimum requirements for the QCP will be provided in an IM or specification.

D. Dispute Resolution System

When QC test results are used as part of the acceptance decision, testing disputes arising between the Contracting Agency and the Contractor shall be resolved in a reliable, unbiased manner or an evaluation performed by the Iowa DOT Central Materials Laboratory. Resolution decisions by the Iowa DOT Central Materials Laboratory will be final.

Unless specified elsewhere, the District Materials Engineer will select some or all of the following steps for the dispute resolution:

1. Check all numbers and calculations.
2. Review past proficiency and validation data.
3. Review sampling and testing procedures.
4. Check equipment operation, calibrations and tolerances.
5. Perform tests on split samples or reference samples.
6. Involve the Central Materials Laboratory.

If the discrepancy cannot be resolved using the steps listed above, or if it is determined that the Contractor's testing is in error, then the Agency test results will be used for the acceptance decision for that lot.

INDEPENDENT ASSURANCE PROGRAM

The Independent Assurance Program (IAP) will evaluate all sampling and testing procedures, personnel, and equipment used as part of an acceptance decision (Includes Contractor, Contracting Agency, and consultant). Testing performed by the Central Materials Laboratory is not subject to IAP. The Central Materials Laboratory maintains accreditation through the AASHTO Materials Reference Laboratory (AMRL) Program. **The goal of the IAP program is to check each active tester at least once per calendar year.**

The IAP includes both system- and project-based approaches defined as follows:

- **Project Approach.** The frequency of IAP activities is based primarily on quantities of materials being tested and requires minimums (as per IM 204) on every project.
- **System Approach.** The frequency of IAP activities is based on time intervals, regardless of the number of tests, quantities of materials, or numbers of projects being tested by the individual and equipment being evaluated.

The systems approach for IAP was implemented statewide in 1999 for evaluation of Contractor, consultant, city, county, and state equipment, procedures, and personnel involved with project acceptance. Within implementation of the systems approach, the District Materials Engineer may find it more appropriate to retain use of the project approach for IAP on specific projects when the systems approach cannot be effectively applied.

Independent assurance includes evaluation based on:

Calibration checks
Split samples
Proficiency samples
Observation of sampling and testing procedures

A. IAP Personnel & Equipment

IAP testing equipment must not be the same equipment that was used by the project QC or verification personnel. IAP personnel must not be involved in the project verification testing or QC testing for the sampling and testing procedure they are evaluating on that project.

B. Comparison of Test Results

A prompt comparison of the test results obtained by the individual being evaluated and the IAP tester will be performed by the Engineer. If results of the comparisons do not comply with tolerances provided in IM 216 or criteria in IM 208, Appendix C, a review of the test procedures and equipment shall be performed immediately to determine the source of the discrepancy. Corrective actions must be identified, incorporated as appropriate and followed by additional IAP testing. Test results from all the samples involved in the IAP will be documented and reported in the appropriate District or project files.

C. Annual Report of IAP Results

The Central Materials Office will compose and submit an annual report to the FHWA Division Administrator summarizing the results of the Iowa DOT's systems approach IA Program. This report will identify the number of sampling and testing personnel evaluated by systems approach IA testing, the number of evaluations found to be acceptable and unacceptable, as well as a summary of any significant system-wide corrective actions taken.

SIGNIFICANT DIGITS IN TEST DATA

When comparing test data to the specification limit, a uniform method is used to round the data. When a rounding method is not specified elsewhere for the test data, the method to be used is the Rounding Method in ASTM E29 except that the rounding procedure in section 6.4.3 is replaced as below and 6.4.4 is eliminated.

6.4.3 When the digit next beyond the last place to be retained is 5, and there are no digits beyond this 5, or only zeros, increase by 1 the digit in the last place retained.

When the Iowa DOT provides a computer program or spreadsheet for reporting test results, the rounding method will be as reported by the computer software.

**I.M. 207
Independent
Assurance Program**



******THIS IS A NEW IM. – PLEASE READ CAREFULLY.******

**INDEPENDENT ASSURANCE PROGRAM FOR CONSTRUCTION
OVERVIEW & DESCRIPTION**

The Independent Assurance Program (IAP) is a part of the Iowa DOT Quality Assurance Program for Construction. Appendix A contains the details of who is covered and what sampling and testing is covered in the program.

- Purpose of IAP— IAP is an unbiased and independent assessment of all sampling, testing, and testing equipment. This assessment includes evaluation of procedures and equipment used for the acceptance of highway materials and construction. 23 CFR Part 637 requires each state to have an IA Program.
- IAP is distinct from and not intended as an acceptance process or for use in verification of contractor sampling and testing results. IAP is distinct from and not intended for production quality control (QC) purposes. If IAP results indicate a potential problem with quality, the results may be used to initiate additional testing.
- IAP sampling shall be done in such a manner as to minimize variability. In order to eliminate material and process variability, split samples should be used. IAP samples may be taken independently of Agency verification or Contractor/Producer QC samples, or may be a split of a verification or an QC sample.
- Deficiencies in verification or QC processes that are identified through the IAP program must be investigated and resolved.
- IAP is an essential tool that helps to ensure integrity within the quality assurance (QA) program.

The IAP includes both system- and project-based approaches defined as follows:

- Project Approach. The frequency of IAP activities is based primarily on quantities of materials being tested and requires minimums (as per IM 204) on every project. For projects with small quantities, project IAP will not be required:
 - HMA quantities less than 5000 tons
 - PCC paving quantities less than 5000 sq. yds.
 - PCC for structural and miscellaneous less than 50 cu. yds.
 - Non-Proportioned Aggregate less than 5000 tons.
- System Approach. The frequency of IAP activities is based on time intervals, regardless of the number of tests, quantities of materials, or numbers of projects being tested by the individual and equipment being evaluated. Each active technician should be checked at least 1 time per year. For HMA, the Districts Laboratories perform proficiency testing monthly during the construction season and field HMA laboratories perform proficiency testing up to 3 times per construction season. If a significant deficiency is observed for a technician, a later second check should be made.

Record keeping is required for all IAP observations and tests. The record should include who and what was checked, when, where, and the outcome of the check. An annual report is required by the FHWA detailing the system approach program- how many people for each test were checked, what was found, and how it was resolved. Also any systematic issues should be detailed (i.e. problems with equipment or calibrations, need for additional training, improvements in test procedure instructions.).

IAP Responsibilities

HMA				
Procedure to Check	To Whom	By Whom	How	Approach(1)
Field Density Sampling	RCE	Training	Computer Program & Training	System
Field Density Testing	RCE	DME	Test same cores- IM 216	Project
Mix Sampling	CONTR, RCE	DME	Observe	Project
Mix Properties Testing	CONTR, DME	CTRL	Proficiency- IM 208	System
Binder Sampling	CONTR, RCE	Training or DME	Training or Observe	Both
Binder Properties Testing	DME	CTRL	Proficiency- IM 208	System
Aggregate Grad. Sampling	RCE, CONTR	Training or DME	Training or Observe	Both
Aggregate Grad. Testing	RCE, CONTR, DME(2)	DME, CTRL	Proficiency or Split test IM 208/216	System
Aggregate Quality Sampling	DME	Training/Demo.	Training	System
Aggregate Quality Testing	None	None	None	
Ride Testing	CONTR, DME	CTRL	Yearly Calibration	System

Note 1- The DME may use different approaches for DOT, local agency, and contractor personnel.

Note 2- When the District Laboratory is performing the verification gradation testing for a project.

RCE-Resident Construction Engineer/Project Engineer

DME-District Materials Engineer

CTRL-Central Materials Office

CONTR-Contractor

IAP Responsibilities

PCC Paving				
Procedure to Check	To Whom	By Whom	How	Approach(1)
Core Sampling	RCE	Training	Training	System
Core Testing	RCE	DME	Test same cores- IM 216	Project
Air Sampling	RCE	DME	Observe	System
Air Testing	RCE	DME	Side-by-side tests- IM 216	System
Aggregate Grad. Sampling	RCE, CONTR(3)	Training or DME	Training or Observe	Both
Aggregate Grad. Testing	RCE, CONTR(3), DME(2)	DME	Split Test- IM 216	Both
Aggregate Quality Sampling	DME	Training/Demo.	Training	System
Aggregate Quality Testing	None	None		
Cementitious Materials Sampling	DME	Training/Demo.	Training	System
Cementitious Materials Testing	None	None		
Admixtures Sampling	DME	Training/Demo.	Training	System
Admixtures Testing	None	None		
Ride Testing	CONTR, DME	CTRL	Yearly Calibration	System

Note 1- The DME may use different approaches for DOT, local agency, and contractor personnel.

Note 2- When the District Laboratory is performing the verification gradation testing for a project.

Note 3- QMC projects only.

RCE-Resident Construction Engineer/Project Engineer

DME-District Materials Engineer

CTRL-Central Materials Office

CONTR-Contractor

IAP Responsibilities

PCC Structures			
Procedure to Check	To Whom	By Whom	How
Slump Sampling	RCE	DME	Observe
Slump Testing	RCE	DME	Observe or side-by-side tests- IM 216
Air Sampling	RCE	DME	Observe
Air Testing	RCE	DME	Side-by-side tests- IM 216
Aggregate Grad. Sampling	CONTR, RCE	DME	Observe
Aggregate Grad. Testing	RCE	DME	Split tests- IM 216
Aggregate Quality Sampling	DME	Training/Demo.	Training
Aggregate Quality Testing	None	None	
Cementitious Materials Sampling	DME	Training/Demo.	Training
Cementitious Materials Testing	None	None	
Admixtures Sampling	DME	Training/Demo.	Training
Admixtures Testing	None	None	
Ride Testing	CONTR, DME	CTRL	Yearly Calibration

Note 1- The DME may use different approaches for DOT, local agency, and contractor personnel.

RCE-Resident Construction Engineer/Project Engineer

DME-District Materials Engineer

CTRL-Central Materials Office

CONTR-Contractor

IAP Responsibilities

Non-Proportioned Aggregates (Including Recycled)				
Procedure to Check	To Whom	By Whom	How	Approach(1)
Aggregate Grad. Sampling	CONTR, DME	Training or DME	Training or Observe	Both
Aggregate Grad. Testing	CONTR, DME	DME	Proficiency or Split test IM 208/216	System
Aggregate Quality Sampling	DME	Training/Demo.	Training	System
Aggregate Quality Testing	None	None		

Note 1- The DME may use different approaches for DOT, local agency, and contractor personnel.
 RCE-Resident Construction Engineer/Project Engineer
 DME-District Materials Engineer
 CTRL-Central Materials Office
 CONTR-Contractor or Producer

**I.M. 208
Materials Lab
Qualification**



MATERIALS LABORATORY QUALIFICATION PROGRAM

GENERAL

The FHWA has outlined a Laboratory Qualification Program in the Federal-Aid Policy Guide update published as 23 CFR 637 on June 29, 1995. The updated guide has requirements for laboratories performing testing on Federal-Aid highway projects.

In order to avoid an appearance of a conflict of interest, any qualified non-DOT laboratory shall perform only one of the following types of testing on the same project: Verification testing, quality control testing, IA testing, or dispute resolution testing.

LABORATORIES TO BE QUALIFIED

The following laboratories are included in the qualification program for all Federal-Aid projects:

- | | |
|-------------------------------------|------------------------------------------|
| Central Materials Laboratory | Ready Mix Laboratories |
| 6 District Laboratories | PCC Contractor Laboratories |
| District Area Laboratories | HMA Contractor Laboratories |
| Resident Construction Laboratories* | Consultant and Commercial Laboratories * |
| Aggregate Producer Laboratories | City and County Laboratories * |
| Soils Field Laboratories* | |

* May be qualified at the time of a project.

LABORATORY QUALIFICATION PROCESS

A two-level qualification system is required by the FHWA. Laboratories are either accredited or qualified. The accreditation process is more rigorous than the qualification process.

Accredited Laboratory Process

The Central Materials Laboratory and the six District Laboratories will be accredited as outlined in the 23 CFR 637 guide. The Central Materials Laboratory is accredited through the AASHTO Materials Reference Laboratory Program. The District Materials Laboratories will be accredited by using the Central Materials Staff and equipment to check testing and testing procedures and by using the same calibration and training documentation process. Laboratories will be accredited for a two-year period. In addition, an annual review will be made by the Central Office Staff. Appendix A contains the procedures for accrediting the District Materials Laboratories.

Qualified Laboratory Process

The remaining laboratories will be qualified as outlined below:

The District Materials Offices will qualify laboratories. Laboratories will be qualified for a two-year period. In addition, an annual review will be made by District Staff. Appendix B contains the procedures for qualifying materials laboratories.

Four laboratory types will be qualified, aggregate laboratories, PC Concrete laboratories, soils field laboratories, and Hot Mix Asphalt laboratories.

Qualified laboratories will have the following:

1. Current manuals and test methods to perform the qualified testing available
2. A technician certified by the Iowa DOT to perform the qualified testing
3. Proper equipment to perform the qualified testing (calibrated or checked annually according to Appendix B)
4. Satisfactory project and proficiency test results
5. Documentation of equipment calibrations, equipment checks, and proficiency results

The District may elect to accept qualifications, accreditations, or inspections from other government agencies or Laboratory inspection agencies. The AASHTO Materials Reference Laboratory (AMRL) and Cement and Concrete Reference Laboratory are 2 common Laboratory inspection programs. The links are:

<http://www.amrl.net/amrlsitefinity/default/aap/r18labs.aspx>

<http://www.ccrl.us/Lip/LabListReport.pdf>

ADMINISTRATION OF THE PROCESS

The Central Materials Laboratory will be responsible for implementation and operation of the Laboratory Qualification Program. The Central Materials Laboratory will accredit the District Laboratories. The District Materials Offices will qualify laboratories.

NON-COMPLIANCE/DISPUTE RESOLUTION

A laboratory that does not meet the requirements of the IM is subject to elimination from the qualification program.

Disputes concerning calibration and correlation of equipment will be resolved by the office responsible for the qualification. For disputes that cannot be resolved at the District, the Central Materials Laboratory will be the final authority.

DISTRICT LABORATORY ACCREDITATION PROGRAM

The Central Materials Laboratory (CML) will accredit the District Materials Laboratories and maintain records of the accreditation for five years. The CML Staff will check the following prior to accrediting a laboratory:

1. Check for current manuals and test procedures covering the accredited testing.
2. Check the certification and training records of the testing personnel.
3. Document that proper equipment is available to perform qualified testing.
4. Check documentation system.

Scheduling of the annual accreditation review will be discussed with the laboratories needing accreditation.

Table 1 is the list of items to be reviewed.

An oral close out on any deficiencies will be held with the testing personnel. Written notice will be sent within two months of the inspection. CML personnel will re-inspect if necessary after correction of any deficiencies.

A report showing the laboratory, the date accredited, and the expiration date will be issued by the Materials Testing Engineer.

NON-COMPLIANCE/DISPUTE RESOLUTION

A laboratory that does not meet the requirements of the IM is subject to elimination from the qualification program.

The CML and the District Materials Engineer will resolve disputes concerning calibration and correlation of equipment.

TABLE 1 - Laboratory Accreditation Checklist

	√	Minimum Calib./Verif. Interval	Calib./Verif. Procedure
Tester Qualifications-Proper Iowa DOT certifications			
Current Test Procedures			
Current Calibration Procedures & Records			
Documentation of correlation results and corrective actions taken for previous construction season			
Balances		12 months	Iowa 917-B
Ovens		12 months	Iowa 1501-A
Mechanical Shakers		12 months	Iowa 1502-A
Marshall Compactor T-245		12 months	Iowa 1504-A
Gyratory Compactor T-312		6 months	Iowa 1522-A
Marshall Molds T-245		12 months	Iowa 1523-A
Comp. Test Machine T-245		12 months	Iowa 1505-A
Sieves		6 months	Iowa 1506-A
Thermometers - Test		6 months	Iowa 1607-A
Thermometers - Ref.		12 months	Iowa 1607-A
Timers T-201, T-202		6 months	Iowa 1508-A
Sand Equivalent T-176		12 months	Iowa 1509-A
Gyratory Compactor Molds T-312		12 months	Iowa 1524-A
Vacuum Systems T-209		12 months	Iowa 1510-A
Pycnometers T-228, T209		12 months	Iowa 1618-A
Fine Aggregate Anularity T-304		12 months	Iowa 1525-A
Dynamic Shear Rheometer T-315		6 months	Iowa 1612-A
Balance Weights M-231		12 months	
Sample Splitters T-248		12 months	(visual condition)

LABORATORY QUALIFICATION PROGRAM

The District Materials Office will qualify the other laboratories and maintain records of the qualification for three years. The District Staff will check the following prior to qualifying a laboratory:

1. Establish the type of laboratory (Aggregate, Hot Mix Asphalt, Soils Field, PC Concrete).
2. Check for current manuals and test procedures covering the qualified testing.
3. Check the certification of the testing personnel.
4. Document that proper equipment is available to perform qualified testing.
5. Check documentation system.

Scheduling of the qualification review will be discussed with the laboratories seeking qualification. The District staff performing the qualification review should have the appropriate certification (IM 213) for the type of laboratory and tests being reviewed. The District Materials Engineer should be contacted for laboratories that have been qualified in other states. The District Materials Office may qualify a laboratory based on an acceptable qualification report and qualification program from another state transportation agency.

Table 1 and the pages following cover the list of items to be reviewed.

An oral close out on any deficiencies will be held with the testing personnel. Written notice will be sent within two weeks of the inspection. District personnel will re-inspect after correction of any deficiencies.

A form showing the laboratory type, the date qualified, and the expiration date will be issued by the District Materials Engineer.

The list of Qualified Laboratories will be maintained on a database accessible by authorized Materials Personnel.

NON-COMPLIANCE/DISPUTE RESOLUTION

A laboratory that does not meet the requirements of the IM is subject to elimination from the qualification program.

The office responsible for the qualification will resolve disputes concerning calibration and correlation of equipment. For disputes that cannot be resolved at the District level, the Central Materials Laboratory will be the final authority.

Table 1 - Laboratory Qualification Checklist

	√	Calib./Verif. Interval	Calib./Verif. Procedure
Tester Qualifications-Proper Iowa DOT certifications			
Current Test Procedures			
Current Calibration Procedures & Records			

Documentation of correlation results and corrective actions taken for previous construction season.			
Soils Field Laboratory			
Balances		12 months	Iowa 917
Sieves- wear, tear, size		12 months	
Mold, Base, and rammer condition		(a)	IM 309
Aggregate Laboratory			
Balances		12 months	Iowa 917
Sieves- wear, tear, size, and opening size		12 months	Iowa 1506
Splitter- condition		12 months	(Visual)
Mechanical Shakers- condition (if used)		12 months	Iowa 1502
HMA Laboratory			
Balances- and water bath		12 months	Iowa 917
Sieves- wear, tear, size, and opening size		12 months	Iowa 1506
Splitter- condition		12 months	(Visual)
Mechanical Shakers- condition (if used)		12 months	Iowa 1502
Rice equipment- vacuum and flask		12 months	IM 350
Thermometers		12 months	Iowa 1607
Ovens- temperatures		12 months	Iowa 1501
Gyratory Compactor and molds		12 months	Iowa 1522
PCC Laboratory			
Balances		12 months	Iowa 917
Sieves- wear, tear, size, and opening size		12 months	Iowa 1506
Splitter- condition		12 months	(Visual)
Mechanical Shakers- condition (if used)		12 months	Iowa 1502
Air Meter		12 months	IM 318
Slump Cone and equipment-condition		12 months	
Flexural Strength Apparatus		12 months	Central Lab
(a) The mold, base or rammer should be checked if the condition warrants.			

LABORATORY ITEMS

PCC Portable Paving Plant

The following list contains, as a minimum, what is required for a qualified PCC paving plant laboratory. The test equipment to perform each of the required tests is contained in the respective IM.

- Field Lab of suitable size for workspace, space to perform tests, and sample storage. Locate the Field Lab so it is convenient to the plant, but outside the influence of plant vibration.

Air-conditioned
 Personal computer

Phone
All in one printer
Sample storage
Work table
Electrical outlets
Running water available to perform necessary testing
Desk and chair
Incidental spoon, pans, pails

- The personal computer shall be capable of running Iowa DOT programs. It is recommended to have at least Windows 2000 or newer software on the computer. Iowa DOT programs have been checked and are capable of running on Windows 2000 and newer software.

HMA Plant

The following list contains, as a minimum, what is required for a qualified asphalt laboratory. The test equipment to perform each of the required tests is contained in the respective IM.

- Field Lab and Office [Suggested size 8 ft. x 44 ft. (2.4 m x 13.41 m)]. Locate the Field Lab so it is convenient to the plant, but outside the influence of plant vibration.

Air-conditioned
Personal computer
Phone
Fax machine
Copy Machine
Sample storage
Work table
Bulletin board
Water available to perform necessary testing
Desk and chair
Incidental spoon, trowels, pans, pails

- The personal computer shall be capable of running Iowa DOT programs. It is recommended to have at least Windows 2000 or newer software on the computer. Iowa DOT programs have been checked and are capable of running on Windows 2000 and newer software.

Removable storage device
Color monitor, VGA or better
Printer

- Diamond saw for cutting core lifts.
- Diamond core drill (minimum 4" diameter core).



Iowa Department of Transportation

MATERIALS LABORATORY QUALIFICATION PROGRAM
Laboratory Inspection - per Materials Instructional Memorandum 208

Company Name: _____

Laboratory name: _____

Laboratory type: Aggregate HMA PCC **Soils** (Circle one)

Laboratory location: _____

Laboratory contact person: _____

Laboratory technician:	Certification number:	Expires:
_____	_____	_____
_____	_____	_____
_____	_____	_____

Current manuals and written test procedures available? _____

Current calibration procedures and records? _____

Documentation of correlation results and corrective actions taken for previous construction season? _____

Proper equipment available to perform qualified testing? _____

Other remarks: _____

Date of inspection: _____ Qualification expiration date: _____

Inspection performed by: _____
Print name

Sign name

Inspection received by: _____
Print name

Sign name

District Number _____

cc: Materials Engineer, Contractor/Producer, Ames, File



Iowa Department of Transportation

**AGGREGATE LABORATORY INSPECTION
QUALITY CONTROL CHECKLIST**

Contractor/Producer: _____ Location: _____
Certified Technician: _____ Certification No: _____

Balances (Iowa Test Method 917) **Yes** **No**
Updated balance calibration records available? _____
Check balance using 500 gm & 1000 gm calibrated weights? _____
Is balance accurate to 0.1%? _____

Sieves (Iowa Test Method 1506)
Is there adequate correlation history to qualify? _____
Were go/no-go gauges used to check accuracy? _____
Are the sieves in good condition (no loose frames, holes, or tears)? _____

Splitter
Is the splitter in good condition?
(i.e., missing shuts, cracked welds, or leaking seams) _____

Shaker (Iowa Test Method 1502)
Is shaker apparatus secure and level? _____

Scale
Are the laboratory weights used for routine calibrations accurate?
(Use 0.1% difference from our calibrated weights as standard.) _____

Comments _____

cc:Materials Engineer
Contractor/Producer
Ames
File

Inspected By: _____
Date Inspected: _____



Iowa Department of Transportation

HMA LABORATORY INSPECTION
QUALITY CONTROL CHECKLIST

Contractor/Producer: _____ Location: _____

Certified Technician: _____ Certification No.: _____

Thermometers (IM 321, IM 325, IM 325G, IM 350) **Yes** **No**
Thermometer Calibration and Documentation available? _____
Temperature of check: _____ (25 deg C or 135 deg C)
State reference thermometer _____
Contractor reference thermometer _____
Difference _____

Rice Pycnometer (IM 350)
Calibration chart and/or documentation available? _____
Equipment achieves between 25.5 and 30mm of mercury vacuum? _____
Mercury is free of bubbles? _____

Gyratory/Marshall Compactor (IM 325/IM 325G)
Calibration documentation available? _____
Is equipment generally clean? _____
Documentation of annual mold measurements? _____

Ovens (IM 325/IM 325G)
Documentation of temperature checks? _____
General condition satisfactory? _____
Do all parts work as intended? _____

Water Bath (IM 321)
Temperature? _____

Correlation
Correlation results available for previous year? _____

Comments: _____

NOTE: HMA labs must also qualify as an aggregate lab.

cc: Materials Engineer **Inspected By:** _____
Contractor/Producer
Ames **Date Inspected:** _____
File



Iowa Department of Transportation

**READY MIX/PCC PAVING LABS
QUALITY CONTROL CHECKLIST**

Contractor/Producer: _____ Location: _____

Certified Technician: _____ Certification No: _____

Inspection Checklist Items:

Air Meter (IM 318) **Yes** **No**

Check meter using approved 5% pugs.
Is air meter clean? _____
Proper rod and mallet. _____

Slump Cone (IM 317)

Interior of cone free of dents or projections. _____
5/8" by 24" tamping rod. _____
Rigid, nonabsorbent base. _____
Equipment clean and free of hardened concrete. _____

Beam Breaker (IM 316)

Current annual calibration sheet _____
Equipment clean. _____

Beam Molds (IM 328)

Molds clean and free of dents _____
General condition of molds good. _____

Comments _____

NOTE: PCC labs must also qualify as an aggregate lab.

cc: Materials Engineer **Inspected By:** _____
Contractor/Producer
Ames **Date Inspected:** _____
File



Iowa Department of Transportation

**SOILS FIELD LABORATORY INSPECTION
QUALITY CONTROL CHECKLIST**

Contractor/Producer: _____ Location: _____
Certified Technician: _____ Certification No: _____

Balances	(Iowa Test Method 917)	Yes	No
	Updated balance calibration records available?	_____	_____
	Check balance using 500 gm & 1000 gm calibrated weights?	_____	_____
	Is balance accurate to 0.1%?	_____	_____

Sieves

Are the sieves in good condition (no loose frames, holes, or tears)? _____

Mold, Base, and Rammer (IM 309)

Are they in good condition. Mold round and the base flat? _____

If not, check the dimensions for out-of-tolerance.

Rigid Foundation

Do they have a concrete pad or floor or other rigid foundation to compact the specimen on? _____

Comments _____

cc:Materials Engineer
Contractor/Producer
Ames
File

Inspected By: _____
Date Inspected: _____

INDEPENDENT ASSURANCE PROFICIENCY & TESTING FOR HMA

GENERAL

The HMA Proficiency Program is part of the Independent Assurance Program described in IM 205. The HMA Proficiency Program provides participating laboratories with a means to:

- Check both the instrument and the operator under actual testing conditions.
- Compare individual test results with the average of a large body of results so that corrective action may be taken where wide discrepancies occur.
- Evaluate the quality of test results, thereby reducing the risk of dispute due to testing errors.

Each accredited and qualified Laboratory and certified staff shall establish and maintain their proficiency by following program described herein.

A project approach for independent assurance may be used for RCE, county, city, and consultant laboratories.

WITNESSING FOR IAP

The District Materials Offices are responsible for witnessing the HMA mix sampling, splitting, and testing; the binder sampling; and the cold feed aggregate sampling and quartering (if used as the acceptance method for gradation). When using either the project approach or the system approach, document with a written report (Figure 1 is a good example):

- Who was checked
- When
- Where including project number
- What activity was checked
- Comments on observations
- The name of the person doing the IA

PROFICIENCY SAMPLE

The Central Materials Laboratory will prepare and send out proficiency samples during the construction season (April through September). The samples and tests for laboratories will be as follows:

- A. District Laboratories
 - 1. Asphalt Binder
 - a. $G^*/\text{Sin Delta}$
 - 2. HMA Mix
 - a. G_{mb} Laboratory Density

- b. G_{mm} Maximum Specific Gravity
- c. % Binder, Ignition Oven
- d. Gradation, Ignition Oven
- 3. Combined Aggregate
 - a. Gradation
 - b. G_{sa} Apparent Specific Gravity (every other sample)
 - c. G_{sb} Bulk Specific Gravity (every other sample)
 - d. Percent Absorption (every other sample)
 - e. Fine Aggregate Angularity (every other sample)
 - f. Sand Equivalency (every other sample)
- B. HMA Laboratories
 - 1. HMA Mix
 - a. G_{mb} Laboratory Density
 - b. G_{mm} Maximum Specific Gravity
 - 2. Combined aggregate
 - a. Gradation
- C. Aggregate Laboratories
 - 1. Gradation

PROFICIENCY SAMPLE FREQUENCY

- A. District Laboratories

Each District Laboratory will receive a set of proficiency samples monthly April through September. The samples will be tested and the results reported within 14 calendar days of receipt
- B. Contractor HMA laboratories

Each active certified HMA technician performing quality control testing for state or local federal aid projects will pick-up proficiency samples in April from the closest District Laboratory. The samples will be tested and the results reported to the Central Materials Laboratory by May 15.

For active certified technicians that do not obtain a proficiency sample in April, they must contact the District Laboratory in the District where they will be working and obtain and test

a proficiency sample prior to the start of paving. Results will be compared to the District Laboratory results for that month.

TEST RESULT ANALYSIS

Test results from the proficiency samples will be analyzed using the current AASHTO Material Reference Laboratory (AMRL) procedure. The analysis compares the results from each participant and each District and Central Laboratory to the overall mean. Test results will also be compared to the Central Materials Laboratory results.

Any test result that is 3.0 standard deviations or greater from the mean will be considered failing. Two consecutive proficiency sample results that are 2.0 standard deviations or greater from the mean will be considered failing.

In the event of a small data set or large or small variation within a data set, the individual results will be compared with the Central Laboratory results. IM 216 will be used to compare the results. Proficiency test results beyond the tolerance will be considered failing.

INVESTIGATION OF FAILING TEST RESULTS

The technician with failing test results shall review the calculation, test procedures, and perform a calibration if warranted. When there are two or more consecutive failing results, the Central Materials Laboratory or the District Material Engineer will contact the technician and arrange to conduct an evaluation of the procedures and equipment to correct any deficiencies. Three consecutive failing results by a technician will constitute unsatisfactory performance as defined in IM 213 and become a part of their permanent file.

If an active certified HMA technician fails to obtain and test a proficiency sample, the District Materials Engineer will conduct an investigation and if warranted issue an unsatisfactory performance notice.

If an active DOT certified HMA technician fails to test and report a proficiency sample by deadline, the District Materials Engineer will be notified to conduct an investigation and if warranted issue an unsatisfactory performance notice.

I.M. 209
Approved Producers Program
& Certified Aggregate



APPROVED PRODUCER PROGRAM AND CERTIFIED AGGREGATES

APPROVED PRODUCER PROGRAM

In order to furnish certified aggregates to projects, an aggregate producer shall be on the approved aggregate producer listing (Appendix B, attached). This will also apply to recycled product yards and/or processors. The specific requirements, including the details of the required quality control program are in Appendix A (attached).

Specification limits for aggregates being produced are found in Appendix C and D. For complete details on aggregate quality and gradation requirements, refer to the appropriate referenced specification.

Non-compliance to the approved Producer Quality Control Program shall constitute grounds for the source and/or producer to be placed on conditional status by the District Materials Engineer. Continued non-compliance will be considered sufficient grounds to remove the producer from the Approved Producer List.

Appendix E contains the "Notification of Violations of the Approved Producer's Quality Control Program". This is a written notice from the District Materials Coordinator or District Materials Engineer to a Producer identifying violation(s) of the Producer's Quality Control Program or requirements of the Approved Producer Program. A written response is required from the Producer describing how the violation occurred, how the violation will be rectified, and what will be done so the violation will not occur or continue to occur in the future.

An Aggregate Review Board will meet, as needed, for disciplinary actions and appeals involving Approved Producers.

The Aggregate Review Board shall consist of:

- The State Construction and Materials Engineer
- The Chief Construction and Materials Geologist

CERTIFIED AGGREGATES – SAMPLING AND TESTING

The Aggregate Producer shall be responsible for source product quality control. Aggregate quality will be determined by testing samples secured by District Materials personnel. This will not relieve the producer or supplier of their responsibility for quality of the material. Producers must meet the responsibilities outlined in *Guidelines for Aggregate Producer Quality Control Program*, IM 209 Appendix A.

Not less than 24 hours before start up, or as soon as possible for a production change, the appropriate District Materials Engineer shall be notified. The notification shall include the estimated daily production and total production, the intended use (project or warehouse stock), production ledge(s) if applicable, and responsible person(s). Failure to notify may result in additional quality sampling and testing, or rejection of the material.

Aggregates to be used in highway construction projects shall be subject to sampling and testing, including Producer Quality Control (QC) sampling and testing. Sampling and testing shall be performed during production in accordance with the minimum frequencies listed in the table below.

TABLE 1. SOURCE SAMPLING AND TESTING REQUIREMENTS

Sample Type	Producer Quality Control Testing Frequency	Iowa DOT Verification Testing Frequency
Proportioned Aggregates		
Gradation	1/1500 T ^(1, 4) minimum	1/18,000 T ^(2, 4)
Quality	1/12,000 T or 1/month, whichever is more frequent ⁽³⁾	1/12,000 T or 1/month, whichever is less frequent ⁽²⁾
Non-Proportioned Aggregates		
Gradation	1/3000 T ⁽¹⁾ minimum	1/18000 T ⁽²⁾
Quality	1/12,000 T or 1/month, whichever is more frequent ⁽³⁾	1/12,000 T or 1/month, whichever is less frequent ⁽²⁾

Notes:

- 1 Additional QC testing may be required at the time material is shipped to a project, for a stockpiled material carried over a winter season or if there is evidence of segregation, contamination, or degradation.
- 2 May be adjusted by the DME for source specific needs.
- 3 When required by the DME for sources where historic quality test results have approached or exceeded the specification limits (IM 307, 344, and 368).
- 4 Variation of Fineness Modulus (FM) by more than 0.2 lower than the target fineness or more than 0.25 greater than the target fineness modulus should be investigated.

A. Producer Quality Control Sampling & Testing

Producer QC sampling and testing personnel, laboratories, and equipment shall be qualified in accordance with the Iowa DOT Technical Training & Certification Program (IM 213) and the Materials Laboratory Qualification Program (IM 208). If Producer gradation test results are used as part of an acceptance decision, they will be evaluated under the Independent Assurance Program.

It is recommended that a Producer Quality Control Program include quality control testing to assist with ledge control and pit quality. Such tests may include: specific gravity (IM 307), clay lumps and friable material (IM 368), or shale in fine aggregate (IM 344). If historic data from a source indicate that quality test results approach or exceed specification limits the Engineer may require specific data be provided by the aggregate producer or supplier to the Iowa DOT

(obtained by qualified persons and procedures). These data may include those tests listed above. See Table 1 for frequencies.

B. Iowa DOT Verification Sampling & Testing

The District Materials Office will be responsible for monitoring the Producers Quality Control Program. Verification of quality and gradation is through independent sampling and testing. Verification sampling and testing is done by Agency personnel. Agency sampling and testing personnel, laboratories, and equipment will be qualified in accordance with the Iowa DOT Technical Training & Certification Program (IM 213) and the Materials Laboratory Qualification Program (IM 208).

When requested by the Agency, Producer or Contractor personnel shall assist with the sampling as directed and witnessed by the certified Agency personnel. The sample location and time will be randomly selected by the Agency (except when noted elsewhere) and will only be given to the Producer immediately prior to sampling. To maintain the integrity of the sample, it will be transported by Agency personnel or secured by a tamper proof method and transported by the Producer. The Agency may spilt the verification sample and give a portion to the Producer.

Verification gradation test results, when non-complying, will normally be provided to the Producer within 3 working days of sampling.

At no time will the District Materials Office representative issue directions to the producer. However, the representative will have authority and responsibility to question and where necessary reject any operation, which is not in accordance with the Specifications, Special Provisions, and Instructional Memorandums.

C. Validation of Non-Proportioned Aggregate Test Results

The verification gradation test results will be compared to the QC test results to validate the QC results for non-proportioned aggregate. Validation is based on the verification test results being within the specification limits. When the QC test results cannot be validated, the dispute resolution process will be used. Material shall not be shipped from the stockpile until the dispute is resolved. **NOTE:** Verification test results may be used solely for acceptance. When verification test results are used solely for acceptance, the acceptance criteria is Article 4109.

D. Fine Aggregate Test Results for PCC

The verification gradation test results may be used solely for acceptance. When verification test results are used solely for acceptance, the acceptance criteria is Article 4110. When failing verification gradation test results are determined, validated QC test results may be used in the acceptance process at the discretion of the District Materials Engineer.

E. Dispute Resolution System

Validation disputes arising between the Contracting Agency and the Producer or Contractor will be resolved in a reliable, unbiased manner usually within two weeks of notification of a dispute. If necessary, an evaluation will be performed by the Iowa DOT Central Materials Laboratory. Resolution decisions by the Iowa DOT Central Materials Laboratory will be final.

Unless specified elsewhere, the District Materials Engineer will select some or all of the following steps for the dispute resolution:

1. Perform a comparison between the verification result and QC result(s) for the same time period (If the QC sample is from a split with the verification sample, also compare the previous independently taken QC result). Use the tolerances in IM 216. If the results are within the tolerance, validation is achieved.
2. Check all numbers and calculations.
3. Isolate material in dispute and begin a new stockpile. Resample stockpile material in dispute.
4. Perform tests on split obtained by Agency personnel.
5. Review past proficiency and validation data.
6. Review sampling and testing procedures.
7. Check equipment operation, calibrations and tolerances.
8. In the event of multiple validation failures for a source, the DME may use F-test and t-test statistical methods to compare the set of QC results with the set of verification results. A 0.05 level of significance will be used and a set of at least 5 verification test results.
9. Involve the Central Materials Laboratory.

If the discrepancy cannot be resolved using the steps listed above then the Agency test results will be used for the acceptance decision for that lot.

F. Small Quantities

Verification sampling and testing may be waived by the DME for product quantities of less than 2000 tons. For quantities of less than 200 tons of non-critical aggregate, the DME may waive QC testing and approve the stockpile based on a visual inspection by the DME or the Engineer.

CERTIFIED AGGREGATES – DOCUMENTATION

A. Producer Test Documentation

All producer test results performed on certified aggregates, whether compliant or non-compliant, shall be reported weekly or as designated to the District Materials Engineer on Form #821278. These reports shall indicate whether the aggregate is being produced for direct project delivery, stockpiling for a specific project, or for advance warehouse stock.

Selected production limits shall be included on Form #821278.

Production limits for aggregate produced for use in HMA or PCC mix designs are generated by the contractor and supplied to the aggregate producer on Forms #955 and #955QMC respectively.

B. Certified Aggregate Delivery Documentation

Documentation may be accomplished by numbered truck ticket, transfer list or shipment

statement (such as Form #821278), or by a bill of lading (for rail or barge shipments). The certified documentation shall be furnished to project inspection personnel or receiving contractor before material is incorporated.

- For aggregates as bid items measured by weight (mass), the certified truck tickets shall be numbered and include signatures or initials in accordance with Article 2001.07.
- A “secure electronic signature” as defined by IM 209 Appendix G may be acceptable for certification of truck tickets in lieu of an original signature.
- In the case of shipment by rail or barge, the documentation shall be sent to the project engineer and receiving contractor or ready mix operator no later than the same day as shipment source departure. The documentation shall include the rail car or barge number(s).
- Documentation not having an exact weight (mass) shall include an estimated quantity (i.e. transfer listings or Form #821278, etc.).
- If the Producer/Supplier QC test results are used in the acceptance decision for non-proportioned aggregates, the Producer shall supply a signed summary documentation to the Project Engineer, including: the type of material and source, the total quantity, project number, and gradation results.
- When Agency test results are used for the acceptance decision of non-proportioned aggregate, the Producer/Supplier shall provide the Materials Engineer the total tons delivered to the project, the type of material and source, project number, and gradation results. District Materials will provide test reports to the project.

The following certification statement is required to be on the document used to certify the material being delivered (i.e. truck ticket, Form #821278, etc.): “**This is to certify the material herein described meets applicable contract specifications.**” **NOTE:** This certification statement shall be signed or initialed by an authorized representative of the aggregate supplier.

To ensure proper identification of delivered aggregates, the following additional information is required on the certification document:

Proportioned Aggregate

When the aggregate represented is for use in HMA or PCC mixtures, the project number is preferred when practical, as in the case when shipping to a single project paving plant site, and not required when impractical, as in the case when shipping into warehouse stock at a ready mix plant or when shipping to a plant supplying material to multiple projects.

PCC Aggregate: Gradation number, quantity, source name and T203 A-number, production beds (for quarried stones) and the delivery date.

HMA Aggregate: Product size, quantity, source name and T203 A-number, production beds (for quarried stones), and delivery date.

Non-proportioned Aggregate

Iowa DOT gradation number, project number, quantity, source name and T203 A-number and the delivery date. **NOTE:** Documentation for revetment stones shall include production beds.

Recycled Aggregate Materials

Iowa DOT gradation number, project number, quantity, source name and the delivery date. **NOTE:** A T203 A-number is not required for Recycled plants.

REHANDLING OF CERTIFIED AGGREGATES

When certified aggregates are rehandled the District Materials Engineer shall be notified and afforded the opportunity to monitor the re-handling procedure.

For the purpose of this IM, re-handling is meant to include the physical unloading and reloading of aggregate at a temporary storage site before the aggregate is delivered to its final destination. Rehanded certified aggregates may be required to be re-tested, with or without re-weighing and recertified on a numbered shipment ticket with proper identification and certification statement.

ACCEPTANCE

At the Contractor's and Producer's own risk, aggregates may be certified for project use before quality sample test results are reported based on the following:

- Complying Quality Control and Verification gradations
- Documentation of consistent previous compliance to specified quality requirements from the source or ledge.

A. Proportioned Aggregate

In the case of HMA or PCC proportioned aggregates, acceptance tests will be performed on verification samples obtained at the proportioning plant.

Certified proportioned aggregate may be incorporated into a project on the basis of the certified truck ticket, certified bill of lading, shipment listing, certified transfer listing or Certified Gradation Test Report (Form #821278).

A file of certified shipment or transfer documents for the HMA or PCC proportioned aggregate will be maintained by the contractor or ready mix operator and made available for inspection at each plant or project site during the project period. Project inspection personnel shall verify that all material incorporated in the project is properly certified and document this verification and quantity on each of the appropriate daily or periodic construction reports. No other project documentation for the incorporated aggregate is required.

B. Non-Proportioned Aggregate

Acceptance of non-proportioned aggregates will be based on proper certification, visual examination by the contracting authority to ensure against obvious contamination or segregation, Producer quality control test results, and Agency verification test results.

Minor quantities of non-critical aggregates may be visually inspected by the contracting authority and recorded in the project field book. Quantities less than 200 Mg (ton) are considered minor. An example of a non-critical aggregate is a non-proportioned aggregate such as granular backfill material for bridge abutments.

C. Independent Assurance Program (IAP)

If Producer QC test results are used in the acceptance decision for non-proportioned aggregate, each certified technician who performs the QC sampling or testing and their test equipment will be independently checked by Iowa DOT certified technicians (IAP personnel) as per Materials IM 205 at least once per year. IAP personnel must not be involved in gradation verification testing for the aggregate source being tested.

IAP personnel will witness the Producer technician taking a random sample and splitting that sample. The splits of the sample will be tested by the Producer's technician and by the Iowa DOT District Laboratory. District Laboratory IAP testing equipment must not be the same equipment that is used for gradation verification for that source.

The results will be compared using IM 216. If acceptable correlation is not found, IAP personnel will contact the Producer's technician and review the results for the following:

1. Check for recording, weighing, or calculating errors.
2. Check to see that the balance is working correctly.
3. Check the sieves for damage or out of tolerance openings.
4. Check for overloading of sieves.
5. Check for incomplete sieving.
6. Resolve any problems, repeat the sampling, splitting, and observe the testing of a new sample.

The IAP results are not to be used in the acceptance decision for the material. Any non-complying IAP results should result in a visit by the Iowa DOT inspector responsible for verification testing at that location.

This method of IAP is called a System Approach and requires the Iowa DOT to report a summary of the results annually to the FHWA. Document when the Producer's Technician was visited, which Producer's laboratory was used, the results, and any follow-up if required. This documentation should be retained in the event of an FHWA audit.

GUIDELINES FOR AGGREGATE PRODUCER QUALITY CONTROL PROGRAM

GENERAL

This appendix contains the minimum requirements for the producer Quality Control Program in order to become an approved aggregate producer.

Producers must submit a written application to their District Materials Engineer (DME) for review and approval.

Quality Control Programs for recyclers will describe procedures for receiving, sorting and managing stockpiles of reclaimed materials intended to be processed into certified aggregates.

NOTE: Producers with operations in more than one District shall apply to the District Materials Engineer in the district where the most certified material production exists or is anticipated. The application is attached to this Appendix or is available on-line through the Iowa DOT web page. This application is also available from the DME Offices and the Iowa Limestone Producers Association (ILPA) office.

DEFINITIONS

The following definitions apply to the Quality Control Program guidelines:

Source - Any location aggregate is produced at or shipped from on a certified basis (e.g., quarries, pits, project sites, recycle yards, terminal locations, portable production operation, etc.).

Conditional Status - This is a written notice from the District Materials Engineer to a producer that certified aggregates will no longer be accepted from a particular source. Application of Conditional Status may vary depending upon situation or specific circumstances. The Conditional Status may apply only to a production operation and aggregate produced by that operation. In other situations, when the deficiency is more widespread, the Conditional Status may apply to an entire company or division within a company until the problem is resolved. In the case of portable production operations, Conditional Status shall apply to the specific production operation regardless of source location, and shipment of aggregate previously produced by the affected production operation may be placed on Conditional Status when warranted.

GUIDELINES FOR AGGREGATE PRODUCER QUALITY CONTROL PROGRAM

1. Aggregate Certification

The producer has the overall responsibility of certifying that material being placed in the certified stockpile is produced under and conforms to the Aggregate Certification Program, and the producer Quality Control (QC) Program. The Iowa DOT, through its monitoring activities (sampling/testing, visual observation, etc.), will verify the continued compliance to the program.

2. Knowledge of Current Specifications

The producer Quality Control representative(s) must maintain up-to-date knowledge of the specifications that apply to aggregate products currently being produced at the source. The

producer representative shall have available, at the testing lab, a copy of the current Standard Specifications, all applicable Supplemental Specifications and all applicable Instructional Memorandums (IMs) for aggregate inspection, as well as a current geological section, if applicable. The producer will be aware of any Special Provisions, which change current aggregate specifications. This applies to both quality and gradation requirements. The producer shall be responsible for providing these up-to-date publications to their QC representative.

3. Plant Production Log

The producer is required to maintain a plant production log when producing under the program. This production log shall detail, on a daily basis, samples taken, pass/fail results, corrective actions, plant/ledge changes, etc. The log must be kept at a designated location and be readily available to the Iowa DOT representative for review.

4. Visual Inspection

The producer is responsible for visually inspecting the aggregate source process on a frequent basis. Visual inspection can be defined as observing the processing or production area, as well as the condition of the aggregate in the flow stream or stockpiles. This visual inspection does not take away from actual testing, but enhances the inspection to ensure quality aggregates. It is the responsibility of the producer Quality Control representative to observe the overall operation to detect segregation, degradation, and contamination that are detrimental to the quality of the product.

5. Quality Requirements

Any certified stockpile must meet the designated quality before shipment. The producer is responsible for supplying material meeting all quality requirements. Intentional shipment of untested or out of specification material will constitute grounds for immediate rejection of material and placement of the source and/or the producer on conditional status. The producer Quality Control representative will obtain and maintain quality information on specific ledges, production methods, and certified stockpiles for each source.

6. Production Notification

Twenty-four hours before startup or as soon as possible for production change, the appropriate Area Materials Coordinator (AMC) or District Materials Engineer (DME) shall be notified. Failure to notify may result in material rejection or resampling of the stockpile. Notification shall include the estimated intended tonnage to be produced, estimated daily production rate, intended use (e.g., project information or warehouse stock), and if applicable, production ledges, and responsible person(s).

7. Production

A. The producer shall establish gradation production limits for each material to be certified to help ensure a product that is uniformly graded and meets specifications at the time of use.

1. Gradation production limits shall apply to individual products within each source and be

maintained for each stockpile.

2. Gradation production limits are subject to review, only, by the AMC or DME.
3. Repeated non-adherence to the producer established gradation production limits require stockpile sampling and testing by the producer.

