MATERIALS SOURCE GUIDE

March 2016

MDOT
Michigan Department of Transportation

CONSTRUCTION FIELD SERVICES DIVISION

FOREWORD

This manual has been prepared to give information and guidance to personnel associated with sampling, testing and inspection of materials used in Michigan Department of Transportation and Federal Aid Secondary projects. Its purpose is to supplement the Materials Quality Assurance Procedures (MQAP) Manual, Hot Mix Asphalt (HMA) Production Manual, Procedures for Aggregate Inspection, Density Control Handbook, and the Michigan Construction Manual to standardize procedures and assure adequate, uniform quality control.

Buy America step certification is required for pay items and materials as listed in the document located at the following web link: http://www.michigan.gov/documents/mdot/MDOT_BuyAmericaStepCertPayItems_401954_7.pdf Please also review the Special Provision for Source of Steel and Iron (Buy America), 12SP105(A) at the following web link: http://mdotcf.state.mi.us/public/dessssp/spss_source/12SP105(A)v7.pdf

For copies of the most recent Materials Source Guide you can:

Download from the internet at web address:

http://www.michigan.gov/mdot/0,1607,7-151-9622_11044_11367-22505--,00.html

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\
Maps & Publications
\
Manuals & Guides
\
Materials Source Guide

Periodically check the website for updates to the Materials Source Guide. Updated guides can be downloaded and printed.

TABLE OF CONTENTS

Title	Page
Definitions	4
Index (In reference to the Materials Acceptance Requirements Table)	11
Materials Acceptance Requirements, including Special Instructions, copied from the MDOT Materials Quality Assurance Procedures Manual Chapter 7	27
Approved Suppliers List	56
Approved Manufacturers List	60
Qualified Products List	70
Tested Stock Suppliers List	92
Selecting and Shipping Samples	94
Appendix	
Visual Inspection Items by Quantity - Alphabetical	96
Visual Inspection Items by Quantity - by Specification Number	98

This manual is in accordance with the 2012 Standard Specifications for Construction.

DEFINITIONS

(References to the Materials Quality Assurance Procedures Manual-MQAP)

BASIS OF ACCEPTANCE: Refers to the method by which materials incorporated into MDOT projects are accepted. Below is a list of all the current Basis of Acceptance methods used by MDOT for acceptance of materials.

- **Visual Inspection (VI):** (See MQAP Section 1.07) Materials which may be visually inspected by MDOT personnel for acceptance or rejection. When a maximum VI limit is given for materials with another specified basis of acceptance, materials may be accepted by VI up to maximum VI quantities as indicated for that material, per item, per project. (NOTE: All materials should be visually inspected prior to incorporation into the job without quantity limit, and may be rejected on that basis even though material may be acceptable on another basis.)

- **Tested Stock (Tested Stock):** (See MQAP Section 2.01) Tested stock samples represent a defined quantity (batch, heat, lot, tank, etc.) of the manufacturer's or supplier's inventory that is sampled and tested by MDOT and has been set aside for use on state and federally funded projects. Approved material(s) may then be shipped to any MDOT project until the approved quantity is depleted. Distribution of form 1922 "Shipment of Tested Stock Report" as detailed in the MQAP is required upon shipment of approved Tested Stock material(s) to MDOT projects.

- **General Certification (Gen Cert):** (See MQAP Section 3.01) When this certification is specified as the basis of acceptance in the contract documents, it must be provided in accordance with Section 3.01 of the MQAP. A general certification must include a general description of the material(s), a list of the applicable specifications (ASTM, AASHTO, MDOT or other designations as appropriate), and a statement that the material(s) conforms to these specifications.

    - Qualified Product List (QPL): (See MQAP Section 6.01) Products that have been tested and/or evaluated by MDOT and found to meet performance and/or other specification requirements. A Qualified Products List (QPL) of these products is maintained within this document. All QPL materials must be documented per Section 6.01 of the MQAP with a General Certification.

- **Test Data Certification (Test Data Cert):** (See MQAP Section 3.01) When this certification is specified as the basis of acceptance in the Materials Acceptance Requirements Table, in addition to the requirements of a General Certification, the certification must also include laboratory test report(s) for samples obtained from the same lot(s), batch, heat, etc. of material represented by the certification and tested according to applicable specifications (ASTM, AASHTO, MDOT).

- **Approved Manufacturer (Appr Mfr):** (See MQAP Section 3.02) A manufacturer who has submitted quality control documentation and/or material samples, and has been given approval status to certify specific material(s). General Certification per the requirements of Section 3.01 of the MQAP must accompany all Approved Manufacturer shipments to either an Approved Supplier location or the MDOT project site. Strict adherence to the requirements for Certification Documentation and Distribution is required of all Approved Manufacturers.

    - Approved Supplier: (See MQAP Section 3.02) When Approved Manufacturer is specified as the basis of acceptance in the contract documents, the material must be supplied by the manufacturer or, **without modification** to the material, by an Approved Supplier. An Approved Supplier must recertify Approved Manufacturer material(s). Strict adherence to the requirements for Certification Documentation and Distribution is required of all Approved Suppliers for the recertification of material(s). All original Approved Manufacturer General Certification(s) must accompany the material(s) shipment to the MDOT project site. When Approved Manufacturer is specified, a

supplier may not distribute or recertify material(s) unless they have been granted Approved Supplier status.

- **Special Provision:** Revisions and additions to the Standard and Supplemental Specifications applicable to an individual project. Special Provisions have been reviewed and approved for use by MDOT. Materials acceptance may be defined by these documents included in the project proposals.

- **Fabrication Inspection (Fabrication Inspection):** Materials subjected to Fabrication Inspection are those that are typically manufactured offsite and shipped to the project. Refer to the proper subsection of Chapter 4 of the MQAP to find the requirements of the various Fabrication Inspections currently performed by MDOT.

- **Acceptance Testing (Test):** Sampling and testing of a material to determine compliance with specification requirements prior to incorporation into the project. Acceptance testing is the required basis of acceptance for some materials, as indicated in the contract documents, but may be applied to all materials regardless of the basis of acceptance.

OTHER DEFINITIONS

Manufacturer: A producer or fabricator of materials with control over the quality, workmanship and handling of material.

Supplier: A supplier has no control, other than through careful handling, over the quality and workmanship of material.

CERTIFICATION DOCUMENTATION
(See MQAP Section 3.01)

Where more than one piece of paper is included in the certification document, all pages must be numbered and include Contract I.D. in order to reunite them should they become separated.

Upon delivery to a supplier, all certified material, either bundled or palleted, shall be stenciled, stamped or otherwise identified as per ASTM, AASHTO, or MDOT specification to allow the manufacturer's material to be recognized and checked against the manufacturer's certification documentation.

All **General Certification** documents must consist of all of the following:

- Company name, address and contact information.
- Date of shipment.
- Contract number (Control Section/Job Number).
- Name of contractor.
- If material is certified by a supplier, the manufacturer's name must be included on the certification.
- A list of all applicable specifications (ASTM, AASHTO, MDOT or other designations as appropriate) which the material is certified to meet.
- Any applicable specification modifier such as class, grade, type, etc.
- Name of material (MDOT designation Spec No.).
- Identification markings on shipment as required by the General Materials Certification Procedures, in the Quality Assurance Procedures Manual, Section 3.01.03.B.
- Quantity of material represented by the certification.
- For certification of Qualified Product List (QPL) materials, indicate QPL specification section number as shown in the Materials Source Guide and the product name.

- A statement, signed by a responsible representative of the manufacturer or supplier, that the material represented by the certification meets all MDOT listed specification requirements.

Test Data Certification - When this certification is specified as the basis of acceptance in the Materials Acceptance Requirements Table, in addition to the requirements of a General Certification, the following information must also be included:

- Laboratory test report(s) for samples obtained from the lot(s) of material represented by the certification and tested according to applicable specifications (ASTM, AASHTO, MDOT).

CERTIFICATION DISTRIBUTION

All certification documents except those issued by Approved Manufacturers/Approved Suppliers must be distributed as follows: Two copies must accompany the shipment, one for the contractor's files and one for the Project Engineer's office. The contractor is ultimately responsible for all materials documentation distribution to the Project Engineer's office.

Approved Manufacturer/Approved Supplier Certifications must follow the above distribution requirements with the addition of one a copy being mailed, emailed, or faxed on the date of shipment to:

Michigan Department of Transportation
Construction Field Services Division
Materials Control
P.O. Box 30049
Lansing, Michigan 48909
Facsimile: (517) 322-5664
Email: MDOT-MaterialsControl@michigan.gov

CERTIFICATIONS AND RECERTIFICATIONS

Information required on certifications may vary from one material to the next. The following examples of certification documents are ONLY provided for reference.