B. Testing and Reporting

1. Minimum test frequencies as per IM 209, Appendix C
2. Test results will be known before delivery when the product is being shipped to a project.
3. All test results will be available at a designated location within 24 hours of sampling when the material is being placed into a certified stockpile.
4. Report gradation test results to DME and contractor, when applicable, on Form #821278.

C. Maintaining Ongoing Quality Control Procedures

1. Proper ledge control and/or control of stockpiles of reclaimed PCC and HMA intended for recycling into certified aggregates.
2. Equipment (production and testing)
3. Stockpiling procedures
4. Proper stockpile identification (signing, stockpile maps, etc., as required).

8. Delivery

- A. Stockpile identification to ensure delivery from proper stockpiles
- B. Visual inspection for contamination, segregation, etc.
- C. Stockpile gradation resampling may be required.
- D. Proper identification and certification of delivered aggregate as per IM 209
- E. Maintain ongoing QC procedures.
- F. Report tonnage to the AMC when requested.

9. Quality Control Structure

In order to ensure quality as a priority, the producer Quality Control personnel will have a line of communication directly to their management, as well as their production operation.

AGGREGATE PRODUCER APPROVAL APPLICATION

Company Name _____

Address _____

(IF MORE THAN ONE; i.e., Regional Offices, etc., PLEASE ATTACH LIST AND AREA COVERED.)

1. Are copies of current applicable specifications, aggregate testing IMs and source information data such as geologic sections available at the respective sources or testing facilities? (Yes or No) If No, explain.

2. Is a plant production log maintained on a daily basis and available for inspection? (Yes or No) If No, explain

3. Who (position) is responsible for production notification to the Area Materials Coordinator?

4. Which company representative (position) is normally responsible for daily overall Quality Control processes at the source?

5. Describe the certified stockpile identification system in place at each source (Map, signing, etc.)

6. Please attach a detailed summary of your Quality Control Program. (**NOTE:** Please refer to Guidelines for Required Aggregate Producer Quality Control Program.)

7. Please attach a flow chart of your current Quality Control structure (Include names, addresses, phone numbers of appropriate management personnel, chain of command, etc., for problem resolution).

Indicate the District(s) for which you have operations to produce State of Iowa Certified material.

1 2 3 4 5 6

AUTHORIZED SIGNATURE _____ DATE _____

DME RECOMMENDATIONS _____

DME SIGNATURE _____ DATE _____

APPROVAL (YES or NO) REMARKS _____

CENTRAL MATERIALS SIGNATURE _____

DATE _____

APPROVED AGGREGATE PRODUCERS

This appendix lists the approved aggregate Producers.

PRODUCER

A-Line Crushing Service
Acme Fuel & Materials Company
Aggregate Industries
Aggregate Materials Company
Aggregates, Inc.
Alliance Materials Inc.
Anderson Sand & Gravel Company
Arcadia Limestone Company
Bard Concrete
BMC Aggregates L.C.
Bedrock Gravel Company
Belco of Nebraska, Inc.
Bellevue Sand & Gravel Company
Benton's Sand & Gravel
Big Stones Quarry, Inc.
Boon Construction Company for Crosby Pit
Boyer Sand & Rock, Inc.
Bridgeport Materials
Brockman Mgt., LLC, dba Brockman Sand Co.
Bruening Rock Products, Inc./Skyline Const., Inc.
Builders Sand & Cement Company
Bushman Excavating
C.A.P Recycling
C.J. Moyna & Sons, Inc.
Cantera Aggregates
Carnarvon Sand & Gravel
Cemstone Products Company
Central Stone Company #1
Cessford Construction Company

LOCATION

Cedar Falls, IA
Muscatine, IA
Eagan, MN
Dubuque, IA
Cedar Rapids, IA
Dixon, IL
De Witt, IA
Arcadia, IA
Dyersville, IA
Waterloo, IA
Schleswig, IA
Council Bluffs, IA
Bellevue, IA
Cedar Falls, IA
Peru, IA
Neillsville, WI
Hawarden, IA
Sergeant Bluff, IA
Ft. Madison, IA
Decorah, IA
Davenport, IA
Fairfax, IA
Sioux City, IA
Elkader, IA
Corydon, IA
Denison, IA
Mendota Heights, MN
Hannibal, MO
Burlington, IA

Cessford Construction Company	Le Grand, IA
Cleveringa Excavating LLC	Alton, IA
Cohrs Construction, Inc.	Spirit Lake, IA
Concrete, Inc.	Gifford, IA
Concrete Materials	Sioux Falls, SD
Conreco, Inc.	Omaha, NE
Coots Materials Company	Vinton, IA
Corell Recycling - A Div. of Corell Contractor, Inc.	Des Moines, IA
County Materials Corp.	Marathon, WI
Crawford Quarry Company	Cedar Rapids, IA
Croell Redi Mix	New Hampton, IA
Crushed Aggregate Products	Red Oak, IA
Dave's Sand & Gravel, Inc.	Everly, IA
DeLong Recycling, Inc.	Washington, IA
Des Moines Asphalt and Paving	Johnston, IA
Douds Stone, Inc.	Ottumwa, IA
Duininck Bros., Inc.	Prinsburg, MN
Elder Corp.	Pleasant Hill, IA
Falk, L. R. Construction Company	St. Ansgar, IA
Falkstone LLC	St Ansgar, IA
Flewelling Sand & Gravel	Moville, IA
Floyd River Materials	Sioux City, IA
Ft. Calhoun Stone Company	Blair, NE
Fort Dodge Asphalt Company	Fort Dodge, IA
Geo Tech Materials	Douds, IA
Gehrke Quarries, Inc.	Gifford, IA
Gray Quarry, Inc.	Hamilton, IL
Great River Materials, LLC	Burlington, IA
Greene Limestone Company	Charles City, IA
Grimes Asphalt & Paving	Grimes, IA
Hahn Ready Mix	Muscatine, IA
Hallett Materials	Des Moines, IA
"Hank" Stalp Gravel Company	West Point, NE

Harsco Metals

Hawkeye Paving Corporation

Heartland Asphalt, Inc.
Heimes Excavating & Utilities Co.
Higman Sand & Gravel
Horsfield Materials, Inc.
Ideal Sand Co. aka Ideal Ready Mix Co., Inc.
Iowa Drainage, Inc.

K&L Construction

Knife River Midwest LLC
Kuhlman Construction Company
L.G. Everist, Inc.
L & M Sand & Gravel, Inc.
L & W Quarries
LaHARV Construction Company, Inc.
Lessard Contracting, Inc.
Linwood Mining & Minerals Corporation
Lounsbury
Lundell Construction Co., Inc.
Lyman-Richey Sand & Gravel Company
Mallard Sand & Gravel Company
Manatt's, Inc.
Manatt's Sand & Gravel, Inc.
Marengo Ready Mix, Inc.
Martin Commercial Excavating
Martin Marietta Aggregates
Mass Custom Hauling & Crushing
MatX, Inc.
McAlister Aggregates, LLC
Meller Excavating & Asphalt, Inc.
Mielke's Quarry
Milestone Materials, Di. of Mathy Const. Company
Mobile Crushing & Recycling, Inc.
Mohr Sand, Gravel & Construction, LLC

Muscatine, IA

Bettendorf, IA

Mason City, IA
Omaha, NE
Akron, IA
Epworth, IA
West Burlington, IA
Sheffield, IA
Sergeant Bluff, IA
Stratford, IA
Colesburg, IA
Sioux Falls, SD
LeMars, IA
Centerville, IA
Forest City, IA
Sergeant Bluff, IA
Davenport, IA
West Des Moines, IA
Storm Lake, IA
Omaha, NE
Valley, NE
Brooklyn, IA
Tama, IA
Marengo, IA
Davenport, IA
Des Moines, IA
Milan, IL
Colorado Springs, CO
Bayard, IA
Fort Madison, IA
McGregor, IA
Onalaska, WI
Otho, IA
Lohrville, IA

Myrl & Roy's Paving, Inc.	Sioux Falls, SD
Nelstar	Meriden, IA
New Ulm Quartzite Quarries, Inc.	New Ulm, MN
Norris Aggregates Company	Cameron, MO
North Iowa Sand & Gravel, Inc.	Mason City, IA
Northwest Illinois Construction LLC	Rock Falls, IL
Northwest Materials	Fort Dodge, IA
NorthWest Ready-Mix Concrete, Inc.	Ocheyedan, IA
NUAggregates	Akron, IA
Ortonville Stone Company	Ortonville, MN
PBI Construction	Marcus, IA
Patrick M. Pinney Contractors, Inc.	Sioux City, IA
Paul Niemann Construction Company	Sumner, IA
Pella Construction Company Ltd.	Pella, IA
Persinger Sand & Gravel	Smithland, IA
Peru Quarry Inc.	Peru, IA
Peterson Contractors, Inc.	Reinbeck, IA
Pettengill Concrete & Gravel	Rock Rapids, IA
Pierce Sand	Stanberry, MO
PNB Processors, LLC	Denmark, IA
Prairie Sand & Gravel	Prairie Du Chien, WI
Preston Ready Mix Corporation	Preston, IA
Quality Concrete Company	Clinton, IA
Rainbow Quarry LLC	Monona, IA
Randall Transit Mix Company	Northwood, IA
Recycled Aggregate Products Company	Sioux City, IA
Red Rock Quarry	Sanborn, MN
Reding's Gravel & Excavating Co.	Algona, IA
Reilly Construction Company, Inc.	Ossian, IA
Riehm Construction Company, Inc.	Waukon, IA
River City Stone - Di. of Mathy Construction Company	Keiler, WI
Riverstone Group, Inc.	Moline, IL
River Products Company, Inc.	Iowa City, IA
Rock Hard Concrete Recycling Inc.	West Branch, IA

Rocky Mountain Enterprises, Inc.	Athens, WI
S & A Construction, LTD	Allendale, MO
S & G Materials	Iowa City, IA
Savanna Quarry, Inc.	Savanna, IL
Schildberg Construction Company, Inc.	Greenfield, IA
Schmillen Construction, Inc.	Marcus, IA
ShIPLEY Contracting	Fort Madison, IA
Sieh Sand and Gravel	Spencer, IA
Southern Minnesota Construction Company, Inc.	Fairmont, MN
Spencer Quarries	Spencer, SD
Stensland Gravel Company	Larchwood, IA
Sterzinger Crushing, Inc.	Taunton, MN
Stoner Sand	Ridgeway, MO
Stratford Gravel, Inc.	Dayton, IA
Strong Rock & Gravel	Lansing, IA
Swan Rock & Sand Products, LLC	Eddyville, IA
Tiefenthaler Ag-Lime Inc.	Breda, IA
Tri City Blacktop	Bettendorf, IA
Tri Star Quarries	Plano, IA
Tube City IMS Corp.	Wilton, IA
Ulland Brothers, Inc.	Albert Lea, MN
United Contractors, Inc.	Grimes, IA
Valley Sand & Gravel Co.	Rock Valley, IA
Weatherston Contracting Co., Inc.	Beresford, SD
Weber Stone Company, Inc.	Anamosa, IA
Welden Aggregates, Inc.	Iowa Falls, IA
Wendling Quarries, Inc.	De Witt, IA
West Des Moines Sand	Des Moines, IA
Western Engineering Company	Harlan, IA
Wetherell Sand & Gravel	Peterson, IA
Wiltgen Construction Company	Calmar, IA
Winn Corporation Sand & Gravel	Ollie, IA
Wright Materials Company	Belmond, IA
Zupke Sand & Gravel	Randalia, IA

October 21, 2014
Supersedes October 15, 2013

AGGREGATE SPECIFICATION LIMITS & SAMPLING AND TESTING GUIDE

Matls. IM 209
Appendix C

(See Specifications for Complete Details.)

TEST LIMITS	Spec #	F & T A	F & T C	LA Abrasion	Absorption	Chert	Shale	Clay Lumps	Plastic Index	Mortar Strength	Al ₂ O ₃ Limit	Pore Index	Gradation Number
<u>Fine Aggregate for PCC</u>													
PCC	4110						2						1
<p><u>Note:</u> Maximum 40% between sieves</p> <p><u>Note:</u> The fineness modulus must be no lower than 2.60. A target fineness modulus (or base-line) will be established for each source for continued approval.</p> <p><u>Note:</u> Shale + Coal not to exceed 2% max.</p>													
PCC, Class L	4111						2						1
<p><u>Note:</u> Only from approved PCC sources.</p> <p><u>Note:</u> Maximum 45% between sieves and must have a fineness modulus no lower than 2.30.</p> <p><u>Note:</u> Shale + Coal not to exceed 2%max.</p>													
<u>Intermediate Aggregate for PCC</u>													
Crushed Stone and Pea Gravel	4112	6						0.5			0.5		2
<p><u>Note:</u> For Pea Gravel see Table 4112.03-2 for maximum allowable objectionable materials</p>													
<u>Coarse Aggregate for PCC</u>													
Crushed Stone	4115	6		50		2	1	0.5			0.5		3-5
-Structural		6		50		3	1	0.5			0.5		3-5
<p><u>Note:</u> See 4115.02 for maximum allowable objectionable materials.</p>													
Gravel	4115	6		35		2	1	0.5					3-5
-Structural		6		35		3	1	0.5					3-5
<p><u>Note:</u> See 4115.02 for maximum allowable objectionable materials.</p>													
Bridge Deck													
-Surfacing, Repair & Overlay		6		40	2.5	0.5					0.4		6
<p><u>Note:</u> Unsound Chert+Shale+Coal+Iron not to exceed 1%.</p> <p><u>Note:</u> Unsound Chert particles are defined in 4115.02.</p>													

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TEST LIMITS	Spec #	F & T A	F & T C	LA Abrasion	Absorption	Chert	Shale	Clay Lumps	Plastic Index	Mortar Strength	Al ₂ O ₃ Limit	Pore Index	Gradation Number
<u>Class V Aggregate</u>	4117	6		40			2 (+#16)			1.5			7
<u>Combination of Materials With Class V</u>													
Coarse Limestone													
Limestone Screenings													
<u>Note:</u> See 4117 for cement requirements.													
<u>Note:</u> Acquire limestone from sources meeting the specified coarse aggregate durability class for PCC.													
<u>Note:</u> Must meet the requirements of 4115 and be only from sources acceptable as coarse aggregate.													
<u>Pipe Bedding for PCC</u>													
Aggregate	4118.02	15	50										3
<u>Note:</u> >75% Crushed Gravel or Crushed Stone. Crushed PCC may be used if approved by the Engineer													
Pipe Backfill													
Aggregate	4119.02	15	45										10,11
<u>Note:</u> >75% Crushed Gravel or Crushed Stone. Crushed PCC may be used if approved by the Engineer.													
<u>Granular Surfacing</u>													
Aggregate for Granular													
Shoulders	4120.02												Per 4120.02
<u>Note:</u> Requirements are equivalent to 4120.04, 4120.05 or 4120.06.													
Class C Gravel	4120.03	15						10					10
<u>Note:</u> Percent of Clay Lumps + percent passing #200 sieve not to exceed 15%.													
<u>Note:</u> Percent of Clay Lumps + percent of (+4) shale + percent passing #200 not to exceed 20%.													
Class A Crushed Stone	4120.04	15	45					4					11
<u>Note:</u> For shouldered only; material with Al ₂ O ₃ not exceeding 0.7 or A-freeze not exceeding 10 may have an abrasion Stone maximum of 55.													
Class B Crushed Stone	4120.05	20	55					4					11
<u>Note:</u> "C" Freeze + Abrasion not to exceed 65%													
Class D Crushed Stone	4120.06												
<u>Note:</u> "C" Freeze, Abrasion, and Gradation to be specified by Contract Documents.													
Paved Shoulders Fillets	4120.07	15	45					4					11
<u>Note:</u> Material with Al ₂ O ₃ not exceeding 0.7 or A-freeze not exceeding 10 may have an abrasion maximum of 55.													

AGGREGATE SPECIFICATION LIMITS & SAMPLING AND TESTING GUIDE

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Matls. IM 209
Appendix C

(See Specifications for Complete Details.)

TEST LIMITS	Spec #	F & T A	F & T C	LA Abrasion	Absorption	Chert	Shale	Clay Lumps	Plastic Index	Mortar Strength	Al ₂ O ₃ Limit	Pore Index	Gradation Number
<u>Granular Subbase</u>													
	4121	25		50							1.5		12a(Cr. St.) 12b(Grav.)
Note: Combinations of crushed PCC, sand, crushed gravel, or crushed stone may be used. Specification limits are for crushed stone or crushed gravel.													
<u>Crushed Stone-Base</u>													
Macadam Stone	4122		10	50									13(Visual) Per 4122.02
Note: Choke stone see 4122.03 for details; when produced from Macadam has certified inspection of 1/3000 ton.													
<u>Modified Subbase</u>													
	4123		15	45					7 (Gravel)		4.7(-#40)		14
Note: Material with Al ₂ O ₃ not exceeding 0.7 (+4) or A-freeze not exceeding 10 may have an abrasion maximum of 55. Note: If gravel only, 75% of +3/8" must be crushed with a minimum of one fractured face. Note: Reclaimed pavements meeting Materials IM 210 may be used with no more than 50% RAP.													
<u>Aggregate for Slurry Mixture</u>													
	4124.03	10		40			5				0.7		22 or 23
Note: Friction Type 4 or better, sand equivalent of not less than 45, and organic materials maximum 0.01%.													
<u>Aggregate for Bituminous Sealcoat</u>													
	4125.03		10	40			5						1, 19-21
Note: Friction Type 4 or better, shale on sand cover aggregate shall not exceed 2% maximum.													
<u>Coarse Aggregate for HMA</u>													
Type A	4127.02	10		45	6.0			0.5			0.7		Per Form 955
Type B													
Primary	4127.02	25	10	45	6.0						1.5		Per Form 955
Non-Primary	4127.02	45	10	45	6.0						2.5		Per Form 955
Note: Organic materials maximum 0.01%.													
<u>Fine Aggregate for HMA</u>													
	4127.03												Per Form 955
Note: Organic materials maximum 0.01%.													
Note: Natural sand shall have no more than 50% retained between two consecutive sieves below the #4 sieve.													
Note: Crushed gravel or stone processed from coarse aggregate meeting requirements of 4127.02.													

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AGGREGATE SPECIFICATION LIMITS & SAMPLING AND TESTING GUIDE

Matls. IM 209
Appendix C

(See Specifications for Complete Details.)

TEST LIMITS	Spec #	F & T A	F & T C	LA Abrasion	Absorption	Chert	Shale	Clay Lumps	Plastic Index	Mortar Strength	Al ₂ O ₃ Limit	Pore Index	Gradation Number
Combination of Materials													
Type A	4127.04	Per Form 955											
Type B		<p>Note: The fine portion of combined materials shall not exceed 2% shale retained on the #16 sieve. Note: The fine portion of combined materials shall not exceed 5% shale retained on the #16 sieve.</p>											
Retevment Stone													
Class A	4130.01	10		50							0.7	25	Visual
Class B	4130.01	10		50							0.7	25	Visual
Class D	4130.01		10	50									Visual
Class E and C	4130.01	10		50							0.7	25	Visual
<p>Note: See Specification 4130.01 for bedding plane/concrete slab thickness requirements. Note: See 4130.04 for gradation requirements.</p>													
Erosion Stone	4130.05		15	50			5						Visual
Gabion Stone	4130.08	10		50							0.7		Visual
<p>Note: See 4130.07 for gradation requirements.</p>													
Porous Backfill													
	4131	10		50			5(+4)				0.7		29
<p>Note: Material shall be free of visible clay and objectionable clay coating.</p>													
Special Backfill													
Crushed Stone/PCC/CCP/Reclaimed HMA; Mixtures of Gravel, Sand and Soil or Uniformly blended combinations of the above.	4132.01												30,31
Gravel	4132.03												31
<p>Note: Organic material of no more than 1% on fraction passing the #40 sieve.</p>													
Granular Backfill													
	4133	20		55				4					32**
<p>Note: "C" Freeze + Abrasion not to exceed 65%. *See 4133.04 for gradation when backfill is under flowable mortar.</p>													
Floodable Backfill													
	4134												
<p>** See 4134.02 for gradation requirements</p>													
Recycled PCC													
<p>Note: Recycled PCC and Recycled Composite must meet gradation and sampling frequency of the intended product; and meet the requirements of IM 210.</p>													
Recycled Composite													

AGGREGATE GRADATION TABLE – ENGLISH

Grad. No.	Section No.	Std. Sieve Size Intended Use	1 1/2"	1"	3/4"	1/2"	3/8"	Percent Passing								*Notes
								#4	#8	#30	#50	#100	#200			
1	4110,4125,4133 4112	PCC FA Cover Agg.					100	90-100	70-100	10-60					0-1.5	1
2		PCC Intermediate				95-100			0-10							
3	4115 (57, 2-8), 4118	PCC CA	100	95-100		25-60		0-10	0-5					0-1.5	2,10	
4	4115 (2-8)	PCC CA	100	50-100	30-100	20-75	5-55	0-10	0-5					0-1.5	10	
5	4115 (67, 2-8)	PCC CA		100	90-100		20-55	0-10	0-5					0-1.5	10	
6	4115.05 (Repair & Overlay)	PCC CA			100	97-100	40-90	0-30						0-1.5	10	
7	4117 (Class V)	PCC FA & CA	100					80-92	60-75	20-40						
8	4117.03 (Class V)	Fine Limestone					100	90-100						0-30		
10	4120.02, 4120.03, 4119 (C Gravel)	Granular Surface			100			50-80	25-60						3, 11	
11	4120.02, 4120.04, 4120.05, 4120.07, 4119 (A, B, Cr. St.)	Granular Surface & Shoulder		100	95-100	70-90		30-55	15-40					6-16	4, 5, 11	
12a	4121 (Cr. St.)	Granular Subbase	100			40-80			5-25					0-6	6, 11	
12b	4121 (Cr. Gravel)	Granular Subbase	100			50-80			10-30				5-15	3-7	7, 11	
13	4122.02 (Cr. St.)	Macadam St. Base														
14	4123	Modified Subbase	100		70-90				10-40					3-10	5, 7, 11	
19	4125 (1/2" Cr. Gr. or Cr. St.)	Cover Aggregate			100	97-100	40-90	0-30	0-15					0-2	11	
20	4125 (1/2" Sr. Gr.)	Cover Aggregate			100	95-100	40-80	0-15	0-7					0-1.5	11	
21	4125 (3/8")	Cover Aggregate				100	90-100	10-55	0-20	0-7				0-1.5	11	
22	4124.02	Fine Slurry Mixture					100	85-100	40-95	20-60	14-35	10-25		5-25	9, 11	
23	4124.02 (Cr. St.)	Coarse Slurry Mixture					100	70-90	40-70	19-42				5-15	11	
29	4131	Porous Backfill			100	95-100	50-100	0-50	0-8						11	
30	4132.02 (Cr. St.)	Special Backfill	100											0-10	5, 11	
31	4132.03 (Gravel)	Special Backfill							10-40					3-7	11	
32	4133 (Sand/Gr./Cr. St.)	Granular Backfill		100	90-100	75-100			30-55					0-10	8, 11	
35	4134 (Natural Sand/Gr.)	Floodable Backfill	100						10-100					0-4	11	
36	4134 (Natural Sand)	Floodable Backfill						100						0-2	11	

Notes: (Gradations Nos. 9, 15, 16, 17, 18, 24, 25, 26, 27, 28, 33 and 34 have been deleted.)

1. For Section 4110, when the fine aggregate is sieved through the following numbered sieves - 4, 8, 16, 30, 50, and 100 - not more than 40% shall pass one sieve and be retained on the sieve with the next higher number.
2. When used in precast and prestressed concrete bridge beams, 100% shall pass the 1" sieve. When used for pipe bedding the No. 200 restriction does not apply.
3. When compaction of material is a specification requirement, the minimum percent passing the No. 200 sieve is 6%. When used as trench backfill, must be a minimum 75% crushed gravel.
4. See specifications for combination of gravel and limestone.
5. Unwashed air-dried samples of crushed composite material shall be tested for gradation compliance except that no gradation determination will be made for material passing the No. 200 sieve.
6. The gradation requirement for the No. 8 sieve shall be 5% to 20% when recycled material is supplied.
7. For Section 4121 gravel, one fractured face on 30% or more of the particles retained on the 3/8-inch sieve. For Section 4123 gravel, one fractured face on 75% or more of the particles retained on the 3/8-inch sieve.
8. Crushed stone shall have 100% passing the 1.5" sieve.
9. Gradation limitations for the 30, 50 and 100 sieves shall not apply when slurry mixture is applied by hand lutes, such as for slurry leveling.
10. Maximum of 2.5% passing the No. 200 sieve allowed for crushed limestone or dolomite when documented production is 1% or less. For the production of PCC coarse aggregate, when using limestone or dolomite ledges, dry screening is not permitted.
11. When Producer gradation test results are used for acceptance, test results representing at least 90% of the material being produced shall be within the gradation limits and the average of all gradation results shall be within the gradations limits. Stockpiled material not meeting the criteria may, at the District Materials Engineer's discretion, be resampled using Materials I.M. 301 procedures. One hundred percent of the stockpile quality control and verification test results shall be within the gradation limits.

******THIS IS A NEW APPENDIX. – PLEASE READ CAREFULLY.******

NOTIFICATION OF IM 209 VIOLATION

This appendix contains the Notification of Violations of the Approved Producer's Quality Control Program.

This is a written notice from the District Materials Coordinator or District Materials Engineer to a producer identifying violation(s) of the Producer's Quality Control Program or requirements of the Approved Producer Program (Office of Materials IM 209).

A written response is required from the Producer describing how the violation occurred, how the violation will be rectified, and what will be done so the violation will not occur or continue to occur in the future. After the written response is received, grounds for Conditional Status will be determined. Conditional Status requires that certified aggregates will no longer be accepted from a particular source. The Conditional Status may apply only to a production operation and aggregate produced by that operation. In other situations, when the deficiency is more widespread, the Conditional Status may apply to an entire company or division within a company until the problem is resolved. See Office of Materials IM 209, Appendix A for details. If the Notification of Violation is found to be in error, the Notification will be rescinded. Written responses should be sent to the District Materials Office and the Geology Section of the Central Materials Laboratory.

Producer Name_____

Source (include A-number)_____

Date(s) of violation_____

Nature of Violation (Circle all that apply)

1. Aggregate Certification
2. Knowledge of Current Specifications
3. Plant Production Log
4. Visual Inspection
5. Quality Requirements
6. Production Notification
7. Production
8. Delivery (Unapproved Materials)
9. Quality Control Structure
10. Other

Additional details (attach a separate document if more space is needed):

IOWA DOT SIGNATURE_____DATE_____

Copies to: District Materials Office
Geology Section, Central Materials Laboratory

******THIS IS A NEW APPENDIX. – PLEASE READ CAREFULLY.******

DISTRICT MATERIALS DUTIES

This appendix contains District Materials aggregate duties.

- Monitor producer/supplier compliance to the respective Approved Producer Quality Control Program.
- Confirm that material is being produced from the intended ledge.
- Confirm that unprocessed reclaimed pavement is sorted for the intended recycled product.
- Review requirements of source approvals for particular production ledges or depths and processing methods.
- Review sample locations and methods.
- Review Q/C tests:
 - test results
 - frequencies
 - reporting
- Visual inspection of stockpiles:
 - Condition of base
 - Segregation
 - Contamination
 - Degradation
 - Load-out
 - Product identification
- Production verification samples:
 - Gradation (one of the following methods)
 - Independent sample by District Materials
 - Witness Q/C technician obtain production verification sample
 - For revetment, erosion stone and macadam base, verification will be based on visual inspection
 - Quality samples will be obtained by District Materials.
 - District Materials will take possession of all production verification samples.
- District Materials will make production verification test results available to the producer.
- Non-complying production verification test results.
 - Notify the producer.
 - Investigate the stockpile, for acceptance, in accord with written evaluation method IM 301 or as directed by the District Materials Engineer.
- Review producer certification of aggregates, including compliance of certification documents in accord with IM 209.

APPLICATION FOR APPROVAL OF ELECTRONIC SIGNATURE

This appendix contains the Application for Approval of Electronic Signature for Certification of Materials and Weights.

From: _____
Name of Weighmaster

Via: _____
Name of Company Officer / Company Name

To: District Materials Engineer, Iowa DOT
Geology Section, Office of Construction and Materials, Iowa DOT

Subj: Electronic Signature Authority for Certifying Truck Tickets

1. I have read Federal Code 1020 and Iowa Code 714.8 (following this document) and am aware of the potential penalties for fraud and knowingly tendering a false certification. I will not knowingly cause or create a false document nor allow others access to my password that would allow them to certify materials. I am also aware of the provisions authorizing secure electronic signature per IM.209 Appendix G.
2. My Secure Electronic Signature Authority is granted to me by the Iowa DOT Office of Construction and Materials and represents the authorization by the company officer to certify materials for the company for whom I am employed. Should I terminate employment, this signature authority shall be revoked. Violations of these Codes shall be cause for revocation of this authority.

Signature and Date of Weighmaster acknowledging review of Codes.

SIGNATURE _____ DATE _____

Attach a Sample of Secure Electronic Signature

Authorization to Certify on behalf of the Company: Signature and Date of Company Officer, Title, Date.

SIGNATURE _____ TITLE _____ DATE _____

Signature and Date of Iowa DOT District Materials Engineer

IOWA DOT SIGNATURE _____ DATE _____

Signature and Date of Electronic Signature Authorization: Iowa DOT Office of Construction and Materials

IOWA DOT SIGNATURE _____ DATE _____

Copies to: District Materials Office
Geology Section, Central Materials Laboratory

Iowa DOT requirements are based on Iowa Code Section 554(C) Superseded by 554(D) Secure Electronic Signature.

1. Subject to the provisions of section 554C.303 and 554(D), if, by the application of a qualified security procedure, it can be authenticated that an electronic signature is the signature of a specific person, the electronic signature shall be considered to be a secure electronic signature at the time of verification.
2. A qualified security procedure for purposes of this section is a security procedure for identifying a party that meets the following:
 - A. Authorized by, and implemented in accordance with the requirements of IM 209 Appendix G.
 - B. Previously agreed to by the parties to an agreement and implemented in accordance with the terms of the agreement.
 - C. Authorized by the responsible Company Officer to act on behalf of the Company and being capable of creating a secure electronic signature that meets all of the following conditions:
 - (1) Is unique to the signer within the context in which it is used.
 - (2) Can be used to promptly, objectively, and automatically identify the person signing the electronic record.
 - (3) Is password protected and assignable to only that person with the authority given by the Company Officer.
 - (4) Was reliably created by such identified person.
 - (5) Is linked to the electronic record to which it relates in a manner which ensures that if the record or signature is changed the electronic signature is invalidated, provided that the security procedure is implemented in a manner required by the certification.
 - (6) Acceptable security systems shall meet the provisions of NTEP or NIST Handbook 44.

Crimes and Criminal Procedure 18 USC Section 1020

1020. Highway projects

Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the costs thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction of any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report, or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to a material fact in any statement, certificate, or report submitted pursuant to the provisions of the Federal-Aid Road Act approved July 11, 1916 (39 Stat. 355), as amended and supplemented,

Shall be fined under this title or imprisoned not more than five years, or both.

Iowa Code Section 714.8 Fraudulent practices defined.

A person who does any of the following acts is guilty of a fraudulent practice:

1. Makes, tenders, or keeps for sale any warehouse receipt, bill of lading, or any other instrument purporting to represent any right to goods, with knowledge that the goods represented by such instrument do not exist.
2. Knowingly attaches or alters any label to any goods offered or kept for sale so as to materially misrepresent the quality or quantity of such goods, or the maker or source of such goods.
3. Knowingly executes or tenders a false certification under penalty of perjury, false affidavit, or false certificate, if the certification, affidavit, or certificate is required by law or given in support of a claim for compensation, indemnification, restitution, or other payment.
4. Makes any entry in or alteration of any public records, or any records of any corporation, partnership, or other business enterprise or nonprofit enterprise, knowing the same to be false.
5. Removes, alters or defaces any serial or other identification number, or any owners' identification mark, from any property not the person's own.
6. For the purpose of soliciting assistance, contributions, or other thing of value, falsely represent oneself to be a veteran of the armed forces of the United States, or a member of any fraternal, religious, charitable, or veteran's organization, or any pretended organization of a similar nature, or to be acting on behalf of such person or organization.
7. Manufactures, sells, or keeps for sale any token or device suitable for the operation of a coin-operated device or vending machine, with the intent that such token or device may be so used, or with the representation that they can be so used; provided, that the owner or operator of any coin-operated device or vending machine may sell slugs or tokens for use in the person's own devices.
8. Manufactures or possesses any false or counterfeit label, with the intent that it is placed on merchandise to falsely identify its origin or quality, or who sells any such false or counterfeit label with the representation that it may be so used.
9. Alters or renders inoperative or inaccurate any meter or measuring device used in determining the value of or compensation for the purchase, use or enjoyment of property, with the intent to defraud any person.
10. Does any act expressly declared to be a fraudulent practice by any other section of the Code.
11. Removes, defaces, covers, alters, or destroys any component part number as defined in section 321.1, vehicle identification number as defined in section 321.1, or product identification number as defined in section 321.1, for the purpose of concealing or misrepresenting the identity or year of manufacture of the component part or vehicle.
12. Knowingly transfers or assigns a legal or equitable interest in property, as defined in section 702.14, for less than fair consideration, with the intent to obtain public assistance under chapters 16, 35B, 35D, and 347B, or Title VI, subtitles 2 through 6, or accepts a transfer of or an assignment of a legal or equitable interest in property, as defined in section 702.14, for less than fair consideration, with the intent of enabling the party transferring the property to obtain public assistance under chapters 16, 35B, 35D, and 347B, or Title VI, subtitles 2 through 6. A transfer or assignment of property for less than fair consideration within one year prior to an application for public assistance benefits shall be evidence of intent to transfer or assign the

property in order to obtain public assistance for which a person is not eligible by reason of the amount of the person's assets. If a person is found guilty of a fraudulent practice in the transfer or assignment of property under this subsection the maximum sentence shall be the penalty established for a serious misdemeanor and sections 714.9, 714.10 and 714.11 shall not apply.

13. Fraudulent practices in connection with targeted small business programs.
 - a. Knowingly transfers or assigns assets, ownership, or equitable interest in property of a business to a woman or minority person primarily for the purpose of obtaining benefits under targeted small business programs if the transferor would otherwise not be qualified for such programs.
 - b. Solicits and is awarded a state contract on behalf of a targeted small business for the purpose of transferring the contract to another for a percentage if the person transferring or intending to transfer the work had no intention of performing the work.
 - c. Knowingly falsifying information on an application for the purpose of obtaining benefits under targeted small business programs.

A violation under this subsection is grounds for decertification of the targeted small business connected with the violation. Decertification shall be in addition to any penalty otherwise authorized by this section.

14. Makes payment pursuant to an agreement with a dealer or market agency for livestock held by the dealer or market agency by use of a financial instrument which is a check, share draft, draft, or written order on any financial institution, as defined in section 203C.1, if after seven days from the date that possession of the livestock is transferred pursuant to the purchase, the financial institution refuses payment on the instrument because of insufficient funds in the maker's account.

This subsection is not applicable if the maker pays the holder of the instrument the amount due on the instrument within one business day from a receipt of notice by certified mail from the holder that payment has been refused by the financial institution.

As used in this subsection, "dealer" means a person engaged in the business of buying or selling livestock, either on the person's own account, or as an employee or agent of a vendor or purchaser. "Market agency" means a person engaged in the business of buying or selling livestock on a commission basis.

15. Obtains or attempts to obtain the transfer of possession, control, or ownership, of the property of another by deception through communications conducted primarily by telephone and involving direct or implied claims that the other person contacted has won or is about to win a prize, or involving direct or implied claims that the other person contacted may be able to recover any losses suffered by such other person in connection with a prize promotion.
16. Knowingly provides false information to the treasurer of state when claiming, pursuant to section 556.19, an interest in unclaimed property held by the state, or knowingly provides false information to a person or fails to disclose the nature, value, and location of unclaimed property prior to entering into a contract to receive compensation to recover or assist in the recovery of property reported as unclaimed pursuant to section 556.11.
17. A packer who includes a confidentiality provision in a contract with a livestock seller in violation of section 202A.4.

18. Manufactures, creates, reproduces, alters, possesses, uses, transfers, or otherwise knowingly contributes to the production or use of a fraudulent retail sales receipt or universal price code label with intent to defraud another person engaged in the business of retailing.

For purposes of this subsection:

- a. Retail sales receipt" means a document intended to evidence payment for goods or services.
 - b. Universal price code label" means the unique ten-digit bar code placed on the packaging of an item that may be used for purposes including but not limited to tracking inventory, maintaining price information in a computerized database, and serving as proof of purchase of a particular item.
19. A contractor who enforces a provision in a production contract that provides that information contained in the production contract is confidential as provided in section 202.3.

APPROVED ELECTRONIC SIGNATURES

This appendix contains the Approved Electronic Signature for Certification of Materials and Weights.

Weighmaster	Company Name
Mary Worrell	Martin Marietta
Lori Henry	Martin Marietta
Nikki Hanna	Martin Marietta
Lisa George-Bacon	Martin Marietta
John Johnson	Hallett Materials
Ronda Hammes	Martin Marietta
Lisa Maher	Martin Marietta
Deb Gjerde	Martin Marietta
Theresa McMains	Martin Marietta
Robin Cass	Martin Marietta
Jennifer Stanley	Martin Marietta
Jeff Werden	Martin Marietta
Mary A. Green	Martin Marietta
Wesley Alertszen	Martin Marietta
Brenda Liles	Martin Marietta
Joel Tichy	Martin Marietta
Donna Hughes	Martin Marietta
Mark Haskell	Martin Marietta
Rex A. Gaskill	Martin Marietta
Viki Sauerman	Martin Marietta
Craig Groover	Martin Marietta
Diane Thomas	Martin Marietta
Joyce Davis	Martin Marietta
Daryl Scott	Martin Marietta
Cherene M Vote	Martin Marietta
Sandra Johnson	Martin Marietta
Brenda L. Benjamin	Martin Marietta
Michell Thilges	Martin Marietta
Tonya Holmes	Martin Marietta
Karen Ries	Martin Marietta
Aaron L. Conn	Martin Marietta
Linda Jones	Martin Marietta
Tammy Draper-Hansen	Martin Marietta
Coby Metz	Martin Marietta

Jason Hinkle
Rick A. Burchard
Sandy Caskey
Mark Bowden
Danielle Fiorini
Jolene McMahon
Jo Ann Decker
Terri Day
Lyndsey Hartley
Hillierie Salat
Carrie Thompson
Debbie Veldhuizen
Cory Haupt

Martin Marietta
Martin Marietta
L.G. Everist, Inc.
L.G. Everist, Inc.
Martin Marietta
Higman Sand &Gravel
Higman Sand &Gravel
Martin Marietta
Martin Marietta
Martin Marietta
Martin Marietta
L.G. Everist, Inc.
Martin Marietta

**I.M. 210
Production of Cert.
Aggregate from
Reclaimed Roadways**



**PRODUCTION OF CERTIFIED AGGREGATE
FROM RECLAIMED ROADWAYS**

GENERAL

This IM deals with requirements for furnishing certified aggregate produced from reclaimed materials.

The requirements of Office of Materials IM 209 (Certified Aggregates Approved Producer Program) also apply to the production of aggregate from reclaimed roadway materials.

Processing Requirements for Aggregates Produced from Reclaimed Materials

Notification to District Materials personnel of new production, as well as testing frequency, sampling, documentation, and acceptance of recycled materials, are the same as for virgin materials as outlined in IM 209. The District Materials Engineer shall be afforded the opportunity to witness the stockpiling of unprocessed recycled material.

Processing of reclaimed PCC, crushed composite pavement (CCP), and salvaged HMA (RAP) shall include a means of eliminating material other than PCC, RAP, or CCP in the finished product. This may be accomplished by pre-screening or other methods acceptable to the District Materials Engineer. Stockpiles contaminated with soil or excessive recycled fines may require processing using a grizzly at the time of delivery to the recycle yard or as directed by the District Materials Engineer. Figures 1 through 6 show examples of poor (unacceptable) and clean stockpiles.

Stockpiles contaminated with reinforcing steel, soil, or other material can be rejected upon visual inspection. The producer or contractor shall be informed immediately that the stockpile has been rejected. Recycled yards must have controlled access and delivered material shall be inspected prior to incorporation into unprocessed stockpiles.

Moving Crusher Recycling Operations (such as a Paradigm)

- If multiple crushers and screening plants are used, each plant's production must have its own Q/C and monitor gradation testing.
- Sampling and testing frequency needs to be in agreement between the Producer and DME before production.
- Sampling locations must be identified using stationing, GPS, or other accurate and reliable method.
- Material must be from a known aggregate source or the quality establish prior to incorporation.

-
- Material cannot be incorporated until the material is represented by a complying gradation test result.

Modified Subbase and Granular Subbase

These products require that the reclaimed material be identifiable and the following shall apply:

- A. For Modified Subbase: recycled crushed PCC pavement or subbase, crushed composite pavement (CCP), and salvaged HMA (RAP) or HMA subbase can be reclaimed from an Interstate or Primary roadway pavement under the jurisdiction of the contracting authority and shall be certified based on gradation testing. If recycling subbase material, soil shall not be incorporated into the subbase. See: Modified Subbase Production, below.
- B. For Granular Subbase: recycled crushed PCC pavement or subbase can be reclaimed from an Interstate or Primary roadway pavement under the jurisdiction of the contracting authority and shall be certified based on gradation testing. If recycling subbase material, soil shall not be incorporated into the subbase.
- C. Recycled PCC roadway pavement or recycled composite roadway pavement obtained from secondary roads or municipal streets may be used (as described above) if the source of the aggregate is known and the PCC coarse aggregate durability is Class 2 or better and shall be certified based on gradation testing. The producer shall be responsible for documentation of the pavement source.
- D. When the source or quality of the material from the secondary or municipal pavement is unknown, the material shall be certified based on quality requirements identified in the Standard Specifications for crushed stone for the aggregate being produced and gradation requirements for the aggregate product.
 1. If the concrete originated from multiple locations, the crushed material from each location must be stockpiled in separate but homogeneous stockpiles.
 2. Prior to certification and furnishing to projects, each stockpile must be readily identifiable, and have compliant results on applicable tests on samples taken from each of these stockpiles.
- E. On secondary and municipal projects, recycled material can also be reclaimed from roadway pavement under the jurisdiction of the contracting authority and shall be certified based on gradation testing.

Modified Subbase Production

Some aggregate products allow the blending of RAP with virgin aggregate or crushed PCC. The virgin aggregate or crushed PCC shall meet the gradation and quality requirements of the

intended product before blending with RAP. HMA shall be processed into RAP, meeting the applicable nominal maximum size for the intended product before blending with other aggregate.

The addition of unprocessed HMA shall only be allowed if it is generated from a composite pavement or consistent base layer. Material from HMA shoulders may only be used for Special Backfill. Blending of RAP shall be accomplished by the use of belt feeders and bins equipped with adjustable gates or drive systems that can be calibrated and controlled. This is applicable to all permanent recycling operations as well as in-place recycling operations (such as the Paradigm). For Modified Subbase, the amount of recycled HMA shall not exceed 50%. RAP containing soil or other foreign material other than HMA will be considered contaminated and subject to rejection.

Granular Shoulders

Crushed recycled materials may total no more than 30% of the shoulder aggregate for new construction and no more than 50% of the total for existing granular shoulders. The intended proportions shall be provided to the District Materials Engineer at least 24 hours before the start of production. The District Materials Engineer shall be afforded the opportunity to witness the calibration of the blending equipment. The blending restrictions described in Modified Subbase also apply to Granular Shoulders.

Recycled PCC for Class D and Class E Revetment

Recycled PCC revetment must be reclaimed from Interstate or Primary roadway pavements or airport runways.

To meet the nominal top size of 250 pounds for Class D and Class E revetment, recycled PCC used for revetment must be 10 inches or greater in thickness. If the Engineer or project requires using riprap containing material larger than 250 pounds, recycled PCC will not meet the dimensional requirements of Section 4130.02. Recycled PCC will not meet the dimensional requirements for Class A, B, and C revetment.

Certified Aggregates Produced from Reclaimed Materials Delivery Documentation

As outlined in Materials IM 209: an Iowa DOT gradation number, project number, quantity, source name and the delivery date. **NOTE:** A T203 A-number is not required for Recycled plants.



Figure 1. Recycled stockpile contaminated with steel.



Figure 2. Recycled stockpile contaminated with organic material.



Figure 3. Recycled stockpile with excessive fines.



Figure 4. Recycled stockpile contaminated with non-pavement material.



Figure 5. Example of a clean stockpile of recycled HMA.



Figure 6. Example of a clean stockpile of recycled PCC.

I.M. 213
Technical Training
& Certification Program



TECHNICAL TRAINING & CERTIFICATION PROGRAM

GENERAL

The purpose of the Technical Training & Certification Program is to ensure Quality Control (QC)/Quality Assurance (QA) and Acceptance of Aggregates, Hot Mix Asphalt (HMA), Portland Cement Concrete (PCC), Soils, Erosion Control, Precast and Prestressed Concrete, and Pavement Profiles and to ensure proper documentation of quality control/quality assurance and acceptance procedures and test results by industry and Contracting Authority personnel.

This Instructional Memorandum (IM) explains the requirements to become certified and to remain certified to perform inspection and testing in the State of Iowa. This IM also describes the duties, responsibilities and the authority of persons assigned the position of Certified Technician in any of the above areas for construction or maintenance projects. Appendix C of this IM lists what tests and procedures the technician is qualified to perform for each level of certification they obtain.

Through a cooperative program of training, study, and examination, personnel of the construction industry, State DOT, and other Contracting Authorities will be able to provide quality management and certified inspection. Quality control/quality assurance and acceptance sampling, testing and inspection will be performed by certified personnel and documented in accordance with the IMs.

A technician who is qualified and holds a valid certification(s) shall perform quality control/quality assurance and acceptance at a production site, proportioning plant, or project site. Responsibilities cannot be delegated to non-certified technicians. The duties of a Certified Technician may be assigned to one or more additional Certified Technicians.

The Technical Training & Certification Program will be carried out in accordance with general policy guidelines established or approved by the Highway Division Director. A Board of Certification composed of the following members will advise the Director:

- Director – Office of Construction and Materials
- Representative of District Materials Engineers**
- Representative of District Construction Engineers**
- Representative of Associated General Contractors (AGC of Iowa)
- Representative of Iowa Concrete Paving Association (ICPA)
- Representative of Asphalt Paving Association of Iowa (APAI)
- Representative of Iowa Ready Mixed Concrete Association (IRMCA)
- Representative of Iowa Limestone Producers Association (ILPA)
- Representative of County Engineers
- Coordinator of Technical Training & Certification Program**

** Appointed by Program Director

The Director of the Office of Construction and Materials will be the Program Director. Coordinators will be appointed by the Program Director to assist in administration of the program and to handle such planning, administration, and coordinating functions as may be needed.

TRAINING

The Iowa DOT will provide the training necessary to become certified or an agency approved by the Program Director. Producers/Contractors are encouraged to conduct their own pretraining program. A complete listing of training opportunities is available in the Technical Training & Certification Program's Information and Registration Booklet or at the Technical Training & Certification Program website, www.iowadot.gov/training/ttcp.html. The book is available at any of the Iowa DOT Materials Offices.

CERTIFICATION REQUIREMENTS

1. A candidate must attend instruction and pass the examination(s) for all levels of certification prepared and presented by the Program Director or someone designated by the Program Director. If the new candidate fails the examination, they will have one opportunity to retake the examination. The retake must be completed within six months of the original exam. If they fail the retake of the examination, they will need to attend the training again before taking the examination the third time. If an individual is recertifying they will have only one opportunity to take the examination. If they fail the examination they must take the applicable training before retaking the examination.
2. All prerequisites shall be met before the applicant may attend the next level of training for the certification desired. A listing of certification levels and prerequisites is located in Appendix A.
3. Once the candidate has met all the criteria and has received certification, it is recommended the Certified Technician work under the supervision of an experienced technician until they become efficient in the inspection and testing methods they will be performing.

An individual requesting to become certified as a Precast/Prestress Concrete Technician is required to obtain forty hours of experience assisting in quality control inspection at an approved plant before certification will be issued. The experience must be documented and shall be approved by the District Construction and Materials Engineer. This experience must be completed within two years from the date the individual attended the training.

4. Registered Professional Engineers, engineering graduates, and geology graduates from accredited institutions will be exempt from the training requirement in the areas they have had instruction. In order to obtain certification for any technical level, these persons must pass all applicable tests for the level of certification they wish to obtain. All certificates issued in accordance with these requirements will be subject to the same regulations concerning expiration, recertification, etc., as applies to certificates obtained via training and examinations.

Out-of-state technicians will be issued certifications when the following criteria are met:

1. The applicant must be certified in another state or shall have received equivalent training, if the state does not have a certification program, in each level of certification they are requesting.
2. The applicant must pass an examination for each level of certification desired, which will be administered by the Iowa Department of Transportation. Failure of the examination shall require the applicant to take the applicable schooling before they can retake the exam.
3. The applicant must follow the prerequisite requirements of the Technical Training & Certification Program.

Out-of-state applications should be submitted to the District Materials Office closest to the home location of the applicant. Copies of all the applicant's certifications must accompany the application.

CERTIFICATION

Upon successfully completing the requirements for certification, the Program Director will issue a certificate and a pocket certification card. This certification is not transferable. A certification shall be valid for five years.

CERTIFICATION IDENTIFICATION

The certificate will contain letters that identify the District of record, the certificate holder, certification number, the level of certification, and the expiration date of each level.

The assigned certification number may change if the certificate holder changes their residence.

RENEWAL OF CERTIFICATION

A certification shall be valid through December 31st of the fifth year. A 90-day grace period will be allowed. If the individual has not renewed their certification within the 90-day grace period, they are automatically decertified. The individual may obtain certification by taking the examination for the level of certification they are requesting. If the individual does not take the examination within one year after their certification(s) expire, i.e., 12/31/expiration year, they must retake all applicable schooling and pass the examinations. If an applicant becomes decertified in any level of certification and that certification is a prerequisite for other levels of certification the applicant will also be decertified in those related levels of certification.

All certified technicians will be required to pass an examination in each level of certification they hold before recertification will be issued. Failure of any level shall require the applicant to retake the applicable schooling and pass the test.

The certificate holder shall be responsible for applying for certification renewal and for maintaining a current address on file with the appropriate District Materials Office.

Technicians certified as Level I HMA and/or Level II PCC shall attend a minimum of two update classes each in the five-year period between certification and each recertification. The Iowa DOT or an agency or organization approved by the TTCP will hold these classes. These update classes will be listed in the Technical Training & Certification Program Booklet and on the program website, or the certified technician may contact the Iowa DOT for information. If an individual does not attend the two update classes required before their certification expires, they must take the entire schooling and pass the examination for the certification required.

The certified technician will not receive credit for the following:

1. More than one update per training season in each level of certification.
2. An update taken during the same training season in which the individual recertified.

UNSATISFACTORY PERFORMANCE NOTICE

A certified technician failing to perform the required specified duties or inadequately performing these duties, will receive an Unsatisfactory Notice (Office of Materials IM 213, Appendix B). The notice will be from the District Materials Engineer in the District where the failure occurred. This notice and all supporting documentation will be placed in the technician's permanent file with the District Materials Office in which the technician resides. The notice will also be placed on the statewide computer file. The notice will remain in their file for five years. The notice may be removed prior to the five years upon the recommendation of the District Materials Engineer.

SUSPENSION & DECERTIFICATION

A technician receiving two Unsatisfactory Work Performance Notices for work performed under a specific certification will be given a three-month suspension of the applicable certification. Suspended technicians shall not perform any duties governed by the suspended certification, including any duties which require the suspended certification as a prerequisite.

Technicians are eligible to be reinstated after the three-month suspension and successful completion of the applicable recertification test(s).

Technicians are subject to decertification when they receive a third Unsatisfactory Performance Notice.

Certified Technicians will be decertified for any of the following reasons:

The certificate will become invalid for the following reasons:

1. Failure of the certificate holder to renew the certificate prior to regular expiration as described above.
2. Use of false or fraudulent information to secure or renew the certificate.
3. Use of false or fraudulent actions or documentation by the certificate holder.
4. Not performing tests and technician duties properly and in accordance to specifications.

Action will be effective on the date the Program Director issues the suspension or decertification notice.

Technicians that are decertified shall not perform any duties requiring certification. Technicians may request reinstatement after one year.

Appeals and reinstatement requests shall be submitted in writing to the Program Director. Appeals and reinstatement requests will be considered by the Certification Board.

If reinstatement is authorized, the applicant must attend and successfully complete the applicable certification courses.

FUNCTIONS & RESPONSIBILITIES

A certificate holder at each production site, project site, proportioning plant, or laboratory will perform duties. The certified technician shall perform quality control testing in accordance with specified frequencies and submit designated reports and records.

The specification requirement for materials testing by a certified technician does not change the supplier's responsibilities to furnish materials compliant with the specification requirements.

The District Materials Engineer and/or Project Engineer will be responsible for monitoring the sampling, testing, production inspection activities and quality control performed by the contractor. A monitor shall have satisfactorily completed the training and be certified for the level of technician they are monitoring.

The District Materials Engineer and/or Project Engineer will have authority and responsibility to question and where necessary, require changes in operations and quality control to ensure specification requirements are met.

QUALITY CONTROL, TESTING, & DOCUMENTATION

The QC Technician shall be present whenever construction work related to production activity, such as stockpiling or other preparatory work, requires record development and/or documentation is in progress. The QC Technician's presence is normally required on a continuing basis beginning one or more days before plant operation begins and ending after plant shut down at the completion of the project. The work shall be performed in a timely manner and at the established frequencies.

The QC Technician's presence is not normally required during temporary plant shut downs caused by conditions, such as material shortages, equipment failures, or inclement weather.

All quality control activities and records shall be available and open for observation and review by representatives of the contracting authority.

Reports, records, and diaries developed during progress of construction activities will be filed as directed by the Contracting Authority and will become the property of the Contracting Authority.

Quality control activities, testing, and records will be monitored regularly by Contracting Authority representatives. The Project Engineer or District Materials Engineer will assign personnel for this function.

Monitor activities will be reported and filed at prescribed intervals with the Project Engineer, District Materials Engineer, producer, contractor, and the contractor's designated producer.

At no time will the monitor inspector issue directions to the contractor, or to the QC Technician. However, the monitor inspector will have the authority and responsibility to question, and where necessary, reject any operation or completed product, which is not in compliance with contract requirements.

ACCEPTANCE

Completed work will be accepted on the basis of specification compliance documented by acceptance test records, and monitor inspection records. Specification noncompliance will require corrective action by the producer, contractor, or by the contractor's designated producer, and review of events and results associated with noncompliance by the Project Engineer.

CERTIFICATION LEVELS

<u>CERTIFICATION LEVEL</u>	<u>TITLE</u>	<u>PRE-REQUISITES</u>
<u>AGGREGATE</u>		
Level I Aggregate	Certified Sampling Technician	None
Level II Aggregate	Certified Aggregate Technician	Level I Aggregate
<u>PORTLAND CEMENT CONCRETE</u>		
Level I PCC**	PCC Testing Technician	None
Level II PCC	PCC Plant Technician	Level II Aggregate & Level I PCC
Level III PCC	PCC Mix Design Technician	Level II PCC
**American Concrete Institute (ACI) Grade I certification will be acceptable as a portion of the Level I PCC training.		
<u>HOT MIX ASPHALT</u>		
HMA Sampler	HMA Sampler	None
Level I HMA	HMA Technician	Level II Aggregate
Level II HMA	HMA Mix Design Technician	Level I HMA
<u>PROFILOGRAPH</u>		
Profilograph	Profilograph Technician	None
<u>PRESTRESS</u>		
Prestress	Prestress Technician	Level I PCC or ACI Grade I <i>If the technician will be performing gradations, they will need to be Aggregate Level II- certified.</i>
<u>SOILS</u>		
Soils	Soils Technician	None
<u>EROSION CONTROL</u>		
Erosion Control	Erosion Control Technician	None

UNSATISFACTORY PERFORMANCE NOTICE

Issued To: _____

Date: _____

This notice is to inform you that your performance as a Certified Inspector/Technician was unsatisfactory for the reason(s) listed below.

This notice will be placed in your permanent file with the District Materials Office in which you reside. It will also be placed on the statewide computer file.

The goal of the Technical Training and Certification Program (TTCP) is to work with contractors, producers, cities, and counties to continually improve the quality of Iowa's construction projects. We hope you will work with us to achieve this goal.

Unsatisfactory Performance:

District Materials Engineer

cc: Program Director – Construction and Materials Engineer, Ames
TTCP Coordinator
Resident Construction Engineer

CERTIFIED TECHNICIANS QUALIFICATIONS

Tests and Procedures the Certified Technician is qualified to perform for each level of certification.

LEVEL I AGGREGATE

- IM 204 - Inspection of Construction Project Sampling & Testing (when material is incorporated)
- IM 209, App. C - Aggregate Specification Limits & Sampling & Testing Guide (when material is produced)
- IM 301 - Aggregate Sampling Methods
- IM 336 – Methods of Reducing Aggregate Field Samples to Test Samples

LEVEL II AGGREGATE

- IM 210 – Production of Certified Aggregate From Reclaimed Roadways
- IM 216 - Guidelines for Verifying Certified Testing Results
- IM 302 - Sieve Analysis of Aggregates
- IM 306 - Determining the Amount of Material Finer Than #200 (75µm) Sieve in Aggregate
- IM 307 - Determining Specific Gravity of Aggregate
- IM 308 - Determining Free Moisture & Absorption of Aggregate
- IM 336 - Methods of Reducing Aggregate Field Samples to Test Samples
- IM 344 - Determining the Amount of Shale in Fine Aggregate
- IM 345 - Determining the Amount of Shale in Coarse Aggregate
- IM 368 – Determining the Amount of Clay Lumps & Friable Particles in Coarse Aggregate
- IM 409 – Source Approvals for Aggregate

LEVEL I PCC

- IM 204 - Inspection of Construction Project Sampling & Testing
 - IM 208 - Materials Laboratory Qualification Program
 - IM 216 - Guidelines for Verifying Certified Testing Results
 - IM 315 - Method of Protecting, Curing, Making & Testing Concrete Cylinders
 - IM 316 - Flexural Strength of Concrete
 - IM 317 - Slump of Hydraulic Cement Concrete
 - IM 318 - Air Content of Freshly-Mixed Concrete by Pressure
 - IM 327 - Sampling Freshly-Mixed Concrete
 - IM 328 - Making, Protecting, and Curing Concrete Flexural Specimens
 - IM 340 - Weight Per Cubic Foot, Yield, & Air Content (Gravimetric) of Concrete
 - IM 383 - Testing the Strength of PCC Using the Maturity Method
 - IM 385 - Temperature of Freshly-Mixed Concrete
 - IM 525 - Designing Flowable Mortar
 - Iowa 410-B - Method of Test for Flow of Grout Mixtures
 - AASHTO T97 - Third Point Loading
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LEVEL II PCC

- IM 527 - Paving Plant Inspection
- IM 528 - Structural Concrete Plant Inspection
- IM 529 - PC Concrete Proportions

LEVEL III PCC

- IM 530 - Quality Management & Acceptance of PC Concrete Pavement
- IM 531 - Test Method for Combining Aggregate Gradations
- IM 532 - Aggregate Proportioning Guide for Portland Cement Concrete Pavement

HMA SAMPLER

- IM 320 – Method of Sampling Compacted Asphalt Mixtures
- IM 321 – Method of Test for Compacted Density of Hot Mix Asphalt (HMA) (Displacement Method)
- IM 322 - Method of Sampling Uncompacted Hot Mix Asphalt
- IM 323 - Method of Sampling Asphaltic Materials

LEVEL I HMA

- IM 204 - Inspection of Construction Project Sampling & Testing
- IM 208 - Materials Laboratory Qualification Program
- IM 216 - Guidelines for Verifying Certified Testing Results
- IM 320 - Method of Sampling Compacted Asphalt Mixtures
- IM 321 - Method of Test for Compacted Density of Hot Mix Asphalt (HMA) (Displacement)
- IM 322 - Method of Sampling Uncompacted Hot Mix Asphalt
- IM 323 - Method of Sampling Asphaltic Materials
- IM 325G - Method of Test for Determining the Density of Hot Mix Asphalt (HMA) Using the Superpave Gyrotory Compactor (SGC)
- IM 337 - Determining Thickness of Completed Courses of Base, Subbase, & Hot Mix Asphalt
- IM 350 - Maximum Specific Gravity of Hot Mix Asphalt (HMA) Mixtures
- IM 357 - Preparation of Hot Mix Asphalt (HMA) Mix Samples for Test Specimens
- IM 501 - Asphaltic Terminology, Equations & Example Calculations
- IM 508 - Hot Mix Asphalt (HMA) Plant Inspection
- IM 509 - Tank Measurement & Asphalt Cement Content Determination
- IM 511 - Control of Hot Mix Asphalt (HMA) Mixtures

LEVEL II HMA

- IM 380 - Vacuum-Saturated Specific Gravity & Absorption of Combined or Individual Aggregate Sources
- IM 510 - Method of Design of Hot Mix Asphalt (HMA) Mixes
- AASHTO T176 - Plastic Fines in Graded Aggregate & Soils by use of Sand Equivalent Test
- AASHTO T304 - Uncompacted Void Content of Fine Aggregate
- ASTM D 4791 - Flat Particles, Elongated Particles, or Flat & Elongated Particles in Coarse Aggregate
- AASHTO T283 Resistance of Compacted Hot Mix Asphalt (HMA) to Moisture-Induced Damage

PROFILOGRAPH

- IM 341 - Determining Pavement & Bridge Ride Quality

PRESTRESS

- IM 570 - Precast & Prestressed Concrete Bridge Units

SOILS

- IM 309 – Determining Standard Proctor Moisture Density Relationship of Soils
- IM 312 – Sampling of Soils for Construction Project
- IM 335 – Determining Moisture Content of Soils
- ASTM D-2937 – Field density by drive-cylinder method

AGGREGATE TECHNICIAN DUTIES

Duties of the Aggregate Technician are detailed in IM 209 and the IM 300 Series and consist of, but are not limited to the following:

A. Sampling

1. Obtain representative samples by approved method(s).
2. Sample at required frequencies.
3. Identify samples with pertinent information such as:
 - a. Type of material
 - b. Intended use
 - c. Production beds working depth
 - d. Sampling method
4. Reduce samples by approved method(s).

B. Gradation Testing

1. Follow appropriate gradation testing methods.
2. Maintain current applicable specifications.
3. Post test results within 24 hours of sampling.

C. Other Testing as Required (specific gravity, moisture, deleterious material, etc.)

1. Follow appropriate testing methods.
2. Maintain current applicable specifications.
3. Complete required reports.

D. Sampling & Testing Equipment

1. Clean and check testing sieves for defects.
2. Assure scale accuracy.
3. Maintain sampling and testing equipment.

E. Communication

1. Notify the District Materials office for production start-up or changes.
2. Relay test results to appropriate production or supervisory personnel.
3. Report failing test results immediately to appropriate personnel (including District Materials office) and assure remedial actions are taken.

F. General

1. Monitor stockpiling procedures to avoid contamination and excess segregation.
2. Assure proper identification of stockpiles.
3. Assure specification requirements for intended use are met before shipment.
4. Assure sampling locations are safe.
5. Assure proper bedding planes or production depths are maintained.

G. Documentation

1. Report all production test results of certified aggregates on Form #821278 and distribute as required.
2. Assure "plant production log" is maintained.

**PORTLAND CEMENT CONCRETE (PCC) TECHNICIAN DUTIES
PAVING & STRUCTURAL CONCRETE**

The Quality Control Technician shall have no other duties while performing certified inspection duties. Refer to IM 528 for exceptions. The District Materials Engineer may approve all quality control activities be performed by a single certified technician for low production situations.

Many of the duties of the PCC Level II Technician are detailed in IM 527 (Paving) and IM 528 (Structural) and consist of, but are not limited to the following:

A. Stockpiles

1. Assure proper stockpiling procedures.
2. Prevent intermingling of aggregates.
3. Prevent contamination.
4. Prevent segregation.

B. Plant Facilities

1. Assure safe sampling locations.
2. Check for equipment compliance.
3. Assure proper laboratory location and facilities.

C. Calibration

1. Be present during calibration (paving).
2. Check plant calibration (structural).
3. Assure proper batch weights.

D. Cement (Fly Ash) & Aggregate Delivery

1. Check for proper sources and certification.
2. Document quantities delivered.
3. Monitor condition of shipments.

E. Plant Sampling

1. Check aggregate gradations by obtaining, splitting, and testing samples.
2. Check aggregate moistures and specific gravity.

F. Proportion Control

1. Check scale weights and operation.
2. Check admixture dispensers.
3. Check mixing time and revolutions.
4. Check cement yield. (Paving plant only, unless over 10,000 cu. yds.)

G. Concrete Tests

1. Cure flexural test specimens.
2. Test flexural specimens (Contract agency will perform test in structural plant).
3. Conduct maturity testing.

H. Test Equipment

1. Clean and maintain scales, screens, pycnometers and beam molds, and laboratory facility.

I. Documentation

1. Prepare daily plant reports (paving), weekly plant reports (structures).
2. Document all checks and test results in the field book.
3. Maintain daily diary of work activity.

HOT MIX ASPHALT (HMA) TECHNICIAN INSPECTION DUTIES

The following is a list of the duties that must be performed by the Certified Level I HMA Technicians doing quality control work for the Contractor on all projects where the Quality Management-Asphalt (QM-A) specification applies. The Quality Control Technician shall have no other duties while performing certified inspection duties.

These duties consist of, but are not limited to, the following:

A. Aggregate Stockpiles.

1. Assure proper stockpiling of aggregate deliveries. (stockpile build & additions)
(daily check list, IM 508)
 - a. Prevent intermingling of aggregates.
 - b. Check for and prevent contamination.
- c. Prevent segregation.
 - d. Check for oversize material.
2. Document certified aggregate deliveries. (each delivery) (plant book, IM 508)
 - a. Obtain truck tickets.
 - b. Check for proper certification.
 - c. Check for proper approved source.
- d. Enter deliveries in Plant Book Program, Aggregate Certification page.
3. Observe loader operation. (daily) (daily check list, IM 508)
 - a. Check for proper stockpile to bin match-up.
 - b. Check that loader does not get stockpile base material in load.
 - c. Check that loader does not intermingle aggr. by overloading bins.

B. Asphalt Binder Delivery. (each delivery) (plant report & plant book, IM 508 & 509)

1. Check that material is pumped into correct tank.
2. Document Deliveries.
 - a. Obtain truck tickets.
 - b. Check for proper approved source.
 - c. Check for proper certification.
 - d. Check for proper grade.
 - e. Check for addition of liquid anti-strip if required.
 - f. Check if weight per gallon or specific gravity has changed.
 - g. Enter deliveries into Plant Book Program, Asphalt Binder Shipment Log page.

C. Plant Operations. (daily)

1. Prepare Plant Report Program for daily entries. (plant report, IM 511)
 - a. Enter Date.
 - b. Enter Report Number.
 - c. Enter expected tonnage for the day.
 - d. Enter any proportion or target changes that apply.
2. Aggregate Delivery System. (daily check list, IM 508)
 - a. Check for proper cold feed gate settings.
 - b. Check for proper cold feed belt speed settings.
 - c. Check for proper moisture setting (drum plants).
 - d. Monitor RAP proportions
3. Mixing System. (daily check list, spec 2303.03, IM 508)
 - a. Check for proper asphalt binder delivery setting.
 - b. Check for proper interlock operation.
 - c. Monitor coating of aggregates.
 - d. Monitor mixing time (batch plants).
4. Loading System. (daily check list, spec 2303.03 & 2001.01, IM 508)
 - a. Check hopper/silo gates for proper open/close
 - b. Check trucks for proper loading and possible segregation.
 - c. Check trucks for diesel fuel contamination in box and remove contaminated trucks from service (5 hrs with box raised).
5. Asphalt Binder Quantity Determination. (plant report, IM 508 & 509)
 - a. Perform start-up tank stick measurement before mix production begins (if applicable).
 - b. Perform final tank stick measurement after mix production is done (if applicable).
 - c. Perform intermediate tank stick measurements as needed.
 - d. If using meter for quantity, obtain totalizer printout readings and periodically check against tank stick readings.
 - e. If using batch count for quantity, obtain printouts of each batch and add up the asphalt binder used for total quantity.

D. Plant Operations. (2 hour intervals) (plant report, IM 508)

1. Temperatures.
 - a. Monitor and record mix temperature at discharge into truck box.
 - b. Monitor and record asphalt binder temperature.
 - c. Monitor and record air temperature.
2. Observe plant operation for any irregularities.

E. Weighing Equipment.

1. Proportioning scales (batch plants). (min. 1/day) (spec 2001.07 & 2001.20)
(daily check list, IM 508)
 - a. Perform sensitivity checks of scales.
 - b. Check for interference at scale pivot points.
2. Pay Quantity Scales. (min. 1/day) (spec 2001.07 & 2001.20, IM 508)
(daily check list, plant book)
 - a. Regularly perform check weighing comparisons with a certified scale as necessary. (min. 1st day and one additional if >5000 tons, and as
 - b. Perform sensitivity checks of scales. directed by Engineer)
 - c. Check for interference at scale pivot points.
 - d. Perform verification weighing (truck platform scales).
3. Weigh Belts. (daily) (daily check list)
 - a. Check weigh belt for excess clinging fines that effects speed reading.
 - b. Check weigh belt for interference at bridge pivot points.
 - c. Check for proper span setting.
4. Enter scale checks in Plant Book Program, Daily Check List or Plant Scale Checks page. (daily) (plant book)

F. Plant Sampling. (daily) (spec 2303.04, IM 204 & 511)

1. Obtain cold-feed gradation samples as directed by Contracting Authority personnel per IM 301 and IM 204.
2. Obtain asphalt binder samples as directed by Contracting Authority personnel per IM 323 and IM 204.
3. Enter sample data into Plant Book Program, Sample Log page.

4. Obtain cold-feed moisture samples at a minimum of every ½ day (drum mix plants).
- G. Field Sampling (if not performed by others). (daily) (spec 2303.04, IM 204 & 511)
1. Obtain uncompacted mix random samples as directed by Contracting Authority personnel, and identify time, station, lift and side.
 3. Obtain compacted mix core random samples as directed by Contracting Authority personnel.
- H. Testing. (daily) (spec 2303.04, IM 204 & 511)
1. Field cores.
 - a. Provide properly calibrated equipment for Contracting Authority technician's use.
 - b. Obtain and record core location station and offset information.
 - c. Obtain copy of core thickness measurements from Contracting Authority Technician.
 - d. Obtain copy of core weights from Contracting Authority technician.
 - e. Record weights and thickness in Plant Report Program.
 - f. Enter sample data into Plant Book Program Sample Log page.
 2. Uncompacted mix.
 - a. Properly store Contracting Authority secured portion of paired sample.
 - b. Split Contractor half of paired sample into test portions as per IM 357.
 - c. Perform gyratory compaction as per IM 325G.
 - d. Perform bulk specific gravity test of laboratory-compacted specimen as per IM 321.
 - e. Perform maximum specific gravity test as per IM 350.
 - f. Enter test data into Plant Report Program.
 - g. Submit secured samples to DOT District Lab.
 - h. Enter sample data into Plant Book Program, Sample Log page.
 3. Aggregate.
 - a. Split one sample each day as directed by Contracting Authority personnel and provide half for testing by Contracting Authority.
 - b. Perform gradation analysis as per IM 302 and enter weights into Plant Report Program.
 - c. Perform moisture tests and enter weights into Plant Book Program, Plant Moistures page (drum mix plants).
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4. Testing Lab Qualification. (as needed) (IM 208 & 511)
 - a. Record all HMA sample validations with DOT on form 235.
 - b. Document corrective actions taken when not correlating.
 - c. Document all test equipment calibrations.
 - d. Update IM's, test procedures and specs as required.

 - I. Documentation. (daily) (spec 2303.04, plant report, plant book, IM 204, 511 & 508)
 1. Prepare computerized Daily Plant Report (form 241).
 - a. Check that all data is correct.
 - b. Check that all data is complete.
 - c. Compute moving averages for gradation and lab voids.
 - d. Compute tons of mix used to date.
 - e. Enter mix adjustment data on report.
 - f. Check for spec compliance.
 - g. Immediately report non-complying results.
 - h. Obtain and record mat temperatures and stationing.
 - i. Provide daily Plant Report printout to DME.

 2. Maintain a daily diary of work activity in Plant Report Program.
 - a. Record weather conditions.
 - b. Record daily high and low temperatures.
 - c. Record sunrise and sunset times.
 - d. Record any interruptions to plant production.
 - e. Record any other significant events.

 3. Copy and export daily data and paste into control charts program.

 4. Enter all asphalt binder or aggregate proportion changes in Plant Book Program, Mix Adjustments page.

 5. Enter tack shipment quantities in Plant Book Program, Tack Shipment Log page.

 6. Total all truck tickets delivered to project and deduct any waste to determine HMA pay quantity.

 - J. Miscellaneous. (daily) (daily check list, IM 208 & 511)
 1. Fill out Plant Book Program, Daily Check List page.

 2. Clean lab.

 3. Back-up computer files.
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4. Dispose of samples as directed by District Lab.
 5. Clean and maintain lab equipment.
- K. Independent Assurance Duties. (Every 3 months) (IM 205 & 216)
1. Pick up HMA and aggregate proficiency sample from District Lab.
 2. Test aggregate proficiency sample for gradation per IM 302.
 3. Test HMA proficiency sample per IM 357, 325G, 321 & 350.
 4. Report test results on proficiency samples to Central Materials Office per IM 205.
- L. Project Duties. (1/project) (IM 508 & 511)
1. Be in possession of appropriate mix design.
 2. Be present during plant calibration.
 3. Observe scale calibrations.
 4. Perform plant site and set-up inspection and fill out Plant Site Inspection List.
 5. Set up Plant Report and Plant Book Programs and enter all project information to create Project Master files at beginning of project.
 6. Check that release agents used in truck boxes are on the approved list in IM 491.15
 7. Copy all computer files and provide to the Contracting Authority at completion of project.
 8. Copy all paperwork and control charts and provide to the Contracting Authority at completion of project.

PRESTRESS TECHNICIAN DUTIES

Duties of the Prestress Technician are detailed in IM 570 and consist of, but are not limited to the following:

A. Pre-pour

1. Identify and document materials requiring outside fabrication inspection.
 2. Identify potential fabrication or production problems and notify Iowa DOT inspectors.
 3. Verify that all materials incorporated meet the requirements of the contract documents.
 4. Review concrete placement documents for strand locations.
 5. Check tension calculations.
 6. Measure elongation and gauge pressure during tensioning.
 7. Check hold down and insert locations.
 8. Check stress distributions.
 9. Check steel reinforcement and placement.
 10. Check strand position.
 11. Check condition of pallet.
 - a. Level
 - b. Holes
 - c. Gaps
 - d. Other deformities
 12. Determine moisture of aggregates.
 13. Check form condition and placement.
 - a. Oil
 - b. Line alignment level
 - c. Tightness
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B. Concrete Placement

1. Check on use of an approved mix design and batching operations (sequence).
2. Assure appropriate placement and proper vibration techniques.
3. Measure and record concrete temperature.
4. Assure test cylinders are properly made.
5. Assure appropriate finish.
6. Assure appropriate curing operations.

C. Post-pour

1. Check temperature and record during curing process.
2. Assure concrete strength has been met prior to releasing the line.
3. Assure proper detensioning procedure.
4. Check unit for defects and obtain approval for repairs.
5. Identify and store cylinders with the respective units.
6. Check beam ends for fabrication in accordance with the plans.
7. Assure exterior sides of fascia beams are grouted.
8. Inspect after patching and desired surfacing.
9. Measure and record overall dimensions of beam.
10. Measure and record camber at release and compare to design camber.
11. Check and/or measure and record lateral sweep before shipping.
12. Assure proper cylinder cure.

PROFILOGRAPH TECHNICIAN DUTIES

Duties of the Profilograph Technician are detailed in IM 341 and consist of, but are not limited to the following:

- A. Test pavement and bridge surfaces for ride quality.
- B. Evaluate the test data.
 - 1. Identify bumps and dips.
 - 2. Summarize the roughness into segments and sections.
 - 3. Identify the segments for incentive, disincentive, or grind.
 - 4. Retest and evaluated bumps, dips, and must grid segments for specification compliance.
- C. Documentation
 - 1. Document the evaluation on a test report. A copy is sent to the Project Engineer, District Materials Engineer, and Central Materials.
 - 2. Notify the Project Engineer if the daily average profile index exceeds the specification tolerance.
 - 3. Submit the profilograms to the Project Engineer for all areas tested.

SOILS TECHNICIAN DUTIES

A certified Soils Technician is required for all projects with Compaction with Moisture Control, Compaction with Moisture and Density Control, or Special Compaction of Subgrade (including for Recreation Trails). Refer to contract documents for Contractor QC testing requirements. Duties of the Soils Technician consist of, but are not limited to the following:

- A. Sampling: Obtain samples at required frequencies per IM 204.
 - B. Proctor Testing
 - C. Other Testing as Required
 - 1. For projects with Compaction with Moisture Control: Determine moisture content per frequencies in IM 204.
 - 2. For projects with Compaction with Moisture and Density Control or Special Compaction of Subgrade: Determine moisture content and in-place density per frequencies in IM 204.
 - D. Sampling & Testing Equipment
 - 1. Clean and check testing sieves for defects.
 - 2. Assure scale accuracy.
 - 3. Check and maintain other testing equipment.
 - E. Evaluate the test data.
 - 1. For projects with Compaction with Moisture Control: Confirm soils are being placed within required moisture content range.
 - 2. For projects with Compaction with Moisture and Density Control or Special Compaction of Subgrade: Confirm soils are being placed within required moisture content range and soil is compacted to density equal to or greater than density requirement.
 - F. Documentation and Communication
 - 1. Document test data. A copy is sent to the Project Engineer.
 - 2. Relay test results to appropriate supervisory personnel.
 - 3. Notify the Project Engineer if any test results do not meet contract requirements and assure corrective actions are taken.
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EROSION CONTROL TECHNICIAN DUTIES

Duties of the Erosion Control Technician consist of, but are not limited to the following:

- A. Carefully review and be familiar with the details in the contract documents.
- B. Assign erosion and sediment control monitoring responsibilities to Erosion & Sediment Control (ESC) Basics trained field staff.
- C. Review copies of storm water inspection reports.
- D. Provide input on initial Erosion Control Implementation Plan (ECIP) submittal and ECIP updates.
- E. Provide onsite reviews when requested by Contracting Authority or Contractor field staff.

MATERIAL ACCEPTANCE REPORT

Project Number		Accounting ID	PCN	Contractor	
ESFM-C031(61)--5S-31		27627	31-C031-061	TSCHIGGFRIE EXCAVATING CO.	
Line No	Item	Description	Unit	Quantity	
0010	2102-2710070	EXCAVATION, CL 10, RDWY+BORROW	CY	14,581.000	
Line No	Item	Description	Unit	Quantity	
0020	2104-2710020	EXCAVATION, CL 10, CHANNEL	CY	3,576.000	
Line No	Item	Description	Unit	Quantity	
0030	2105-8425005	TOPSOIL, FURN+SPREAD	CY	100.000	
Line No	Item	Description	Unit	Quantity	
0040	2108-5025000	OVERHAUL	ST-Y	10,523.000	
Line No	Item	Description	Unit	Quantity	
0050	2213-7100400	RELOCATION OF MAIL BOX	EACH	2.000	
Line No	Item	Description	Unit	Quantity	
0060	2312-8260051	GRANULAR SURF ON RD, CL A CR STONE	TON	2,800.000	
Material Desc		Spec No	IM	Sample Freq	Basis of Acceptance
GRAVEL/LIMESTONE FOR GRAN. SHOULDERS		4120.02	209	DME	Certification Type D
		4109.02	T203	source sampled	Approved Source
				RCE	
				CONTRACTOR	
Comments:					
Certified Truck Ticket					
Line No	Item	Description	Unit	Quantity	
0071	2401-6745625	RMVL OF EXISTING BRIDGE	LS	1.000	
		FHWA# 146010			
Line No	Item	Description	Unit	Quantity	
0072	2401-6745625	RMVL OF EXISTING BRIDGE	LS	1.000	
		FHWA # 146070			
Line No	Item	Description	Unit	Quantity	
0073	2401-6745625	RMVL OF EXISTING BRIDGE	LS	1.000	
		FHWA # 146090			
Line No	Item	Description	Unit	Quantity	
0074	2401-6745625	RMVL OF EXISTING BRIDGE	LS	1.000	
		FHWA # 146100			
Line No	Item	Description	Unit	Quantity	
0080	2402-0425031	GRANULAR BACKFILL	TON	8,800.000	
Material Desc		Spec No	IM	Sample Freq	Basis of Acceptance
GRANULAR BACKFILL MATERIAL		4133	209	DME	Certification Type D
			T203	source sampled	Approved Source
				RCE	
				CONTRACTOR	
Comments:					
Certified Truck Ticket					

Project Number	Accounting ID	PCN	Contractor	
ESFM-C031(61)--5S-31	27627	31-C031-061	TSCHIGGFRIE EXCAVATING CO.	

Line No	Item	Description	Unit	Quantity
0085	2402-2720000	EXCAVATION, CL 20	CY	2,594.000

Line No	Item	Description	Unit	Quantity
0090	2403-0100020	STRUCT CONC (RCB CULV)	CY	1,594.000

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
PORTLAND CEMENT	4101	401	DME	Approved Source
			1/100,000 sy	Certification Type D
			paving	Test Report by Central
			RCE	Lab
Comments:			CONTRACTOR	
1/1000 cy structures, 10 lb sample, Certified Truck Ticket				

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
WATER FOR CONCRETE AND MORTAR	4102		DME	Test Report by Central
			1-Quart per	Lab
			source	
			RCE	
Comments:			CONTRACTOR	
Sample only if not city water source				

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
AIR ENTRAINING ADMIXTURE	4103.01A	403	DME	Approved Brand
				Approved Lot
			RCE	
			1/lot	
Comments:			CONTRACTOR	
Check with DME to determine if lot is approved.				

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
WATER REDUCING ADMIXTURE	4103.01B	403	DME	Approved Brand
				Approved Lot
			RCE	
			1/lot	
Comments:			CONTRACTOR	
Check with DME to determine if lot is approved.				

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
LIQUID CURING COMPOUNDS	4105	405	DME	Test Report by Central
		437	1 Quart/batch	Lab
			RCE	Approved Source
Comments:			CONTRACTOR	
Source sample each batch # for white, others approved source				

Project Number	Accounting ID	PCN	Contractor
ESFM-C031(61)--5S-31	27627	31-C031-061	TSCHIGGFRIE EXCAVATING CO.

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
FLY ASH	4108	491.17	DME	Approved Source
			1/100,000 sy paving	Certification Type D
			RCE	Test Report by Central Lab
Comments:			CONTRACTOR	

1/1000 cy structures, 10 lb sample, Certified Truck Ticket

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
FINE AGGREGATE FOR CONCRETE, STRUCTURES	4110	209	DME	Certification Type D
	4109.02	T203		Test Report by Contractor
			RCE	Test by RCE
			1/wk	Approved Source
Comments:			CONTRACTOR	1/lot

Certified Truck Ticket or other cert per IM 209, RCE test 1st day + 20%, Bridge Decks RCE sample and test 1 per deck pour

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
COARSE AGGREGATE FOR CONCRETE, STRUCTURES	4115	209	DME	Certification Type D
	4109.02	T203	1/1000 cy	Test Report by Contractor
			RCE	Test by RCE
			1/wk	Approved Source
Comments:			CONTRACTOR	1/lot

Certified Truck Ticket or other cert per IM 209, RCE test 1st day + 20%, Bridge Decks RCE sample and test 1 per deck pour

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
READY MIX CONCRETE FOR STRUCTURES	2403	528	DME	Test by RCE
			RCE	
			1/30 cy air & slump	
Comments:			CONTRACTOR	

Min. 1/pour air & slump. 2 beams/placement if required per 2403.18 and 2403.19

Line No	Item	Description	Unit	Quantity
0100	2404-7775000	REINFORC STEEL	LB	211,657.000

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
STEEL REINFORCEMENT	4151	451	DME	Approved Source
			1 per project/45 t or more	Steel Mill Certifications
Comments:			RCE	
			CONTRACTOR	

Project Number	Accounting ID	PCN	Contractor	
ESFM-C031(61)--5S-31	27627	31-C031-061	TSCHIGGFRIE EXCAVATING CO.	

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
DOWELS - ALL TYPES	4151.02B	451.03B	DME	Approved Source
Comments:			1 per project	Certification Type D
			per year	
			RCE	
			CONTRACTOR	

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
REINFORCEMENT CHAIRS	4151	451.01	DME	Approved Source
Comments:				Visual Approval by RCE
			RCE	
			CONTRACTOR	

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
MESH REINFORCEMENT	4151.04	451	DME	Approved Source
Comments:			1 Sample per	Steel Mill
			year	Certifications
			RCE	
			CONTRACTOR	

2 Ft. X 2 Ft. Sample

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
REINFORCEMENT SUPPORTS	4151	451.01	DME	Approved Source
Comments:				Visual Approval by RCE
			RCE	
			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0110	2417-0330024	APRON, SAFETY SLOPE, 24"	EACH	2.000

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
APRONS, SAFETY SLOPE,	4141.01	441	DME	Approved Source
Comments:				Certification Type D
			RCE	
			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0120	2417-0330030	APRON, SAFETY SLOPE, 30"	EACH	2.000

Project Number		Accounting ID		PCN		Contractor	
ESFM-C031(61)--5S-31		27627		31-C031-061		TSCHIGGFRIE EXCAVATING CO.	

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
APRONS, SAFETY SLOPE,	4141.01	441	DME	Approved Source
				Certification Type D
			RCE	
Comments:			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0130	2417-0330060	APRON, SAFETY SLOPE, 60"	EACH	4.000

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
APRONS, SAFETY SLOPE,	4141.01	441	DME	Approved Source
				Certification Type D
			RCE	
Comments:			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0140	2417-1040024	CULV, CMP ENT, 24"	LF	146.000

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
CORR. STEEL ENTRANCE PIPE,	4141.01	441	DME	Approved Source
				Certification Type D
			RCE	
Comments:			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0150	2417-1040030	CULV, CMP ENT, 30"	LF	118.000

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
CORR. STEEL ENTRANCE PIPE,	4141.01	441	DME	Approved Source
				Certification Type D
			RCE	
Comments:			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0160	2417-1040060	CULV, CMP ENT, 60"	LF	116.000

Project Number	Accounting ID	PCN	Contractor	
ESFM-C031(61)--5S-31	27627	31-C031-061	TSCHIGGFRIE EXCAVATING CO.	

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
CORR. STEEL ENTRANCE PIPE,	4141.01	441	DME	Approved Source
			RCE	Certification Type D
Comments:			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0170	2507-6800061	REVTMENT, CLASS E	TON	2,500.000

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
CLASS E REVTMENT STONE	4130.04	209	DME	Certification Type D
		T203	source sampled	Approved Source
Comments:			RCE	
			CONTRACTOR	

Certified Truck Ticket

Line No	Item	Description	Unit	Quantity
0180	2510-6745850	RMVL OF PAV'T	SY	6,745.000

Line No	Item	Description	Unit	Quantity
0190	2518-6910000	SAFETY CLOSURE	EACH	16.000

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
STEEL SIGN POSTS	4186.10		DME	Approved Shop Drawings
			RCE	Fabrication Report
Comments:			CONTRACTOR	

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
RETROREFLECTIVE SHEETING	4186.03	486.03	DME	Approved Source
			RCE	
Comments:			CONTRACTOR	

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
ORANGE SAFETY FENCE	4188.03	488.03	DME	Approved Source
			RCE	
Comments:			CONTRACTOR	

Project Number	Accounting ID	PCN	Contractor
ESFM-C031(61)--5S-31	27627	31-C031-061	TSCHIGGFRIE EXCAVATING CO.

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
TYPE 3 BARRICADE	4188		DME	As Per Plan
				Visual Approval by RCE
			RCE	
Comments:			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0200	2526-8285000	CONSTRUCTION SURVEY	LS	1.000

Line No	Item	Description	Unit	Quantity
0210	2528-8445110	TRAFFIC CONTROL	LS	1.000

Line No	Item	Description	Unit	Quantity
0220	2533-4980005	MOBILIZATION	LS	1.000

Line No	Item	Description	Unit	Quantity
0230	2601-2634100	MULCH	ACRE	3.000

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
MULCH	4170.09D	470	DME	Visual Approval by RCE
	4169.08			
			RCE	
Comments:			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0240	2601-2636043	SEED+FERTILIZE (RURAL)	ACRE	3.000

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
FERTILIZER FOR EROSION CONTROL	4169.03	469.03	DME	Certification Type D
				If material is suspect
			RCE	
Comments:			CONTRACTOR	

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
EROSION CONTROL SEEDS	4169.02	469.02	DME	Certification Type A
				Visual Approval by RCE
			RCE	
Comments:			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0250	2602-0000020	SILT FENCE	LF	4,400.000

Project Number	Accounting ID	PCN	Contractor
ESFM-C031(61)--5S-31	27627	31-C031-061	TSCHIGGFRIE EXCAVATING CO.

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
STEEL FENCE POSTS	4154.09	454.10	DME	Visual Approval by RCE
			RCE	
Comments:			CONTRACTOR	

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
SILT FENCE	4169	496.01	DME	Approved Source
			RCE	
Comments:			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0260	2602-0000030	SILT FENCE-DITCH CHECKS	LF	4,400.000

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
STEEL FENCE POSTS	4154.09	454.10	DME	Visual Approval by RCE
			RCE	
Comments:			CONTRACTOR	

Material Desc	Spec No	IM	Sample Freq	Basis of Acceptance
SILT FENCE	4169	496.01	DME	Approved Source
			RCE	
Comments:			CONTRACTOR	

Line No	Item	Description	Unit	Quantity
0270	2602-0000060	RMVL OF SILT FENCE	LF	4,400.000

Line No	Item	Description	Unit	Quantity
0280	2602-0000070	RMVL OF SILT FENCE-DITCH CHECK	LF	4,400.000

**SOURCE OF
MATERIALS LIST**

Source of Materials List

Project No ESFM - CO31 (W1) - 55-31

Contract No. 31-CO31-061

County Dubuque

Contractor Tschiggfrie Excavating

Aggregates

Proportioned (PCC and HMA)
Course and fine aggregates

Type of Aggregate

Source

Coarse Agg Gradation #3 CE A31060

Fine Agg Gradation #1 Loes A53532

Non-proportioned

Type of Aggregate

Source

Granular Surface, Class A Bard Cascade East

Revtment, Class E Bard Cascade East

Granular Backfill Bard Cascade East

HMA Source

Location

Plant

Hot Mix Asphalt

Type

Source

Paving & Patching

Blinder

N/A

N/A

Tack

N/A

Anti-stripping Agent (hydrated lime or other additives)

N/A

Location

Plant

Ready Mix Source
PCC Paving & Patching

Source

Type

Cement

N/A

GGBFS

N/A

Fly Ash

N/A

Admixture-Air Entraining

N/A

Admixture-Retarder

N/A

Admixture-Water Reducer

N/A

Curing Compound, White

N/A

Curing Compound, Clear

N/A

Concrete Sealer

N/A

Engineering Fabric

N/A

Grout, Polymer

N/A

Joint Filler

N/A

Reinforcing steel (dowels)

N/A

Reinforcing steel (Tie bars)

N/A

Dowel Basket assemblies

N/A

Water

N/A

Structures		Type	Source
Bridge	Cement	Type III	Lafarge
Culvert	GGBFS	Newcem 120	Lafarge
Deck Overlay	Fly Ash	C	Lovisd
	Admixture-Air Entraining	MB-AE 90	BASF
	Admixture-Retarder	Pelvo	BASF
	Admixture-Water Reducer	Polybeed 997	BASF
	Admixture-Retarder	Pelvo	BASF
	Curing Compound, White	Construction Materials	
	Curing Compound, Clear	N/A	
	Concrete Sealer	Construction Materials	
	Paint Bridge	N/A	
	Beams, Prestressed	N/A	
	Structural steel	Construction Materials	
	Piling wood	N/A	
	Piling Steel	N/A	
	Piling, concrete	N/A	
	Pile Points	N/A	
	Reinforcing steel, uncoated	N/A	
	Epoxy coated steel	N/A	
	Bronze bearing plates	N/A	
	Elastomeric Bridge Bearing Pads.	N/A	
	Steel diaphragms	N/A	
	Floor drains	N/A	
	Steel Masonry Plates	N/A	
	Wood treated timber and lumber	N/A	

Guardrail & Safety Enhancement

Source

Type

Guardrail, wood post

N/A

guardrail Cable

N/A

Steel posts

N/A

Guardrail, formed steel beam

N/A

Guardrail, End Anchorages

N/A

Guardrail Bridge Connections

N/A

N/A

Guardrail, End Anchorages, cable

N/A

N/A

Guardrail, High Tension

N/A

N/A

Removable Marking Tape

N/A

Traffic Paint

N/A

N/A

Beads for Traffic Paint

N/A

Delineator Posts

N/A

Delineators, Amber

N/A

Delineators, White

N/A

Object Markers, Type 3

N/A

N/A

Drainage & Erosion Control

Source

Type

Subdrain Pipe, PE	N/A	
Subdrain Pipe (concrete or clay)	N/A	
Subdrain Pipe (CMP perforated)	N/A	
Subdrain Pipe Outlet- CMP	N/A	
Subdrain pipe Outlet- PE	N/A	
Rodent Guard	N/A	
Concrete Culvert Pipe	N/A	
Corrugated Metal Culvert Pipe	I/Iowa Culvert	
Corrugated Plastic Culvert Pipe	N/A	
Pre-Cast Box Culvert	N/A	
Aprons	I/Iowa Culvert	
Apron Guards	N/A	
Pipe for Sanitary Sewer	N/A	
Pipe for Storm Sewer	N/A	
Inlakes	N/A	
Utility Access	N/A	
Fabric Erosion Control	N/A	
Seeding	White Front Seed	Dubuque
Fertilizer	White Front Seed	Dubuque
Mulch	Dave Rea Inc	Barnard
Nursery	N/A	
Silt Fence	J & R Supply	
Fencing	N/A	
Gates	N/A	

Lighting & Signing

Source

Type

Channeling Devices (Barricades & cones)

Barricades, drums, 42" Channelizer Traf Fix Devices, Inc. Fairfield, IA

TBR

Signs

T.C. Signs Lyle Signs, Inc., Desmet, SD

Posts

Green U-Channel Chicago Heights Steel, Chicago Heights, IL

Overhead Sign Assemblies and Supports

N/A

Anchor bolts, nuts and washers

N/A

Conduit

N/A

Control Cabinet

N/A

Circuit Breakers

N/A

Ground Rods

N/A

Luminaries

N/A

Poles and Mast Arms

N/A

Transformer Base

N/A

Tower Light Poles

N/A

Traffic Signals

N/A

Temporary Traffic Signals

N/A

Miscellaneous

Nite Lite II fence Plastic Safety Systems, Cleveland, OH

I.M. 204
Inspection of Construction
Project Sampling & Testing



**INSPECTION OF CONSTRUCTION PROJECT
SAMPLING & TESTING**

INTRODUCTION

The Iowa Department of Transportation (DOT) has established a Quality Assurance Program (IM 205) to assure that the quality of materials and construction workmanship incorporated into all highway construction projects is in reasonable conformity with the requirements of the approved plans and Specifications, including approved changes. It consists of an Acceptance Program and an Independent Assurance Program (IAP), both of which are based on test results obtained by qualified persons and equipment.

The acceptance portion of the program covers quality control (QC) sampling and testing and verification sampling and testing. The IAP portion of the program covers the evaluation of all sampling and testing procedures, personnel, and equipment used as part of an acceptance decision (includes Contractor, Contracting Agency, and consultant).

ACCEPTANCE PROGRAM FOR MATERIALS

To fulfill the materials acceptance requirements, several methods are used by the DOT.