MATERIALS SOURCE LIST
(See MQAP Section 1.04)

A completed and signed Materials Source List (Form 501) is required project documentation, and required for payment of associated items of work. The Materials Source List is not a substitute for other required material quality control and quality assurance documentation. Prime contractors are responsible for accurate submission of the Materials Source Lists for all materials including their subcontractors.

Michigan Department
Of Transportation
0501 (07/13)

MATERIALS SOURCE LIST

Page ___ of ___

INSTRUCTIONS: Use the **"Materials Source Guide"** for material name and specification number. Enter "SP" for MDOT SPEC # for materials specified by special provision. To avoid delays, submit as soon as possible. No testing of materials will be conducted until forms are received.
Submit to Construction/Project Engineer. Construction/Project Engineer to forward to Region Materials Supervisor. (Please Print or Type all Fields)

CONTROL SECTION

CONSTRUCTION/PROJECT ENGINEER	CONTRACTOR	JOB NUMBER

PROJECT LOCATION

MDOT SPEC #	MDOT MATERIAL/PRODUCT NAME	TYPE/SIZE or CLASS	APPX. QTY.	SOURCE OF MATERIAL (NAME, ADDRESS, LOCATION, Pit#)	FOR OFFICE USE ONLY (Owner Agency) BASIS OF ACCEPTANCE					REMARKS/OTHER
					TEST	T.S.	V.I.	QPL	CERTS	

Check here if there are any revisions. Mark any revisions with an asterisk.

CONTRACTOR'S SIGNATURE	PRINT NAME	TELEPHONE NUMBER	DATE SUBMITTED
OWNER AGENCY (Rep. Signature)	PRINT NAME	TELEPHONE NUMBER	DATE RECEIVED

Enter Your Company Letterhead/Logo Here
(Name, Address, Contact Info)

GENERAL CERTIFICATION

Date Shipped: _____ Name of Contractor: _____

Control Section/Job #: _____ Project/Job Location: _____

We certify that the following described material has been tested and meets the specification requirements of the MICHIGAN DEPARTMENT OF TRANSPORTATION and ASTM, AASHTO or MDOT Specifications.

(Insert applicable ASTM, AASHTO, MDOT Spec #'s)

MDOT MATERIAL NAME: *As described in the MDOT Materials Source Guide*

MDOT SPEC #: *As described in the MDOT Materials Source Guide*

LOT #, HEAT OR IDENTIFICATION:

CLASS, GRADE OR TYPE:

SIZE OR WEIGHT:

QUANTITY:

Signature of Company Representative

Title of Company Representative

Example

DISTRIBUTION: Two Copies SHIPPED WITH MATERIAL. One mailed/faxed or delivered to PROJECT ENGINEER, the other to Contractor. One additional Copy MAILED or FAXED to Construction Field Services Division, MDOT, P.O. BOX 30049, LANSING, MI 48909. FAX # (517)322-5664. COMPLETE ON DATE OF MATERIAL SHIPMENT.

Enter Your Company Letterhead/Logo Here
(Name, Address, Contact Info)

APPROVED SUPPLIER RECERTIFICATION

Contract ID:
Control Section/Job #: _____ DATE OF SHIPMENT: _____

CONTRACTOR: _____

We certify that the following described material meets the specification requirements of the MICHIGAN DEPARTMENT OF TRANSPORTATION for the above project and this material is certified by the manufacturers indicated below.

MDOT MATERIAL NAME: *As described in the MDOT Materials Source Guide*
MDOT SPEC #: *As described in the MDOT Materials Source Guide*
MANUFACTURER:
LOT, HEAT OR IDENTIFICATION:
QUANTITY:
MDOT MATERIAL NAME: *As described in the MDOT Materials Source Guide*
MDOT SPEC #: *As described in the MDOT Materials Source Guide*
MANUFACTURER:
LOT, HEAT OR IDENTIFICATION:
QUANTITY:
MDOT MATERIAL NAME: *As described in the MDOT Materials Source Guide*
MDOT SPEC #: *As described in the MDOT Materials Source Guide*
MANUFACTURER:
LOT, HEAT OR IDENTIFICATION:
QUANTITY:

All steel furnished on this certification is of domestic origin and is in compliance with the project "Buy America" provision.

Signature of Company Representative

Title of Company Representative

DISTRIBUTION: Two Copies SHIPPED WITH MATERIAL. One mailed/faxed or delivered to PROJECT ENGINEER, the other to Contractor. One additional Copy MAILED or FAXED to Construction Field Services Division, MDOT, P.O. BOX 30049, LANSING, MI 48909. FAX # (517)322-5664. COMPLETE ON DATE OF MATERIAL SHIPMENT.