- Sampling & Testing (Test Report)
- Certification
- Approved Sources
- Approved Shop Drawings
- Approved Catalog Cut
- Fabrication Report
- Visual Approval by the Engineer

In many cases more than one method may be required for acceptance in the 204 Appendices and tables in the back of this guide. For some new or special materials, the Materials Engineer may need to determine the most appropriate acceptance requirements.

In order to provide the Contractor the opportunity to construct a project with minimal sampling and testing delays, inspection is performed at the source for many materials. Source inspection may consist of inspecting process control, sampling for laboratory testing or a combination of these procedures. All source-inspected or certified materials are subject to inspection at the project site prior to being incorporated into the work. Project site inspections are for identification of materials with test reports and for any unusual alterations of the characteristics of the material due to handling or other causes. Verification samples secured by project Agency personnel of source-inspected, certified, or project processed materials are also required for some materials in order to secure satisfactory validation for acceptance.

When certification procedures are required, the Contractor may, on the Contractor's own responsibility and at the Contractor's risk, incorporate these materials into the work. Acceptance will be based on satisfactory certification and compliance of the test results of any verification samples. When verification samples are not required, acceptance will be based on satisfactory certification.

A. SAMPLING & TESTING (TEST REPORT)

When a material is sampled and tested, the results will be documented on a construction form or a test report. There is quality control sampling and testing done by the Contractor or producer and verification sampling testing done by the Project Engineer, the District Materials Engineer, the Central Materials Laboratory, or an independent laboratory.

In many cases, in addition to sampling and testing, some other type of acceptance method will also be required. Sampling and testing may be done at the project, supplier, or source depending on which is the most appropriate.

B. CERTIFICATION OF COMPLIANCE

For many materials a fabricator, manufacturer, or supplier is required to provide the Project Engineer with a certification document stating that the material meets the requirements of the plans and specifications. In most cases, the fabricator, manufacturer, or supplier must also be on an approved list in the IM. For some of these materials, sampling and testing is also required before final acceptance. The certification comes in a variety of forms:

- Stamped or preprinted on truck tickets as with aggregates,
- Stamped or preprinted on invoices as with Portland Cement and asphalt binder,
- Stamped or printed on the Mill Analysis as with reinforcing steel, structural steel, and other metals,
- Furnished as a separate document with each shipment as with zinc-silicate paint, engineering fabrics, epoxy coatings, and dowel baskets,
- Stamped or printed on a list of materials for each shipment as with CMP, concrete pipe, clay tile, and corrugated plastic subdrain,

The inspector will verify that the certification has been received by documenting it in the project materials book.

C. APPROVED SOURCE

(May also be referred to as “Approved Producer, Approved Supplier, Approved Fabricator, or Approved Brand”) The source, producer, and the material must be evaluated and approved by the Office of Construction and Materials according to the appropriate Materials IM in order to be used on a project. Once a letter of approval is issued, the source or producer is approved for use on projects (with the exception of steel fabricators). Approved lists are issued biannually for general information only. Approval for a source or producer may be rescinded at any time if it no longer meets the requirements of the IM.

The project inspector will document information about this material such as product name, source, date, producer, and lot number in the project materials book.

Most approved sources also require a certification.

D. APPROVED WAREHOUSE STOCK

For some items made up of miscellaneous materials, inspection and approval will be done by the District Materials Engineer at the supplier’s warehouse.

E. APPROVED SHOP DRAWING & APPROVED CATALOG CUT

This information must be submitted to, and reviewed by the Iowa DOT Central Design Office, before the material can be incorporated in the project.

F. FABRICATION REPORT

The project inspector must have a copy of the final fabrication report prior to incorporating the item into the project. The report will vary depending on the Materials IM requirements for the item fabricated. Final acceptance is by construction personnel at the project site, and is based on the proper documentation and the condition of the component.

G. VISUAL APPROVAL BY PROJECT ENGINEER

(May also be referred to as “As Per Plan, Approved By RCE, or Manufacturer Recommendations”) The project inspector must document information about this material such as product name, source, producer, lot number and date produced in the project materials book. The inspector will make sure the material meets the requirements of the plans, the Engineer, or the manufacturer before the material is used. Visual approval requires construction personnel to visually inspect the material to determine if it complies with the specifications. Visual approval is appropriate for non-critical items such as mulch or sod stakes, where compliance can be readily determined by visual means. If there are questions on specification compliance, samples will be taken for testing.

INDEPENDENT ASSURANCE PROGRAM

The IAP evaluates all sampling and testing procedures, personnel, and equipment used as part of an acceptance decision (Includes Contractor, Contracting Agency, and consultant). Independent assurance includes evaluation based on:

Calibration checks
Split samples
Proficiency samples
Observation of sampling and testing performance

The test method and the frequency of test are in the Appendices. Calibration checks and proficiency samples testing is covered in IM 208.

SMALL QUANTITIES

The FHWA allows and encourages alternative acceptance methods for small quantities of non-critical materials. Appendix X contains a list of those materials and maximum quantities for which alternative acceptance methods may be appropriate. The Project Engineer or District Materials Engineer may still require the normal acceptance method for a material when it is considered critical in the intended application.

IM 204 Appendixes

Appendix A Roadway & Borrow Excavation & Embankments
Appendix B Soil Aggregate Subbase
Appendix C Modified Subbase
Appendix D Granular Subbase
Appendix E Portland Cement Concrete Pavement, Pavement Widening, Base Widening, Curb & Gutter & Paved Shoulders
Appendix F Hot Mix Asphalt (QMA)

Appendix H	Structural Concrete, Reinforcement, Foundations & Substructures, Concrete Structures, Concrete Floors, & Concrete Box, Arch & Circular Culverts
Appendix I	Concrete Drilled Shaft Foundations
Appendix K	Cold-In-Place Recycled Asphalt Pavement
Appendix L	Granular Surfacing/Driveway Surfacing
Appendix M	Concrete Bridge Floor Repair & Overlay & Surfacing
Appendix P	Surface Treatment (Seal Coat, Slurry, Joint Repair, Crack Filling & Fog Seal)
Appendix T	Base Repair, Pavement Repair
Appendix U	Granular Shoulders
Appendix V	Subdrains
Appendix W	Water Pollution Control, Erosion Control
Appendix X	Acceptance of Small Quantities of Materials
Appendix Z	Supplemental Guide, Basis of Acceptance

October 21, 2014
Supersedes April 15, 2014

ROADWAY & BORROW EXCAVATION & EMBANKMENTS

Section 2102 & 2107

Sampling & Testing Guide-Minimum Frequency

Matls. IM 204
Appendix A (US) Units

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS			
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT
SOURCE INSPECTION														
Special Backfill, Crushed Stone (4132.02), Gravel (4132.03)		AS												
Crushed Concrete (4132.02), RAP (2303.02)		209, 210												
Granular Backfill (4133, 4134)	Quality	AS												
Engr. Fabric (4196)	Quality	AS	496.01											
Contractor Furnished Borrow		545	IM 545	CONTR	IM 545	CONTR	IM 545 & Cert	V	RCE/ CONTR	1/10 QC tests	35 lb.	CTRL	Test Report	Note 4
GRADE INSPECTION														
Moisture Control, (QC by Contractor) Note 1	Proctor	309	CONTR	CONTR	1/ soil class	25 lb	Field Book & Test Report	V (7)	CONTR/ RCE CONTR/ DME	1/ 10 req'd QC tests (min. 1)(5) 1/proj.	25 lb. 25 lb.	RCE/ DME CTRL	Field Book Test Report	
	Moisture	335, 334	CONTR	CONTR	1/1ft/1500 ft (for max of 1300 cy) (6)	3 lb	Field Book & Test Report	V (7)	RCE (2) DME	1/ 10 req'd QC tests (min. 1)(5) Witness 1/proj.	3 lb.	RCE	Field Book	
Moisture & Density Control, including Special Compaction of Subgrade (2109.03C), (QC by Contractor) Note 1	Proctor	309	CONTR	CONTR	1/ soil class	25 lb	Field Book & Test Report	V (7)	CONTR/ RCE CONTR/ DME	1/ 10 req'd QC tests (min. 1)(5) 1/proj.	25 lb. 25 lb.	RCE/ DME CTRL	Field Book Test Report	
	Moisture	335, 334	CONTR	CONTR	1/1ft/1500 ft (for max of 1300 cy) (6)	3 lb	Field Book & Test Report	V (7)	RCE (2) DME	1/ 10 req'd QC tests (min. 1)(5) Witness 1/proj.	3 lb.	RCE	Field Book	
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing	In-place Density	326 & 334, ASTM D2937, D2167, D1556, & AASHTO T191 & T233	CONTR	CONTR	1/1ft/1500 ft (for max of 1300 cy) (6)	As req'd by test	Field Book & Test Report	V (7)	RCE/ DME DME	1/10 req'd QC tests (min. 1)(5) Witness 1/proj.		RCE/ DME	Field Book	Note 3
	Cert- Certification Statement RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor IA-Independent Assurance V-Verification													
Note 1: When Contractor QC testing is not required in the contact documents. The RCE will perform verification testing at the frequency listed for QC. Note 2: RCE will direct the Contractor to take a moisture sample beside the RCE verification sample location. Note 3: If testing is done with a portable moisture-density gauge, the gauge calibration will be verified on the Validator block. Note 4: For earthwork quantities of less than 50,000 Yd ³ , no IA will be required. Note 5: If no QC tests are required, then no verification or independent assurance tests are required. Note 6: If source of excavation and moisture have been consistent and within moisture control limits and density has been greater than or equal to minimum density (if required), testing of each lift will be waived. Minimum frequency will be 1 per 1300 Yd ³ . Note 7: For earthwork quantities of less than 1300 Yd ³ , no verification tests will be required.														

Sampling & Testing Guide-Minimum Frequency

April 15, 2014
Supersedes October 16, 2007

SOIL AGGREGATE SUBBASE
Section 2110

Matis. IM 204
Appendix B

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS							
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT				
SOURCE INSPECTION																		
Granular Surfacing Material(4120)		AS 209																
GRADE INSPECTION																		
Mixed Materials (2110)	Density (Proctor)	309								V	RCE	2/mile (min. 2/proj.)	5000 gm	RCE	Field Book	Change of Soil type requires additional Proctors		
Uncompacted Mixture	Pulverization Moisture	2" Sieve Visual								V	RCE	2/mile		RCE	Field Book			
Compacted Mixture (2110)	Density Thickness Width	311, 312, 334 337								V	RCE	2/mile		RCE	Field Book			
Finished Subbase	Cross Section	Stringline								V	RCE	10/mile		RCE	Field Book	Template for secondary park & institutional roads		
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing													Cert- Certification Statement RCE- Resident Construction Engineer/Project Engineer DME- District Materials Engineer CTRL- Central Materials Office CONTR- Contractor				IA-Independent Assurance V-Verification	

Sampling & Testing Guide-Minimum Frequency

**PORTLAND CEMENT CONCRETE PAVEMENT, PAVEMENT WIDENING, BASE WIDENING
CURB & GUTTER, & PAVED SHOULDERS**

April 15, 2014
Supersedes October 16, 2012
Section 2122, 2201, 2213, 2301, 2302, 2310, Quality Management Concrete (QM-C)

Mats. IM 204
Appendix E (US) Units

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPT.	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
SOURCE INSPECTION													
Aggregates- Fine (4110)		AS 209											
Aggregate- Coarse (4115), Intermediate		AS 209											
Portland Cement (4101)	Quality	AS 401											
Fly Ash (4108)	Quality	AS 491.17											
GGBFS (Ground Granulated Blast Furnace Slag)	Quality	AS 491.14											
Curing Compounds (4105)	Lab Tested	405											
Clear Curing Compounds (4105)		AB 405.07											
Air Entraining Admixture (4103)	Quality	AB 403											
Water Reducing Admix. (4103)	Quality	AB 403											
Retarding Admixture (4103)	Quality	AB 403											
Joint Sealer (4136.02)	Lab Tested	436.01, 436.02, 436.03											
Backer Rod (4136.02)	Lab Tested	AB 436.04											
Mixing Water (4102)	Lab Tested								V	RCE/ CONTR	1/ source	CTRL	Not required for potable water from municipal supply
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert- Certification Statement				RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent Assurance V-Verification QMC-Quality Management Concrete		

NOTE: RCE/CONTR indicates that the contractor shall assist in the sampling at the direction of and witnessed by the project engineer.

Sampling & Testing Guide-Minimum Frequency

**PORTLAND CEMENT CONCRETE PAVEMENT, PAVEMENT WIDENING, BASE WIDENING
CURB & GUTTER, & PAVED SHOULDERS**

April 15, 2014 Section 2122, 2201, 2213, 2301, 2302, 2310, Quality Management Concrete (QM-C) Appendix E (US) Units Mats. IM 204

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS			
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT
SOURCE INSPECTION														
Steel Reinforcement (4151)														
Dowels	Quality	AS 451												
Tie Bars	Quality	AS 451												
General Use	Quality	AS 451												
PLANT INSPECTION														
Aggregates-Fine (4110/4111)	Grad QMC	302 306 336	CONTR	1/1500cy	IM 301	CONTR	800240	V	RCE/ CONTR	Sample 1/day, test 1 st day + 2/week	IM 301	RCE	IM 530 for intermittent production	
	Grad Non-QMC	302 306 336	CONTR	1/day	IM 301	CONTR		IA	RCE/ CONTR	Sample 1/day, test 1 st day + 1/-week	IM 301	RCE	IM 527 for intermittent production	
	Moist	308, 527	CONTR	1/half day	1000 gm	CONTR		IA					DME	Not applicable with probe
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing	Sp. Gr.	307	CONTR	IM 527	1000 gm	CONTR								
	Quality	AS 209	CONTR			CONTR								
Cert- Certification Statement			RCE-Resident Construction Engineer/Project Engineer				IA-Independent Assurance V-Verification				QMC-Quality Management Concrete			

NOTE: IA may be accomplished by system approach or on a per project basis (IA at 1 per 100,000 sy of concrete) at the discretion of the DME.

NOTE: When Certified Plant Inspection is not provided, the engineer is responsible for performing quality control sampling and testing.

NOTE: RCE/CONTR indicates that the contractor shall assist in the sampling at the direction of and witnessed by the project engineer.

Sampling & Testing Guide-Minimum Frequency

**PORTLAND CEMENT CONCRETE PAVEMENT, PAVEMENT WIDENING, BASE WIDENING
CURB & GUTTER, & PAVED SHOULDERS**

April 15, 2014
Supersedes October 16, 2012
Section 2122, 2201, 2213, 2301, 2302, 2310, Quality Management Concrete (QM-C)

Matls. IM 204
Appendix E (US) Units

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMP. SIZE	TEST BY
PLANT INSPECTION													
Aggregates- Coarse (4115), Intermediate	Grad QMC	302 306 336	CONTR	QMC 1/1500 cy	IM 301	CONTR	800240	V	RCE/ CONTR	Sample 1/day, test 1 st day+2/-week	IM 301	RCE	IM 530 for intermittent production
	Grad Non-QMC	302 306 336	CONTR	1/day	IM 301	CONTR		IA	RCE/ CONTR	Sample 1/day, test 1 st day + 1/week	IM 301	DME	IM 527 for intermittent production
	Moist	308	CONTR	1/half day	IM 301	CONTR							
	Sp. Gr.	307	CONTR	IM 527	IM 301	CONTR							
	Quality	AS 209							V	DME	1/100,000 sy	50 lb	CTRL
Portland Cement (4101)	Quality	AS Cert		Each Load				V	DME	1/100,000 sy	15 lb	CTRL	
Fly Ash	Quality	AS Cert	CONTR	1/10,000 cy		CONTR	820912						
GBFS(Ground Granulated Blast Furnace Slag)	Quality	AS Cert		Each Load			800240	V	DME	1/100,000 sy	15 lb	CTRL	
Air Admixture	Quality	AS 403		Each Load				V	DME	1/100,000 sy	15 lb	CTRL	
Water Reducer	Quality	AS 403						V	DME	1/batch	1 pint	CTRL	Sample batches not previously reported or as required by DME
Retarding Admixture	Quality	AS 403						V	DME	1/batch	1 pint	CTRL	
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert- Certification Statement				RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent Assurance V-Verification		QMC-Quality Management Concrete

NOTE: IA may be accomplished by system approach or on a per project basis (IA at 1 per 100,000 sy of concrete) at the discretion of the DME.

NOTE: When Certified Plant Inspection is not provided, the engineer is responsible for performing quality control sampling and testing.

NOTE: Quality samples not required when mix quantity is less than 2000 sq. yds., except for curing compound.

NOTE: RCE/CONTR indicates that the contractor shall assist in the sampling at the direction of and witnessed by the project engineer.

Sampling & Testing Guide-Minimum Frequency

PORTLAND CEMENT CONCRETE PAVEMENT, PAVEMENT WIDENING, BASE WIDENING CURB & GUTTER, & PAVED SHOULDERS

April 15, 2014
 Supersedes October 16, 2012
 Section 2122, 2201, 2213, 2301, 2302, 2310, Quality Management Concrete (QM-C)
 Appendix E (US) Units
 Mats. IM 204

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPT.	S&T TYPE	SAMP. BY	FREQ.		SAMPLE SIZE	TEST BY
GRADE INSPECTION													
Chloride Solution	Concentration	373	RCE	1/day									
Steel Reinforcement: Dowels	Quality	AS 451.03B											
Dowel Basket Assembly	Quality	AS 451 Cert 451.03B											
Tie Bars	Quality	AS 451											
General Use	Quality	AS 451											
Curing Compound (4105)	Quality	Tested 405											
Plastic Concrete	Air QMC	318 327	CONTR	1/350 cy, 1/100 cy ready mix									
	Air Non-QMC	318 327											
	Slump	317											
	Grade Yield		RCE	1/1000 cy									
	Beams**	316, 327, 328	RCE	2/day									
Hardened Concrete	Thickness*	346, 347											
	Smoothness	341	CONTR	100%									
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert- Certification Statement				RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent Assurance V-Verification QMC-Quality Management Concrete		

*IA thickness cores sent to Central Lab for additional project information testing (Interstate and Primary only). **None required when maturity is used.
NOTE: IA may be accomplished by system approach or on a per project basis (IA at 1 per 100,000 sy of concrete or as noted in the table) at the discretion of the DME.
NOTE: Quality samples not required when mix quantity is less than 2000 sq. yds., except for curing compound.
NOTE: RCE/CONTR indicates that the contractor shall assist in the sampling at the direction of and witnessed by the project engineer. **NOTE:** Form #E115 available from the Office of Construction.

Sampling & Testing Guide-Minimum Frequency

April 15, 2014
Supersedes October 15, 2013

HOT MIX ASPHALT
Section 2303 & 2213

Matls. IM 204
Appendix F (US) Units

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE, & VERIFICATION S&T				REMARKS						
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT			
SOURCE INSPECTION																	
Aggregates-Coarse (4127)		AS															
Aggregates-Fine (4127)		AS															
Hydrated Lime (4127)		AS															
Asphalt Binder		AS															
Emulsions & Cutbacks		AS															
Release Agent		AS															
Recycled Asphalt Shingles		AS															
PLANT INSPECTION																	
Aggregates (2303)	Quality																
Combined Aggregate (4127)	Gradation		RCE/ CONTR	1/lot	IM 301	CONTR				V	DME RCE/ CONTR	Sample 1/day, Test 1 st day + 20% Systems Approach*	50 lb. IM 301	CTRL DME/ RCE	IM 216 IM 216		
	Moisture		CONTR	1 / half day	1000 gm	CONTR				IA						Dryer Drum Plants Only	
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing																	
										Cert- Certification Statement			RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor			IA-Independent Assurance V-Verification	

*A project approach may be applied at the discretion of the DME at the frequency 1/project.

NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.

Sampling & Testing Guide-Minimum Frequency

April 15, 2014
Supersedes October 15, 2013

HOT MIX ASPHALT
Section 2303 & 2213

Matls. IM 204
Appendix F (US) Units

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE, & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
PLANT INSPECTION													
Mineral Filler													
Asphalt Binder	DSR Quality	AS Cert											
Cutback		AS Cert											
Emulsion	Residue	AS 360											
GRADE INSPECTION													
Uncompacted Mixture:	Lab Density & Lab Voids	321, 350 325G											
	Moisture Sensitivity	AS Article 2303.02, E,2											
Compacted Mixture	Mat Density, Thickness & Voids	320, 321 337											
	Joint Density	Article 2303.03, D, 4, b											
	Smoothness	341											
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert- Certification Statement				RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent Assurance V-Verification		

* A system approach may be applied at the discretion of the DME.
NOTE: A Verification sample for asphalt binder quality and aggregate quality not required under 2000 tons of mix.
NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.

Sampling & Testing Guide-Minimum Frequency

**STRUCTURAL CONCRETE, REINFORCEMENT, FOUNDATIONS & SUBSTRUCTURES,
CONCRETE STRUCTURES, CONCRETE FLOORS, & CONCRETE BOX,
ARCH & CIRCULAR CULVERTS**

Mats. IM 204
Appendix H (US) Units

October 21, 2014
Supersedes April 15, 2014

Sections 2403, 2404, 2405, 2406, 2412, & 2415

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS			
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT
SOURCE INSPECTION														
Aggregate-Fine (4110)		AS	209											
Aggregate-Coarse (4115)		AS	209											
Granular Backfill (4133)		AS	209											
Portland Cement (4101)	Quality	AS	401											
Fly Ash (4108)	Quality	AS	491.17											
Mixing Water (4102)	Quality								V	RCE	1/source	1pt	CTRL	Not required for potable water from Municipal Supply
GGBFS (Ground Granulated Blast Furnace Slag)	Quality	AS	491.14											
Air Entraining Admixture	Quality	AS	403											
Retarding Admixture	Quality	AS	403											
Water reducing Admixture	Quality	AS	403											
Curing Compound, White (4105)	Lab Tested	AS	405						V	DME	1/batch	1qt	CTRL	Sample batches not previously reported or as required by DME
Curing Compound, Clear (4105)		AS	405.07											
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing														
Cert – Certification Statement			RCE-Resident Construction Engineer/Project Engineer				DME-District Materials Engineer				IA-Independent Assurance			
			CONTR-Contractor				CTRL-Central Materials Office				V-Verification			

NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.

Sampling & Testing Guide-Minimum Frequency

**STRUCTURAL CONCRETE, REINFORCEMENT, FOUNDATIONS & SUBSTRUCTURES,
CONCRETE STRUCTURES, CONCRETE FLOORS, & CONCRETE BOX,
ARCH & CIRCULAR CULVERTS**

October 21, 2014
Supersedes April 15, 2014

Matls. IM 204
Appendix H (US) Units

Sections 2403, 2404, 2405, 2406, 2412, & 2415

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
SOURCE INSPECTION													
Pre-formed Joint Sealer (4136)	Lab-Tested	AS											
Reinforcing Steel Bars (4151)	Quality	AS											
Steel Pile (4167)	Quality	467											
Concrete Pile (4166)	Quality	AS											
Timber Pile (4165)	Quality	Cert AS											
Timber (4162) & Lumber (4163)		Treated-Cert AS											
Concrete Anchors	Quality	AS											
Epoxy Grout	Quality	AS											
Concrete Sealer	Quality	AS											
Subdrain Pipe (4143)	Quality	AS											
Neoprene Bearing Pads (4195)		AS											
Bronze Bearing Plates (4190.03)		AS Cert											
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing													
Cert – Certification Statement			RCE-Resident Construction Engineer/Project Engineer				DME-District Materials Engineer				IA-Independent Assurance		
			CTRL-Central Materials Office				CONTR-Contractor				V-Verification		
NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.													

Sampling & Testing Guide-Minimum Frequency

**STRUCTURAL CONCRETE, REINFORCEMENT, FOUNDATIONS & SUBSTRUCTURES,
CONCRETE STRUCTURES, CONCRETE FLOORS, & CONCRETE BOX,
ARCH & CIRCULAR CULVERTS**

October 21, 2014
Supersedes April 15, 2014

Mats. IM 204
Appendix H (US) Units

Sections 2403, 2404, 2405, 2406, 2412, & 2415

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
SOURCE INSPECTION													
Steel Masonry Plate (4152)		AS Cert											
Precast Units (2407)	Quality	AS 570											
Anchor Bolts (lighting, signing, handrail, structures) (4153)	Lab Tested	ASD											
Structural Steel (4152)	Quality	Cert											Monitor Sample According to plans or other instructions
Aluminum & Steel Bridge Rail & Anchor Assembly		ASD											
Conduit (Electrical) (4185.10) Steel		AS											
Conduit (Plastic) (4185.10)	Lab Tested							V	DME	1/size 4'	CTRL		
Bentonite		Visual											
Flowable Mortar	Lab Tested	Approved Trial Mix 525, 375											Tested by DME
Fabric Formed Revealment		Approved Trial Mix 375											Tested by DME
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert – Certification Statement				RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent Assurance V-Verification		
NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.													

Sampling & Testing Guide-Minimum Frequency

**STRUCTURAL CONCRETE, REINFORCEMENT, FOUNDATIONS & SUBSTRUCTURES,
CONCRETE STRUCTURES, CONCRETE FLOORS, & CONCRETE BOX,
ARCH & CIRCULAR CULVERTS**

October 21, 2014
Supersedes April 15, 2014

Sections 2403, 2404, 2405, 2406, 2412, & 2415

Matls. IM 204
Appendix H (US) Units

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
PLANT INSPECTION													
Aggregate- Fine (4110)	Gradation Deck	302, 306 336	CONTR	IM 528	IM 301	CONTR	800240	RCE/ CONTR	Sample & Test 1/deck pour	IM 301	RCE	Plant Monitor Workbook	See IM 528
	Gradation All other		CONTR	IM 528	IM 301	CONTR		RCE/ CONTR	Sample 1/wk Test 1 st day +20%	IM 301	RCE	Plant Monitor Workbook	See IM 528
	Moisture	308, 528	CONTR	IM 528	IM 301	CONTR							Systems approach applicable
	Sp. Gr.	307	CONTR	IM 528	IM 301	CONTR							See IM 528; if Moisture Probe is used
	Quality	AS 209											
Aggregate- Coarse (4115)	Gradation Deck	302, 306 336	CONTR	IM 528	IM 301	CONTR		RCE/ CONTR	Sample & Test 1/deck pour	IM 301	RCE	Plant Monitor Workbook	See IM 528
	Gradation All other		CONTR	IM 528	IM 301	CONTR		RCE/ CONTR	Sample 1/wk Test 1 st day +20%	IM 301	RCE	Plant Monitor Workbook	See IM 528
	Moisture	308, 528	CONTR	IM 528	2000gm	CONTR							Systems approach applicable
	Sp. Gr.	307	CONTR	IM 528	2000gm	CONTR							
	Quality	AS 209											
Portland Cement	w/c ratio	528	CONTR	1/pour		CONTR				50 lb	CTRL		(1)
	Quality	AS Cert								1/1000 cy	CTRL		(1)
AS-Approved Source			Cert – Certification Statement										
ASD-Approved Shop Drawing			RCE-Resident Construction Engineer/Project Engineer										
S&T-Sampling & Testing			DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor										
			IA-Independent Assurance V-Verification										

(1) These verification samples for concrete materials not required when mix quantity is less than 50 cu. yd.

NOTE: IA may be accomplished by system approach or on a per project basis (IA at 1 per 1000 cy of concrete) at the discretion of the DME according to IM 207.

NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.

Sampling & Testing Guide-Minimum Frequency

**STRUCTURAL CONCRETE, REINFORCEMENT, FOUNDATIONS & SUBSTRUCTURES,
CONCRETE STRUCTURES, CONCRETE FLOORS, & CONCRETE BOX,
ARCH & CIRCULAR CULVERTS**

October 21, 2014
Supersedes April 15, 2014

Mats. IM 204
Appendix H (US) Units

Sections 2403, 2404, 2405, 2406, 2412, & 2415

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS					
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT		
PLANT INSPECTION																
Fly Ash	Quality	AS	Cert	Each Load												
GGBFS(Ground Granulated Blast Furnace Slag)	Quality	AS	Cert	Each Load				800240								
Air-Entraining Admixture (4103)		AS	403							V	RCE	1/batch	1pt	CTRL	(1) Sample lots/batches not previously reported or as required by DME	
Retarding Admixture		AS	403							V	RCE	1/batch	1pt	CTRL		
Water Reducing Admixture (4103)		AS	403							V	RCE	1/batch	1pt	CTRL		
GRADE INSPECTION																
Plastic Concrete	Air Content		318, 327					E145*		V IA	RCE	1/30 cy		RCE DME	If >350 cy placement, DME may increase to 1/50 cy, if consistent during first 90 cy	
	Slump		317, 327							V IA	RCE	1/30 cy		RCE DME		
	Beams		316, 327, 328								RCE	2/placement		RCE	If required per 2403	
	Cylinders										DME			DME	See Note	
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing										Cert – Certification Statement						IA-Independent Assurance V-Verification
<p>(1) These verification samples for concrete materials not required when mix quantity is less than 50 cu. yd. NOTE: IA may be accomplished by system approach or on a per project basis (IA at 1 per 1000 cy of concrete) at the discretion of the DME according to IM 207. NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer. NOTE: Cylinders for strength on primary project bridge decks only and where specifically called for in the plans or specifications.</p>																
* Available from the Office of Construction.																

Sampling & Testing Guide-Minimum Frequency

**STRUCTURAL CONCRETE, REINFORCEMENT, FOUNDATIONS & SUBSTRUCTURES,
CONCRETE STRUCTURES, CONCRETE FLOORS, & CONCRETE BOX,
ARCH & CIRCULAR CULVERTS**

October 21, 2014
Supersedes April 15, 2014

Sections 2403, 2404, 2405, 2406, 2412, & 2415

Mats. IM 204
Appendix H (US) Units

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS			
			SAMPLE BY	FREQ.	SAMPLE SIZE	TES BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT
GRADE INSPECTION														
Reinforcing Steel (4151)	Quality	AS	Cert	Each Shipment				Field Book	V	DME	IM 451	6 ft	CTRL	
Reinforcing Steel Epoxy Coated (4151)	Quality	AS	Cert	Each Shipment				Field Book	V	DME	1 bar	6 ft	CTRL	Will be verification tested for coating
Reinforcing Stainless Steel (4151)	Quality	AS	Cert	Each Shipment				Field Book	V	DME	IM 452	6 ft	CTRL	
Steel Pile (4167)	Quality	AS	Cert	Each Heat				Field Book	V	DME	IM 467		CTRL	
Timber Pile (4165)	Quality	AS	462 Cert						V	DME	IM 467		CTRL	No grade requirement Charge numbers on butt end.
Anchor Bolts (lighting, signing, handrail, structures)	Lab Tested	ASD							V	DME	1/project	1 bolt w/nut & washer	CTRL	Sample only if not source inspected
Steel Masonry Plates (4152)		ASD	Cert	Each Shipment				Field Book						Approved by Materials Department
Bronze Bearing Plates (4190.03)	Lab Tested	AS	495.03	Each Shipment				820905	V	DME	1/project	1 only	CTRL	Sample only if not source inspected
Neoprene Bearing Pads (4195)		ASD		Each Shipment				Field Book						Approved By Materials Dept.
Alum. Bridge Rail & Anchor Assembly Pipe(as per plan)	Dimensions Galvanized	ASD	Visual 332						V	DME	1/project		DME	
AS-Approved Source														
ASD-Approved Shop Drawing														
S&T-Sampling & Testing														
Cert – Certification Statement RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor														
IA-Independent Assurance V-Verification														
NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.														

Sampling & Testing Guide-Minimum Frequency

**STRUCTURAL CONCRETE, REINFORCEMENT, FOUNDATIONS & SUBSTRUCTURES,
CONCRETE STRUCTURES, CONCRETE FLOORS, & CONCRETE BOX,
ARCH & CIRCULAR CULVERTS**

October 21, 2014
Supersedes April 15, 2014

Mats. IM 204
Appendix H (US) Units

Sections 2403, 2404, 2405, 2406, 2412, & 2415

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS				
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT	
GRADE INSPECTION															
Timber (4162) & Lumber (4163)	Quality	AS Treated-Cert AS Cert	462 443, 448												
Subdrain Pipe (4143)	Quality			Each Shipment											
Flowable Mortar (2506)	Flow Test		375							V	RCE	1/4 hours (critical) Visual (noncritical)	RCE	Plant Report	Mix Design approval by DME Lab mix for critical flow only
Grout for Stone Revetment 2507 and Fabric Formed Revetment	Air Content		318 340							V	RCE	1/2 half day		Plant Report	Fabric Formed Mix Design approval by DME
	Flow Test		375							V	RCE	1/2 half day			Fabric Formed Revetment Only
Bentonite Hardened Concrete	Compressive Strength		315												Only when required by the DME
	Flow Test	Visual	375												
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing	Smoothness		341							V	DME	10%	DME		
Cert - Certification Statement			RCE-Resident Construction Engineer/Project Engineer				DME-District Materials Engineer				IA-Independent Assurance				
CONTR-Contractor			CTRL-Central Materials Office				CONTR-Contractor		V-Verification						
NOTE: RCE/CONTR indicates that the Contractor shall assist in the sampling at the direction of and witnessed by the Project Engineer.															

Sampling & Testing Guide-Minimum Frequency
CONCRETE DRILLED SHAFT FOUNDATIONS
 Section 2433

April 15, 2014
 Supersedes October 18, 2011

Matis. IM 204
 Appendix I

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS			
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT
SOURCE INSPECTION														
Aggregate-Fine (4110)		AS	209											
Aggregate-Coarse (4115)		AS	209											
Portland Cement (4101)	Quality	AS	401											
Fly Ash (4108)	Quality	AS	491.17											
Mixing Water (4102)	Quality													Not required for potable water from Municipal Supply
Air Entraining Admixture	Quality	AS	403											
Retarding Admixture	Quality	AS	403											
Reinforcing Steel Bars (4151)	Quality	AS	451											
Permanent Casing	Quality		Cert											According to plans or other instructions
Drilling Slurry		Visual	2433											
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing														
			Cert- Certification Statement											
				RCE-Resident Construction Engineer/Project Engineer				DME-District Materials Engineer				IA-Independent Assurance		
				CONTR-Contractor				CTRL-Central Materials Office				V-Verification		

Quality samples not required when mix quantity is less than 50 cu. yd.

Sampling & Testing Guide-Minimum Frequency
CONCRETE DRILLED SHAFT FOUNDATIONS
 Section 2433

April 15, 2014
 Supersedes October 18, 2011

Matis. IM 204
 Appendix I

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
PLANT INSPECTION													
Aggregate- Fine (4110)	Gradation	302, 306 336	CONTR	IM 528	IM 301	CONTR	RCE/ CONTR	Sample 1/wk Test 1 st day +20% 1/project	IM 301 IM 301	DME RCE			System Approach Applicable
	Moisture	308, 528	CONTR	IM 528	1000 gm	CONTR	DME						See IM 528 if Moisture Probe is used
	Sp. Gr.	307	CONTR	IM 528	1000 gm	CONTR							
	Quality	AS 209											
Aggregate- Coarse (4115)	Gradation	302, 306 336	CONTR	IM 528	IM 301	CONTR	RCE/ CONTR	Sample 1/wk Test 1 st day +20% 1/project	IM 301 IM 301	DME RCE			System Approach Applicable
	Moisture	308, 528	CONTR	IM 528	2000gm	CONTR	DME						
	Sp. Gr.	307	CONTR	IM 528	2000gm	CONTR							
	Quality	AS 209											
Portland Cement	w/c ratio	528	CONTR	1/pour		CONTR							
	Quality	AS Cert											
Fly Ash	Quality	AS Cert											
	Quality	AS 403		Each Load									Sample lots not previously reported or as required by DME
Air-Entraining Admixture (4103)		AS 403					DME	1/batch	1 pint	CTRL			Sample lots not previously reported or as required by DME
	Retarding Admixture	AS 403					DME	1/batch	1 pint	CTRL			Sample lots not previously reported or as required by DME
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert- Certification Statement				RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent Assurance V-Verification		

Quality samples not required when mix quantity is less than 50 cu. yd.

Sampling & Testing Guide-Minimum Frequency
CONCRETE DRILLED SHAFT FOUNDATIONS
 Section 2433

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 Appendix I

April 15, 2014
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MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS			
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT
GRADE INSPECTION														
Plastic Concrete	Air Content	316, 327						V	RCE	1/30 cy	RCE	DME	DME may adjust	
	Slump	317, 327						V	RCE	1/30 cy	RCE	DME	DME may adjust	
	Cylinders							IA	DME	3/project	DME		Primary Projects Only (Information only)	
Reinforcing Steel (4151)	Quality	AS Cert												
Metal Access Pipe		Visual												
Drilling Slurry	Density, Viscosity, pH, Sand Content	387	Each Shipment											
Crosshole Sonic Log Test		2433	CONTR	1/2 hours										
			CONTR	1/shaft										1/4 hours if consistent
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing														
Cert- Certification Statement			RCE-Resident Construction Engineer/Project Engineer				IA-Independent Assurance							
DME-District Materials Engineer			DME-District Materials Engineer				V-Verification							
CTRL-Central Materials Office			CTRL-Central Materials Office											
CONTR-Contractor			CONTR-Contractor											

Quality samples not required when mix quantity is less than 50 cu. yd.

NOTE: IA may be accomplished by system approach or on a per project basis (IA at 1 per project) at the discretion of the DME according to IM 207.

Sampling & Testing Guide-Minimum Frequency

April 14, 2014
Supersedes October 17, 2006

GRANULAR SURFACING/DRIVEWAY SURFACING

Sections 2312 & 2315

Matls. IM 204
Appendix L (US) Units

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
SOURCE INSPECTION													
Class C Gravel (4120.03)	Gradation Quality	AS 209											
Class A Crushed Stone (4120.04)	Gradation Quality	AS 209											
Class B Crushed Stone (4120.05)	Gradation Quality	AS 209											
Class D Crushed Stone (4120.06)	Gradation Quality	AS 209											
Aggregate for Type B, AC or cold laid Bituminous Concrete (for driveways only)	Gradation Quality	AS 209											
Crushed Stone Base (For driveways only) (4122)	Gradation Quality	AS 209											
GRADE INSPECTION													
Dimensions	Thickness Width Cross Slope		RCE	3/mi.								Field Book	
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert- Certification statement										IA-Independent Assurance V-Verification
													RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor

Sampling and Testing Guide-Minimum Frequency

October 15, 2013
Supersedes April 19, 2011

CONCRETE BRIDGE FLOOR REPAIR & OVERLAY & SURFACING

Section 2413

Mats. IM 204
Appendix M

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS			
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT
SOURCE INSPECTION														
Aggregates-Fine (4110)		AS												
Aggregates-Coarse (4115)		AS												
Portland Cement (4101)	Quality	AS												
GGBFS (Ground Granulated Blast Furnace Slag)	Quality	AS											For HPC-O	
Fly Ash (4108)	Quality	AS											For HPC-O	
Mixing Water (4102)	Quality	Lab Tested							V	RCE	1 qt.	CTRL	Not needed for potable Municipal Water	
Air Entraining Admixture (4103)	Quality	AS												
Water Reducing Admixture (4103)	Quality	AS												
Retarding Admixture (4103)		AS												
Curing Compound (4105)	Lab Tested	AS							V	DME	1 batch	CTRL	Sample lots not previously reported	
PLANT INSPECTION														
Aggregate-Fine (4110)		AS												When ready mixed concrete is used
Aggregate-Coarse (4115)	Quality	AS							V	DME	50 lb	CTRL	DME may adjust frequency	
	Gradation								V	RCE	20 lb	RCE	When ready mixed concrete is used	
Portland Cement (4101)	Quality	AS							V	DME	15 lb	CTRL		
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert- Certification Statement			RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor			IA-Independent Assurance V-Verification					

Sampling and Testing Guide-Minimum Frequency

October 15, 2013
Supersedes April 19, 2011

CONCRETE BRIDGE FLOOR REPAIR & OVERLAY & SURFACING

Section 2413

Mats. IM 204
Appendix M

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
PLANT INSPECTION (cont)													
GGBFS(Ground Granulated Blast Furnace Sleg)	Quality	AS	Cert	Each Load									For HFC-O
Fly Ash	Quality	AS	Cert	Each Load									For HFC-O
Air Entraining Admixture (4103)		AS	403						RCE	Each batch	1 pt	CTRL	Sample if not previously reported
Water Reducing Admixture (4103)		AS	403						RCE	Each batch	1 pt	CTRL	Sample if not previously reported
Retarding Admixture (4103)		AS	403						RCE	Each batch	1 pt	CTRL	Sample if not previously reported
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing													
Cert- Certification Statement				RCE-Resident Construction Engineer/Project Engineer				IA-Independent Assurance					
				DME-District Materials Engineer				V-Verification					
				CTRL-Central Materials Office									
				CONTR-Contractor									

Sampling and Testing Guide-Minimum Frequency

October 15, 2013
Supersedes April 19, 2011

CONCRETE BRIDGE FLOOR REPAIR & OVERLAY & SURFACING

Section 2413

Mats. IM 204
Appendix M

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS			
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY	REPORT
GRADE INSPECTION														
Plastic Concrete (2413)	Air	318, 327								V	RCE	1/100 sy(2)	RCE	1/30yd ³ for ready mix, min 1/day
	Slump	317, 327								V	RCE	1/100 sy(2)	RCE	1/30yd ³ for ready mix, min 1/day
	Density	358								V	RCE	See Note	RCE	For Class O PCC only,(1)
	Thickness									V	RCE	3/50 sy	RCE	
	Cylinders									V	DME	3/project	DME	Primary Projects only (Information Only)
Concrete Sealer (2413.03, G)	Quality	AS 491.12												
Hardened Concrete	Smoothness	341	CONTR	100%						V	DME	10%	DME	
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert- Certification Statement											
			RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor											IA-Independent Assurance V-Verification

- (1) Nuclear density testing frequency for each placement shall be one test within 5 feet of the beginning and end of the placement and additional tests shall be equally spaced a maximum of 100 feet throughout the length of the placement. Each placement shall have a minimum of three nuclear density tests.
- (2) For Class O on daily pours of more than 300 square yards, the minimum frequency will be 1 test per 100 square yards for the first 300 square yards, then 1 test for every 300 square yards for the remainder of the day's pour.

Sampling & Testing Guide-Minimum Frequency

April 15, 2014
Supersedes April 16, 2013

SURFACE TREATMENT (Seal Coat, Microsurfacing, Slurry, Joint Repair, Crack Filling, Fog Seal) Matls. IM 204
Section 2307, 2319, 2540, 2544, 2306, 2308

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
SOURCE INSPECTION													
Aggregates (4125)	Quality Gradation	AS	209										
Emulsions/ Cutbacks	Quality	AS	437										
Emulsion & Aggregate	Compatibility		349					DME	1/ source	1 qt & 10lb	DME/ CTRL		Seal Coat
Emulsion & Aggregate	Mix Design												Slurry & Microsurfacing
GRADE INSPECTION													
Aggregate	Quality Gradation	Cert	301					DME	1/proj.	50 lb	CTRL		Seal Coat
Emulsion	Quality Residue	Cert	323, 360					RCE	1/20,000 gal	1 qt	DME	(2)	(1)
	Compatibility		349					RCE	1st day+ 1/week	1 qt & 10 lb	DME		Seal Coat
Cutback	Quality Viscosity	Cert	323										
	Anti-Strip	AS	323, 374										
AS-Approved Source			Cert- Certification Statement										
ASD-Approved Shop Drawing			RCE-Resident Construction Engineer/Project Engineer										
S&T-Sampling & Testing			DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor										
			IA-Independent Assurance V-Verification										

Emulsion samples in plastic bottles only.
No samples required for joint repair, crack filling, and fog seal. Acceptance based on certification only.
(1) Sample emulsion for full width placement seal coat, slurry, and microsurfacing only.
(2) Log all shipments

Sampling & Testing Guide-Minimum Frequency

April 15, 2014
Supersedes October 15, 2013

BASE REPAIR (2212), PAVEMENT REPAIR (PATCHES)

Sections 2529 & 2530

Matls. IM 204
Appendix T

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
SOURCE INSPECTION													
Aggregates Fine (4110)		AS											
Aggregates Coarse (4115)		AS											
Portland Cement (4101)	Quality	AS											
Fly Ash (4108)	Quality	AS											
GGBFS (Ground Granulated Blast Furnace Slag) (4105)	Quality	AS											
Curing Compound (4105)	Lab Tested												
Air Entraining Admixture (4103)	Quality	AS											
Granular Backfill	Gradation Quality	AS											
Drain Tubing	Quality	AS											
Epoxy Grout		AS											
Joint Seal (4136.02)	Lab Tested												
Backer Rod (4136.02)		AS											
Steel Reinforcing	Quality	AS											
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing			Cert- Certification Statement				RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent Assurance V-Verification		

Sampling & Testing Guide-Minimum Frequency

April 15, 2014
Supersedes October 15, 2013

BASE REPAIR (2212), PAVEMENT REPAIR (PATCHES)

Sections 2529 & 2530

Matls. IM 204
Appendix T

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
PLANT INSPECTION													
Aggregates-Coarse (4115)	Grad	302 306 336	CONTR	IM 528	IM 301	CONTR		V	RCE/ CONTR	IM 528	IM 301	RCE	
	Moist		CONTR	IM 528	1000 gm	CONTR							
	Sp. Gr.		CONTR	IM 528	1000 gm	CONTR							
	Quality	AS											
Aggregate- Fine (4110)	Gradation	302, 306 336	CONTR	IM 528	IM 301	CONTR	830211	V	RCE/ CONTR	IM 528	IM 301 IM 301	RCE	
	Moisture	308, 528	CONTR	IM 528	IM 301	CONTR	830211						See IM 528 if Moisture Probe is used
	Sp. Gr.	307	CONTR	IM 528	IM 301	CONTR	830211						
Portland Cement (4101)	Quality	AS		Each Load									
	Quality	Cert		Each Load									
Fly Ash	Quality	AS		Each Load									
	Quality	Cert		Each Load				V	DME	1/batch	1 pt	CTRL	Sample lots not previously reported or as directed by DME
Air Entraining Admixture	Quality	AS						V	DME	1/batch	1 pt	CTRL	
	Quality	403						V	DME	1/batch	1 pt	CTRL	
Water Reducing Admixture	Quality	AS						V	DME	1/batch	1 pt	CTRL	
	Quality	403						V	DME	1/batch	1 pt	CTRL	
Retarding Admixture	Quality	AS						V	DME	1/batch	1 pt	CTRL	
AS-Approved Source			Cert- Certification Statement				RCE-Resident Construction Engineer/Project Engineer				IA-Independent Assurance		
ASD-Approved Shop Drawing							DME-District Materials Engineer				V-Verification		
S&T-Sampling & Testing							CTRL-Central Materials Office						
							CONTR-Contractor						

Sampling & Testing Guide-Minimum Frequency

Matls. IM 204
Appendix V (US) Units

SUBDRAINS
Section 2502

April 15, 2014
Supersedes October 17, 2006

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMS	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
SOURCE INSPECTION													
Drain Tubing (4143)	Quality	AS	443										
Rodent Guard (4143.01)		AS	443.01										
Subdrain Outlet (4143)		AS											
Porous Backfill (4131)	Quality Gradation	AS	209										
Granular Backfill (4133)	Quality Gradation	AS	209										
Class A (Outlets) (4120.04)	Quality Gradation	AS	209										
GRADE INSPECTION													
Drain Tubing (4143)	Quality	AS											
Engineering Fabric (4196)		AS	496.01										
Subdrain Outlet	Quality	AS	Cert										
Porous Backfill (4131)	Gradation	AS	Cert			Each Shipment							
Granular Backfill (4133)	Gradation	AS	Cert			Each Shipment							
Class A (Outlets) (4120.04)	Gradation	AS	Cert			Each Shipment							
Metal Posts (4154.09)		Visual				RCE							
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing													
Cert- Certification Statement						RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor			IA-Independent Assurance V-Verification				

**WATER POLLUTION CONTROL
EROSION CONTROL**

Section 2525, 2601

MATERIAL OR CONSTRUCTION ITEM	TESTS	METHOD OF ACCEPTANCE & RELATED IMs	QUALITY CONTROL				INDEPENDENT ASSURANCE & VERIFICATION S&T				REMARKS		
			SAMPLE BY	FREQ.	SAMPLE SIZE	TEST BY	REPORT	S&T TYPE	SAMPLE BY	FREQ.		SAMPLE SIZE	TEST BY
GRADE INSPECTION													
Seeds 4169		Seed Ticket (rural stabilizing) AS, mix report and cert (seed mixes except rural stabilizing)											
Fertilizer 4169		AS 469.02 469.03											
Inoculants 4169		Seed Manufacturer Recommendation											
Sticking Agent		Manufacturer Recommendation											
Sod 4169		Visual				RCE							
Compost 4169		AS IM 469.10											
Straw Mulch 4169		Cert											
Hydraulic Mulch 4169		AS IM 469.10											
Stakes for Sod 4169		Visual				RCE							
Wire Staples 4169		Visual				RCE							
Wood Excelsior Mat 4169		AS IM 469.10											
Engineering Fabrics		AS IM 496.01											
Silt Fence Wire and Posts (Std. Rd. Plan EC-201)		Visual				RCE							
AS-Approved Source ASD-Approved Shop Drawing S&T-Sampling & Testing													
			Cert- Certification Statement				RCE-Resident Construction Engineer/Project Engineer DME-District Materials Engineer CTRL-Central Materials Office CONTR-Contractor				IA-Independent Assurance V-Verification		

October 21, 2014 Supersedes April 15, 2014		Sampling & Testing Guide-Minimum Frequency		ACCEPTANCE OF SMALL QUANTITIES OF MATERIALS		Mats. IM 204 Appendix X	
Material	Maximum Quantity	Specifications	Alternate Acceptance Method				
Aggregate, non-proportioned, non-critical	200 tons	IM 209	Approved Source and Visual				
Asphalt, HMA	Mix	mixture bid item of 1000 tons	2303	Approved JMF, Contractor QC, and Contractor Certification			
	Binder	mixture bid item of 1000 tons	4137	Approved Source and Supplier Certification			
	Aggregate	mixture bid item of 1000 tons	4127	Approved Source, Producer Certification for gradation and quality, and Contractor QC.			
Concrete, PCC Paving	Aggregate	Less than 2000 Square Yards of Concrete	4110, 4111, 4115	Approved Source, Producer Certification for gradation and quality, Agency gradation verification, and Contractor QC.			
		Less than 10 Cubic Yards of Concrete or Non- structural items Defined in IM 528	4110, 4111, 4115	Approved Source, Producer Certification for gradation and quality, and Contractor QC.			
	Portland Cement	Less than 2000 Square Yards of Concrete	4101	Approved Source and Producer Certification			
	Fly Ash	Less than 2000 Square Yards of Concrete	4108	Approved Source and Producer Certification			
	GGBFS	Less than 2000 Square Yards of Concrete	4108	Approved Source and Producer Certification			
	Admixtures	Less than 2000 Square Yards of Concrete Yards		Approved Source			

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ACCEPTANCE OF SMALL QUANTITIES OF MATERIALS				
Concrete, PCC Structural	Aggregate	Less than 50 Cubic Yards of Concrete		Approved Source, Producer Certification for gradation and quality, Agency gradation verification, and Contractor QC.
		Less than 10 Cubic Yards of Concrete or Non- structural items Defined in IM 528		Approved Source, Producer Certification for gradation and quality, and Contractor QC.
	Portland Cement	Less than 50 Cubic Yards of Concrete		Approved Source and Producer Certification
	Admixtures	Less than 50 Cubic Yards of Concrete		Approved Source
Dowel Baskets, Epoxy-coated		25		Visual & Field Check
Hardware for Timber		100 lbs.	4153.07	Visual
Joint Filler, Preformed		50 ft.	4136.03	Visual & Dimension
Lighting Material-Conduit & Fittings		100 ft	4185.10	Visual & Brand Name
Paint, Bridge		5 gal.	4182	Visual & Brand Name
Pipe, Welded Steel for Bridge Railing		100 ft.	4153.05	Letter of Compliance
Signing, Delineator posts		10	4186.10,C	Visual
Steel Reinforcement, Epoxy Coated (other than bridge decks)		Less than 5 tons	4151.03,B	Approved Source, Producer Certification
Steel Reinforcement, Uncoated		Less than 45 tons	4151	Approved Source, Producer Certification
Steel Reinforcement, Stainless		Less than 1 ton	4151	Approved Source, Producer Certification

Sampling & Testing Guide-Minimum Frequency									
SUPPLEMENTAL GUIDE – BASIS OF ACCEPTANCE									
Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details	
Admixture-Air Entraining	403	C. Ouyang	4103	1 pt.	DME or RCE	Approved Source Batch (Lot)	Project	Contact District Mats.	Mats. IM 204 Appendix Z
Admixture-Corrosion Inhibitor	402		4103	1 pt.	DME or RCE	Approved Source Batch (Lot)	Project	Contact District Mats.	
Admixture-Retarder	403		4103	1 pt.	DME or RCE	Approved Source Batch (Lot)	Project	Contact District Mats.	
Admixture-Water Reducer	403		4103	1 pt.	DME or RCE	Approved Source Batch (Lot)	Project	Contact District Mats.	
Aggregates-Non-proportioned	209	B. Gossman	4110-4133	IM 301	DME/PROD.	Approved Source/Certified Truck Tickets, (Form #821278)	Source	Certified Ticket for pay items by weight	
Aggregates-Proportioned	209 & 204		4110-4133	IM 301	CONTR/RCE/DME	Approved Source/Certified Truck Tickets, (Form #821278)	Source Project		
Aluminum, Structural		Vacant	4190.01			Approved Shop Drawing & Fabrication Report			
Anchor Bolts	453.08	Vacant	2522.03, E,4 4185.02, A 4187.01, C	1 bolt, nut & washer per size, per project	DME	Approved Source/Test Report/Steel Mill Certifications			
Anchors, Concrete	453.09	C. Ouyang				Approved Source			
Anti-Strip Agent	491.16	S. Schram				Approved Source			
Arrow Panels, Solar-Assisted	486.12	J. Putherickal	2528.03, G			Approved Source			
Asphalt Binder	437	S.Schram	4137	1 4-oz. tin	CONTR/DME	Approved Source/Certification Statement /Test Rpt.	Source Project		
Asphalt, Cutback	437		4138	1 qt. tin	RCE	Approved Source/Certification Statement /Test Rpt.	Source		
Asphalt, Emulsified	437	S.Schram	4140	1 qt. bottle	RCE	Approved Source/ Certification Statement /Test Rpt.	Source	Project verification for seal coat	
Attenuators -see crash cushion									
Attenuators, Guardrail		Vacant				As per plan			
Backer Rod for Cold Pour Joint Seal	436.04	J. Putherickal	4136.02, B			Approved Source			

Sampling & Testing Guide-Minimum Frequency
SUPPLEMENTAL GUIDE – BASIS OF ACCEPTANCE

Mats. IM 204
Appendix Z

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Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details
Backer Rod for Hot Pour Joint Seal	436.04		4136.02, B			Approved Source		
Barrier Rail, Precast Concrete	571	M. Khoda	2513			Approved Source/DOT Stamp/Fabrication Report	Source	
Beads, Glass	484	J. Puthierickal	4184	1 qt.	DME	Approved Source	Subcontr.	
Bearing, Bronze		Vacant	4190.03	1/project	DME	Test Report		
Bearing, Lead		Vacant	4195.01			Certification Statement		
Bearing, Neoprene	495.03	Vacant	4195.02	1/pad	DME	Fabrication Report/Approved Source	Fabricator	
Bentonite Clay						Visual Approval by RCE		
Bolts, Nuts & Washers, Structural	453.06B	Vacant	4153.06	Per IM 453.06B	DME	Mill Certification/Rotational Capacity Test/Test Report		
Calcium Chloride Solution	373		4194.01	4 lbs. or 1 qt.	RCE	Test by RCE		
Caulking Compound			4192			Visual Approval by RCE		
Concrete, Special Sections	445.01	M. Khoda	4145 4149.02, B			Approved Source, Fabricator's trade mark, Date of Manufacture, Certified stamp, Certification Statement	Source	
Concrete, Modular & Segmental Block	445.04	M. Khoda				Approved Source/Certification Statement		
Concrete, Precast Box Culvert	445.02		2415			Approved source, Approved Shop Drawing, Fabricator's trade mark, Date of Manufacture, Certified stamp, Certification Statement	Source	
Concrete, Prestressed, Precast Units	570		2407			Approved Source, Fabricator's trade mark, Date of Manufacture, DOT Inspection stamp, Fabrication Report	Source	
Concrete Sealer	491.12	C. Ouyang	4139			Approved Source		
Conduit – See Lighting Matl.								
Curing Mats., Burlap			4104			Visual Approval by RCE		

Sampling & Testing Guide-Minimum Frequency

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SUPPLEMENTAL GUIDE – BASIS OF ACCEPTANCE

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Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details
Curing Mats., Clear	405.07	J. Putherickal	4105.07			Approved Source		
Curing Mats., Dark-colored	437	S.Schram	4105.06			Approved Source	Source	
Curing Mats., Plastic Film			4106.01			Visual Approval by RCE		
Curing Mats., White Pigmented	405	J. Putherickal	4105.05	1 qt.		Batch (Lot) Accept	Source	
Crash Cushion	455	J. Putherickal	2551			Approved Source, Certification Statement if source not clearly marked		
Delineators-See Signing Mats.								
Detectable Warning Panels	411	Vacant	2511.02, D			Approved Source		
Dowel-See Steel Reinforcement								
Drainage Trough, Elastomeric Bridge Joints	494	J. Putherickal				Approved Source		
Drains, Floor		Vacant	2406.03, D			Approved Shop Drawing & Fabrication Report		
Drums, Channelizing	488.02	J. Putherickal	4188.02			Approved Source		
Epoxy-coated Steel-See Steel Reinforcement								
Epoxy Injection Resin	491.19	C. Ouyang				Approved Source		
Erosion Control, Fertilizer	469.03	J. Putherickal	4169.03			Approved Source http://idalsdata.org/lowaData/fertilizer.cfm		if material is suspect, DME will sample
Erosion Control, Inoculant			4169.04			Seed Manufacturing Recommendation		
Erosion Control, Mulch			4169.07			Visual Approval by RCE		
Erosion Control, Mulch, Hydraulic	469.10	J. Putherickal	4169.07			Approved Source		
Erosion Control, Mulch, Weed Free			4169.07			Weed Free Certification Statement		

Sampling & Testing Guide-Minimum Frequency									
October 21, 2014 Supersedes April 15, 2014					SUPPLEMENTAL GUIDE – BASIS OF ACCEPTANCE				
Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details	
Erosion Control, Perimeter & Slope Sediment Control Devices	469.10	J. Putherickal	4169.07			Approved Source			
Erosion Control, Seed	469.02		4169.02			Seed Ticket Printed with Test Data (rural stabilizing) Approved Source, seed mixture report and certification (seed mixes except rural stabilizing)			
Erosion Control, Silt Fence Fabric	496.01		4196.01			Approved Source			
Erosion Control, Silt Fence Wire & Posts						Visual Approval by RCE			
Erosion Control, Sod			4169.06			Visual Approval by RCE			
Erosion Control, Sod Stakes			4169.09			Visual Approval by RCE			
Erosion Control, Sticking Agent			4169.05			Seed Manufacturing Recommendation			
Erosion Control, Wire Staples			4169.10, A			Visual Approval by RCE			
Erosion Control, Wood Excelsior Mat	469.10	J. Putherickal				Approved Source			
Expansion Device, Steel		Vacant	4152.02			Approved Shop Drawing & Fabrication Report			
Expansion Tube			4191.01, B			Visual Approval by RCE			
Fabric Engineering	496.01	J. Putherickal	4196.01			Approved Source			
Fasteners, Aluminum Structural	486	Vacant	4190.02			Fabrication Report			
Fence, Barbed Wire			4154.04			Visual Approval by RCE			
Fence, Brace for Field Fence			4154.08			Visual Approval by RCE			

Sampling & Testing Guide-Minimum Frequency
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Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details
Fence, Tie & Tension Wire			4154.05			Visual Approval by RCE		
Fence, Chain Link Fabric	454.10	Vacant	4154.03	1/source/yr		Approved Source/ Certification Statement	Project	
Fence, Chain Link Fittings			4154.11			Visual Approval by RCE		
Fence, Chain Link Posts, Braces, & Rails	454.10		4154.10	1/source/yr		Approved Source/ Certification Statement	Project	
Fence, Field Fence Fabric			4154.02			Visual Approval by RCE		
Fence, Gate			4154.12			Visual Approval by RCE		
Fence, Orange Mesh Safety	488.03	J. Putherickal	4188.03			Approved Source		
Fence, Silt-See Erosion Control								
Fence, Staples			4154.06			Visual Approval by RCE		
Fence, Steel Line Posts			4154.09			Visual Approval by RCE		
Fence, Wood Fence Post	462	C. Ouyang	4154.07			Approved Source/Certification of Grade/Certified Treatment Test Report		
Fertilizer-See Erosion Control								
Fly Ash	491.17	C. Ouyang	4108	15 lbs.	DME	Approved Source/ Certification Statement	Project Source	Verification on paving only
Galvanized Items		Vacant	4100.07		DME	Test Report by District Materials		
GGBFS	491.14	C. Ouyang	4108.02			Approved Source/ Certification Statement	Source Project	
Grating (Aluminum)		Vacant	4187.01, A			Approved Shop Drawing & Fabrication Report		
Grout, Hydraulic Cement	491.13	C. Ouyang				Approved Source		
Grout, Polymer	491.11	C. Ouyang				Approved Source		
Guardrail, Cable		Vacant	4155.03	6 ft.	DME	Test Report by Central Lab		

Sampling & Testing Guide-Minimum Frequency									
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October 21, 2014 Supersedes April 15, 2014					Mats. IM 204 Appendix Z				
Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details	
Guardrail, High Tension Cable	455.01	Vacant	2505.03, B			Approved Source/ Certification Statement			
Guardrail, Formed Steel Beam	455.02		4155.02			Approved Source			
Guardrail, Steel Posts		Vacant	4155.05			Mill Test Report			
Guardrail, Wood Posts	462	C. Ouyang	4155.04			Approved Source/Certification of Grade/Certified Treatment Test Report			
Iron Castings, Utility Access Covers, etc.	453.04	Vacant	4153.04			Certification Statement & Proper Identification Imprint			
Iron Castings, Utility Access Adjustment Rings	449.05					Approved Source/Certification Statement			
Iron Bridge Rockers		Vacant	4153.04			Approved Shop Drawing & Fabrication Report			
Joint Filler, Flexible Foam-Type CF & EF Joints	436.05	J. Putherickal	4136.03, B 4136.03, D			Approved Source			
Joint Filler, Type E Joint	436.03		4136.03, A			Approved Source			
Joint Filler, Bituminous	436.03		4136.03, A			Approved Source			
Joint Sealer for Concrete Sewer Pipes	491.09		4149.04,D,2			Approved Source			
Joint Sealer, Elastomeric (Neoprene)	436.02		4136.03			Approved Source			
Joint Sealer, Poured	436.01		4136.02, A			Approved Source			
Keyway			4191.01, A			Visual Approval by RCE			
Lighting Material, Aluminum Poles	557	Vacant	4185.02, F			Approved Shop Drawing/Approved Source/Certification Statement			
Lighting Material, Circuit Test			2523.03, U		Contractor	Test Report (Contractor) Form #820928			
Lighting Material, Connectors			4185.11			Approved Catalog Cut			
Lighting Material, Contactors			4185.05			Approved Catalog Cut			

Sampling & Testing Guide-Minimum Frequency

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Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details
Lighting Material, Control Cabinet			4185.07			Approved Shop Drawing & Catalog Cut		
Lighting Material, Conduit & Fittings, Plastic			4185.10, D	4'-Plastic	DME	Test Report		
Lighting Material, Conduit & Fittings, Steel	485.10	J. Putherickal	4185.10, B			Approved Source		
Lighting Material, Ground Rods & Clamps			4185.04			Visual		
Lighting Material, Handholes	445.01	M. Khoda	4185.08			Approved Source, Fabricator's trade mark, Date of Manufacture, Certified stamp, Certification Statement	Source	
Lighting Material, Junction Boxes			4185.09			Approved Catalog Cut		
Lighting Material, Lighting Tower	557	Vacant	2522.03, E			Approved Shop Drawing/Approved Source/Certification Statement		
Lighting Material, Lowering Device			2522.03, G			Approved Shop Drawing & Fabrication Report		
Lighting Material, Luminaries			4185.03			Approved Catalog Cut		
Lighting Material, Photoelectric Control			4185.06			Approved Catalog Cut		
Lighting Material, Sealant for Traffic Loop Detectors	491.18	J. Putherickal				Approved Source		
Lighting Material, Steel Poles	557	Vacant	4185.02, E			Approved Shop Drawing/Approved Source/Certification Statement		
Lighting Material, Underground Warning Tape			2523.03, E			Visual Approval by ROE		
Lighting Material, Wire & Cable			4185.12			Approved Catalog Cut & Certification Statement		DME may obtain verification samples
Lighting Material, Wood Poles	462	C. Ouyang	4185.02, G			Approved Source/Certification Statement		

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October 21, 2014
Supersedes April 15, 2014

Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details
Lighting Material, Fasteners for Poles	453.09	C. Ouyang	4185.02, B	1 each type	DME	Test Report & Approved Shop Drawing		
Lighting Material, Mastarms	557	Vacant	4185.02, C			Approved Shop Drawing/Approved Source/Certification Statement		
Lighting Material, Slip Base	557		4185.02, B			Approved Shop Drawing/Approved Source/Certification Statement		
Lighting Material, Transformer Base	557		4185.02, D			Approved Shop Drawing/Approved Source/Certification Statement		
Markers (reflective) for Guardrail & Concrete Barrier Rail	486.08	J. Putherickal	4186.12			Approved Source		
Markers, Raised Pavement	483.07		2527.02, D,5			Approved Source		
Mastarms-See Lighting Materials								
Paint, Epoxy Aluminum	482.04					Approved Source		
Paint, Traffic-VOC-Compliant Solvent-borne	483.03		4183.02			Approved Source		
Paint, Traffic Waterborne	483.03		4183.03			Approved Source	Subcontr.	
Paint, Waterborne Acrylic Finish (Bridge Paint)	482.05	J. Putherickal	4182.03			Approved Source/Certification Statement		
Paint, Zinc-rich Epoxy	482.02		4182.02			Approved Source/Certification Statement		
Paint, Zinc-silicate Solvent-borne	482.05		4182.02			Approved Source/Certification Statement		
Patch Material, Rapid-set Concrete	491.20	C. Ouyang				Approved Source		
Pedestrian Bridge, Pre-engineered	557	Vacant				Approved Source/Approved Shop Drawing		
Piling, Concrete	570	M. Khoda	4166			Approved Source, Fabricator's trade mark, Date of Manufacture, DOT Inspection stamp, Fabrication Report	Source	

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Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details
Piling, Timber	462	C. Ouyang	4165			Approved Source/Certification of Grade/Certified Treatment Test Report		Charge number on butt ends
Piling, Steel	467	Vacant	4167			Approved Source/Mill Certification	Project	
Pipe, PVC Sewer	443, 446	J. Putherickal	4149.02			Approved Source/Certification Statement	Source	
Pipe, Concrete	445	M. Khoda	4145			Approved Fabricator, Fabricator's trade mark, Date of Manufacture, Certified stamp, Certification Statement	Source	
Pipe, Corrugated Aluminized	441	Vacant	4141			Approved Source/Certification Statement		
Pipe, Corrugated Polyethylene 3-10 in.	443	J. Putherickal	4146.02 4143.01			Approved Source	Source	
Pipe, Corrugated Polyethylene 12-36 in.	446	J. Putherickal	4146.02			Approved Source/Certification Statement	Source	
Pipe, Corrugated Steel	441	Vacant	4141			Approved Source/Certification Statement	Fabricator	
Pipe, Ductile Iron Sewer			4149.02			Certification Statement		
Pipe, Polyethylene Sewer	443, 446	J. Putherickal	4146.03			Approved Source/Certification Statement	Source	
Pipe, Rodent Guard for PE Pipe	443.01	Vacant	4143.01, B			Approved Source		
Pipe, Rodent Guard for CMP Pipe	443.01	Vacant	4143.01, B			Approved Source		
Pipe, Concrete Subdrain Tile	448	J. Putherickal	4148			Approved Source/Certification Statement	Source	
Pipe, Corrugated Metal Subdrain Outlet	441	Vacant	4143.01, B			Approved Source/Certification Statement	Fabricator	
Pipe, Corrugated Polyethylene Subdrain	443	J. Putherickal	4143.01, B			Approved Source	Source	
Pipe, Welded Steel for Bridge Rail (See Railing, Bridge)		Vacant						
Pipe, Horizontal Subdrain	443	J. Putherickal	4143.01, A			Approved Source	Source	

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Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details
Plant Material, Fertilizer	469.03	J. Putherickal	4170.09, B			Approved Source		
Plant Material, Mulch	470	J. Putherickal	4170.09, D		RCE	Field Review Report		
Plant Materials, Plants	470	C. Ouyang	4170.01- 4170.08		Roadside Development	Field Review Report	Source	Rpt. Issued-Roadside Development
Portland Cement Concrete Premix Pack	447					Approved Source/Certification Statement	Source	
Portland Cement, All Types	401	C. Ouyang	4101	10 lbs.	DME	Approved Source/Certification Statement	Project Source	
Railing, Bridge			4153.05			Approved Source/Approved Shop Drawing/Fabrication Report		Approved Source
Reflective Sheeting-See Signing Material								
Release Agent			491.15	C. Ouyang				
Sealant, Traffic Loop-See Lighting Material								
Seed-See Erosion Control								
Signing Material, Delineator Posts					4186.10, C	1 each supplier	DME	Test Report
Signing Material, Delineators	486.07	J. Putherickal	4186.11			Approved Source	Project	
Signing Material, Finished Sign	486	J. Putherickal	4186			Shipping Report/Approved Source/Certification Statement	Source	
Signing Material, Fasteners			4186.09			Fabrication Report		
Signing Material, Reflective	486.03	J. Putherickal	4186.03			Approved Source	Source	
Signing Material, Sign Panels			4186.02			Approved Shop Drawing & Shipping Report		
Signing Material, Sign Support Structures	557	Vacant	4187			Approved Source/Approved Shop Drawing/Fabrication Report		
Signing Material, Stainless Steel Fasteners	453.07	Vacant		1 per size per proj.	DME	Approved Source/Mill Certification	Project	

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Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details
Signing Material, Steel Posts			4186.10			Approved Shop Drawing & Shipping Report		
Signing Material, Wood Posts	462	C. Ouyang	4186.10			Approved Source/Certification of Grade/Certified Treatment Test Report		
Signing Material, Galvanized Items			4100.07			Test Report by District Materials		
Sod-See Erosion Control								
Steel Castings			4153.03			Approved Source/Catalog Cut		
Steel Masonry Plates			4152.02			Mill Certification		
Steel Pipe, Welded			4153.05			Approved Shop Drawing & Fabrication Report		
Steel, Pins/Rollers, Cold Finished			4153.02			Approved Source/Catalog Cut		
Steel, Pins/Rollers, Forged			4153.01			Approved Source/Catalog Cut		
Steel Reinforcement, Basket Assemblies	451.03B	Vacant	4151.02			Approved Source/Certification Statement		
Steel Reinforcement, Epoxy-coated	451.03B	Vacant Vacant	4151.03, C	6 ft.	DME	Approved Source/Mill Certifications & Epoxy Certification Statement /Test Report	Project	Test sample should be 3 ft. away from end of the bar.
Steel Reinforcement, Epoxy-coated Tie Bars	451.03B		4151.02, A	1 per project per year		Approved Source/Certification Statement	Project	
Steel Reinforcement, Epoxy-coated Dowels	451.03B		4151.02, B	1 per project per year		Approved Source/Certification Statement	Project	
Steel Reinforcement, Galvanized	451		4151.03, B	3 ft.	DME	Mill Certifications & Test Report for Galvanizing	Project	

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October 21, 2014 Supersedes April 15, 2014								Mats. IM 204 Appendix Z	
Material	IM	Contact	Spec.	Sample Size	Sampled By	Basis of Acceptance	Verification	Other Details	
Watermain, Appurtenances				4150.05			Catalog Cut/ Mill Certification		
Watermain, Ductile Iron Pipe			4150.02			Mill Certification			
Watermain, Ductile Iron Pipe Fittings			4150.02			Catalog Cut/ Mill Certification			
Watermain, Fire Hydrant Assembly			4150.04			Catalog Cut/ Mill Certification			
Watermain, PVC Pipe	446	J. Putherickal	4150.02			Approved Source/Catalog Cut/ Certification Statement			
Watermain, PVC Pipe Fittings	446	J. Putherickal	4150.02			Approved Source/Catalog Cut/ Certification Statement			
Watermain, Valves			4150.03			Catalog Cut/ Mill Certification			
Wood, Hardware for Timber Structure	462	J. Putherickal	4153.07	1 ea. type		Test Report			
Wood, Treated Posts	462	J. Putherickal	4164			Approved Source/Certification of Grade/Certified Treatment Test Report			
Wood, Treated Timber & Lumber	462		4162			Approved Source/Certification of Grade/Certified Treatment Test Report			
Wood, Untreated Timber & Lumber	462	C. Ouyang	4162	Visual	RCE	Quality grad mark or certification of grade on items requiring grade			

**PROJECT
INSPECTION**

0.00 ¤

0.00 ¤

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~~28,280.00 +~~

~~29,200.00 +~~

~~29,720.00 +~~

~~30,080.00 +~~

~~29,280.00 +~~

~~28,400.00 +~~

~~28,680.00 +~~

~~28,380.00 +~~

~~29,320.00 +~~

~~29,520.00 +~~

~~28,380.00 +~~

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TONS

10-11-2010
ESFM-C031
(61) - 55-31
Farley Rd
REB #4

Gravel
Surface

M.L.

533700
to
523700
LITE
lift.

CE QUARRY
A-31060

CE 10277

DYERSVILLE
P.O. BOX 246
PH: 875-7145



CASCADE
P.O. BOX 610
PH: 852-3313

CRUSHED ROCK - AGRICULTURAL LIME - SAND AND GRAVEL

08:27AM 10/11/2010

Date _____

Sold To T. Riggan

Address _____

ESM-C031(61) 55-31

Deliver To Farley Rd Box 4

IOWA SECRETARY OF AGRICULTURE CERTIFIED

Granular Boulders POUNDS E.C.C.E. PER TON
SURFACE

PRODUCT

	LIME FILL	BALLAST STONE	CONCRETE STONE	RD. ROCK
	CHIPS	RIP RAP D or E	QUARRY LIME	
GROSS	51880 lb		PRICE	
TARE	22740 lb RECALLED		HAUL	
NET	29140 lb		TAX	
	14.57 T		COUNTY TAX	
			TOTAL	

CERTIFICATE STATEMENT

The material herein described has been sampled and tested as prescribed by the Iowa Highway Comm. and complied with the applicable specifications.

Initial _____ Date _____

Driver DLW ID 04

Truck Number _____ Weighmaster CK

Rec'd By X OK

CE QUARRY
A-31060

CE08310



DYERSVILLE P.O. BOX 246 PH: 875-7145
CASCADE P.O. BOX 610 PH: 852-3313

CRUSHED ROCK - AGRICULTURAL LIME - SAND AND GRAVEL
03:49PM 08/19/2010

Sold To Plant Date _____
Address _____

Deliver To _____
IOWA SECRETARY OF AGRICULTURE CERTIFIED

POUNDS E.C.C.E. PER TON

PRODUCT		CONCRETE STONE		RD. ROCK	
LIME FILL	BALLAST STONE	CHIPS	RIP RAP D or E	QUARRY LIME	
		56960 lb			
GROSS		22800 lb	RECALLED	KIWA09	PRICE
TARE		34160 lb			TAX
NET		17.08 T			COUNTY TAX
				TOTAL	

CERTIFICATE STATEMENT

The material herein described has been sampled and tested as prescribed by the Iowa Highway Comm. and compiled with the applicable specifications.

Initial T.M Date 8-19-2010
Driver Cony ID 66 SCD

Truck Number _____ Weighmaster _____

Rec'd By X _____

LOES
A-53532

L1792



DYERSVILLE P.O. BOX 246 PH: 875-7145
CASCADE P.O. BOX 610 PH: 852-3313

CRUSHED ROCK - AGRICULTURAL LIME - SAND AND GRAVEL
10:35AM 08/10/2010

Sold To Bard Date _____
Address _____

Deliver To Cascade plant
IOWA SECRETARY OF AGRICULTURE CERTIFIED

POUNDS E.C.C.E. PER TON

PRODUCT		FILL SAND		MASON SAND	
CONCR. SAND	1' FILTER GRAVEL	3' FILTER ROCK			
	62300 lb				
GROSS	26300 lb	RECALLED	KIWA09	PRICE	
TARE	36000 lb			TAX	
NET	18.00 T			COUNTY TAX	
				TOTAL	

CERTIFICATE STATEMENT

The material herein described has been sampled and tested as prescribed by the Iowa Highway Comm. and compiled with the applicable specifications.

Initial T.M. Date 8-10-2010
Driver Ryke ID 69 #30100

Truck Number _____ Weighmaster _____

Rec'd By X _____

Browser window showing the Iowa Department of Transportation website. The address bar displays <https://maple.iowadot.gov/>. The page title is "Iowa Department of TRANSPORTATION". The navigation menu includes "INDEX A B C D E F G H I J K L M N O P Q R S T U V W X Y Z" and "DOT Home | DOT Phone Book | Contact Us".



[SIGN IN](#)

Materials APL Enterprise

Welcome to Materials Approved Product List Enterprise (MAPLE)

MAPLE contains a searchable database of most of the approved products, sources, producers, and suppliers of materials for Iowa highway projects. MAPLE may be searched by the brand/product name, producer, Materials Instructional Memorandum (IM) number, or material name. New approvals are continually added as they become approved for use. For the products and sources that are not in the database, they can be found at:

- [Aggregate sources](#)
- [Seed conditioners](#)
- [Fertilizer sources](#)
- [Certified weed seed free mulch](#)

Matis. IM T203 GENERAL AGGREGATE SOURCE INFORMATION

Please contact kevin.jones@dot.iowa.gov or todd.hanson@dot.iowa.gov if you have questions or need assistance.



[Policies and Statements](#) | [Applets and Plug-ins](#)
Iowa Department of Transportation - 800 Lincoln Way - Ames, IA 50010

System tray area containing icons for various applications and system functions, including a globe, a folder, a printer, a network connection, and a clock showing 6:13 PM on 1/5/2015.

GENERAL AGGREGATE SOURCE INFORMATION

GENERAL

Only those sources which have been sampled or tested within the last ten years are listed. This listing additionally ranks sources in accordance with a frictional classification as defined herein for aggregates used in Hot Mix Asphalt (HMA) construction, durability class for coarse aggregates used in Portland Cement Concrete (PCC) construction, and Approved Fine Aggregate. Upon request, new sources or different combinations of beds within an existing source can be evaluated for classification. These rankings do not in any way waive the normal quality requirements for the particular types of aggregates indicated in contract documents.

Aggregate sources are continuously updated and the most current version of this IM can be found on the Materials Approved Product List Enterprise (MAPLE) website at <https://maple.iowadot.gov/>.

PORTLAND CEMENT CONCRETE AGGREGATES

Aggregates shall be produced from sources approved in accordance with the requirements of Office of Materials IM 409. The engineer may approve scalping of some portion of the coarser fraction.

All aggregates produced and inspected for intended use in contracts under Iowa Department of Transportation Specifications shall be stored in identifiable stockpiles unless they are being delivered as produced.

DURABILITY CLASSIFICATION

The coarse aggregates have been divided into three classes in accordance with their durability level as determined by performance or laboratory testing.

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.

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.

Class 3i durability aggregates will produce no deterioration of the interstate road system after 30 years of service and less than 5% deterioration of the joints after 35 years.

NOTE: Those sources with a “B” in their durability class designation are approved for 1/2 in. Bridge Deck Overlay/Repair material.

HOT MIX ASPHALT AGGREGATES

Aggregates for HMA construction have been classified into five main functional types in accordance with their frictional characteristics. Those aggregates with the potential to develop the greatest amount of friction under traffic conditions are classified as Type 1 with the potential for friction decreasing as the type number increases. One or more friction types may be specified for use in pavement surface courses. If a type is not specified in the contract documents, Type 5 or better will be acceptable. Tentative bed limitations are shown in this publication.

The frictional classification types are listed and defined in order of descending quality as follows.

Type 1: Aggregates, which are generally, a heterogeneous combination of minerals with coarse-grained microstructure of very hard particles (generally, a Mohs hardness range of 7 to 9) bonded together by a slightly softer matrix. These aggregates are typified by those developed for and used by the grinding-wheel industry such as calcined bauxite (synthetic) and emery (natural). They are not available from Iowa sources. Due to their high cost, these aggregates would be specified only for use in extremely critical situations.

Type 2: Natural aggregates in this class are crushed quartzite and both fine and coarse-grained crushed igneous rocks. The mineral grains in these materials generally have a Mohs hardness range of 5 to 7. Synthetic aggregates in this class are some air-cooled steel furnace slags and others with similar characteristics. For all L2 asphalt mixtures, pipestone and sandstone in quartzite may not exceed 1 percent. For all other asphalt mixtures, pipestone and sandstone in quartzite may not exceed 5 percent.

Type 3: Natural aggregates in this class are crushed gravels. The crushed gravels shall contain 40% or more igneous and metamorphic particles. Synthetic aggregates in this class are the expanded shales with a Los Angeles abrasion loss less than 35 percent.

Type 4: Aggregates crushed from dolomitic or limestone ledges in which 80 percent of the grains are 20 microns or larger. The mineral grains in the approved ledges for this classification generally have a Mohs hardness range of 3 to 4. For natural gravels, the Type 5 carbonate (see below) particles, as a fraction of the total material, shall not exceed the non-carbonate particles by more than 20 percent.

Type 5: Aggregates crushed from dolomitic or limestone ledges in which 20 percent or more of the grains are 30 microns or smaller.

SOURCE LISTINGS - Explanation

NOTE: - number indicates additional source restrictions (bottom of page)
 L=limestone (<15% MgO) and D=dolomite (≥15% MgO), defines rock type for L2 surface mix designs.

Bed numbers shown for PCC aggregate are those on the formal source approval letter. Beds shown for HMA sources are those which have been used or have potential for use and are of the designated friction type.

Frictional Classification - as indicated on page 2
 Hot Mix Asphalt - Type A and B

Durability Class for Portland Cement Concrete Coarse Aggregate ("B" indicates acceptability for Bridge Deck Overlay/Repair)
 Fine Aggregate (X=PCC and HMA Approval, H=HMA use only)

Source Code Number - Used to identify sources on test requests and for data storage (A-number).

Specific Gravity
 DWU-Determine When Used by Iowa DOT

CODE	OPERATOR	SOURCE NAME	LOCATION	BULK SSD SpGr	DUR PCC		FRICT HMA		BEDS	N O T E
					CA	FA	A	B		
29	DES MOINES DIST 5	CRUSHED STONE								
A29002	L&W QUARRIES INC	MEDIAPOLIS-LEONARD	SE 01 T071 R04W	2.65	3		4 4	15	L, 1	
							4 4	15 - 18	L	
							5 5	20	L	
A29008	CESSFORD CONST CO	NELSON	NE 26 T072 R02W	2.62	3		4 4	21 - 24		
							4 4	7 - 20	L	
							4 4	15 - 24		
A29012	CESSFORD CONST CO	GEODE	NE 01 T069 R05W				5 5	24 - 27	L	
							4 4	11 - 12	L	
							5 5	9 - 13	L	
							4 4	17	L	
		SAND & GRAVEL								
A29502	CESSFORD CONST CO	SPRING GROVE	SW 36 T069 R03W	2.66	3	X	4 4			

NOTE 1: AASHTO 57 GRADATION MAXIMUM

RECENTLY ACTIVE AGGREGATE SOURCES

CODE	OPERATOR	SOURCE NAME	LOCATION	BULK SSD SpGr	DUR PCC CA FA	FRICT HMA		BEDS	N O T E
						A	B		
30	DICKINSON	DIST 3	SAND & GRAVEL						
A30504	HALLETT MATERIALS CO	ROHLIN	NE 06	TO98	R36W		H	3 3	
A30508	HALLETT MATERIALS CO	FOSTORIA/LOST	32	TO98	R37W	2.71 2.67	2 X	3 3	
A30510	WEDEKING PIT & PLANT INC	WEDEKING	NE 07	TO98	R36W				
A30512	DICKINSON CO	WESTPORT	NE 17	TO98	R38W		H	4 4	
A30514	HALLETT MATERIALS CO	MILFORD/LEITH	NE 04	TO98	R37W	DWU	2	H 3 3	
A30516	COHRS CONSTRUCTION INC	CROSBY	NW 21	T100	R37W		H		
A30518	COHRS CONSTRUCTION INC	SMITH	SE 06	TO98	R36W		H		
A30520	HALLETT MATERIALS CO	MILFORD/DERNER	W2 13 E2 14	TO98	R37W	DWU DWU	2	X H	
A30522	HALLETT MATERIALS CO	FODNESS	CT 23	T100	R36W		H		
A30524	COHRS CONSTRUCTION INC	COHRS/DERNER	S2 NE 14	TO98	R37W		H		
A30526	NORTHWEST R/M CONC INC	MILL CREEK	SW 08	TO97	R36W		H		
31	DUBUQUE	DIST 6	CRUSHED STONE						
A31002	RIVER CITY STONE	ROSE SPUR	27	TO90	R02E	2.66	3i	4 4 4 4	1 - 8 1 - 15
A31006	BARD-KUHLMAN	DYERSVILLE-SUNDHEIM	SE 32	TO89	R02W	2.66	3i	4 4 4 4	5 - 12 5 - 8
A31008	CJ MOYNA & SONS	KLEIN-RICHARDSVILLE	NW 33	TO90	R01E	DWU	3i	4 4 4 4	3A - 4B 1 - 4
A31010	RIVER CITY STONE	BROWN	NW 33	TO89	R02E	2.65	3i	4 4 4 4 4 4	3 - 9A 2 - 9 9B
A31014	BARD CONCRETE CO	KURT	N2 35	TO87	R02W	2.70	3iB	4 4	1 - 2
A31018	RIVER CITY STONE	MELOY	NW 23	TO87	R01E	DWU	3i	4 4	1 - 3
A31020	RIVER CITY STONE	SCHLITCHE	SE 11	TO89	R02W	DWU	3i	4 4	1 - 4
A31024	BARD-KUHLMAN	JOHNS CREEK	SW 36	TO88	R02W	2.69	3i	4 4 4 4	3 - 4 1 - 4
A31026	WENDLING QUARRIES INC	ARNSDORF	SE 25	TO87	R02E	DWU	3i	4 4	1 - 2
A31028	RIVER CITY STONE	THOLE	NW 21	TO87	R02E	DWU	3i	4 4	1 - 2
A31030	RIVER CITY STONE	KEMP	NE 09	TO89	R01W			4	D, 1
A31032	BRUENING ROCK PROD INC	CASCADE-REITER	NW 28	TO87	R01W	DWU	3i	4 4	1B - 5
A31036	RIVER CITY STONE	BALLTOWN	SE 05	TO90	R01E				
A31040	RIVER CITY STONE	KENNEDY	NW 03	TO88	R01W			4	
A31042	RIVER CITY STONE	GANSEN	NW 09	TO87	R02E			4	
A31046	WENDLING QUARRIES INC	DECKER	SE 24	TO87	R02E	DWU	3i	4 4	1 - 5
A31048	RIVER CITY STONE	MCDERMOTT	NE 35	TO88	R01W	2.65	3i	4 4	2
A31050	RIVER CITY STONE	PLOESSEL-DYERSVILLE	N2 07	TO88	R02W	2.74	3i	4 4	3 - 5
A31052	HORSFIELD MATERIALS INC	EPWORTH-KIDDER	SW 02	TO88	R01W	DWU	3i	4 4	2
A31056	RIVER CITY STONE	RUBIE	SE 06	TO88	R03E	DWU	3iB	4 4	5 - 9
A31058	RIVER CITY STONE	HOLY CROSS	SW 12	TO90	R02W				
A31060	BARD CONCRETE CO	EAST CASCADE	SE 22	TO87	R01W	2.71	3iB	4 4	2 - 5
A31064	RIVER CITY STONE	WEBER	NE 32	TO89	R02E	2.67	3i	4 4	3 - 9A
A31066	RIVER CITY STONE	FILLMORE	SW 26	TO87	R01W	2.70	3i	4 4	2 - 4
A31068	HORSFIELD MATERIALS INC	DYERSVILLE-MAIERS	SE 19	TO89	R02W	DWU	3i	4 4	2
A31504	BARD CONCRETE CO	SAUSER PROPERTY	NW 36	TO87	R02W	2.66	X	4 4	
A31512	BARD CONCRETE CO	BURKLE	SW 19	TO89	R02W	2.66	X		
A31514	RIVER CITY STONE	FILLMORE	CT 26	TO87	R01W	2.66	X		
A31516	HORSFIELD MATERIALS INC	CASCADE-LOCHER	25	TO87	R02W	DWU	X		

NOTE 1: TOP 17.0' OF BED 2

NOTE 2: TOP 6.0' OF BED 9

RECENTLY ACTIVE AGGREGATE SOURCES

CODE	OPERATOR	DIST	SOURCE NAME	LOCATION				BULK SSD SpGr	DUR PCC CA FA	FRICT		BEDS	N O T E
										A	B		
51	JEFFERSON	DIST 5	CRUSHED STONE										
A51006	WINN CORP		JEFFERSON	NE	09	TO71	R10W	DWU	3i			10 - 12	L, 1 D
52	JOHNSON	DIST 6	CRUSHED STONE										
A52002	WENDLING QUARRIES INC		FOUR CO	NW	04	TO81	R08W	2.66 DWU	3iB 3i	4	4	2 - 10	L
A52004	RIVER PRODUCTS CO		CONKLIN	NW	33	TO80	R06W			5	5	23 - 24	L, 2
										5	5	2 - 5	L
										4	4	6 - 10	L
A52006	RIVER PRODUCTS CO		KLEIN	NW	02	TO79	R07W	2.66 DWU	3iB 3i	4	4	2 - 10	L
										5	5	21 - 22	L
										4	4	23 - 24	L, 2
										5	5	2 - 5	L
										4	4	6 - 10	L
										4	4	21	L
										5	5	21 - 22	L
A52008	RIVER PRODUCTS CO		ERNST SAND & GRAVEL	SW	20	TO80	R05W						
A52502	S&G MATERIALS INC		SHOWERS	NE	27	TO79	R06W	2.65 DWU	X X	4	4		
A52506	S&G MATERIALS INC		BUTLER	SW	33	TO79	R06W						
A52508	S&G MATERIALS INC		WILLIAMS	NW	34	TO79	R06W			3	3		
A52510	RIVER PRODUCTS CO		RIVERSIDE #2		34	TO78	R06W	DWU DWU	X X	4	4		
53	JONES	DIST 6	CRUSHED STONE										
A53002	BARD CONCRETE CO		FARMERS-BEHREND'S	NE	14	TO86	R03W	2.64	3i	4	4	1 - 5	D
										4	4	5 - 7	D
A53004	WENDLING QUARRIES INC		MONTICELLO	NE	24	TO86	R04W	2.66	3i	4	4	1	D
A53006	WENDLING QUARRIES INC		ANAMOSA	SE	13	TO84	R04W	DWU	3i	4	4	1 - 5	D
										4	4	1 - 6	D
A53010	WENDLING QUARRIES INC		BALLOU-OLIN	NE	24	TO83	R03W	DWU DWU	3iB 3	4	4	3	D
										4	4	2 - 3	D
										4	4	1 - 3	D
A53012	WENDLING QUARRIES INC		WYOMING		33	TO84	R01W	2.69	3iB	4	4	1 - 2C	D
A53014	WEBER STONE CO INC		JACOBS-SCOTCH GROVE	SW	07	TO85	R02W					5	
A53016	WEBER STONE CO INC		STONE CITY		5,6	TO84	R04W	2.45	3i	4	4	2B - 3	D
A53018	RIVER CITY STONE		FINN	NE	06	TO85	R01W	DWU	3i	4	4	2 - 5	D
A53024	RIVER CITY STONE		SULLIVAN	NW	14	TO86	R03W	DWU	3i	4	4	1 - 5	D
A53026	RIVER CITY STONE		ANAMOSA	SW	15	TO84	R04W						
			SAND & GRAVEL										
A53502	WENDLING QUARRIES INC		MONTICELLO	SE	07	TO86	R03W	2.66		X	4	4	
A53506	RIVER CITY STONE		FINN	N2	06	TO85	R01W	2.65		X	4	4	
A53508	WENDLING QUARRIES INC		ANAMOSA-VERNON	SW	13	TO84	R04W				4	4	
								2.66		X			
A53510	WENDLING QUARRIES INC		KNAPP	SE	27	TO84	R03W				4	4	
								2.65		X			
A53514	WENDLING QUARRIES INC		FLEMING	NE	12	TO83	R03W	2.66		X	4	4	
A53522	WEBER STONE CO INC		WEBER	SE,SW	05	TO84	R04W	2.66		X			
A53526	BARD CONCRETE CO		STEPHENS	NW	34	TO86	R03W	2.66		X	4	4	
A53528	WEBER STONE CO INC		ANAMOSA	NE	14	TO84	R04W	2.65		X			
A53530	RIVER CITY STONE		ANAMOSA-WOOD'S	CT	15	TO84	R04W	2.66		X	3	3	
A53532	BARD CONCRETE CO		LOES	NE	04	TO86	R01W	DWU		X			