Example

MATERIALS ACCEPTANCE REQUIREMENTS TABLE
DEFINITIONS

Sampling Frequency: (**If Required**) Amount of material or number of items, as defined in the Materials Acceptance Requirements Table or other contract documents, which require a sample when submitting material to the Construction Field Services Division for testing.

Size of Sample: **Minimum** size of sample required for testing as defined in the Materials Acceptance Requirements Table or other contract documents.

Maximum VI Quantity: Maximum amount of material which can be accepted by visual inspection for each material, per item, per project.

Remarks: Special notes pertaining to individual materials.

Special Instructions: More detailed information pertaining to particular types of materials, and referenced in "Remarks" or listed in the Materials Source Guide.

NOTE: When the Basis of Acceptance is not “Test”, the sampling criteria provided may be used as guidance if the Project/Construction Engineer determines there may be a problem with the material and requests sampling and testing.

ALPHABETICAL INDEX
TO 2012 MATERIAL SPECIFICATION NUMBERS IN THE MATERIAL ACCEPTANCE REQUIREMENTS TABLE

-A-

ABS Pipe ..... Misc. #7
Abrasive, Low Dusting Blasting ..... 715.02 & 716.02
Abutment Backfill 902
Accelerators, Concrete 903.04
Adhesive Systems for Structural Anchors and Lane Ties 712.03J
Adhesive Systems for Dowel Bars & Tie Bars 603.03B2
Adjusting Rings for Manholes and Drainage Structures (Recycled Rubber) 909.01
Admixture, Air Entraining 903.01
Admixture, Latex Emulsion for Concrete 903.03
Admixture, Mineral Filler, Bituminous Mixtures 902
Admixture, Pozzolanic (Fly Ash) for Concrete 901.07
Admixture, Water Reducing and/or Retarding 903.02
Admixture for Expansive Grout Type E-1 ..... 702.02C
Aggregates 902
Air Entraining Admixture 903.01
Aluminum Alloy Pipe (Corrugated) 909.05B
Aluminum Alloy Sheets, Corrugated 909.05B
Aluminum Alloy Structural Plate ..... Misc. #9
Aluminum Sheets for Signs 919.02A3
Anchor Bolts, Studs, Rods 908.14
Anchor Bolts and Nuts, Other Purposes 908.14D
Anchors, Concrete Adhesive Bonded (Resin) 712.03J
Anchors, Expansion 712.03K
Approved Manufacturers ..... Page 58
Approved Suppliers ..... Page 54
Arrow Bars, Lighted 922.07
Arrow Boards, Type C Solar Assist 922.07
Asphalt Binder 904.03A
Asphalt Emulsion, Bond Coat 904.03C
Asphalt Release Agents 501.02
Asphalt Rubber, Overband Crackfill 502.02B
Assemblies, Load Transfer 914.07

-B-

Back-up Plates for Guardrail 908.11C
Backer Rod, Foam 914.04B
Backfill, Abutment 902
Band Clamps, Strain Pole 921.05A
Bar Chairs 905.03D
Barbed Wire 907.03B
Barricades 922.03E
Barrier Reflector Markers 922.04A
Bases, Precast Concrete 913.07
Baskets, Dowel, Load Transfer 914.07
Beam Guardrail 908.11A
Beam Plates, Sealant for Perimeter 713.02B
Bearings, Elastomeric 914.12
Bent Tie Bars, Lane Ties 914.09
Bituminized Fiber Joint Filler 914.03
Bituminized Fiberglass and Cotton Fabric ..... Misc. #14
Bituminous Materials (Asphalt Binder) 904.03A
Blasting Abrasive, Low Dusting ..... 715.02 & 716.02
Block, Concrete 913.05
Bolts, Mechanical Expansion Anchors 914.10
Bolts, Adhesive Anchor Systems 914.10
Bolts, Anchor, Studs, Rods 908.14
Bolts, Anchor, Other Purposes 908.14D
Bolts, High Strength 906.07
Bond Breaker Tape 603.03B11
Bond Release Agent, Concrete (Dowel Bars) 914.07A
Bonded Anchors, Concrete Adhesive 712.03J
Brick, Clay and Sand Lime 913.03
Brick, Concrete 913.03C
Bridge Deck Drain Extensions, Fiberglass 909.08C
Bridge Railing, Base Plate and Post Elements 908.09A
Bridge Railing, Hardware 908.09C
Bridge Railing, Tube, Parapet 908.09B
Bridge Railing, Tube, Rectangle (Galvanized) 908.09A
Bushings for Pins and Link Plates 707.02