NOTE 1: CEDAR FORK LEDGE
NOTE 2: 1.25 INCH MAXIMUM TOP SIZE

**APPROVED PRODUCERS
WITH QC PROGRAMS**

PRODUCER	STREET ADDRESS	CITY, STATE, ZIP	PHONE/FAX NUMBER
A			
A-LINE CRUSHING SERVICE	1025 CENTER STREET	CEDAR FALLS, IA 50613	319-277-3001
ACME FUEL & MATERIALS CO	2544 PETTIBONE AVENUE	MUSCATINE, IA 52761	563-263-1105
AGGREGATE INDUSTRIES	2915 WATERS ROAD STE 105	EAGAN, MN 55121	651-686-2302
AGGREGATE MATERIALS CO	1400 E 12 TH STREET	DUBUQUE, IA 52001	563-583-6642
AGGREGATES INC	6101 BLAIRS FERRY ROAD NE	CEDAR RAPIDS, IA 52411	319-395-0050
ALLIANCE MATERIALS INC	1822 WOLVERINE RD	DIXON, IL 61021	815-284-2130
ANDERSON SAND & GRAVEL CO	2578 270 TH AVENUE	DEWITT, IA 52742	563-659-5506
ARCADIA LIMESTONE CO	19011 CRYSTAL AVENUE	ARCADIA, IA 51430	712-689-2299
B			
BMC AGGREGATES LC	101 BMC DRIVE	ELK RUN HEIGHTS, IA 50707	319-235-6583 319-235-7065 (FAX)
BARD CONCRETE CO	2021 325 TH AVENUE	DYERSVILLE, IA 52040	563-875-7145 563-875-7860 (FAX)
BARD-KUHLMAN	2021 325 TH AVENUE	DYERSVILLE, IA 52040	563-875-7145 563-875-7860 (FAX)
BEDROCK GRAVEL CO	1002 HWY 59 SOUTH	SCHLESWIG, IA 51461	712-676-3752
BELLCO OF NEBRASKA INC	2826 SOUTH AVENUE	COUNCIL BLUFFS, IA 51503	712-322-8501 712-322-8526 (FAX)
BELLEVUE SAND & GRAVEL CO	29427 HWY 52	BELLEVUE, IA 52031	563-872-3886
BENTON'S SAND & GRAVEL	1410 CENTER STREET	CEDAR FALLS, IA 50613	319-266-2621 319-266-5926 (FAX)
BIG STONES QUARRY, INC	2487 290 TH STREET	PERU, IA 50222	515-988-4106 515-440-0944 (FAX)
BOON CONSTRUCTION CO	N 5399 STATE HWY 73	NEILLSVILLE, WI 54456	
BOYER SAND & ROCK INC	4162 BIRCH AVENUE	HAWARDEN, IA 51023	712-552-2308
BRIDGEPORT MATERIALS	2241 PORT NEAL ROAD	SERGEANT BLUFF, IA 51054	712-253-8449
BROCKMAN SAND CO	2397 263RD AVENUE-POB 312	FORT MADISON, IA 52627	319-372-7138
BRUENING ROCK PRODUCTS INC	325 WASHINGTON STREET-POB 127	DECORAH, IA 52101	563-382-2933
/SKYLINE CONSTRUCTION			563-382-8375 (FAX)
BUILDERS SAND & CEMENT CO	104 WESTERN AVENUE	DAVENPORT, IA 52801	563-322-1757
C			
C.A.P RECYCLING	3150 LEWISTON ST	SIOUX CITY, IA 51105	712-870-0243
C. J. MOYNA & SONS INC	24412 HWY 13	ELKADER, IA 52043	563-245-1442
CANTERA AGGREGATES	1847 100 TH STREET	CORYDON, IA 50060	641-216-3526
CARNARVON SAND & GRAVEL	811 N 10 TH ST	DENISON, IA 51442	712-664-2511
CEMSTONE PRODUCTS COMPANY	2025 CENTRE POINT BLVD- SUITE 300	MENDOTA SPRINGS, MN 55120-1221	651-688-9292
CENTRAL STONE CO #1	RR 1-POB 236	HANNIBAL, MO 63401-9622	573-735-4525
CESSFORD CONST CO	2320 ZELLER AVENUE	LE GRAND, IA 50142	641-479-2695 641-479-2003 (FAX)
CESSFORD CONST CO - SE DIV	3808 OLD HWY 61	BURLINGTON, IA 52601	319-753-2297 319-753-0926 (FAX)
COHRS CONSTRUCTION INC	15700 NORTH TRADEWIND DRIVE	SPIRIT LAKE, IA 51360	712-832-3714
CONCRETE INC	1710 EAST MAIN ST	MARSHALLTOWN, IA 50158	641-752-3696
CONCRETE MATERIALS CO	1201 WEST RUSSELL	SIOUX FALLS, SD 57104	605-357-6000
CONRECO INC	4901 G STREET	OMAHA, NE 68117	402-733-4100 402-733-5774 (FAX)
COOTS MATERIALS CO INC	1700 WEST D STREET	VINTON, IA 52349	319-472-3046 319-472-4485 (FAX)
CORELL RECYCLING	200 SOUTH 13 TH STREET	WEST DES MOINES, IA 50265	515-223-8010
COUNTY MATERIALS CORP	205 NORTH ST-POB 100	MARATHON, WI 54448	715-848-1365
CRAWFORD QUARRY CO	HWY 94 NW-POB 1027	CEDAR RAPIDS, IA 52406	319-396-5705
CROELL REDI MIX	POB 430	NEW HAMPTON, IA 50659	641-394-3770
CRUSHED AGGREGATE PRODUCTS	1720 E AVE	RED OAK, IA 51566	712-579-5062

**APPROVED PRODUCERS
WITH QC PROGRAMS**

PRODUCER	STREET ADDRESS	CITY, STATE, ZIP	PHONE/FAX NUMBER
D			
DAVE'S SAND & GRAVEL INC	RR 2-POB 58A	HARTLEY, IA 51346	712-834-2515
DELONG RECYCLING, INC	1320 N 8 TH AVENUE, POB 488	WASHINGTON, IA 52353	319-653-3334
DES MOINES ASPHALT & PAVING	5109 NW BEAVER DRIVE	JOHNSTON, IA50131	515-262-8296
DOUDS STONE LLC	13133 ANGLE RD SUITE B-POB 187	OTTUMWA, IA 52501	641-683-1671 641-683-1673 (FAX)
DUININCK BROS INC	408 6 TH ST-POB 208	PRINSBURG, MN 56281	320-978-6011
E			
ELDER CORPORATION	5088 EAST UNIVERSITY AVE	DES MOINES, IA 50327	515-266-3111
F			
FALK L R- CONSTRUCTION CO	227 W 4 TH STREET-POB 189	ST ANSGAR, IA 50472-0189	641-713-4569
FALKSTONE LLC	227 W 4 TH STREET-POB 189	ST ANSGAR, IA 50472-0189	641-713-4569
FLEWELLING SAND & GRAVEL	1157 HWY 140	MOVILLE, IA 51039	712-873-3174
FLOYD RIVER MATERIALS	32138 HICKORY AVE	SIOUX CITY, IA 51101	712-233-1111
FORT CALHOUN STONE CO	7001 US HWY 75-POB 284	BLAIR, NE 68008	402-426-4254 402-468-4380 402-468-4388 (FAX)
FORT DODGE ASPHALT CO	2516 7 TH AVENUE SOUTH	FORT DODGE, IA 50501	515-573-3124
G			
GEHRKE QUARRIES INC	POB 521	ELDORA, IA 50627	641-858-3821 641-858-2564 (FAX)
GEO TECH MATERIALS	13091 EAGLE DRIVE	DOUDS, IA 52551	
GRAY QUARRIES INC	POB 386	HAMILTON, IL 62341	217-847-2712
GREAT RIVER MATERIALS, LLC	1444 320 TH AVE	WEVER, IA 52658	319-528-4065 319-528-4063 (FAX)
GREENE LIMESTONE CO	1211 SOUTH MAIN ST-POB 687	CHARLES CITY, IA 50616	641-228-4255 641-228-4061 (Shop)
GRIMES ASPHALT AND PAVING	1001 SE 37 TH ST-POB 139	GRIMES, IA 50111	515-986-3649
H			
HAHN READY MIX	POB 1107	MUSCATINE, IA 52761	563-263-6467
HALLETT MATERIALS CO	5550 NE 22 ND STREET-POB3365	DES MOINES, IA 50316	515-266-9928 515-266-9857 (FAX) 800-838-2615 (WIA)
HANK STALP GRAVEL CO	1598 RIVER ROAD	WEST POINT, NE 68788	402-372-5491 800-372-5491 (T-F) 402-372-5477 (FAX)
HARSCO METALS	1770 BILL SHARP BLVD, GATE 4	MUSCATINE, IA 52761	563-506-0634
HAWKEYE PAVING CORPORATION	801 42 ND STREET S	BETTENDORF, IA 52722	563-355-6299
HEARTLAND ASPHALT INC	2601 SOUTH FEDERAL AVENUE	MASON CITY, IA 50401	641-424-1733
HEIMES EXCAVATING & UTIL CO	9144 SOUTH 147 TH STREET	OMAHA, NE 68138	402-894-1000
HIGMAN SAND & GRAVEL INC	POB 438	AKRON, IA 51001	712-568-2181
HORSFIELD MATERIALS, INC.	505 EAST MAIN ST-POB 305	EPWORTH, IA 52045	563-876-3335
I			
IDEAL SAND CO	3902 MT PLEASANT ST-POB 416	WEST BURLINGTON, IA 52655	319-754-4747
IOWA DRAINAGE INC	703 E. GILMAN ST- POB 7	SHEFFIELD, IA 50475	641-892-4330
K			
K&L CONSTRUCTION INC	501 S. RIDGE ROAD	SERGEANT BLUFF, IA 51054	712-943-2939
KERFORD LIMESTONE CO	36110 FLETCHER ST	WEEPING WATER, NE 68463	402-267-2415
KNIFE RIVER MIDWEST LLC	600 HIGHWAY 175-P.O. BOX 229	STRATFORD, IA 50249	515-838-2475

**APPROVED PRODUCERS
WITH QC PROGRAMS**

PRODUCER	STREET ADDRESS	CITY, STATE, ZIP	PHONE/FAX NUMBER
L			
L G EVERIST INC	POB 9	DELL RAPIDS, SD 57022	605-428-5419
L&M SAND & GRAVEL INC	426 2 ND AVENUE NE	LE MARS, IA 51031	605-428-3012 (FAX)
L&W QUARRIES INC	POB 335	CENTERVILLE, IA 52544	712-546-5359
LA HARV CONST CO INC	POB 267	FOREST CITY, IA 50436	641-437-4830
LESSARD CONTRACTING INC	POB 705	SERGEANT BLUFF, IA 51054	641-437-4837 (FAX)
LINWOOD MINING & MINERALS CORP	5401 VICTORIA AVE, SUITE 110	DAVENPORT, IA 52807	641-581-3643
			712-252-4131
			563-359-8251
			800-798-8251 (T-F)
			563-344-3730 (FAX)
LOUNSBURY LANDSCAPING	6000 RACCOON RIVER DR	WEST DES MOINES, IA 50266	515-225-7100
LUNDELL CONSTRUCTION CO., INC	1420 EAST RICHLAND	STORM LAKE, IA 50588	712-732-4059
LYMAN-RICHEY SAND & GRAVEL	4315 CUMING STREET	OMAHA, NE 68131	402-558-2727
M			
MALLARD SAND & GRAVEL	POB 638	VALLEY, NE 68064	402-359-5287
MANATT'S INC	1755 OLD 6 ROAD-POB 535	BROOKLYN, IA 52211	641-522-9206
			641-522-9407 (FAX)
			641-522-5594 (FAX)
MANATT'S SAND & GRAVEL	1928 340 TH STREET-POB 87	TAMA, IA 52339	641-484-4022
MARENGO READY MIX INC	POB 121	MARENGO, IA 52301-0121	319-642-3811
MARTIN COMMERCIAL ENTERPRISES		DAVENPORT, IA 52807	563-529-2223
MARTIN MARIETTA AGGREGATES	11252 AURORA AVENUE	DES MOINES, IA 50322	515-254-0030
			800-332-5433 (T-F)
			515-254-0035 (FAX)
			309-756-0217
MASS CUSTOM HAULING & CRUSHING	1207 W. 10 TH ST.	MILAN, IL 61264	
MATX INC	110 CLUBBRIDGE PLACE	COLORADO SPRINGS, CO 80906	
MCALISTER AGGREGATES LLC	1924 HWY 141- POB 157	BAYARD, IA 50029	800-642-6653
			712-651-2018 (FAX)
MELLER EXCAVATING & ASPHALT	3321 190 TH STREET	FORT MADISON, IA 52627	319-372-7410
MIELKE'S QUARRY	13303 SPOOK CAVE RD	MCGREGOR, IA 52157	563-539-4227
MILESTONE MATERIALS	920 10 TH AVE NORTH-POB 189	ONALASKA, WI 54650	608-783-6411
			608-783-4311 (FAX)
MOBILE CRUSHING & RECYCLING	2663 OSCEOLA AVENUE	OTHO, IA 50569	515-576-8080
MOHR SAND, GRAVEL & CONST. LLC	POB 232, 104 ASH STREET	LOHRVILLE, IA 51453	712-210-7078
M.R. PAVING AND EXCAVATION	2020 NORTH SPRING ST- POB 787	NEW ULM, MN 56073	507-354-4171
MURPHY HEAVY CONTRACTING CORP	101 ROOSEVELT ST	ANITA, IA 50020	712-762-3386
MYRL & ROY'S PAVING INC	1300 NORTH BAHNSON AVENUE	SIOUX FALLS, SD 57103	605-334-3204
			605-334-0468 (FAX)
N			
NELSTAR	210 WALNUT	MERIDEN, IA 51037	712-443-8832
NEW ULM QUARTZITE QUARRY	ROUTE 5-POB 21	NEW ULM, MN 56073	507-354-2925
			507-359-7870 (FAX)
NORRIS QUARRIES LLC	219 3 RD ST-POB 190	CAMERON, MO 64429	816-324-0310
NORTHERN CON-AGG, LLP	1450 131 ST STREET	LUVERNE, MN 56156	507-283-2124
NORTH IA SAND & GRAVEL INC	18237 KILLDEER AVENUE	MASON CITY, IA 50401	641-424-5591
			641-423-1894 (FAX)
NORTHWEST ILLINOIS CONST LLC	1600 REGAN RD	ROCK FALLS, IL 61071	815-626-5192
NORTHWEST MATERIALS	16 NORTH TAFT-POB 632	FORT DODGE, IA 50501	515-573-8921
NORTHWEST R/M CONCRETE INC	6340 180 TH STREET	OCHEYEDAN, IA 51354	712-758-3683
NU AGGREGATES	300 NORKA DRIVE	AKRON, IA 51001	712-568-2181
O			
ORTONVILLE STONE CO	POB 67	ORTONVILLE, MN 56278	320-839-6131

APPROVED PRODUCERS
WITH QC PROGRAMS

PRODUCER	STREET ADDRESS	CITY, STATE, ZIP	PHONE/FAX NUMBER
P			
PATRICK M. PINNEY CONTRACTORS	1915 FLOYD BLVD-POB 5107	SIOUX CITY, IA 51102	712-252-2774
PAUL NIEMANN CONST CO	24541 150 TH STREET-POB 128	SUMNER, IA 50674-0128	563-578-3261 563-578-3263 (FAX)
PBI CONST	4953 D AVE	MARCUS, IA 51035	712-376-4886
PELLA CONST CO LTD	POB 25	PELLA, IA 50219	641-628-3840
PERU QUARRY	2587 265 TH ST	PERU, IA 50222	515-468-0315
PETERSON CONTRACTORS INC	104 BLACKHAWK-POB A	REINBECK, IA 50669	319-345-2713
PETTENGILL CONC & GRAVEL INC	800 NORTH BOONE	ROCK RAPIDS, IA 51246	712-472-2571
PNB PROCESSORS, LLC	POB 80	DENMARK, IA 52624	319-470-0050
PRAIRIE SAND & GRAVEL	POB 210	PRAIRIE DU CHIEN, WI 53821	608-326-6471
PRESTON READY MIX CORP	POB 399	PRESTON, IA 52069	563-689-3381
Q			
QUALITY CONCRETE CO	327 17 TH AVENUE SOUTH	CLINTON, IA 52732	563-242-3524
R			
RAINBOW QUARRY LLC	800 VOLNEY RD	MONONA, IA 52159	563-535-7606
RECYCLED AGGREGATE PROD CO	2131 18 TH STREET	SIOUX CITY, IA 51105	712-252-7732
REDINGS GRAVEL & EXCAVATING CO	2001 EAST OAK STREET	ALGONA, IA 50511	515-295-3661
RED ROCK QUARRY	12226 KNOX AVE.	SANBORN, MN 56083	507-648-3382
REILLY CONSTRUCTION CO	110 MAIN STREET-POB 99	OSSIAN, IA 52161	563-532-9211 563-532-9759 (FAX)
RIEHM CONSTRUCTION CO INC	2340 9 TH STREET SW	WAUKON, IA 52172	563-568-3314
RIVER CITY STONE	3747 CONSTRUCTORS COURT-POB 160	KEILER, WI 53812-0160	608-568-3433
RIVER PRODUCTS CO INC	3273 DUBUQUE ST NE- POB 2120	IOWA CITY, IA 52244-2120	319-354-1090 319-353-6606 (FAX)
RIVERSTONE GROUP INC	1701 5 TH AVENUE	MOLINE, IL 61265	309-757-8250 309-757-8257 (FAX)
ROCK HARD CONCRETE RECYCLING	214 E. MAIN ST-POB 217	WEST BRANCH, IA 52358	319-631-3903
ROCKY MOUNTAIN ENTERPRISES	6515 COUNTY HIGHWAY H	ATHENS, WI 54411	715-257-1440 715-257-1140 (FAX)
S			
S&A CONSTRUCTION LTD	POB 20	ALLENDALE, MO 64420	660-786-2233
S&G MATERIALS	4213 SAND ROAD SE	IOWA CITY, IA 52240	319-354-1667
SAVANNA QUARRY, INC	9859 SCENIC BLUFF ROAD	SAVANNA, IL 61074	815-273-4208
SCHILDBERG CONSTRUCTION CO	POB 358	GREENFIELD, IA 50849	641-743-2131
SCHMILLEN CONST INC	4772 C AVENUE	MARCUS, IA 51035-0488	712-376-2249
SHIPLEY CONTRACTING	2671 240 TH STREET	FORT MADISON, IA 52625	319-372-1804
SIEM SAND & GRAVEL	101 WEST 18 TH STREET-POB 1503	SPENCER, IA 51301	712-836-2244 712-262-4580
SOUTHERN MN CONST CO, INC.	1100 MARCUS ST-POB1100	FAIRMONT, MN 56031	507-235-3321
SPENCER QUARRIES	25341 430 TH AVENUE	SPENCER, SD 57374	605-246-2344
STENSLAND GRAVEL CO	1741 ASHLEY AVE	LARCHWOOD, IA 51241	712-477-2280
STERZINGER CRUSHING INC	3273 290 TH AVE	TAUNTON, MN 56291	
STONER SAND	33463 EAST 250 TH	RIDGEWAY, MO 64481	660-824-4211
STRATFORD GRAVEL INC	3378 XAVIER AVE	DAYTON, IA 50530	515-571-3133
STRONG ROCK & GRAVEL	721 SOUTH FRONT ST	LANSING, IA 52151	563-538-4603
SWAIN CONSTRUCTION INC	6002 NORTH 89 TH CIRCLE	OMAHA, NE 68134	402-571-1110
SWAN ROCK & SAND PRODUCTS, LLC	POB 111	CINCINNATI, IA 52549	641-658-2474 641-777-1233 (CELL)

APPROVED PRODUCERS
WITH QC PROGRAMS

PRODUCER	STREET ADDRESS	CITY, STATE, ZIP	PHONE/FAX NUMBER
T			
TIEFENTHALER AG-LIME INC	11975 HAWTHORNE AVENUE-POB 157	BREDA, IA 51436	712-673-2686
TRI CITY BLACKTOP	425 S. DEVILS GLEN RD	BETTENDORF, IA	563-359-3491
TRISTAR QUARRIES	11278 474 TH ST	PLANO, IA 52581	
TUBE CITY IMS CORP	1500 WEST 3 RD STREET	WILTON, IA 52778	563-732-4010
U			
ULLAND BROTHERS INC	2400 MYERS ROAD	ALBERT LEE, MN 56007	507-373-1960
UNITED CONTRACTORS, INC	6678 NW 62ND AVE – P.O. BOX 347	JOHNSTON, IA 50131	507-433-1819 515-276-6162
V			
VALLEY SAND & GRAVEL	POB 9	ROCK VALLEY, IA 51247	712-476-2063
W			
WEATHERTON CONTRACTING	307 N 16 TH ST-POB151	BERESFORD, SD 57004	605-763-2078
WEBER STONE CO INC	12791 STONE CITY ROAD	ANAMOSA, IA 52205	319-462-3581 319-462-3585 (FAX)
WENDLING QUARRIES INC	POB 230	DEWITT, IA 52742	563-659-9181 563-659-3393 (FAX)
WEST DES MOINES SAND CO	3888 WALNUT WOODS DR	DES MOINES, IA 50265	515-287-2340
WESTERN ENGINEERING COMPANY	POB 350	HARLAN, IA 51537	712-755-5191
WETHERELL SAND & GRAVEL	POB 37	PETERSON, IA 51047	712-260-8556
WILTGEN CONSTRUCTION CO	113 EAST MAIN STREET-POB 817	CALMAR, IA 52132	563-562-3301 800-365-3301 (T-F)
WINN CORP SAND & GRAVEL	2334 JUNIPER AVENUE	FAIRFIELD, IA 52556	641-693-3333
WRIGHT MATERIALS CO	1127 HWY 69-POB 244	BELMOND, IA 50421	641-444-3920
Z			
ZUPKE SAND & GRAVEL	17963 150 TH STREET	RANDALIA, IA 52164	563-428-4444

IOWA DEPARTMENT OF TRANSPORTATION
SIEVE ANALYSIS WORKSHEET

Advisory:
Acceptance:

Grad. No.:	3
Lab. No.:	15-2010
Material:	washed concrete rock
Co. & Proj. #:	ESFM-CO31(61)-5S-31
Producer:	BARD Materials East Cascade
Contractor:	TSchiggfrie
Sampled By:	Terry Miller Date: 07/08/10
Sample Loc.:	Belt Template



1	
15-2010	
washed concrete sand	
ESFM-CO31(61)-5S-31	
BARD Materials	Loes Pit
TSchiggfrie	
Terry Miller	Date: 07/08/10
Pile	

Coarse Sample Sieve Acc. = 99.8 %

Fine Sample Sieve Acc. = 100.0 %

Sieve Size	Orig. Dry Weight:		% Retd. X-----	% Psg. Final	Reported Final	Specs.
	Wt.	% Retd.				
1 1/2	0.0	0.0		100.0	100	100
1	44.7	1.2		98.8	99	95-100
3/4	529.3	14.5		84.3	84	84
1/2	1,156.6	31.7	31.8	52.6	53	25-60
3/8	785.2	21.5		31.1	31	31
4	986.0	27.0	27.1	4.1	4.1	0-10
8	109.5	3.0		1.1	1.1	0-5
Total 4						
Pan	34.5	0.9				
Total	3,645.8	99.8				

Sieve Size	Wt. Retd.	% Retd.		Reported Final	Specs.
		Final	Passing		
3/8	0.0	0.0	100.0	100	100
4	14.5	2.9	97.1	97	90-100
8	35.5	7.0	90.1	90	70-100
16	74.5	14.7	75.4	75	
30	141.1	27.9	47.5	48	10-60
50	175.9	34.7	12.8	13	
100	58.3	11.5	1.3	1.3	
200	4.3	0.8	0.5	0.5	0-1.5
Wash	2.2				
Pan	0.4	0.5			
Total	506.7	100.0			

Wash Sample

Sieve Size	Orig. Dry Weight:		% Retd.	Reported Final	Specs.
	Wt.	% Retd.			
200	2,694.8	20.3		0.8	0-2.5
Wash	2,674.5	20.3			
Pan	0.6				

Date Reported:	07/08/10	Cert. No.:	EC949
Tested By:	Tony Grawe		

Date Reported:	07/08/10	Cert. No.:	EC949
Tested By:	Tony Grawe		

Remarks:



3197647-20479931

SEE OTHER CONDITIONS ON THE BACK

ORIGINAL

Received subject to the terms of any written transportation contract between the Carrier(s) transporting this shipment and Lafarge North America or its affiliates (Shipper) on the date of issue of this Bill of Lading, the property described hereon, in apparent good order, except as noted, marked, consigned and destined as set forth hereon, which said Carrier(s) agrees to carry with reasonable dispatch to such destination. Carrier(s) shall verify the weight of the shipment and Carrier(s) agree to indemnify Shipper from any loss, cost or expense (including, but not limited to, attorney's fees) arising from or relating to Carrier(s) transport of a load that exceeds the maximum allowable weight. Consignee accepts such shipment in accordance with Lafarge's standard terms and conditions. Page 1 of 1

NON-RECOURSE: If Shipper signs this provision, Shipper shall not be liable for freight charges and Carrier shall not deliver this shipment without advance payment of all shipping and related charges.

Signature of Shipper: _____

BOL No.	3197647
Load No.	
Sales Order No.	5130597
Shipment No.	20479931
Shipment Date	03/23/10
Customer Requested Delivery Date	12/03/09
Customer Requested Delivery Time (ET)	00:00:00

Branch/Plant :

67501
 DAVENPORT PLANT
 301 EAST FRONT ST
 BUFFALO IA 52728
 (563) 323-2751

Shipped To :

280485
 BARD MATERIALS WEST REGION
 HWY. 136 S
 CASCADE IA 52033
 (563) 8523313



67501

Pallets Returned	
------------------	--

Sold To		Customer Purchase Order No.							
BARD MATERIALS WEST REGION									
Item Description	Item No.	Begin/End	Silo	Bags or Gross LB	PLT	Bag Wgt or Tare LB	Net LB	Total TS	
NEWCEM GRADE 120	Y3100007308	06:21 06:29	42	79,740		25,740	54,000	27,000	
				 Y3100007308					
BULK STANDARD	B_MIN_CHRG	FUEL-B	Total US	79,740		25,740	54,000	27,000	
				Total CA					
Additional Sales Order No. - If Applicable									

Special Delivery Instructions :

Mode	Carrier Full Name	Carrier Code	Tractor/Rail Car	Trailer
10	CUSTOMER PICKUP	99999	92BCNC	636BCNC
Rail Route Description		Transportation Contract	Trailer 1 Seal No.	Trailer 2 Seal No.

State Stamp :	Collect
THE MATERIAL HEREIN DESCRIBED HAS BEEN SAMPLED AND TESTED AS PRESCRIBED BY THE HIGHWAY DIVISION OF THE IOWA DEPARTMENT OF TRANSPORTATION AND COMPLIES WITH THE APPLICABLE SPECIFICATION REQUIREMENTS FOR NEWCEM(SLAG CEMENT). PRODUCT CODE SL02B. NSF LISTED	 Shipper Signature / Date
	 Driver Signature / Date
	Customer Signature / Date



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- ▶ Product approval

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- [Aggregate sources](#)
- [Seed conditioners](#)
- [Fertilizer sources](#)
- [Certified weed seed free mulch](#)

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- Material names
- IMs
- Producers
- Brands

Material Name: GGBFS

Brand Name	Company Name	Material Item	IM	PL: Loc (C Sta
Grancem (Code: SL00A)	Holcim (US) Inc.	GGBFS	491.14	Chica (Sky IL
NewCem (Code: SL02A)	Lafarge North America	GGBFS	491.14	Chica
NewCem (Code: SL02B)	Lafarge North America	GGBFS	491.14	Chica
NewCem (Code: SL03A)	Lafarge North America	GGBFS	491.14	Chica New Orleans
NewCem (Code: SL04A)	Central Plains Cement Company	GGBFS	491.14	Chica
NewCem (Code: SL04B)	Central Plains Cement Company	GGBFS	491.14	Chica



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- Materials home
- Product approval

100% [Zoom controls]



Materials Approved Product

Product Details for NewCem

Product Details	
Brand	NewCem
Product Code	SL02B
Company	Lafarge North America
Address	8700 W Bryn Mawr Ave, Suite 300 Chicago, IL Phone: 1 (733) 372-1000
Website	www.lafarge-na.com
Comments	
Approval Date	04/24/2014
Last Updated	05/05/2014



CONTINENTAL CEMENT COMPANY, LLC.

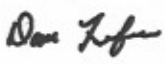
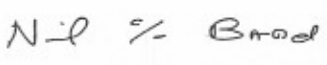

STRAIGHT BILL OF LADING – SHORT FORM – ORIGINAL – NOT NEGOTIABLE

RECEIVED, subject to the classification and tariffs in effect on the date of issue of this Original Bill of Lading, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning and person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and condition of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CAUTION

Cement powder or freshly mixed concrete, grout, or mortar may cause skin injury. Avoid contact with skin and wash exposed skin areas promptly with water. If any cement powder or mixtures get into eyes, rinse immediately and repeatedly with water and get prompt medical attention.

KEEP OUT OF REACH OF CHILDREN

SHIP TO NO.		742291		SHIPPING POINT		Bettendorf	
DELIVER TO BARD MATERIALS, INC. FOB BETTENDORF FOR: CASCADE IA				DATE	03/24/2010	GROSS	79900 LB
				TIME IN	6:46	TARE	25980 LB
				TIME OUT	6:56	NET	53920 LB
CUSTOMER'S ORDER NO.	BIN NO.	DELIVERING CARRIER		TRAILER NO.		R.R. CAR NO.	
	Bin I	PICKUP		636			
BILL OF LADING NO.				261023			
TYPE	NO. OF BAGS	NO. OF PALLETS	DESCRIPTION				TONS
004			025 - TYPE I/II				26.96
THE MATERIAL HEREIN DESCRIBED HAS BEEN SAMPLED & TESTED AS PRESCRIBED BY THE HWY DIV OF IADOT & COMPLIES WITH THE APPLICABLE SPEC REQ'S FOR THIS CEMENT. IADOT SOURCE CODE PC0202 IADOT SOURCE CODE PC0202 _____ (CONTINENTAL CEMENT SIGNATURE)				Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges. Continental Cement Co.  PER _____ (Signature of Consignor)			
				CHARGES ARE PREPAID UNLESS MARKED - NOT PREPAID			
				The description and weight indicated on this Bill of Lading are correct, subject to verification by the Eastern Weighing & Inspection Bureau, Southern Weighing & Inspection Bureau, Trans-Continental Freight Bureau or Western Weighing & Inspection Bureau according to agreement. CONTINENTAL CEMENT COMPANY, LLC. SHIPPER			
RECEIVED BY:		CONTINENTAL CEMENT COMPANY, INC. SHIPPER		RECEIVED BY CARRIER INDICATED ABOVE			
 _____ (CUSTOMER'S SIGNATURE)		 _____ PER: _____ (SHIPPER)		_____ PER: _____ (AGENT)			

Iowa Department of TRANSPORTATION



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- Aggregate sources
- Seed conditioners
- Fertilizer sources
- Certified weed seed free mulch

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- Material names
- IMs
- Producers
- Brands

Material Name: PORTLAND CEMENT



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Material names | IMs | Producers | Brands

Material Name: PORTLAND CEMENT

View Report

Brand Name	Company Name	Material Item
Ash Grove I/II (Code: PC00002)	Ash Grove Cement Company	PORTLAND CEMENT
Ash Grove I/II Chanutte (Code: PC0102)	Ash Grove Cement Company	PORTLAND CEMENT
Ash Grove IP(25) (Code: PC00008)	Ash Grove Cement Company	PORTLAND CEMENT

Scroll Down

Code	Company Name	Product Type
Buzzi I/II Festus (Code: PC3002)	Buzzi Unicem USA	PORTLAND CEMI
Buzzi I/II GC (Code: PC1502)	Buzzi Unicem USA	PORTLAND CEMI
Central Plains I/II (Code: PC0702)	Central Plains Cement Company	PORTLAND CEMI
Central Plains IP(25) (Code: PC2808)	Central Plains Cement Company	PORTLAND CEMI
Central Plains IS(20) (Code: PC2807)	Central Plains Cement Company	PORTLAND CEMI
Continental I (Code: PC0201)	Continental Cement Company, LLC	PORTLAND CEMI
Continental I/II (Code: PC0202)	Continental Cement Company, LLC	PORTLAND CEMI
Continental Cement I/II (Code: PC3502)	Continental Cement Company, LLC	PORTLAND CEMI
GCC I/II (Code: PC1002)	GCC USA - Rapid City, SD	PORTLAND CEMI
GCC I/II Pueblo (Code: PC2902)	GCC USA - Pueblo, CO	PORTLAND CEMI
GCC IP(25) (Code: PC1008)	GCC USA - Rapid City, SD	PORTLAND CEMI
Heracles I (Code: PC1201)	Heracles General Cement/Holcim (US) Inc.	PORTLAND CEMI
Holcim I Ada OK (Code: PC1901)	Holcim (US) Inc.	PORTLAND CEMI

https://maple.iowadot.gov/Search.aspx

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Taskbar icons: Internet Explorer, Microsoft Word, Adobe Reader, and other system utilities.

9:24 AM
1/6/2015



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Product approval

100%



Materials Approved Product

Product Details for Continental III

Product Details	
Brand	Continental III
Product Code	PC0202
Company	Continental Cement Company, LLC
Address	16100 Swingley Ridge Road, Suite 230 Chesterfield, MO Phone: 1 (800) 625-1144
Website	www.continentalcement.com
Comments	
Approval Date	04/24/2014
Last Updated	04/24/2014

HEADWATERS RESOURCES

The material herein described has been sampled P.O. BOX 224, SALIX, IA 51052
and tested as prescribed by the following agencies:
Iowa DOT and ILL DOT. It complies with applicable
specification requirements of Class C fly ash as
defined in ASTM C618 and the above agencies.

CERTIFIED CODE FA 009C

GROSS

PROJECT NO. _____

LOI = 119%

Signed James K. Hesse FINENESS = 136%

CUSTOMER'S NAME Bard

ADDRESS Dyersville IA

COMMODITY Fly Ash

CARRIER Bard

DRIVER Willie Bard

WEIGHED BY _____

LO-027682

LOUISA STATION

07-26-10 06:22 AM

Gross Weight: 80000 lb

Tare Weight: 26020 lb

Net Weight: 53980 lb

CASCADE

Accum # 2

Iowa Department of TRANSPORTATION



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- Seed conditioners
- Fertilizer sources
- Certified weed seed free mulch

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Brand Name	Company Name	Material
Black Dog Generating Station (Code: FA039C)	Lafarge North America	FLY ASH
Burlington Generating Station (Code: FA000C)	General Resource Technology INC	FLY ASH
Coal Creek Power Plant (Code: FA003C)	Headwaters Resources	FLY ASH

Labadie Power Plant Labadie (Code: FA022C)	Mineral Resource Technologies, LLC	FLY ASH
Labadie Power Plant South Beloit (Code: FA024C)	Mineral Resource Technologies, LLC	FLY ASH
Lansing Generating Station (Code: FA008C)	Headwaters Resources	FLY ASH
Lansing Generating Station (Code: FA008C)	Headwaters Resources	FLY ASH
Louisa Generating Station (Code: FA009C)	Headwaters Resources	FLY ASH
Louisa Generating Station (Code: FA009C)	Headwaters Resources	FLY ASH
Louisa Generating Station (Code: FA009C)	Headwaters Resources	FLY ASH
M.L. Kapp Generating Station (Code: FA018C)	General Resource Technology INC	FLY ASH
Monticello Plant (Code: FA021F)	Boral Material Technologies	FLY ASH
Montrose Station Power Plant, Unit #3 (Code: FA036C)	Kansas City Fly Ash, LLC	FLY ASH
Muscatine Power & Water (Code: FA010C)	Lafarge North America	FLY ASH
Muscatine Power & Water (Code: FA010C)	Lafarge North America	FLY ASH
Muskogee Generating Station (Code: FA042C)	Lafarge North America	FLY ASH
Nebraska City Station (Code: FA011C)	Nebraska Ash	FLY ASH



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- Materials home
- Product approval



Materials Approved Product

Product Details for Louisa Generating Station

Product Details	
Brand	Louisa Generating Station
Product Code	FA009C
Company	Headwaters Resources
Address	10701 S River Front Pkwy, Suite 300 South Jordan, UT Phone: 1 (801) 984-9400
Website	www.headwaters.com
Comments	
Approval Date	04/24/2014
Last Updated	04/24/2014



Policies and Statements | Applets and Plug-ins
Iowa Department of Transportation - 800 Lincoln Way - Ames, IA 50010



Master Builders
Admixture Solutions

Air Ext.

110233968

BASF Admixtures, Inc.
23700 Chagrin Boulevard
Cleveland, Ohio 44122-5554

Customer Order #

Purchase Order # **070110**
Delivery Date **7-8-78**

Customer Ship To **BARD MATERIALS**
Address **2477 HWY 136 S**
City **CASCADE** State **IA, 52033-0000**

Special Instructions

Transfer # _____ IN _____ OUT (circle one) **754150**

Shipment # **4100798284** Trailer # _____
Driver **GUY RYMILL** Time _____ A.M. _____ P.M.

AUTOMATICALLY PRINTED TO ASSURE YOU OF ACCURACY
YOUR SALE NO. **070110** GALLON READING-FINISH **4474**
SALE # **00111**
GALLONS START **0.0**
GALLONS FINISH **00284.9**
GALLONS

PREVIOUS SALE NO. _____ GALLONS READING-START _____ 10THS
GALLONS DELIVERED **↓**

PRODUCT	GALS.
56577488 MB AE90	284.9
PLANT GURNEE, IL	TRACTOR # 38 5979

Delivered By *Guy Rymill*
Received By *Tony A 28630*
CUSTOMER SIGN HERE AFTER DELIVERY ONLY

#MWT

048653



Master Builders
Admixture Solutions

WATER Reducer

110163501

BASF Admixtures, Inc.
23700 Chagrin Boulevard
Cleveland, Ohio 44122-5554

Customer Order #

Purchase Order # **060110**
Delivery Date **6-2-10**

Customer Ship To **BARD MATERIALS**
Address **2477 HWY 136 S**
City **CASCADE** State **IA, 52033-0000**

Special Instructions

Transfer # _____ IN _____ OUT (circle one) **764003**

Shipment # **4100734700** Trailer # **3**
Driver **JAMES M. LOVREK** Time _____ A.M. _____ P.M.

AUTOMATICALLY PRINTED TO ASSURE YOU OF ACCURACY
YOUR SALE NO. **AA 2 4 3** GALLON READING-FINISH **0 0 3 0 7** 10THS
AA 2 4 2 **0 0 0 0 0**

PREVIOUS SALE NO. _____ GALLONS READING-START _____ 10THS
GALLONS DELIVERED **↓**

PRODUCT	GALS.
56578230 POLYHEED 997	302.9
PLANT GURNEE, IL	TRACTOR # 385978

Delivered By *James Lovrek*
Received By *Tony A 28630*
CUSTOMER SIGN HERE AFTER DELIVERY ONLY

#MWT

043700

Browser window showing the Iowa Department of Transportation MAPLE website. The address bar displays <https://maple.iowadot.gov/Search.aspx>. The page title is "Iowa Department of TRANSPORTATION". The navigation menu includes "INDEX", "DOT Home", "DOT Phone Book", and "Contact Us".

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Material names | **IMs** | **Producers** | **Brands**

Material Name: **ADMIXTURES, AIR ENTRAINING**

[View Report](#)

Brand Name	Company Name	Material Item	IM	Location (City, State)
Air Plus	Fritz-Pak Corporation	ADMIXTURES, AIR ENTRAINING	403	Dallas, TX
Airalon 3000	W.R. Grace & Co.-Conn.	ADMIXTURES, AIR ENTRAINING	403	Boston, MA
Chryso Air 260	Chryso	ADMIXTURES, AIR ENTRAINING	403	Rockwall, TX
ConAir	Premiere	ADMIXTURES, AIR ENTRAINING	403	Pioneer, OH

Action Center
No current issues detected
3:33 PM
1/6/2015

Browser window: <https://maple.iowadot.gov/Search.aspx> | Iowa Department of Transp... | 3:35 PM 1/6/2015

Item ID	Company Name	Product/Service	Location
MasterAir_AE_200	BASF Corporation - Admixtures	ADMIXTURES, AIR ENTRAINING 403	Cleveland, OH
MasterAir_AE_400	BASF Corporation - Admixtures	ADMIXTURES, AIR ENTRAINING 403	Cleveland, OH
MasterAir_AE_90	BASF Corporation - Admixtures	ADMIXTURES, AIR ENTRAINING 403	Cleveland, OH
MasterAir_VR_10	BASF Corporation - Admixtures	ADMIXTURES, AIR ENTRAINING 403	Cleveland, OH
Miracon_2315	Miracon Technologies	ADMIXTURES, AIR ENTRAINING 403	Richardson, TX
Polychem_AE	General Resource Technology INC	ADMIXTURES, AIR ENTRAINING 403	Eagen, MN
Polychem_SA	General Resource Technology INC	ADMIXTURES, AIR ENTRAINING 403	Eagen, MN
Polychem_SA-50	General Resource Technology INC	ADMIXTURES, AIR ENTRAINING 403	Eagen, MN



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- Materials home
- Product approval

100%



Materials Approved Product

Product Details for MasterAir AE 90

Product Details	
Brand	MasterAir AE 90
Product Code	
Company	BASF Corporation - Admixtures
Address	23700 Chagrin Blvd. Cleveland, OH Phone: 1 (800) 356-7517
Website	www.basf-admixtures.com
Comments	Old Name: MB AE 90
Approval Date	04/24/2014
Last Updated	04/24/2014
Status	Approved



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Material names | **IMs** | **Producers** | **Brands**

Material Name: **ADMIXTURES, MID-RANGE WATER REDUCING** [View Report](#)

Brand Name	Company Name	Material Item
Chryso_Fluid_Optima_256	Chryso	ADMIXTURES, MID-RANGE WATER REDUCIN
Daracem_65	W.R. Grace & Co.-Conn.	ADMIXTURES, MID-RANGE WATER REDUCIN
Eucon_MR	Euclid Chemical Company	ADMIXTURES, MID-RANGE WATER REDUCIN
Eucon_MRX	Euclid Chemical Company	ADMIXTURES, MID-RANGE WATER REDUCIN

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3:43 PM 1/6/2015

MasterPolyheed_1725	BASF Corporation - Admixtures	ADMIXTURES, MID-RANGE WATER REDUCIN
MasterPolyheed_900	BASF Corporation - Admixtures	ADMIXTURES, MID-RANGE WATER REDUCIN
MasterPolyheed_99Z	BASF Corporation - Admixtures	ADMIXTURES, MID-RANGE WATER REDUCIN
OptiFlo_MR	Premiere	ADMIXTURES, MID-RANGE WATER REDUCIN
OptiFlo_Plus	Premiere	ADMIXTURES, MID-RANGE WATER REDUCIN
Polychem_3000	General Resource Technology INC	ADMIXTURES, MID-RANGE WATER REDUCIN
Polychem_775	General Resource Technology INC	ADMIXTURES, MID-RANGE WATER REDUCIN
Sika_ViscoCrete_1000	Sika Corporation	ADMIXTURES, MID-RANGE WATER REDUCIN
Sikament_AFM	Sika Corporation	ADMIXTURES, MID-RANGE WATER REDUCIN

Materials APL Enterprise

IOWA DOT
SWIFTEST SIMPLER CUSTOMER SERVICE

Materials Approved Product
Product Details for MasterPolyheed 997

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Materials home
Product approval

Product Details	
Brand	MasterPolyheed 997
Product Code	
Company	BASF Corporation - Admixtures
Address	23700 Chagrin Blvd. Cleveland, OH Phone: 1 (800) 356-7517
Website	www.basf-admixtures.com
Comments	
Approval Date	04/24/2014
Last Updated	07/03/2014
Status	Approved

IOWA DOT
Policies and Statements | Applets and Plug-ins
Iowa Department of Transportation - 800 Lincoln Way - Ames, IA 50010

8-19

DATE: 2010 MIX: C4WR2050

Plant Inspector: Terry Miller Cert. No. EC 578

Dry Batch Wts: Fine 1496 Coarse 1534

Cement 355 Fly Ash 119 Slag 119

% Moistures: Fine 3.0 Coarse 0.4

Net Batch Wts: Fine 1542 Coarse 1540

	Source/Brand Name	T-203 No./Type/ Class	T-203 Sp.Gr. #	Field Sp.Gr.	Cert. Ton (this week)
F.A.					
C.A.					
Cement					
Fly Ash					

* Put a x after number if DVO

	Brand Name	Rate	Lot.No.
Air Entraining Retarder			
Water Reducer			
Superplasticizer			
Microsilica			

FOR BRIDGE DECK INFORMATION ONLY:

Temperature of: Cement _____ Sand _____

Rock _____ Water _____

8-19-2010

Inlet wing walls
24' of Barrel walls & SLAB
PARAPETS

60 yds

2 Pops

Terry Miller EC578

BATCH NO. 1375 LOAD SIZE 10.00 FORMULA 88 TIME 09:38:20
 TRUCK NO 53 01/01 BSZ 10.00 CODE 4 DATE 08/19/10
 WAT TRIM + 3.5 C4WRC20S20
 ROCK 1 15420 LB MC 0.4 SAND 3 15420 LB MC 3.0

TYPE 2 3534 LB SLAG 1194 LB
 FLYASH 1188 LB
 WATER 222 GL + 10 Gallons
 AIR 48 OZ PDA 209 OZ
 ACCEL 00 OZ
 TIME 09:42:15
 END TARES
 AXA 00 OZ
 AXE 00 OZ

AGG 30 LB CEM 18 LB WAT
 AXB 00 OZ AXC 00 OZ AXD
 NCA 00 OZ
 GL 00 OZ
 OZ 00 OZ

OK

Date of Placement: 7/8/10 to 7/9/10 Location: From to To
 Project No.: ESFM-CO31(61)-5S-31 Contract ID: ESFM-CO31(61)-5S-31
 Plant Name: BARD MATERIALS CASCADE County: Dubuque
 Contractor: Tschiggfrie Excavating Temp. Min: of
 SubContractor: Temp. Max: of
 Weather:
 Report No.: 15
 Date This Report: 7/10/2010
 Date Of Last Report: 7/2/2010
 Structures Des. No.: 100 & #146010

Mix	Batched yd3	% Of Est. Used	Fine Aggregate		Intermediate Aggregate		Coarse Aggregate		Actual Quantities Used - lbs/yd3				Avg w/c Ratio	Max w/c Ratio					
			T-203 Moist. (%)	Wt. SSD lbs	T-203 Moist. (%)	Wt. SSD lbs	T-203 Moist. (%)	Wt. SSD lbs	Cement	Fly Ash	GGBFS	Fine			Inter.	Coarse	In Agg.	Plant	Grade
C-4WR-c20S20	45.00	3.2	2.65	1,496	0.6	2.71	1,534	0.6	2.71	1,534	355	119	119	1,545	59	191.8	9.1	0.438	0.489
C-4WR-c20S20	16.50	3.2	2.65	1,496	0.6	2.71	1,534	0.6	2.71	1,534	355	119	119	1,545	59	187.8	14.1	0.439	0.489

Conc. Treatment	(X)	lbs/yd3
Ice		
Heated Water		
Heated Materials		

Coarse	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#200	Comply
^15-2010	100	95-100	84	25-60	31	0-10	0-5	0-1.5	Y/N
	100	99	84	53	31	3.9	0.9	0.8	yes

Intermediate	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#200	Comply

Fine	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200	Comply
^15-2010	100	90-100	70-100	10-60	48	13	1.3	0.5	yes	
	100	97	90	75	48	13	1.3	0.5	yes	

Target	Adjusted % Passing Calculated Combined Gradation												
	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200	Within Target

Remarks: On 7/08 we poured outlet wings, 13.5ft. Of barrel section and parapit on culvert #146100. 1/4yd waste
 On 7/09 we poured a outlet curtain wall. Had a 1/4yd waste on culvert #146010.

Brand / Source	Rate	Lot Number
BASF MB AE90	4.4 oz./100 ^56577488	
BASF Polyheed 997	3.5oz/100 ^56578230	

Type	Sp. Gr.	Source
Cement: 1	3.14	Continental
Fly Ash: c	2.65	Louisa
GGBFS: 120	2.92	Lafarge

Source	T-203 A #	Grad. No.
Coarse: cascade east	A31060	3
Intermediate:		
Fine: Loes	A53532	1

Distribution: DME Proj. Eng. Plant
 C.P.I.: Terry Miller EC578
 Monitor-Dennis Kearney EC345

Dennis Kearney EC345

ASSURANCE
IOWA DEPARTMENT OF TRANSPORTATION
Test Report-Miscellaneous Materials

Laboratory District 6 - Cedar Rapids

Material Air & Slump Test County Dubuque

Intended Use Structure Project No. ESFM-C031(61)—55-31

Laboratory No. _____ Design No. _____

Date Reported 7-29-10 Contract No. 27627 31-C031-061

Producer _____ Contractor Tschiggfrie Excav. Co.

Source _____

Unit of Material _____ Subcontractor _____

Sampled By Steve Deck Senders No. CR10AS-185 Date 7-29-10

Air
7.4 %

Slump
2-3/4"

Note: side by side air test was performed at the job site. Certified tech, Dennis Kearney, EC345 from Dubuque Co. Engr. office had air of 7.4% and slump of 2-3/4". Steve Deck, EC679 DOT Materials office had air of 7.6%. Tests are within DOT specs. IM216.

Ames
R. Boulet, Dist. 6 Matls.
S. Deck "
D. Kearney

Signed R. Boulet, P.E.

District 6 Materials Engineer

Iowa Department Of Transportation Reported Gradations & I.M. 216 Comparison Report

Project No.: ESFM-C031(61)-5S-31
 Contract ID.: _____
 County: DUBUQUE
 Cont. / Producer: TSCHIGGFRIE EXCAV. CO.
 Design No.: _____
 Coarse Agg. T-203A No.: A31060
 Fine Agg. T-203A No.: A53532
 Proper Equipment: _____
 Applicable Specification: _____
 D.O.T. Tested By: STEVE DECK
 Prod. / C.P.I. Tested By: DENNIS KEARNEY

Senders No. CR10AS-179
 Intended Use: Independent Assurance
 (Paving, Structure, Patching, Incidental)

	Good	Fair	Poor
Care of Equipment:	X		
Sampling Procedure:	X		
Splitting Procedure:	X		
Sieving to completion:	X		
Computations:	X		
Reporting:	X		

Cert. No.: EC679 Date: 7-29-10
 Cert. No.: EC345 Date: 7-29-10

Grad No.	Sample ID	Specs	Sieve Sizes											
			1.5"	1.0"	3/4"	1/2"	3/8"	4	8	16	30	50	100	200
	HS-46-10	D.O.T.	100	100	89	57	31	2.6	0.1					0.9
	DK-46-10	Prod. / C.P.I.	100	100	91	55	32	3.8	1.1					0.9

Grad No.	Sample ID	Specs												
	HS-47-10	D.O.T.					100	97	90	78	45	11	1.1	0.5
	DK-47-10	Prod. / C.P.I.					100	98	91	77	48	12	1	0.5

Sieves	D.O.T. % Retained	Prod. / C.P.I. % Retained	Diff.	Tol. %	Comply (Y/N)
1 1/2 - 1	0.0	0.0	0.0	2	Y
1 - 3/4	11.0	9.0	2.0	5	Y
3/4 - 1/2	32.0	36.0	4.0	7	Y
1/2 - 3/8	26.0	23.0	3.0	6	Y
3/8 - 4	28.4	28.2	0.2	6	Y
4 - 8	2.5	2.7	0.2	1	Y
8 - 200	-0.8	0.2	1.0	1	Y
200	0.9	0.9	0.0	1	Y

	Size Fraction Between Consecutive Sieves, %	Tolerance, %
Coarse Aggregate:		
	0.0 to 3.0	2
	3.1 to 10.0	3
	10.1 to 20.0	5
	20.1 to 30.0	6
	30.1 to 40.0	7
	40.1 to 50.0	9

3/8 - 4	3.0	2.0	1.0	2	Y
4 - 8	7.0	7.0	0.0	2	Y
8 - 16	12.0	14.0	2.0	3	Y
16 - 30	33.0	29.0	4.0	4	Y
30 - 50	34.0	36.0	2.0	4	Y
50 - 100	9.9	11.0	1.1	2	Y
100 - 200	0.6	0.5	0.1	1	Y
200	0.5	0.5	0.0	1	Y

Fine Aggregate:		
	0.0 to 3.0	1
	3.1 to 10.0	2
	10.1 to 20.0	3
	20.1 to 30.0	4
	30.1 to 40.0	4

Remarks:

Roger H. Boulet
 Dist. 6 Materials Engineer
 Dubuque Co.

Distribution: _____ Central Materials _____ TC Materials _____ Cont. / Prod. _____ Proj. Engineer _____ Technician S. Deck

AAC0-0337
A

IOWA DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS
TEST REPORT - CRUSHED STONE
LAB LOCATION - AMES

VERIFICATION

LAB NO....:AAC10-0337

MATERIAL.....:CONC STONE
INTENDED USE....:DECK/STRUCT
PRODUCER.....:BARD CONCRETE CO

CONTRACT #:27627

COUNTY.....:DUBUQUE
SPEC NO.....:4115.00

QUARRY NO.:A31060
CONTRACTOR:T SCHIGGFRIE

SOURCE.....:CASCADE EAST SE-22-087N-01W, DUBUQUE
UNIT OF MATERIAL:BARD R/M

SAMPLED BY.....:DECK

SENDER NO.:CR10AS178

DATE SAMPLED: 07/29/10

DATE RECEIVED: 08/10/10

DATE REPORTED: 08/18/10

PROJ: ESFM-C031(61)--5S-31

LAB NUMBER
TYPE OF AGGREGATE
LA ABRASION % LOSS, GRADING B
SPECIFIC GRAVITY
ABSORPTION
AL2O3

AAC0-0337
STONE
32
2.616
2.04
0.307

COPIES TO:
CENTRAL LAB

Steve-1
DUBUQUE

CO. ⁻¹

DIST6

DISPOSITION: COMPLIES WITH INTENDED USE

SIGNED: KEVIN B. JONES
TESTING ENGINEER

ACI0-0218
CI

VERIFICATION

IOWA DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS
TEST REPORT - ADMIXTURES
LAB LOCATION - AMES

LAB NO.....:ACI10-0218

MATERIAL.....:WATER REDUCER
INTENDED USE.....:STRUCTURE
PRODUCER.....:BASF CONSTRUCTION CHEMICALS
COUNTY.....:DUBUQUE

CONTRACTOR:TSCHIGGFRIE EXAV. CO.
LOT NO.....:56578230

QUANTITY.....:SAMPLED BARD R/M CASCADE IA
BRAND.....:POLYHEED 997
UNIT OF MATERIAL:ACCOUNTING ID: 27627 CONTRACT ID: 31-C031-061
LOCATION OF PRODUCING PLANT: CLEVELAND, OH

SAMPLED BY.....:STEVE DECK SENDER NO.:CR10AS-184
DATE SAMPLED: 07/29/10 DATE RECEIVED: 08/03/10 DATE REPORTED: 08/10/10
PROJECT: ESFM-C031(61)--5S-31

Test Results Manufacturers Limits

COPIES TO:
CENTRAL LAB

Steve - 1
DUBUQUE CO. *1* DIST6

DISPOSITION: PRIOR ANALYSIS: ACI10-217
SENDER'S # CR10AS-174, REPORTED 8/10/10

SIGNED: KEVIN B. JONES
TESTING ENGINEER



CONSTRUCTION MATERIALS, INC.

345 49TH AVENUE DRIVE S.W. CEDAR RAPIDS, IOWA 52404 PHONE: (319) 366-6446 FAX: (319) 366-1712

5210 N.E. 17TH STREET DES MOINES, IOWA 50313 PHONE: (515) 263-9006 FAX: (515) 263-8326

CMI

BACKORDER

Order Number: 0061396 Order Date: 9/24/2008 Ship Date: 8/11/2009 Customer P.O.: 955 (82) Ship VIA: HUMMER Project: Jackson Co. (82)

SOLD TO:

Tschiggfrie Excavating 425 Julian Dubuque Dr P O Box 3280 Dubuque, IA 52001

SHIP TO:

On Hwy 52 near south end of town Deliver after 10:00 AM Bellevue, IA 52031

Handwritten scribbles and initials

Confirm To:

Randy Steffan 563-590-1502

Table with columns: F.O.B., Terms, CMI Job #, Salesperson, Customer Number, Item Number, Description, Unit, Ordered, Shipped, Back Order, Shipped, Price, Amount. Includes a large circular stamp with signature and date.

This is to certify that the attached Mill Certifications are applicable to the material listed. CONSTRUCTION MATERIALS, INC. Signature Date 10/16/09

This is to certify that the material listed on this bill of lading does comply with the applicable specifications of the I.D.O.T. Highway Division CONSTRUCTION MATERIALS, INC. Signature Date 10/16/09

Continued



CONSTRUCTION MATERIALS, INC.

345 49TH AVENUE DRIVE S.W.
CEDAR RAPIDS, IOWA 52404
PHONE: (319) 366-6446
FAX: (319) 366-1712

5210 N.E. 17TH STREET
DES MOINES, IOWA 50313
PHONE: (515) 263-9006
FAX: (515) 263-8326

BACKORDER

Order Number: 0061396
Order Date: 9/24/2008
Ship Date: 8/11/2009
Customer P.O.: 955 (82)
Ship VIA: HUMMER
Project: Jackson Co. (82)

SOLD TO:

Tschiggfrie Excavating
425 Julian Dubuque Dr
P O Box 3280
Dubuque, IA 52001

SHIP TO:

Cedar Rapids Will Call
On Hwy 52 near south
end of town
Deliver after 10:00 AM
Bellevue, IA 52031

Confirm To:

Randy Steffan 563-590-1502

F.O.B. Shipping Point		Terms Net 30 Days	CMI Job #		Salesperson BW	Customer Number 02-TSC01			
Item Number	Description	Whse	Unit	Ordered	Shipped	Back Order	Shipped	Price	Amount
3KEYXFPL3008-9	Keyway Formed w/ legs 30"P 8"-9"PCC	030	LFT	1,790.00	0.00	1,790.00		0.4400	787.60
3CWCWRM1645-RF	1645 White Cure -Refill IOWA Dot Wax Water Cure WR Meadows (1 - 275 gal. totes) Lot # 9HH112	030	GAL	275.00	0.00	275.00		4.3000	1,182.50
3JSWRM3405-IAMO	3405 Mod. Iowa DOT WR Meadows (12 - 55# ctns) LOT # 9HJ013	030	LBS	660.00	0.00	660.00		0.7100	468.60

Net Order: 34,672.17
Less Discount: 0.00
Freight: 0.00
Sales Tax: 7.35
Order Total: 34,679.52

FOR CHEMICAL EMERGENCY
SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT
CALL CHEMTREC 800-424-9300

X

SIGNATURE

ALL RETURNS ARE SUBJECT TO A 25% RESTOCK CHARGE

PLEASE PRINT NAME

Microsoft Access - Table Tools - Datasheet

Security Warning: Certain content in the database has been disabled. Options...

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Tables:

- CURING COMPOUND TEST ST...
- JOINT SEALER TEST STATUS
- TRAFFIC PAINT TEST STATUS

Lab No	MANUFACTURER	BATCH NO	QUANTITY	DATE RECEIVED	DISPOSITION
ADE9-43	SPEC CHEM	031709	0		CARRY OVER
ADE9-44	W.R.MEADOWS	9HA047	0		COMPLY
ADE9-45	SPEC CHEM	060109	0		COMPLY
ADE9-46	SPEC CHEM	060309	0		COMPLY
ADE9-47	SPEC CHEM	060509	0		COMPLY
ADE9-48	DSSC	90617101A	0		COMPLY
ADE9-49	SPEC CHEM	060909	0		COMPLY
ADE9-50	SPEC CHEM	061109	0		COMPLY
ADE9-51	SPEC CHEM	061509	0		COMPLY
ADE9-52	SPEC CHEM	061609	0		COMPLY
ADE9-53	W.R.MEADOWS	9HF141	0		COMPLY
ADE9-54	SPEC CHEM	012109	0		CARRY OVER
ADE9-55	DSSC	90629102A	0		COMPLY
ADE9-56	W.R.MEADOWS	9HH034	0		COMPLY
ADE9-57	SPEC CHEM	040909	0		CARRY OVER
ADE9-58	W.R.MEADOWS	9HH042	0		COMPLY
ADE9-59	W.R.MEADOWS	9HH112	0		COMPLY
ADE9-60	W.R.MEADOWS	8HD173	0		CARRY OVER
ADE9-61	SPEC CHEM	071309	0		COMPLY
ADE9-62	SPEC CHEM	071509	0		COMPLY
ADE9-63	SPEC CHEM	072209	0		COMPLY
ADE9-64	SPEC CHEM	072409	0		COMPLY
ADE9-65	DSSCC	90803101A	0		COMPLY
ADE9-66	DSSCC	90805103A	0		COMPLY
ADE9-67	W.R.MEADOWS	9HD122	0		COMPLY
ADE9-68	W.R.MEADOWS	9HJ046	0		COMPLY
ADE9-69	DSSCC	90811101A	0		COMPLY
ADE9-70	W.R.MEADOWS	9HE059	0		CARRY OVER
ADE9-71	NOX-CRETE		0		COMPLY
ADE9-72	DSSCC	90818101A	0		COMPLY
ADE9-73	SPEC CHEM	060909	0		CARRY OVER
ADE9-74	DSSCC	90838103A	0		COMPLY

Record: 116 of 213 | Unfiltered | Search

Datasheet View | Num Lock



CONSTRUCTION MATERIALS, INC.

345 49TH AVENUE DRIVE S.W.
CEDAR RAPIDS, IOWA 52404
PHONE: (319) 366-6446
FAX: (319) 366-1712

5210 N.E. 17TH STREET
DES MOINES, IOWA 50313
PHONE: (515) 263-9006
FAX: (515) 263-8326

SALES ORDER

Order Number: 0081056
Order Date: 3/11/2010
Ship Date: ~~3/11/2010~~ 3-12-10
Customer P.O.: DAVE K.
Ship VIA: HUMMER
Project: DUBUQUE CO. (61)
Master Order: 0080675

SOLD TO:

Tschiggfrie Excavating
425 Julian Dubuque Dr
P O Box 3280
Dubuque, IA 52001

SHIP TO:

Jobsite at 4 locations on
Farley Road (Co. Rd Y13)
North of
Cascade, IA 52033

Confirm To:

DAVE K. (563) 590-0278

F.O.B.	Terms	CMI Job #	Salesperson	Customer Number		
JOBSITE-6 LOADS	Net 30 Days	10-C03	CS	02-TSC01		
Item Number	Description	Unit	Ordered	Shipped	Back Order	Shipped
	DUBUQUE COUNTY - ESFM-C031(61)--5S-31 B.O.#007 LET 1-20-10					
	4 BOX CULVERTS					
	ITEM #10 - REINFORCING STEEL					
3RPSBF1.0	Black Steel Fab. CR Iowa-Unit Price	030 LBS	53,591.00	0.00	0.00	<u>53,591</u>
	SEE CMI BAR-LIST/JOB# 10-C03 CC-130C, 131C, 132C TAG COLOR:YELLOW, ORANGE, PURPLE					
	Includes: The material for this project was provided using steel cut from the standard stock lengths shown as follows:					
3RPS60044000	Black - 60 Gr. No. 4 x 40'-00" ASTM A615 (0.668lbs/Lft) Ht. # KN0910614301, KN1010040001	030 LBS	14,910.00	0.00	0.00	<u>14,910</u>
3RPS60054000	Black - 60 Gr. No. 5 x 40'-00" ASTM A615 Ht. # KN0910623701, KN0910623801	030 LBS	20,529.00	0.00	0.00	<u>20,529</u>
3RPS60066000	Black - 60 Gr. No. 6 x 60'-00" ASTM A615 (1.502lbs/Lft) Ht. # KN1010007601, KN0910580901	030 LBS	17,572.00	0.00	0.00	<u>17,572</u>
3RPS60076000	Black - 60 Gr. No. 7 x 60'-00" ASTM A615 (2.044 lbs/Lft) Ht. # KN0910547101	030 LBS	580.00	0.00	0.00	<u>580</u>

Continued

This is to certify that the attached Mill Certifications
are applicable to the material listed.
CONSTRUCTION MATERIALS, INC.

Signature [Signature]
Date 3/11/10

This is to certify that the material listed on this bill of lading does
comply with the applicable specifications of the I.D.O.T. Highway
Division

CONSTRUCTION MATERIALS, INC.
Signature [Signature]
Date 3/11/10



CONSTRUCTION MATERIALS, INC.

345 49TH AVENUE DRIVE S.W.
CEDAR RAPIDS, IOWA 52404
PHONE: (319) 366-6446
FAX: (319) 366-1712

5210 N.E. 17TH STREET
DES MOINES, IOWA 50313
PHONE: (515) 263-9006
FAX: (515) 263-8326

SALES ORDER

Order Number: 0081056
Order Date: 3/11/2010
Ship Date: 3/11/2010
Customer P.O.: DAVE K.
Ship VIA: HUMMER
Project: DUBUQUE CO. (61)
Master Order: 0080675

SOLD TO:

Tschiggfrie Excavating
425 Julian Dubuque Dr
P O Box 3280
Dubuque, IA 52001

SHIP TO:

Jobsite at 4 locations on
Farley Road (Co. Rd Y13)
North of
Cascade, IA 52033

Confirm To:

DAVE K. (563) 590-0278

F.O.B.	Terms	CMI Job #	Salesperson	Customer Number
JOBSITE-6 LOADS	Net 30 Days	10-C03	CS	02-TSC01

Item Number	Description	Unit	Ordered	Shipped	Back Order	Shipped
3RACHCU035	CHC Upper 3 1/2" Plain Wire	030 LFT	3,200.00	0.00	0.00	<u>3,200</u>
3RACHCU050	CHC Upper 5" Plain Wire 5' standard lengths-100'/bundle	030 LFT	1,150.00	0.00	0.00	<u>1,150</u>
3RASBUP200	SB Upper 2" Plain Wire 5' standard lengths-100'/bundle	030 LFT	3,500.00	0.00	0.00	<u>3,500</u>
3RAHCC020	Ind High Chair 2", Plastic Tipped	030 EACH	300.00	0.00	0.00	<u>300</u>
3RASBPT200	Slab Bolster 2" Plastic Tipped 5' standard lengths-100'/bundle	030 LFT	1,300.00	0.00	0.00	<u>1,300</u>
3TWA2LTPLAIN06	6" Plain Looptie 5000/Bag 16 Ga.	030 BAG	6.00	0.00	0.00	<u>6</u>

FOR CHEMICAL EMERGENCY
SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT
CALL CHEMTREC 800-424-9300

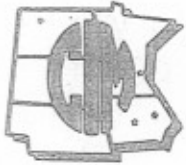
Chris Kluesner

SIGNATURE

Chris Kluesner

PLEASE PRINT NAME

ALL RETURNS ARE SUBJECT TO A 25% RESTOCK CHARGE



CONSTRUCTION MATERIALS, INC.

345-49TH AVENUE DRIVE SW
CEDAR RAPIDS, IOWA 52404
(319) 366-6446
(800) 747-6401
FAX (319) 366-1712

Black Rebar Certification

County: Dubuque County

Project: ESFM-C031(61)--5S-31

Design No. _____

Contractor: Tschiggfrie Construction

The Material listed itemized in this shipment is certified to meet the requirements of ASTM and the applicable specifications of the Iowa Department of Transportation. Attached are the copies of mill tests reports and bar lists that are applicable to this shipment.

Size	Weight	Heat Numbers
11		
10		
9		
8		
7	580	KN0910547101 ✓
6	17,572	KN1010007601, KN0910580901 ✓
5	20,529	KN0910623701, KN0910623801 ✓
4	14,910	KN0910614301, KN1010045001 ✓
3		ea
Spirals & Spacers		

Bar List Total **53,591**

Signed:
Date: 3/11/10

Distribution

Transportation Center	EC ✓	1
Field w/ Truckload		1
Contractor - Main Office		1

6725 OXFORD STREET
MINNEAPOLIS, MN 55426
(952) 929-0431
(800) 486-8456
FAX (952) 929-0737

5210 NE 17TH STREET
DES MOINES, IA 50313
(515) 263-9006
(800) 747-9006
FAX (515) 263-8326





Construction Materials, Inc.
 345 49th Ave. Dr SW
 Cedar Rapids, Iowa 52404
 800-747-6401 319-366-1712(fax)
 constructionmaterialsinc.com

JOB NUMBER 10-C03	RELEASE NUMBER 1	REQ. DELIVERY DATE	PAGE 1 of 4
JOB NAME ESFM-C031(61)--5S-31	CC 130C		BY EE
CUSTOMER Tschiggfrie Excavating			

MATERIAL TYPE Multiple	REFERENCE DUBUQUE COUNTY	DRAWING ID IDOT	DESCRIPTION #1704 FHWA 146070															
Item	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC

#1704
 FHWA 146070
 TAG: YELLOW

(1) HEADWALL
 Rebar, Grade 60, Black

1	4	7	35-05	7J1		290													0
	4.					290.													
2	1	6	60-00	6S5	4	90		53-08	6-04					1-003		6-03	59-11		H
3	1	6	60-00	6F4	4	90		57-00	3-00					0-09		2-103	59-103		H
4	1	6	40-01	6S6	4	60		34-09	5-04					1-052		5-012	39-102		H
5	1	6	39-00	6F5	4	59		36-00	3-00					0-09		2-103	38-103		H
6	4	6	36-00	6P2	4	216		33-00	3-00					0-11		2-101	35-101		H
7	2	6	32-10	6S7	4	99		29-07	3-03					1-10		2-081	32-031		H
8	4	6	13-08	6P3	4	82		10-08	3-00					2-103		0-091	11-051		H02
9	2	6	8-04	6S1	16	25		1-041	0-033	6-08				1-012		6-063	6-102		H04
10	2	6	7-11	6S2	16	24		1-033	1-01	5-06				1-061		5-032	6-042		H04
11	2	6	57-06	6S3		173													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 20 VARY 1 EACH **																			
12	20	6	48-11	6M5		1164													0
			28-08	6M5															0
13	4	6	35-04	6P1		212													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 6 VARY 1 EACH **																			
14	6	6	35-02	6M2		309													0
			33-04	6M2															0
15	2	6	35-00	6S4		105													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 19 VARY 1 EACH **																			
16	19	6	33-02	6M1		899													0
			29-10	6M1															0
17	24	6	32-04	6F1		1165													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 8 VARY 1 EACH **																			
18	8	6	29-06	6F3		212													0
			5-09	6F3															0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 12 VARY 1 EACH **																			
19	12	6	29-02	6F2		327													0
			6-11	6F2															0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 17 VARY 1 EACH **																			
20	17	6	25-11	6M3		546													0
			16-11	6M3															0
21	11	6	16-10	6M4		278													0
22	1	6	5-02	6F4		8													0
23	1	6	4-09	6S5		7													0
	145.					6150.													
24	4	5	40-00	5B7	4	167		37-00	3-00					0-09		2-103	39-103		H
25	1	5	40-00	5B5	4	42		37-00	3-00					0-09		2-103	39-103		H



Construction Materials, Inc.
 345 49th Ave. Dr SW
 Cedar Rapids, Iowa 52404
 800-747-6401 319-366-1712(fax)
 constructionmaterialsinc.com

JOB NUMBER 10-C03	RELEASE NUMBER 1	REQ. DELIVERY DATE	PAGE 2 of 4
JOB NAME ESFM-C031(61)--5S-31			CC 130C
CUSTOMER Tschiggfrie Excavating			BY EE

MATERIAL TYPE Multiple	REFERENCE DUBUQUE COUNTY	DRAWING ID IDOT	DESCRIPTION #1704 FHWA 146070
---------------------------	-----------------------------	--------------------	----------------------------------

Item	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC
------	-----	------	--------	------	-------	-----	---	---	---	---	---	-----	---	---	---	---	---	----

Rebar, Grade 60, Black -- Continued

1	1	5	39-00	5B6	4	41		36-00	3-00					0-09		2-103	38-103	H	
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 9 VARY 1 EACH **																			
2	9	5	37-04	5B8	4	219		34-04	3-00					0-09		2-103	37-023	H	
			9-04	5B8				6-04	3-00					0-09		2-103	9-023	H	
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 5 VARY 1 EACH **																			
3	5	5	36-11	5B7	4	131		33-11	3-00					0-09		2-103	36-093	H	
			13-08	5B7				10-08	3-00					0-09		2-103	13-063	H	
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 45 VARY 1 EACH **																			
4	45	5	16-11	5C9	17	618		4-00	12-11									H03	
			9-05	5C9				4-00	5-05									H03	
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 32 VARY 1 EACH **																			
5	32	5	16-10	5C10	17	415		4-00	12-10									H03	
			8-00	5C10				4-00	4-00									H03	
6	4	5	15-08	5C12	17	65		4-00	11-08									H03	
7	50	5	10-06	5C11	17	548		4-00	6-06									H03	
8	55	5	7-05	5T1	S5	426	0-06	0-11	3-10	2-02								C06	
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 17 VARY 1 EACH **																			
9	17	5	31-03	5B9		331												0	
			6-00	5B9														0	
10	1	5	25-01	5B5		26												0	
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 4 VARY 1 EACH **																			
11	4	5	22-03	5B7..		56												0	
			4-09	5B7..														0	
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 15 VARY 1 EACH **																			
12	15	5	5-03	5C7		62												0	
			2-10	5C7														0	
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 4 VARY 1 EACH **																			
13	4	5	3-08	5C8		14												0	
			2-10	5C8														0	
247. 3161.																			
14	4	4	40-00	4B3	4	107		37-00	3-00					0-09		2-103	39-103	H	
15	1	4	40-00	4B1	4	27		37-00	3-00					0-09		2-103	39-103	H	
16	1	4	39-00	4B2	4	26		36-00	3-00					0-09		2-103	38-103	H	
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 8 VARY 1 EACH **																			
17	8	4	37-04	4B4	4	135		34-04	3-00					0-09		2-103	37-023	H	
			12-10	4B4				9-10	3-00					0-09		2-103	12-083	H	
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 4 VARY 1 EACH **																			
18	4	4	36-11	4B3	4	76		33-11	3-00					0-09		2-103	36-093	H	
			19-06	4B3				16-06	3-00					0-09		2-103	19-043	H	
19	49	4	6-08	4I1	S5	218	1-033	0-111	1-07	2-10								C06	
20	3	4	40-00	4D2		80												0	
21	3	4	34-10	4D3		70												0	
22	17	4	32-04	4D1		367												0	
23	1	4	25-01	4B1		17												0	
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 4 VARY 1 EACH **																			
24	4	4	22-03	4B3..		36												0	
			4-09	4B3..														0	
25	3	4	17-06	4D2		35												0	



Construction Materials, Inc.
345 49th Ave. Dr SW
Cedar Rapids, Iowa 52404
800-747-6401 319-366-1712(fax)
constructionmaterialsinc.com

JOB NUMBER 10-C03	RELEASE NUMBER 1	REQ DELIVERY DATE	PAGE 3 of 4
JOB NAME ESFM-C031(61)--5S-31			CC 130C
CUSTOMER Tschiggfrie Excavating			BY EE

MATERIAL TYPE Multiple				REFERENCE DUBUQUE COUNTY				DRAWING ID IDOT				DESCRIPTION #1704 FHWA 146070							
Item	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC	

Rebar, Grade 60, Black -- Continued

** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 60 VARY 1 EACH **																		
1	60	4	12-11	4C1		316												0
			2-10	4C1														0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 36 VARY 1 EACH **																		
2	36	4	12-10	4C2		188												0
			2-10	4C2														0
3	4	4	11-09	4C3		31												0
4	3	4	10-07	4C6		21												0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 55 VARY 1 EACH **																		
5	55	4	10-05	4C5		226												0
			1-10	4C5														0
6	2	4	1-09	4C4		2												0
	258.					1978.												

Rebar, Grade 60, Galvanized

7	2	5	2-11	5FA	S11	6		2-103						1-04			0-05	L
	2.					6.												

19'-6" END SECTION

Rebar, Grade 60, Black

8	8	6	12-00	6M5S		17	144	10-02	1-10									H04
9	28	6	12-00	6M5L		17	505	10-02	1-10									H04
10	8	6	5-02	6K5S		17	62	3-02	2-00									H04
11	28	6	5-02	6K5L		17	217	3-02	2-00									H04
12	25	6	5-06	6K7			207											0
13	25	6	5-01	6M7			191											0
	122.						1326.											
14	10	5	12-06	5M4S		17	130	10-02	2-04									H03
15	30	5	12-06	5M4L		17	391	10-02	2-04									H03
16	10	5	5-07	5K4S		17	58	3-02	2-05									C03
17	30	5	5-07	5K4L		17	175	3-02	2-05									C03
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 11 VARY 1 EACH **																		
18	11	5	28-05	5E1L			275											0
			19-05	5E1L														0
19	2	5	26-08	5M9			56											0
20	2	5	26-02	5K9			55											0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 11 VARY 1 EACH **																		
21	11	5	18-03	5E1S			163											0
			10-03	5E1S														0
22	26	5	17-07	5M6			477											0
23	26	5	17-07	5K6			477											0
24	39	5	11-05	5A2			465											0
25	50	5	8-03	5K2			430											0
26	50	5	7-11	5M2			413											0
27	26	5	3-06	5R1			95											0
	323.						3660.											
28	14	4	29-09	4B1L			278											0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 10 VARY 1 EACH **																		
29	10	4	29-04	4E2L			163											0
			19-06	4E2L														0



Construction Materials, Inc.
 345 49th Ave. Dr SW
 Cedar Rapids, Iowa 52404
 800-747-6401 319-366-1712(fax)
 constructionmaterialsinc.com

JOB NUMBER 10-C03	RELEASE NUMBER 1	REQ. DELIVERY DATE	PAGE 4 of 4
JOB NAME ESFM-C031(61)--5S-31			CC 130C
CUSTOMER Tschiggfrie Excavating			BY EE

MATERIAL TYPE Multiple	REFERENCE DUBUQUE COUNTY	DRAWING ID IDOT	DESCRIPTION #1704 FHWA 146070															
Itm	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC

Rebar, Grade 60, Black -- Continued

** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 10 VARY 1 EACH **																			
1	10	4	29-04	4F2L		163													0
			19-06	4F2L															0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 13 VARY 1 EACH **																			
2	13	4	28-05	4F1L		205													0
			19-05	4F1L															0
3	28	4	26-08	4M1		499													0
4	28	4	26-02	4K1		489													0
5	8	4	19-06	4B2L		104													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 10 VARY 1 EACH **																			
6	10	4	19-02	4E2S		95													0
			9-04	4E2S															0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 10 VARY 1 EACH **																			
7	10	4	19-02	4F2S		95													0
			9-04	4F2S															0
8	7	4	19-02	4B2S		90													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 13 VARY 1 EACH **																			
9	13	4	18-03	4F1S		124													0
			10-03	4F1S															0
10	13	4	11-05	4A1S		99													0
11	39	4	11-05	4A1L		298													0
12	14	4	9-04	4B1S		87													0
217.						2789.													

Total Weight: 19,360 Lbs

Longest Length: 60-00

WEIGHT SUMMARY

SIZE	TOTAL			STRAIGHT			LIGHT BENDING			HEAVY BENDING		
	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS
Rebar, Grade 60, Black												
4	253	475	4767	237	408	4178	1	49	218	15	18	371
5	172	570	6821	71	284	3395	1	55	426	100	231	3000
6	104	267	7476	91	177	5803	0	0	0	13	90	1673
7	1	4	290	1	4	290	0	0	0	0	0	0
	530	1316	19354	400	873	13666	2	104	644	128	339	5044
Rebar, Grade 60, Galvanized												
5	1	2	6	0	0	0	1	2	6	0	0	0
	1	2	6	0	0	0	1	2	6	0	0	0



Construction Materials, Inc.
 345 49th Ave. Dr SW
 Cedar Rapids, Iowa 52404
 800-747-6401 319-366-1712(fax)
 constructionmaterialsinc.com

JOB NUMBER 10-C03	RELEASE NUMBER 2	REQ. DELIVERY DATE	PAGE 1 of 1
JOB NAME ESFM-C031(61)--5S-31			CC 131C
CUSTOMER Tschiggfrie Excavating			BY EE

MATERIAL TYPE Rebar, Grade 60, Black	REFERENCE DUBUQUE COUNTY	DRAWING ID IDOT	DESCRIPTION #1704 FHWA 146070
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Itm	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC
-----	-----	------	--------	------	-------	-----	---	---	---	---	---	-----	---	---	---	---	---	----

#1704 FHWA 146070
 TAG: ORANGE

38' BARREL

1	72	6	12-00	6M5	17	1298		10-02	1-10										H04
2	72	6	5-02	6K5	17	559		3-02	2-00										H04
3	48	6	5-06	6K7		397													0
4	48	6	5-01	6M7		366													0
240.						2620.													
5	78	5	12-06	5M4	17	1017		10-02	2-04										H03
6	78	5	5-07	5K4	17	454		3-02	2-05										C03
7	22	5	37-08	5E1		864													0
8	4	5	26-08	5M9		111													0
9	4	5	26-02	5K9		109													0
10	49	5	17-07	5M6		898													0
11	49	5	17-07	5K6		898													0
12	76	5	11-05	5A2		905													0
13	96	5	8-03	5K2		826													0
14	96	5	7-11	5M2		793													0
552.						6875.													
15	20	4	37-08	4F2		503													0
16	26	4	37-08	4F1		654													0
17	20	4	37-08	4E2		503													0
18	15	4	37-08	4B2		377													0
19	28	4	37-08	4B1		705													0
20	53	4	26-08	4M1		944													0
21	53	4	26-02	4K1		927													0
22	100	4	11-05	4A1		763													0
315.						5376.													

Total Weight: 14,871 Lbs

Longest Length: 37-08

WEIGHT SUMMARY

TOTAL				STRAIGHT			LIGHT BENDING			HEAVY BENDING		
SIZE	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS
Rebar, Grade 60, Black												
4	8	315	5376	8	315	5376	0	0	0	0	0	0
5	10	552	6875	8	396	5404	0	0	0	2	156	1471
6	4	240	2620	2	96	763	0	0	0	2	144	1857
	22	1107	14871	18	807	11543	0	0	0	4	300	3328



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JOB NUMBER 10-C03	RELEASE NUMBER 3	REQ DELIVERY DATE	PAGE 1 of 4
JOB NAME ESFM-C031(61)--5S-31			CC 132C
CUSTOMER Tschiggfrie Excavating			BY EE

MATERIAL TYPE Multiple	REFERENCE DUBUQUE COUNTY	DRAWING ID IDOT	DESCRIPTION #1704 FHWA 146070
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Itm	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC
-----	-----	------	--------	------	-------	-----	---	---	---	---	---	-----	---	---	---	---	---	----

#1704 FHWA 146070

TAG: PURPLE

(1) HEADWALL

Rebar, Grade 60, Black

1	4	7	35-05	7J1		290													0
	4.					290.													
2	1	6	60-00	6S5	4	90	53-08	6-04					1-003		6-03	59-11			H
3	1	6	60-00	6F4	4	90	57-00	3-00					0-09		2-103	59-103			H
4	1	6	40-01	6S6	4	60	34-09	5-04					1-052		5-012	39-102			H
5	1	6	39-00	6F5	4	59	36-00	3-00					0-09		2-103	38-103			H
6	4	6	36-00	6P2	4	216	33-00	3-00					0-11		2-101	35-101			H
7	2	6	32-10	6S7	4	99	29-07	3-03					1-10		2-081	32-031			H
8	4	6	13-08	6P3	4	82	10-08	3-00					2-103		0-091	11-051			H02
9	2	6	8-04	6S1	16	25	1-041	0-033	6-08				1-012		6-063	6-102			H04
10	2	6	7-11	6S2	16	24	1-033	1-01	5-06				1-061		5-032	6-042			H04
11	2	6	57-06	6S3		173													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 20 VARY 1 EACH **																			
12	20	6	48-11	6M5		1164													0
			28-08	6M5															0
13	4	6	35-04	6P1		212													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 6 VARY 1 EACH **																			
14	6	6	35-02	6M2		309													0
			33-04	6M2															0
15	2	6	35-00	6S4		105													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 19 VARY 1 EACH **																			
16	19	6	33-02	6M1		899													0
			29-10	6M1															0
17	24	6	32-04	6F1		1165													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 8 VARY 1 EACH **																			
18	8	6	29-06	6F3		212													0
			5-09	6F3															0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 12 VARY 1 EACH **																			
19	12	6	29-02	6F2		327													0
			6-11	6F2															0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 17 VARY 1 EACH **																			
20	17	6	25-11	6M3		546													0
			16-11	6M3															0
21	11	6	16-10	6M4		278													0
22	1	6	5-02	6F4		8													0
23	1	6	4-09	6S5		7													0
	145.					6150.													
24	4	5	40-00	5B7	4	167	37-00	3-00					0-09		2-103	39-103			H
25	1	5	40-00	5B5	4	42	37-00	3-00					0-09		2-103	39-103			H
26	1	5	39-00	5B6	4	41	36-00	3-00					0-09		2-103	38-103			H



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JOB NUMBER 10-C03	RELEASE NUMBER 3	REQ DELIVERY DATE	PAGE 2 of 4
JOB NAME ESFM-C031(61)--5S-31		CC 132C	
CUSTOMER Tschiggfrie Excavating		BY EE	

MATERIAL TYPE Multiple				REFERENCE DUBUQUE COUNTY				DRAWING ID IDOT				DESCRIPTION #1704 FHWA 146070						
Item	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC

Rebar, Grade 60, Black -- Continued

** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 9 VARY 1 EACH **																			
1	9	5	37-04	5B8	4	219													
			9-04	5B8					34-04	3-00					0-09		2-103	37-023	H
									6-04	3-00					0-09		2-103	9-023	H
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 5 VARY 1 EACH **																			
2	5	5	36-11	5B7	4	131													
			13-08	5B7					33-11	3-00					0-09		2-103	36-093	H
									10-08	3-00					0-09		2-103	13-063	H
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 45 VARY 1 EACH **																			
3	45	5	16-11	5C9	17	618													
			9-05	5C9					4-00	12-11									H03
									4-00	5-05									H03
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 32 VARY 1 EACH **																			
4	32	5	16-10	5C10	17	415													
			8-00	5C10					4-00	12-10									H03
									4-00	4-00									H03
5	4	5	15-08	5C12	17	65													H03
6	50	5	10-06	5C11	17	548													H03
7	55	5	7-05	5T1	S5	426	0-06	0-11	3-10	2-02									C08
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 17 VARY 1 EACH **																			
8	17	5	31-03	5B9		331													0
			6-00	5B9															0
9	1	5	25-01	5B5		26													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 4 VARY 1 EACH **																			
10	4	5	22-03	5B7..		56													0
			4-09	5B7..															0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 15 VARY 1 EACH **																			
11	15	5	5-03	5C7		62													0
			2-10	5C7															0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 4 VARY 1 EACH **																			
12	4	5	3-08	5C8		14													0
			2-10	5C8															0
247.						3161.													
13	4	4	40-00	4B3	4	107													0
									37-00	3-00					0-09		2-103	39-103	H
14	1	4	40-00	4B1	4	27													0
									37-00	3-00					0-09		2-103	39-103	H
15	1	4	39-00	4B2	4	26													0
									36-00	3-00					0-09		2-103	38-103	H
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 8 VARY 1 EACH **																			
16	8	4	37-04	4B4	4	135													0
			12-10	4B4					34-04	3-00					0-09		2-103	37-023	H
									9-10	3-00					0-09		2-103	12-083	H
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 4 VARY 1 EACH **																			
17	4	4	36-11	4B3	4	76													0
			19-06	4B3					33-11	3-00					0-09		2-103	36-093	H
									16-06	3-00					0-09		2-103	19-043	H
18	49	4	6-08	4I1	S5	218	1-033	0-111	1-07	2-10									C06
19	3	4	40-00	4D2		80													0
20	3	4	34-10	4D3		70													0
21	17	4	32-04	4D1		367													0
22	1	4	25-01	4B1		17													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 4 VARY 1 EACH **																			
23	4	4	22-03	4B3..		36													0
			4-09	4B3..															0
24	3	4	17-08	4D2		35													0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 60 VARY 1 EACH **																			
25	60	4	12-11	4C1		316													0
			2-10	4C1															0



Construction Materials, Inc.
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JOB NUMBER 10-C03	RELEASE NUMBER 3	REQ. DELIVERY DATE	PAGE 3 of 4
JOB NAME ESFM-C031(61)--5S-31	CUSTOMER Tschiggfrie Excavating		CC 132C
			BY EE

MATERIAL TYPE Multiple				REFERENCE DUBUQUE COUNTY				DRAWING ID IDOT				DESCRIPTION #1704 FHWA 146070							
Item	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC	

Rebar, Grade 60, Black -- Continued

** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 36 VARY 1 EACH **

1	36	4	12-10	4C2		188												0
			2-10	4C2														0
2	4	4	11-09	4C3		31												0
3	3	4	10-07	4C6		21												0

** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 55 VARY 1 EACH **

4	55	4	10-05	4C5		226												0
			1-10	4C5														0
5	2	4	1-09	4C4		2												0
	258.					1978.												

Rebar, Grade 60, Galvanized

6	2	5	2-11	5FA	S11	6		2-103						1-04			0-05	L
	2.					6.												

19' - 6" END SECTION

Rebar, Grade 60, Black

7	8	6	12-00	6M5S		17	144	10-02	1-10									H04
8	28	6	12-00	6M5L		17	505	10-02	1-10									H04
9	8	6	5-02	6K5S		17	62	3-02	2-00									H04
10	28	6	5-02	6K5L		17	217	3-02	2-00									H04
11	25	6	5-06	6K7			207											0
12	25	6	5-01	6M7			191											0
	122.						1326.											
13	10	5	12-06	5M4S		17	130	10-02	2-04									H03
14	30	5	12-06	5M4L		17	391	10-02	2-04									H03
15	10	5	5-07	5K4S		17	58	3-02	2-05									C03
16	30	5	5-07	5K4L		17	175	3-02	2-05									C03

** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 11 VARY 1 EACH **

17	11	5	28-05	5E1L			275											0
			19-05	5E1L														0
18	2	5	26-08	5M9			56											0
19	2	5	26-02	5K9			55											0

** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 11 VARY 1 EACH **

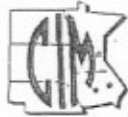
20	11	5	18-03	5E1S			163											0
			10-03	5E1S														0
21	26	5	17-07	5M6			477											0
22	26	5	17-07	5K6			477											0
23	39	5	11-05	5A2			465											0
24	50	5	8-03	5K2			430											0
25	50	5	7-11	5M2			413											0
26	26	5	3-06	5R1			95											0
	323.						3660.											
27	14	4	29-09	4B1L			278											0

THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 10 VARY 1 EACH **

28	10	4	29-04	4E2L			163											0
			19-06	4E2L														0

THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 10 VARY 1 EACH **

29	10	4	29-04	4F2L			163											0
			19-06	4F2L														0



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JOB NUMBER 10-C03	RELEASE NUMBER 3	REQ. DELIVERY DATE	PAGE 4 of 4
JOB NAME ESFM-C031(61)--5S-31			CC 132C
CUSTOMER Tschiggfrie Excavating			BY EE

MATERIAL TYPE Multiple				REFERENCE DUBUQUE COUNTY				DRAWING ID IDOT				DESCRIPTION #1704 FHWA 146070						
Itm	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC

Rebar, Grade 60, Black -- Continued

** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 13 VARY 1 EACH **																		
1	13	4	28-05	4F1L		205												0
			19-05	4F1L														0
2	28	4	26-08	4M1		499												0
3	28	4	26-02	4K1		489												0
4	8	4	19-06	4B2L		104												0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 10 VARY 1 EACH **																		
5	10	4	19-02	4E2S		95												0
			9-04	4E2S														0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 10 VARY 1 EACH **																		
6	10	4	19-02	4F2S		95												0
			9-04	4F2S														0
7	7	4	19-02	4B2S		90												0
** THE FOLLOWING ITEM IS A GROUPED VARIABLE -- 13 VARY 1 EACH **																		
8	13	4	18-03	4F1S		124												0
			10-03	4F1S														0
9	13	4	11-05	4A1S		99												0
10	39	4	11-05	4A1L		298												0
11	14	4	9-04	4B1S		87												0
						217.												2789.

Total Weight: 19,360 Lbs

Longest Length: 60-00

WEIGHT SUMMARY

SIZE	TOTAL			STRAIGHT			LIGHT BENDING			HEAVY BENDING		
	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS
Rebar, Grade 60, Black												
4	253	475	4767	237	408	4178	1	49	218	15	18	371
5	172	570	6821	71	284	3395	1	55	426	100	231	3000
6	104	267	7476	91	177	5803	0	0	0	13	90	1673
7	1	4	290	1	4	290	0	0	0	0	0	0
	530	1316	19354	400	873	13666	2	104	644	128	339	5044
Rebar, Grade 60, Galvanized												
5	1	2	6	0	0	0	1	2	6	0	0	0
	1	2	6	0	0	0	1	2	6	0	0	0

SOLD TO: CONSTRUCTION MATERIALS INC
 345 49TH AVE DR SW
 CEDAR RAPIDS, IA 52404-4819

NUCOR
BAR MILL GROUP
NUCOR STEEL KANKAKEE, INC.

CERTIFIED MILL TEST REPORT

Page: 1

SHIP TO: CONSTRUCTION MATERIALS
 345 49TH AVE SW
 CEDAR RAPIDS, IA 52404-4819

Ship from: Nucor Steel Kankakee, Inc.
 One Nucor Way
 Bourbonnais, IL 60914
 815-937-3131

Date: 7-Jan-2010
 B.L. Number: 402618
 Load Number: 196071

Material Safety Data Sheets are available at www.nucorbar.com or by contacting your inside sales representative.

NBMG-08 March 24, 2009

HEAT NUM. *	DESCRIPTION	PHYSICAL TESTS				CHEMICAL TESTS													
		YIELD P.S.I.	TENSILE P.S.I.	ELONG % IN 8"	BEND	WT% DEF	C	Ni	Mn	Cr	P	Mo	S	V	Si	Cb	Cu	Sn	C.E.
PO# => KN0910612102	46242 Nucor Steel - Kankakee Inc 13/#4 Rebar 40' A615M Gr 420 (Gr60) ASTM A615/A615M-09 GR 60[420] AASHTO M31-07 Melted 12/10/09 Rolled 12/19/09	65,770 453MPa	99,574 687MPa	15.0%	OK	-3.8% .025	.38 .16	.91 .11	.011 .062	.051 .010	.22 .002	.31	.56						
PO# => KN0910614301	46242 Nucor Steel - Kankakee Inc 13/#4 Rebar 40' A615M Gr 420 (Gr60) ASTM A615/A615M-09 GR 60[420] AASHTO M31-07 Melted 12/10/09 Rolled 12/20/09	67,218 463MPa	99,693 687MPa	13.8%	OK	-3.1% .024	.38 .19	.89 .11	.013 .077	.051 .011	.21 .002	.32	.55						

I HEREBY CERTIFY THAT THE ABOVE FIGURES ARE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION.

ALL MANUFACTURING PROCESSES OF THE STEEL MATERIALS IN THIS PRODUCT, INCLUDING MELTING, HAVE OCCURRED WITHIN THE UNITED STATES. ALL PRODUCTS PRODUCED ARE WELD FREE. MERCURY, IN ANY FORM, HAS NOT BEEN USED IN THE PRODUCTION OR TESTING OF THIS MATERIAL.



QUALITY ASSURANCE: Curtis Glenn

SOLD CONSTRUCTION MATERIALS INC
345 49TH AVE DR SW
CEDAR RAPIDS, IA 52404-4819

NUCOR
NUCOR STEEL KANKAKEE, INC.

CERTIFIED MILL TEST REPORT

Page: 1

SHIP CONSTRUCTION MATERIALS
345 49TH AVE SW
TO: CEDAR RAPIDS, IA 52404-4819

Ship from:

Nucor Steel Kankakee, Inc.
One Nucor Way
Bourbonnais, IL 60914
815-937-3131

Date: 24-Feb-2010
B.L. Number: 404845
Load Number: 197555

Material Safety Data Sheets are available at www.nucorbar.com or by contacting your inside sales representative.

NBMG-08 March 24, 2009

HEAT NUM. *	DESCRIPTION	PHYSICAL TESTS				CHEMICAL TESTS													
		YIELD P.S.I.	TENSILE P.S.I.	ELONG % IN 8"	BEND	WT% DEF	C	Ni	Mn	Cr	P	Mo	S	V	Si	Cb	Cu	Sn	C.E.
PO# => KN1010084001	46242 Nucor Steel - Kankakee Inc 13/#4 Rebar 40" A615M Gr 420 (Gr60) ASTM A615/A615M-09 GR 60[420] AASHTO M31-07 Melted 02/12/10 Rolled 02/15/10	67,023 462MPa	99,145 684MPa	13.8%	OK	-4.6% .031	.36 .19	.93 .12	.013 .062	.046 .014	.21 .002	.34	.54						
PO# => KN1010084101	46242 Nucor Steel - Kankakee Inc 13/#4 Rebar 40" A615M Gr 420 (Gr60) ASTM A615/A615M-09 GR 60[420] AASHTO M31-07 Melted 02/12/10 Rolled 02/15/10	68,446 472MPa	100,972 696MPa	13.8%	OK	-4.6% .031	.38 .19	.98 .10	.013 .060	.045 .013	.23 .001	.35	.57						
PO# => KN1010084201	46242 Nucor Steel - Kankakee Inc 13/#4 Rebar 40" A615M Gr 420 (Gr60) ASTM A615/A615M-09 GR 60[420] AASHTO M31-07 Melted 02/12/10 Rolled 02/15/10	67,656 466MPa	97,004 669MPa	15.0%	OK	-4.6% .030	.36 .20	.92 .09	.013 .061	.048 .017	.19 .001	.33	.54						

I HEREBY CERTIFY THAT THE ABOVE FIGURES ARE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION.

ALL MANUFACTURING PROCESSES OF THE STEEL MATERIALS IN THIS PRODUCT, INCLUDING MELTING, HAVE OCCURRED WITHIN THE UNITED STATES. ALL PRODUCTS FINISHED ARE MELD FREE. MERCURY, IN ANY FORM, HAS NOT BEEN USED IN THE PRODUCTION OR TESTING OF THIS MATERIAL.

QUALITY ASSURANCE:  Curtis Glenn

SOLD CONSTRUCTION MATERIALS INC
 345 49TH AVE DR SW
 TO: CEDAR RAPIDS, IA 52404-4819

NUCOR
BAR MILL GROUP
NUCOR STEEL KANKAKEE, INC.

CERTIFIED MILL TEST REPORT

Page: 1

SHIP CONSTRUCTION MATERIALS
 TO: 345 49TH AVE SW
 CEDAR RAPIDS, IA 52404-4819

Ship from:

Nucor Steel Kankakee, Inc.
 One Nucor Way
 Bourbonnais, IL 60914
 815-937-3131

Date: 21-Jan-2010
 B.L. Number: 403175
 Load Number: 196127

Material Safety Data Sheets are available at www.nucorbar.com or by contacting your inside sales representative.

NBMG-08 March 24, 2009

HEAT NUM.*	DESCRIPTION	PHYSICAL TESTS				CHEMICAL TESTS													
		YIELD P.S.I.	TENSILE P.S.I.	ELONG % IN 8"	BEND	WT% DEF	C	Ni	Mn	Cr	P	Mo	S	V	Si	Cb	Cu	Sn	C.E.
PO# => KN0910623701	46242 Nucor Steel - Kankakee Inc 16/#5 Rebar 40' A615M Gr 420 (Gr60) ASTM A615/A615M-09 GR 60[420] AASHTO M31-07 Melted 12/13/09 Rolled 01/08/10	70,234 484MPa	104,355 720MPa	13.8%	OK	-2.7% .034	.37 .18	.98 .10	.017 .060	.052 .018	.20 .002	.40	.56						
PO# => KN0910623801	46242 Nucor Steel - Kankakee Inc 16/#5 Rebar 40' A615M Gr 420 (Gr60) ASTM A615/A615M-09 GR 60[420] AASHTO M31-07 Melted 12/18/09 Rolled 01/08/10	70,265 484MPa	104,050 717MPa	13.8%	OK	-2.9% .034	.37 .16	1.01 .13	.015 .065	.059 .013	.22 .002	.37	.57						
PO# => KN0910623901	46242 Nucor Steel - Kankakee Inc 16/#5 Rebar 40' A615M Gr 420 (Gr60) ASTM A615/A615M-09 GR 60[420] AASHTO M31-07 Melted 12/18/09 Rolled 01/07/10	70,412 485MPa	104,719 722MPa	15.0%	OK	-2.7% .034	.36 .16	1.05 .13	.014 .058	.050 .014	.30 .002	.33	.56						

I HEREBY CERTIFY THAT THE ABOVE FIGURES ARE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION.

ALL MANUFACTURING PROCESSES OF THE STEEL MATERIALS IN THIS PRODUCT, INCLUDING HEATING, HAVE OCCURRED WITHIN THE UNITED STATES. ALL PRODUCTS PRODUCED ARE WELD FREE. MERCURY, IN ANY FORM, HAS NOT BEEN USED IN THE PRODUCTION OR TESTING OF THIS MATERIAL.

QUALITY ASSURANCE: Curtis Glenn



NUCOR

BAR MILL GROUP
NUCOR STEEL KANKAKEE, INC.

SOLD TO: CONSTRUCTION MATERIALS INC
345 49TH AVE DR SW
CEDAR RAPIDS, IA 52404-4819

CERTIFIED MILL TEST REPORT

Page: 1

SHIP TO: CONSTRUCTION MATERIALS
345 49TH AVE SW
CEDAR RAPIDS, IA 52404-4819

Ship from:
Nucor Steel Kankakee, Inc.
One Nucor Way
Bourbonnais, IL 60914
815-937-3131

Date: 19-Jan-2010
B.L. Number: 403001
Load Number: 196370

Material Safety Data Sheets are available at www.nucorbar.com or by contacting your inside sales representative.

NBIMG-08 March 24, 2009

HEAT NUM.*	DESCRIPTION	PHYSICAL TESTS				CHEMICAL TESTS												
		YIELD P.S.I.	TENSILE P.S.I.	ELONG % IN 8"	BEND	WT% DEF	C	Ni	Mn	Cr	P	Mo	S	V	SI	Cb	Cu	Sn
PO# => KN1010007601	46242 Nucor Steel - Kankakee Inc 19/#6 Rebar 60" A615M Gr 420 (Gr60) ASTM A615/A615M-09 GR 60[420] AASHTO M31-07 Melted 01/08/10 Rolled 01/15/10	69,847	104,076	12.5%	OK	-2.1%		.37	.98	.09	.015		.046	.19		.33		.56
		482MPa	718MPa			.050		.20	.09	.060		.013	.002		.028			

I HEREBY CERTIFY THAT THE ABOVE FIGURES ARE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION.

ALL MANUFACTURING PROCESSES OF THE STEEL MATERIALS IN THIS PRODUCT, INCLUDING MELTING, HAVE OCCURRED WITHIN THE UNITED STATES. ALL PRODUCTS PRODUCED ARE HELD FREE OF MERCURY, IN ANY FORM, HAS NOT BEEN USED IN THE PRODUCTION OR TESTING OF THIS MATERIAL.

QUALITY ASSURANCE:  Curtis Glenn

SOLD TO: CONSTRUCTION MATERIALS INC
345 49TH AVE DR SW
CEDAR RAPIDS, IA 52404-4819

NUCOR
BAR MILL GROUP
NUCOR STEEL KANKAKEE, INC.

CERTIFIED MILL TEST REPORT

Page: 1

SHIP TO: CONSTRUCTION MATERIALS
345 49TH AVE SW
CEDAR RAPIDS, IA 52404-4819

Ship from:

Nucor Steel Kankakee, Inc.
One Nucor Way
Bourbonnais, IL 60914
815-937-3131

Date: 11-Dec-2009
B.L. Number: 401160
Load Number: 195137

Material Safety Data Sheets are available at www.nucorbar.com or by contacting your inside sales representative.

NBMC-08 March 24, 2009

HEAT NUM.*	DESCRIPTION	PHYSICAL TESTS			CHEMICAL TESTS														
		YIELD P.S.I.	TENSILE P.S.I.	ELONG % IN 8"	BEND	WT% DEF	C	Ni	Mn	Cr	P	Mo	S	V	SI	Cb	Cu	Sn	C.E.
PO# => KN0910580901	46242 Nucor Steel - Kankakee Inc 19/#6 Rebar 60" A615M Gr.420 (Gr60) ASTM A615/A615M-09 GR 60[420] AASHTO M31-07 Melted 11/08/09 Rolled 12/03/09	70,254 484MPa	104,387	13.8%	OK	-2.3% .047	.40 .18	1.02 .13	.014 .057	.050 .016	.23 .002	.31 .034	.60						

I HEREBY CERTIFY THAT THE ABOVE FIGURES ARE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION.

ALL MANUFACTURING PROCESSES OF THE STEEL MATERIALS IN THIS PRODUCT, INCLUDING MELTING, HAVE OCCURRED WITHIN THE UNITED STATES. ALL PRODUCTS PRODUCED ARE HELD FREE OF MERCURY, IN ANY FORM, HAS NOT BEEN USED IN THE PRODUCTION OR TESTING OF THIS MATERIAL.

QUALITY ASSURANCE: Curtis Glenn



SOLD TO: CONSTRUCTION MATERIALS INC
345 49TH AVE DR SW
CEDAR RAPIDS, IA 52404-4819

SHIP TO: CONSTRUCTION MATERIALS
345 49TH AVE SW
CEDAR RAPIDS, IA 52404-4819

NUCOR
BAR MILL GROUP
NUCOR STEEL KANKAKEE, INC.

CERTIFIED MILL TEST REPORT

Ship from:

Nucor Steel Kankakee, Inc.
One Nucor Way
Bourbonnais, IL 60914
815-937-3131

Date: 11-Jan-2010
B.L. Number: 402678
Load Number: 196065

Material Safety Data Sheets are available at www.nucorbar.com or by contacting your inside sales representative.

NBMG-08 March 24, 2009

HEAT NUM.*	DESCRIPTION	PHYSICAL TESTS			CHEMICAL TESTS														
		YIELD P.S.I.	TENSILE P.S.I.	ELONG % IN 8"	BEND	WT% DEF	C	Ni	Mn	Cr	P	Mo	S	V	Si	Cb	Cu	Sn	C.E.
PO# => KN0910547101	46242 Nucor Steel - Kankakee Inc 22/#7 Rebar 60" A615M Gr420(G60)	67,625	102,197	13.8%	OK	-2.9%		.37	.98	.10	.013	.046	.21	.36	.56				
	ASTM A615/A615M-09 GR 60[420] AASHTO M31-07 Melted 10/17/09 Rolled 10/22/09	466MPa	705MPa			.055		.22	.10	.065	.012	.012	.002						

I HEREBY CERTIFY THAT THE ABOVE FIGURES ARE CORRECT AS CONTAINED IN THE RECORDS OF THE CORPORATION.

ALL MANUFACTURING PROCESSES OF THE STEEL MATERIALS IN THIS PRODUCT, INCLUDING HEATING, HAVE OCCURRED WITHIN THE UNITED STATES. ALL PRODUCTS PRODUCED ARE MELD FREE. MERCURY, IN ANY FORM, HAS NOT BEEN USED IN THE PRODUCTION OR TESTING OF THIS MATERIAL.

QUALITY ASSURANCE:  Curtis Glenn

AS 0-0045
S

IOWA DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS
TEST REPORT - REINFORCING STEEL
LAB LOCATION - AMES

LAB NO....:AS 10-0045

MATERIAL.....:REINFORCING STEEL
INTENDED USE.....:STRUCTURE
PRODUCER.....:NUCOR STEEL

CONTRACTOR:TSCHIGGFRIE

QUANTITY.....:211657 LBS
SOURCE.....:KANKAKEE, IL
SAMPLED BY.....:ZIMMERMAN
DATE SAMPLED: 05/12/10
PROJ: ESFM-C031(61)--5S-31

SENDER NO.:CR10AS-42
DATE RECEIVED: 05/18/10
DATE REPORTED: 05/25/10

LAB NO. AS 0-0045
SENDER'S NO. CR10AS-42
NOM. SIZE 5
UNIT WEIGHT
LB. PER FOOT 1.006
YIELD POINT
LBS. PER SQ. IN. 68,150
TENSILE STR.
LBS. PER SQ. IN. 102,550
ELONGATION PERCENT
IN 8 INCHES 15.0
REQUIRED 9.0
BEND TEST OK
DEFORMATIONS OK

COPIES TO:
CENTRAL LAB

Hayder-1
DUBUQUE

CO. *1*

DIST6

DISPOSITION: COMPLIES A615 GRADE 60

SIGNED: KEVIN B. JONES
TESTING ENGINEER

I.M. 401
Hydraulic Cements



HYDRAULIC CEMENTS

GENERAL

Portland cement shall meet the requirements of ASTM C150 for the type specified. When blended cement is to be furnished, it shall meet the requirements of ASTM C595. Cement Type I, II, III, IP, IS and IL shall also meet the additional requirements outlined in Section 4101 of the Standard Specifications. Approval of any type of Portland and blended cements will be based on certification by an approved source or upon source sampling and testing before being incorporated into the work. Approved cement sources and distribution terminals are listed in the **Materials Approved Products Listing Enterprise (MAPLE) as Appendixes A and B.**

The available cement types are:

ASTM C150

- Type I For general use.
- Type II For moderate sulfate resistance. C_3A less than 8%.
- Type III High early strength. Generally, a finer ground Type I cement.

White Cement White cement sources shall meet the requirements of ASTM C150, except the maximum Fe_2O_3 shall not exceed 0.5%. Approved sources of white cement are listed in the Appendix B.

ASTM C595

- Type IS Type I Slag is a Portland cement blended, or clinker interground, up to 35% GGBSF.
- Type IP Type I Pozzolan is a Portland cement blended or clinker interground, up to 25% pozzolan.
- Type IL Type I Limestone is a Portland cement blended or clinker interground, between 5% and 15% limestone.

SOURCE APPROVAL

For consideration for approval, the manufacturer shall provide the following to the Materials Office:

1. A quality control program that meets the requirements of Section A.
2. A copy of the latest CCRL inspection report on quality control laboratory, including documentation of resolution of any discrepancies noted.
3. A 3-month strength uniformity report prepared in accordance with the requirements of ASTM C917, "Standard Test Method for Evaluation of Cement Strength Uniformity from a Single Source".

-
4. A letter indicating the type of each processing addition, and the percent range that will be used in Type I cement.

The manufacturer shall also prepare a 24-hour composite sample of cement from current production according to ASTM C183. This sample will be tested by the Central Materials Laboratory for acceptance.

Iowa may approve a source based on another state source approval, provided that state will agree to the terms in Appendix C and the source meets Section 4101 of the Iowa DOT Standard Specifications.

Mixing of cement from different sources, different plants, or of different types in one storage bin or silo will not be allowed.

When less than 5% of limestone is used, the manufacturer shall inform the Office of Materials in writing on the amount of the addition. The manufacturer shall also supply comparative test data on chemical and physical properties of the cement with and without limestone. The amount of limestone used shall be included in the manufacturer's Mill Test Reports. Approval of Type II cement which contains limestone in a range of 5% to 15%, is described in Section C of this IM.

A. Quality Control Program

The control of the production from each grinding mill type shall be considered separately. The following minimum testing frequencies are presented as a general guideline:

1. One sample representing 24 hours of production to be tested for air content, false set, and soundness. Determinations of free lime may be used to alter the frequency of testing soundness.
2. One sample representing 4 hours production to be tested for time of set and fineness.
3. One sample representing 48 hours production to be tested for chemical analysis.
4. One sample representing 4 day's production to be tested for 3- and 7-day compressive strength.

The sampling, tests and testing frequencies required may vary from the above guidelines depending of the particular production problems of the plant. In all cases, the quality control procedure used shall be submitted in writing to the District Materials Engineer for approval.

The plant sample test records shall be available for study by Highway Division personnel for at least seven years after the cement represented has been produced.

B. Quality Control Laboratory

The Portland cement plant is required to have a control laboratory compliant with ASTM C1222, Standard Practice for Evaluation of laboratories Testing Hydraulic Cement. The control laboratory shall be AASHTO accredited. This laboratory will perform testing on the applicable

types of cement meeting ASTM C150 and C595. Any major difference on test results between the control laboratory and the Highway Division Ames Laboratory shall be resolved quickly. Continued unresolved differences in test results will be considered a basis for discontinuing control laboratory approval.

C. Approval of Type IL Cement

To apply for approval of a Type IL cement, manufacturer shall submit test results of two concrete mixtures, one with the Type IL cement and other with the control Type I/II cement of the same source, to the Office of Materials. These two concrete mixtures shall be cast per the Iowa DOT Concrete Mix Designation C-3WR-C20. The coarse aggregate used shall be an Iowa DOT approved limestone or dolomite. Fly ash, sand, air entraining agent and chemical admixtures used shall also be from Iowa DOT approval lists. The air content shall be in the range of 5.5% and 7.0%.

The tests and approval requirements are listed below:

- ASTM C39, Compressive Strength at 7, 28, and 56 Days: 90% or better of control.
- ASTM C78, Flexural Strength or ASTM C496, Splitting Tensile Strength at 28 and 56 Days: 95% or better of control or a 28-day 3rd point MR greater than 640 psi.
- ASTM C157, Concrete Shrinkage up to 56 Days: 95% or better of control or 56-day shrinkage less than 0.040%.
- ASTM C666, Freeze-Thaw Resistance up to 300 Cycles: 95% or better of control or a durability factor greater than 90%.
- ASTM C457, Air Void Analysis.
- ASTM C1202, Rapid Chloride Permeability.
- ASTM C1012, Sulfate Resistance up to 6 Months.

SOURCE APPROVED BY OTHER STATES

Iowa DOT will accept cements and cement blends approved or certified by other state transportation agencies, providing that state agrees to the following terms and that source meets Article 4101 of Standards Specifications.

1. The host state agency will require the cement plant within its boundaries to have a laboratory compliant with ASTM C1222, Standard Practice for Evaluation of Laboratories Testing Hydraulic Cement. This laboratory shall be AASHTO accredited and will perform testing on the applicable types of cement produced (ASTM C 150/AASHTO M 85, C595/AASHTO M 240, C 1157) and shipped for state agencies consumption. Agency laboratories used for verification testing must meet the same criteria.
2. The host state agency will require the cement plant within its boundaries to have a printed, agency acceptable quality control/quality assurance plan for the production of cements used by state agencies. The plan must include commitments to comply with ASTM C1222 and ASTM C183, Standard Practice for Sampling and the Amount of Testing of Hydraulic Cement. The host state agency will verify compliance with the quality control plan.
3. The host state agency will require the cement producer to maintain and provide, for each lot (silo) of cement shipped, a compilation of Mill Test Reports in an electronic form (Excel spread

-
- sheet). The applicable data will be provided to the host state agency at least semiannually.
4. The host state agency will require the cement producer to submit split samples of a regular Portland cement (ASTM C150/AASHTO M85) and a blended cement (ASTM C595/AASHTO M240) or performance specification cement (ASTM C1157) if produced, semiannually for verification testing.
 5. The host state agency will require the cement producer to submit reports for ASTM C917, Standard Test Method for Evaluation of Cement Strength Uniformity From a Single Source, for both a regular Portland cement and a blended cement, if produced, at least semiannually.
 6. The host state agency will require the cement producer to maintain production and quality control/quality assurance records for at least seven years and make those records available if requested.
 7. The host state agency will review submittals from the cement producer along with agency test results. If deficiencies are discovered, the state agency will monitor corrective actions taken by the producer until the deficiencies are corrected. The reciprocal agreement state agency will be notified of the deficiencies and of each occurrence.
 8. Any test results or submittals collected by the host state agency may be made available to the reciprocal agreement state agency upon request.
 9. All cement plant information and data is confidential within the limits of a public agency and is for state agencies information and inspection only.
 10. Quality assurance test results of field samples, performed by a reciprocal state, shall be reported to the host state agency when non-compliance occurs. The reciprocal state agency will deal directly with the cement producer. The host state agency will take action as described in Item 7. The host state agency shall notify all reciprocal agreement state agencies when non-compliance occurs.
 11. Cement tests or requirements beyond the standards stated above may be provided to reciprocal state agencies by agreement between the host state and reciprocal state agencies.

CONTINUED SOURCE APPROVAL

A. DOT Sampling and Testing

After initial approval, random samples will be taken and tested at a minimum rate of one sample semiannually. The samples may be taken at the source or at the distribution terminal if the source is outside the district's normal area of travel.

A split-sample will be obtained from the plant of a Regular Supplier twice a year, preferably in January and July. The sample will be split and tested for complete chemical and physical properties by supplier's control laboratory and the Highway Division Ames Laboratory, respectively. The date of the split sampling and load out silo number will be identified on the sample identification report for later comparison.

Verification samples will be secured at the project site just before incorporation into the work. Test results, which do not comply with the specifications, may be considered sufficient cause to rescind approval to furnish cement. Construction that contains cement represented by verification samples showing deficient test results will be subject to the requirements of Article 1105.04 of the Standard Specifications.

B. Mill Test Reports

Mill Test Reports covering cement to be certified shall be submitted to the Cement and Concrete Engineer at the Central Laboratory at Ames, and if requested, to the District Materials Engineer who monitors the plant. An electronic form (Excel spreadsheet) is acceptable.

The plant of a regular supplier is required to submit reports for ASTM C917, Standard Test method for Evaluation of Cement Strength Uniformity at least annually.

PROJECT DOCUMENTATION

All approved cements shipped for intended use in Iowa shall be clearly identified. The producer of approved cement shall furnish for the project records, two invoices or bill of lading copies, which bear the following certification statement and the signature of an authorized representative of the producer:

CERTIFICATION STATEMENT

The material herein described has been sampled and tested as prescribed by the Highway Division of the Iowa Department of Transportation and complies with the applicable specification requirements for type _____ cement.

Bin No. _____ Signed _____
Date _____

The bills of lading or invoices shall include project number, if available, source name, source location, source code, type, and quantity in the shipments. For blended cements (Types IP and IS), the above type designation shall include the suffix (X), where (X) equals the targeted percentage of slag or pozzolan in the product.

In the case of truck shipments, these copies of the bill of lading or invoice shall accompany each load, and shall be retained at the project or ready mixed concrete plant for the project engineer records. In the case of rail shipments, these copies shall be mailed to the project or ready mix plant.

I.M. 403
Chemical Admixtures
For Concrete



CHEMICAL ADMIXTURES FOR CONCRETE

GENERAL

Air entraining admixtures shall meet the requirements of AASHTO M154. Water reducing and retarding, water-reducing, high range water reducing, and non-chloride accelerating admixtures shall meet the requirements of AASHTO M194. All chemical admixtures used for Portland Cement Concrete shall meet the requirements outlined in Section 4103 and other applicable Iowa Department of Transportation Standard Specifications. Approved brands of chemical admixtures for concrete are listed in the Materials Approved Products Listing Enterprise (MAPLE) as Appendixes A, B, C, D, E, F and G for different types of applications.

For all types of admixtures, the source, brand name, and lot/batch number must be identifiable by markings on the container and by description on the invoice. The manufacturer and supplier shall maintain a record of shipment, which identifies the brand, lot/batch number and certified test data for each shipment. This data shall be made available to the contracting authority when requested.

Material that (i) is suspected of being frozen, or (ii) exceeds its shelf life, or (iii) has been stored at plant site for more than 6 months shall be sampled and tested prior to use.

MANUFACTURER, BRAND NAME APPROVAL, USAGE GUIDELINES

To obtain approval for any admixture type, the manufacturer shall submit the following items to the Office of Materials in Ames:

1. Product identification including brand name and product number
2. Complete manufacturer's recommendation for usage
3. A copy of Level 1 product test report for the submitted admixture from the National Transportation Product Evaluation Program (NTPEP). The test result reported will be evaluated for compliance with appropriate AASHTO specification
4. A current Materials Safety Data Sheet (MSDS)
5. A one-quart (one-liter) representative sample may be required upon request

Specific requirements for each type of admixture are as follows:

A. Air Entraining Admixtures

Air entraining admixtures shall meet the requirements of Iowa Department of Transportation Standard Specifications Section 4103 and AASHTO M154.

Approved brands of air entraining admixtures are listed in Appendix A of this IM.

B. Retarding, and Water-Reducing & Retarding Admixtures for Bridge Deck and Drilled Shaft Concrete Required Extended Working Time

Retarding, and water-reducing & retarding admixtures shall meet the requirements of AASHTO M194, Type B or Type D. These admixtures can be used for water reduction, retardation, or water reduction and retardation for bridge deck and drilled shaft concrete when extended working time is required.

Approved brands of retarding, and water-reducing & retarding admixtures for bridge deck and drilled shaft concrete required extended working time are listed in Appendix B of this IM. Appendix B also contains a guideline for dosage rates and working time limits based on an estimated maximum temperature of the concrete during placement at the point of discharge. Working time limits have been determined by AASHTO T197 using 200 psi (1.38 MPa) penetration resistance and shall be provided by manufacturer. In addition to the AASHTO M194 requirements, a minimum working time of 4.5 hours is required for the Type I/II cement mix used the maximum normal recommended dosage of an admixture and tested at the normal temperature (between 70°F and 75°F).

C. Water-Reducing Admixtures

Water-reducing admixtures shall meet the requirements of AASHTO M194, Type A.

Approved brands of water-reducing admixtures with their proper dosage rates are listed in Appendix C of this IM.

Mid-range water reducers used for bridge overlay concrete (Class HPC-O Mixture) are noted in Appendix C. In addition to the AASHTO M194 requirements, the use of these admixtures shall provide a maximum water content of 90% of the control at a normal dosage, and shall not result in a less initial set time as compared to the control. The intent of these mid-range water reducers is to achieve a workable, dense, low water to cementitious material ratio concrete for bridge overlay as described in Article 2413.02 of Standard Specifications.

A combination of a water-reducing admixture and a retarding admixture may be used to aid in air entrainment and slump retention.

D. High Range Water-Reducing Admixtures

High Range water-reducing admixtures shall meet the requirements of AASHTO M194, Type F.

Approved brands of high range water-reducing admixtures with their recommended dosage rates are listed in Appendix D of this IM. As indicated, some of these high range water reducers listed can be used to cast self-consolidated concrete. If needed, a viscosity-modified admixture produced by the same manufacturer is allowed to cast self-consolidated concrete.

E. Non-Chloride Accelerating Admixtures

Non-Chloride Accelerating Admixtures shall meet the requirements of AASHTO M194, Type C or E. Total chloride content, which may come from some indirect sources, shall not exceed 0.1% in the admixtures.

Approved brands of non-Chloride accelerating admixtures with their recommended dosage rates are listed in Appendix E of this IM.

F. Admixtures for Prestressed & Precast Concrete

In addition to the admixtures listed in other Appendixes of this IM, the admixtures listed in Appendix F can also be used in prestressed and precast concrete. Benefits of those admixtures in Appendix F include increasing production rate, improvement of visual appeal, greater strength, more durable, better compactability, and extension of life of molds and machines parts for dry-cast concrete. In order to get an admixture approval, its producer shall prove that the use of the admixture will not reduce strength of concrete, and provide evidence of the above-mentioned benefits.

G. Retarding, Water-Reducing & Retarding Admixtures for Concrete with Normal Working Times

Retarding, water-reducing and retarding admixtures shall meet the requirements of AASHTO M194, Type B or Type D. These admixtures can be used for water reduction, retardation, or water reduction and retardation for concrete.

When use as a retarder is specified or authorized by the engineer, the contractor shall be responsible for its use and application of the proper dosage rate. It may also be necessary to adjust the quantity of air entraining agent. When fly ash is used in the concrete, the dosage rate shall be applied to both the cement and fly ash combined.

Approved brands of water-reducing and retarding admixtures with their recommended dosage rates are listed in Appendix G of this IM.

A hydration stabilizer/controller will be evaluated for approval as a retarder (Type B) or a water reducing & retarding admixture (Type D), and listed and identified in Appendix B or Appendix G after approved.

If alternative requirements specified in AASHTO M194 are met, an admixture may be provisionally approved based on six-month test results. Producer shall submit one-year test results for final approval as soon as they become available. The failure or delay in submitting one-year results may lead to revoking of provisional approval.

Approval of admixtures may be withdrawn because of deficient test results; product changes made after original approval, or unsatisfactory field performance.

AGITATION OF ADMIXTURES

Air entraining admixtures shall be stirred, agitated, or circulated at least weekly to ensure a uniform and homogeneous mixture of solids and solution. It is the admixture supplier's responsibility to the contractor to provide a quality product. Therefore the admixture suppliers shall be responsible for the system used to maintain the quality product described above.

Retarding, water-reducing, and high range water-reducing admixtures shall be stirred, circulated, or agitated thoroughly once a day prior to operation of the proportioning plant to maintain the solids in suspension. The agitating shall be done in such a way that the solution in the holding or storage tank is circulated for a minimum of five minutes each day per 100 gallons (380 liters) of solution or any fraction thereof. Use of a timer on the pump is recommended to prevent excessive heat from the pump. 5 minutes is adequate for smaller tanks to a maximum of 15 minutes for larger tanks.

A circulating pump with a 250-watt (1/3 hp) pump motor and a 1-inch (25 mm) inside diameter hose will be considered as a minimum requirement. The engineer shall approve the method of agitation.

NOTE: Introducing air into a tank will not be acceptable.

CERTIFICATION

A. FOR MANUFACTURER

At the beginning of each calendar year, a certification form will be sent to each manufacturer. If the admixture to be supplied during that year is identical with the formulation previously tested and approved, then the manufacturer shall complete the quality control limits to be followed and return it to the Office of Materials in Ames, Iowa.

B. FOR DISTRIBUTOR

At the beginning of each calendar year, a certification form will be sent to each distributor. The distributor shall certify that admixtures to be supplied are not altered and will be distributed as received from the manufacturer.

MONITOR SAMPLING & TESTING, AND REJECTION OF MATERIAL

Monitor samples will be obtained and sent to Central Materials for testing. Sampling frequency shall be according to IM 204. The sample size shall be one 1 pint (0.5 liter).

For all admixtures, only one acceptance sample per lot/batch is necessary. No project assurance samples are needed.

Samples will be tested for variation from the manufacturer target for solids, specific gravity and chloride content if needed.

If the test result of a monitor sample is outside the quality control limits specified by AASHTO M154 or M194 and provided by the manufacturer, all material in the storage tank shall be rejected. The admixture company is not allowed to mix new replacement material with the non-compliance material. The admixture manufacturer is responsible for the condition of storage tanks and should determine if the tanks should be cleaned to prevent cross contamination and further product failures.

I.M. 405
White Pigmented
Curing Compound



WHITE PIGMENTED CURING COMPOUND IN BULK STORAGE

GENERAL

White pigmented curing compound in bulk storage shall meet the requirements of Section 4105. The material shall be stored in clean bulk containers. The containers shall be capable of keeping the material well-mixed without damaging the emulsified curing compound. Diaphragm pumps and mechanical agitators are examples of acceptable means of mixing; gear pumps and other high shear devices are unacceptable.

Each day the curing compound is used, the bulk tank of material shall be well mixed prior to application as described below. The material does not need to be mixed on days it is not used. The bulk tank shall not go longer than 4 days without mixing.

The batch number shall be clearly marked on the bulk tank at all times. Different batches of cure may be mixed in the same bulk tank provided both batches of cure are acceptable. Cure from two different manufacturers shall not be mixed in the same bulk tank.

Documentation in the form of an invoice or identification list from the supplier shall be furnished to the project engineer at the time of delivery to the project. This identification list shall contain the project number, county, contractor, brand, batch number of curing compound, Ames Lab Number representing the batch test result and the date delivered to the project.

Acceptance of material will be based on successful completion of tests prior to shipment. Random monitor samples may be taken at any time. It is recommended that the project inspector obtain a monitor sample every two months the material remains on a job site without being used up.

PRE-SHIPMENT SAMPLING

Prior to shipment, an Iowa DOT employee, or designated representative shall witness the sampling of each batch of cure to be supplied to Iowa DOT projects. The mixing and sampling techniques shall be according to manufacturer recommendations. A one-quart (one-liter) sample shall be obtained and sent to the Central Materials Laboratory. Acceptance of the batch will be based on satisfactory test results.

MONITOR SAMPLING

A monitor sample may be obtained at any time. Prior to sampling, the bulk tank shall be well mixed. For tanks with mechanical agitating paddles, the material shall be mixed for 15 minutes, but not more than 30 minutes. This is true regardless of the amount of material in the tank.

For tanks with circulating pumps, the material shall be drawn from the bottom of the tank and pumped to the top at a point furthest from where the material is drawn. The material shall be pumped for such a time that the material in the tank is turned over once but not more than two times.

For example: If a 5000-gallon (20,000-liter) tank is full and has a pump rated at 200 gallons (800 liters) per minute, it would take 25 minutes to turn the tank over once. $5000 \text{ gallons} \div 200 \text{ gallons (20,000 liters} \div 800 \text{ liters) per minute} = 25 \text{ minutes}$. Therefore the tank should be mixed at least 25 minutes, but no longer than 50 minutes. If the tank was nearly empty with only 1000 gallons (4000 liters) of material, the tank should be mixed between 5 and 10 minutes. $1000 \text{ gallons} \div 200 \text{ gallons per minute} = 5 \text{ minutes}$ or $4000 \text{ liters} \div 800 \text{ liters per minute} = 5 \text{ minutes}$.

Samples should be taken from the discharge hose on the bulk tank. At least 5 gallons (20 liters) of material should flow through the hoses to ensure that freshly mixed material is being sampled. A one-quart (one-liter) sample should be obtained and sent to the Central Materials Laboratory. Non-compliant test results on any monitor sample shall be sufficient cause for rejection of a batch.

I.M. 491.17
Fly Ash



FLY ASH

GENERAL

Acceptance of fly ash will be on the basis of approved sources and upon satisfactory test results on samples obtained at the project site. Test results of fly ash shall meet the requirements of AASHTO M 295 and the Specifications of the Iowa Department of Transportation. Approval will require identification of the specific sources of the coal from which the ash is derived.

Approval is based upon fly ash produced when the power plant is utilizing specific materials, equipment, and processes. Any change in materials, equipment, and processes will void any source approval and require that a new approval be sought. Approved fly ash sources are listed in the Materials Approved Products Listing Enterprise (MAPLE) as Appendixes A and B for two types of applications.

Fly ash produced immediately prior to shut down and after start up may be quite different from the fly ash normally obtained. The fly ash can be affected to the point that it does not meet specifications. Monitor samples or verification samples tested by the Iowa Department of Transportation not meeting specifications will void the source approval.

SOURCE APPROVAL

A. Certified Source

Approved certified sources of fly ash are listed in Appendix A of this IM. A source may furnish fly ash on the basis of certification provided:

1. The quality-monitoring program meets the minimum sampling and testing frequencies established in ASTM C 311. The tonnage units expressed therein are interpreted to refer to as-marketed material. The producer shall test at least one sample for each consecutive 30 days, for the months of March through October for conformance to Iowa Department of Transportation specifications. The test reports for all monitor samples shall be submitted to the Iowa Department of Transportation within 45 days of the sampling date.

In addition to the test frequencies established in ASTM C 311, daily control tests shall be made to establish the uniformity of the fly ash being produced. Specific tests shall be agreed to by the engineer and may vary from source to source. As a minimum, the loss on ignition and percent retained on the No. 325 mesh sieve shall be determined.

Sample test records and shipment reports shall be available for inspection by Iowa Department of Transportation personnel for at least three years after the fly ash has been tested.

The Quality Control Laboratory will be considered approved if it is properly equipped and staffed to perform the tests required for an accepted Quality Control Program. Continued approval of the control laboratory will depend on the comparison of its test results with the Iowa Department of Transportation Central Laboratory. If major differences are found, an attempt to resolve them shall be made as quickly as possible. Continued unresolved differences in test results will be considered a basis for discontinuing control laboratory approval.

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2. The fly ash has shown conformance to the applicable specifications for a continuous period of at least the last six months.
 3. Available alkali in approval sources of fly ashes shall be less than 1.50%. The value of available alkali in fly ash can be either determined by the test method specified in ASTM C 311, or by the statistical formula developed by the Central Materials Laboratory based on the historical data. Fly ash sources that have available alkali between 1.50% and 2.50% will be approved based on satisfactory results of the following test. Mortar bars made per ASTM C 311 with 15% and 30% fly ash, Type I cement with 0.70% to 0.80% of alkali (Na₂O) equivalent (two cements may be mingled to achieve this alkali range), and Pyrex aggregate shall exhibit no more than 10% expansion over non-fly ash mortar bars at an age of 60 days. Testing shall be performed by a laboratory approved by the Iowa Department of Transportation.
 4. Each shipment of fly ash is properly certified.

The supplier of certified fly ash shall furnish for the project records two invoices or bill of lading copies that bear the following certification statement and the signature of a responsible company representative:

Certification Statement

The material herein described has been sampled and tested as prescribed by the Highway Division of the Iowa Department of Transportation and complies with the applicable specification requirements for Class _____ fly ash.

Date _____ Signed _____

The bills of lading or invoices shall include project number, if available, source name, source location, source code, class, and quantity in the shipment.

These copies of the bill of lading or invoice shall accompany each load, and shall be retained at the project or ready mix plant for the Project Engineer records.

The truck tanker shall have a copy of the invoice or bill of lading attached directly to the tanker portion of the truck. When the tanker unloads the contents at the project site, the unloading time and material final destination (storage "pig" number) shall be marked on this copy and left with the invoice or bill of lading copies.

In the case of more than one project being supplied by a ready mix plant, the plant shall furnish the Project Engineer, for each project, either a copy of each bill of lading or invoice, or a listing of the bills of lading or invoices representing the fly ash incorporated in the project. This listing shall bear the signature of a responsible supplier representative.

The source, car or truck number, ticket number, ash type, and quantity of each shipment of fly ash used on a project shall be recorded on Form #830211, or Form #830224, whichever is applicable.

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5. At least one monitor sample shall be secured annually from power plant sites, located in Iowa or within 50 miles from Iowa borders, and be tested by the Iowa Department of Transportation. The test results of monitor samples shall be in compliance with current specifications.
 6. Co-Mingling of Fly Ash

Mixing of fly ash from different sources, different generating plants/units, or different classes into one storage bin or silo will not be allowed, with the following exception.

When the same coal stockpile, the same brand and model of generating equipment, the same process of operation, and the same brand and model of fly ash collection-equipment are used; fly ashes from different units at a generating plant may be considered for approval as a single blend and stored in a silo. To apply for the approval, the producer or marketer shall provide the composite sample test data (composite samples should represent 3200 ton increments of fly ash collection or the month whichever comes first) from the separate units for the previous 12 months. The Office of Materials will conduct a statistical t-test to compare major physical and chemical properties of the two fly ash sources. If the t-test results show the test data means to be equal at a significance level of 0.05, the blending process may be allowed. Annual analysis may be required for continued approval. Blending will only be allowed within the storage silo.

At ready mixed concrete plants and paving batch plants, a fly ash storage bin shall be emptied, as far as practical, prior to refilling from a different source.

B. Sources for Pavement Subsealing and Jacking

1. Fly ash to be used for pavement subsealing and jacking may be accepted on an approved source basis as listed in Appendix B.
2. A mixture of 3 parts fly ash and 1 part Portland cement shall have an initial setting time between 30 minutes and 3.0 hours. Initial set is defined as 100-psi resistance when measured in accordance with ASTM C 403.

PROJECT ASSURANCE SAMPLING

Required verification samples will be secured at the project site just before incorporation into the work. Test results, which do not comply with the specifications, may be considered sufficient cause to rescind approval to furnish fly ash on certification basis. Construction, which contains fly ash represented by verification samples, which show deficient test results, will be subject to the requirements of Article 1105.04 of the Standard Specifications.

Depending upon certain chemical characteristics, fly ash is marketed as either Class F or Class C ash per AASHTO M 295. The identification submitted with the verification samples sent to the Central Laboratory should include the normal descriptive information as well as the source of the ash, the marketer and the class of the ash.

Precautionary measures shall be taken to prevent cement contamination of fly ash samples obtained at the proportioning plants. The samples shall be taken preferably as follows:

1. Directly from the delivery transport vehicles
2. Drop a sufficient amount of material in a clean container or a clean end loader bucket, and obtain a representative sample.

UNIFORMITY CHECK AND DENSITY UPDATE

For checking the AASHTO M 295 uniformity requirement, the average fly ash density for a source will be computed based on the values tested and reported by the Central Materials Laboratory. The value of average density will be updated if it is more than 0.10 gram/cm³ different than the current value listed in the Appendix A. The density update will generally be done in the October IM revision unless a change in fly ash operation or coal source occurs.

I.M. 451
Steel Reinforcement



STEEL REINFORCEMENT

*****GENERAL REWRITE – PLEASE READ CAREFULLY.*****

GENERAL

This IM covers steel reinforcement. The requirements for steel reinforcement can be found in standard specification 4151. Refer to IM 451.03B for epoxy coated steel reinforcement. Refer to IM 451.02 for galvanized steel reinforcement. Refer to IM 452 for stainless steel reinforcement. Approved suppliers and manufacturers can be found in the Materials Approved Products Listing Enterprise (MAPLE).

MANUFACTURING MILL APPROVAL

Prior to furnishing reinforcing steel or wire mesh reinforcement on a certification basis, the following documents shall be submitted:

1. A request shall be submitted to Central Construction and Materials Office in Ames, Iowa detailing the location of the manufacturing plant and any distribution center(s).
2. Quality control plan/procedures the company has established to ensure material quality and identity through the manufacturing process as well as quality control testing. Submit NTPEP approval for review and acceptance if available. IM 451 Appendix G provides guidelines for the Fabricator/Supplier Quality Control Procedures.
3. A typical example of certification documents the mill will furnish.
4. A picture showing the permanent mill-imprinted markings/symbols of the manufacturing mill (grade Mark, Bar Size, etc...)
5. Copy of an identification list, invoice or bill of materials. The documents shall show the project and design number, the size, length, grade, heat number, number and weight of pieces in the shipment. The document must have a certification statement as described in the Certification Procedures.
6. Submit three 6 foot sample bars for testing representing the range of small, medium, and large diameter bars rolled by the producing mill.

Upon satisfactory review of this application, the manufacturing mill will be placed on the approved list in Appendix D.

SUPPLIER APPROVAL

Prior to furnishing reinforcing steel or wire mesh reinforcement on a certification basis, the supplier shall request approval by submitting the following items:

1. A request shall be submitted to the Central Construction and Materials Office in Ames, Iowa.
2. Sources of steel that would be handled by the company and supplied.
3. Quality control procedures the company has established to ensure material identity (as to heat numbers and inventory) from the time material arrives from a mill or a source, through

fabrication process, and shipment. Refer to IM 451 Appendix G.

4. Copy of an identification list, invoice or bill of materials. The documents shall show the project and design number, the size, length, grade, heat number, number and weight of pieces in the shipment. For wire mesh reinforcement, also include the spacing and size of wire, length and width of sheets or rolls and quantity in the shipment. The document must have a certification statement as described in the Certification Procedures.

Upon satisfactory review of this application the company will be placed on the approved list in Appendix B, C or E.

CERTIFICATION PROCEDURES

- The steel mill and/or supplier shall furnish an identification list, invoice or bill of loading for each shipment to each project. It shall show the project, design number, size, length, grade, heat number, source and number and weight of pieces in the shipment and contain a certification statement state that the attached mill test reports represent the itemized material. For wire mesh reinforcement, also include the spacing and size of wire, length and width of sheets or rolls and quantity in the shipment.
- The signed mill test reports/certification shall include the physical, chemical analysis, ASTM designation, grade and type for each heat.
- The signed mill test reports/certification shall also include a statement indicating the steel meets the requirements of IM 107, Group 1, Buy America.

ACCEPTANCE

Acceptance of steel reinforcement and wire mesh shall be on the basis of certification from an approved steel manufacturer and/or supplier and acceptable verification test results when required.

Reinforcing steel, which is shipped to a contractor for use on several projects, shall be sampled at the rate established under verification sampling and testing. Examples of this would be shipments to prestressed/precast and concrete pipe plants or lighting and signing contractors where the steel may be used on several projects.

- Approved suppliers are listed in Appendix B.
- Approved suppliers of wire mesh reinforcement are listed in Appendix C.
- Approved manufacturers of reinforcing steel (plain and deformed bars) are listed in Appendix D.
- Approved suppliers of reinforcing steel mechanical splicing products are listed in Appendix E.

The amount of verification sampling and testing will generally depend upon the amount of steel required for the project.

1. Project Quantity Less Than 45 tons
Acceptance will be based on certification of each heat with no verification samples required.
2. Project Quantity 45 tons and over
Sample one 6 foot piece of the most common bar furnished to the project.

3. Wire mesh reinforcement

The District Materials Engineer shall secure a 24-inch x 24-inch sample at a minimum frequency of one sample per source per year.

**APPROVED SUPPLIERS OF
MECHANICAL SPLICES FOR REINFORCING BARS**

*****GENERAL REWRITE – PLEASE READ CAREFULLY.*****

GENERAL

This IM covers mechanical splices. The requirements for mechanical splices can be found in standard specification 4151. Approved suppliers of mechanical splices for reinforcing bars can be found in the Materials Approved Products Listing Enterprise (MAPLE).

FABRICATOR/SUPPLIER APPROVAL

Prior to furnishing mechanical splices to a project the supplier or fabricator shall request approval by submitting the following items:

1. A written application for approval shall be submitted to the Office of Construction and Materials in Ames, Iowa, and shall contain the following items.
 - a. Source of steel
 - b. Grade of steel
 - c. Grade of couplers
 - d. Name of fabricator
 - e. Epoxy powder brand name and coater's name, if applicable
2. Quality control procedures that the company has established to ensure material identity (heat number, source, etc.)
3. A typical example of certification documents that the company will furnish to Iowa DOT projects.
4. Test reports from independent / certified lab showing test compliance with the intended requirements.
5. Submit three different samples of three different sizes for testing (coated and uncoated)

CERTIFICATION PROCEDURES

- The steel mill, fabricator or supplier shall furnish a letter of compliance with a certification statement indicating the couplers meet the ASTM and Iowa DOT specification requirements. The letter shall indicate the project number, county and contractor's name.
- If epoxy coated couplers are used, the certification statement shall also include the name of the epoxy coating company and powder brand.
- The steel mill, fabricator or supplier shall furnish an identification list, invoice or bill of loading for each shipment to each project. It shall show the project and quantity of couplers shipped to the project.

- The signed mill test reports used in the fabrication of the couplers shall include the chemical and mechanical properties, ASTM designation, grade and type for each heat.
- The signed mill test reports/certification shall also include a statement indicating that the steel meets the requirements of IM 107, Group 1, Buy America.

ACCEPTANCE

Acceptance of mechanical splices shall be on the basis of certification from an approved source and certification as described above.

**STEEL REINFORCEMENT
APPROVED SUPPLIERS / DISTRIBUTORS
WAREHOUSE MONITOR INSPECTION FORM**

Supplier / Distributor Name _____

Location _____

Contact Person _____

Steel Sources _____
(must be on the approved list IM 451 and Appendices)

Current / up-to-date written Q.C. Procedures in place _____

Date of last in-house review / update _____

Material stored above ground on proper cribbing or timber _____

Heat number on tags are clearly legible _____

Bar lengths properly supported to prevent sagging _____

Bar reinforcements are from domestic origin _____
(foreign steel is not acceptable)

Steel reinforcement compliance? _____

Records keeping – Certified Mill Test Reports _____

Storage (indoor / outdoor) _____

Special areas designated for state certified steel reinforcement _____

cc: Central Construction & Materials Office

*****THIS IS A NEW APPENDIX. – PLEASE READ CAREFULLY.*****

**GUIDELINES FOR FABRICATOR/SUPPLIER
QUALITY CONTROL PROCEDURES**

1. List Sources - source must be on the approved list (IM 451 and applicable appendices).
 2. Responsibility & Authority - Quality Control Manager and/or responsible person
 - a. Qualifications
 - b. Responsibilities
 3. Material Identification and Handling
 - a. Incoming steel identified by source and heat number
 - b. Mill Test reports
 - c. Identity of steel is maintained through fabrication/storage.
 - d. After fabrication, length and number of pieces identified with heat number
 - e. One heat number per bundle
 4. Welding & welding Requirements (if applicable):
 - a. Weld Specification Requirements (AWS D1.1 , D1.2 , D1.4 , D1.5 , etc...)
 - b. Weld Procedure Specifications (WPS) , submittal & approval .
 - c. Welder's certification / qualifications.
 5. Documentation/Record Keeping
 - a. All projects are kept and/or assigned a file number in which all mill test reports for any steel will have a certification on file.
 - b. Fabrication/shear logs are complete. Material fabricated can be traced to source, heat number, grade, etc.
 - c. Certification documents contain a certification statement that all steel is melted in the USA and of domestic origin.
 - d. Material Certification documents are submitted to the respective District Materials Engineer.
 6. Storage :
 - a. Proper Storage (Indoors / Outdoors).
 - b. Off the grounds (elevated/on pallets , etc..)
 - c. Stocked pile materials (steel) are bundled , properly marked & properly Identified (Source , Heat Number ,Grade , Etc...)
 7. Shipping & Handling
 - a. All steel is marked and identified with project number and any other markings. One heat number per bundle
 - b. Each shipment has an identification list showing project, size, length, grade, heat number, number and weight of pieces in the shipment, and attached mill certifications
-

******THIS IS A NEW APPENDIX. – PLEASE READ CAREFULLY.******

STEEL REINFORCING IDENTIFICATION REPORT

Distributor / Suppliers _____

Must be listed in Appendix B, IM 451

Rolling Mills _____

Must be listed in Appendix D, IM 451

Epoxy Coater _____

Must be listed in Appendix A, IM 451.03B

Project Number _____

Design Number _____

Contractor's Name _____

Sub-Contractor's Name _____

Certified Mill Test Report: Attach a copy of the Certified Mill Test Report for each Heat No. listed below

Epoxy Coating Certification:

In addition, for coated bar, attach a copy of the Epoxy Powder Certificate and Epoxy Coating Test Certificates for each Lot. No.

Sheet Piling Size

Length

Heat No.

No. of Pieces

Project Inspector

Date _____