-C-

Cable, Electrical 918.03
Cable, Prestress Strand 905.07
Calcium Chloride 922.12A
Cantilevers, Sign Support 919.07
Caps, Expansion for Dowel Bars 914.07C
Casing, Steel Pipe 909.05D
Cast Iron Pipe ..... Misc. #2
Castings, Miscellaneous Metals (Manhole) 908
Catch Basins 908
Cedar Posts (Wood Fence) 912.07B
Cement 901
Certification Verification of Cement 901
Certification Verification of Expansive Grout 702.02C
Chain Link Fence Fabric 907.04A
Chairs, Steel Reinforcement 905.03D
Chemical Fertilizer for Grass Seeding 917.10
Chemical Weed Sprays 917.16
Class B Plastic Pipe 909.06
Clay Brick 913.03
Clay Pipe ..... Misc. #3
Coarse Aggregate 902
Coating for Dowel Bars 914.07A
Coating, Polymer Coating for HMA Pavement at Snowmobile Crossings 502-SP
Coating for Rebar, Epoxy 905.03
Coating Systems for Steel Structures, Hangers Assemblies and End Diaphragms (Prime, Intermediate, Top) 915
Cobblestone 916.01A
Cold Applied Pipe Joint Sealer (Mastic) 909.09
Cold Plastic Pavement Marking, Permanent 811.03D4
Cold Plastic Pavement Marking, Temporary (Tape) 922.06A
Column Break-Away Sign Support 919.06
Compost 917.08
Compression Gasket 909.03
Concrete Accelerators 903.04
Concrete Adhesive System for Bonded Anchors (Resin) 712.03J
Concrete Barriers, Temporary 922.04
Concrete Barrier Reflector Markers 922.04A
Concrete Bases, Precast 913.07
Concrete Block 913.05

Concrete Brick 913.03C
Concrete End Sections, Precast 909.04E
Concrete Expansion Anchors 712.03K
Concrete Pipe, Reinforced and Non-Reinforced ..... 909.04A - C
Conduit, Electrical ..... 918.01, 918.01A, B, D, F
Conduit, Electrical (Polyethylene) ..... 918.01D & E
Cones, Traffic 922.03A
Contraction Baskets 914.07
Copper Sheet (Waterstop) 908.08
Corrugated Aluminum Alloy Pipe 909.05B
Corrugated Aluminum Alloy Sheets 909.05B
Corrugated Poly-Pipe, Culverts and Sewers 909.06
Corrugated Poly-Tubing, Underdrains 909.07B
Corrugated Plate, Structural ..... Misc. #8
Corrugated Steel Pipe 909.05A
Corrugated Steel Pipe (Polymer Coated) 909.05A1
Corrugated Steel Sheets 909.05A1
Cotton Fabric, Bituminized ..... Misc. #14
Coupling Bands 909.05A4
Cover, Sign 922.02D
Covers and Lids, Manholes 908
Crack Injection 914.06
Culvert, Cast Iron ..... Misc. #2
Culverts, Class B 909.06
Curing Compound 903.06
Cut-offs for Piling 906.05

-D-

Deck Drain Extensions, Bridge 909.08C
Deformed Steel Bars for End-of Pour Joint Devices 914.08
Delineator Posts, Flexible 919.03D
Delineator Posts, Steel 919.03D
Delineator Reflectors ..... 919.03A, B
Dense Graded Aggregate 902
Detectable Warning Surfaces 803.02B
Dimension (Sawed) Posts, Wood 912.08
Ditch Lining (Geotextile Blanket) 910.03A
Dowel Bar Grouting Systems 603.03B2
Dowel Bars for Load Transfer (Steel) 914.07

Dowel Baskets, Load Transfer 914.07
Downspouts, Bridge Deck 909.08A
Downspouts, Culvert 909.08B
Drain Pipe (Underdrain).....909.07A, B
Drainage Marker Post.....909.10
Drainage Casting, Misc. Metals.....908
Drainage Structures, Precast Reinforced Concrete 913.06
Ductile Iron Pipe ..... Misc. #2
Dust Palliative, Calcium Chloride 922.12A

-E-

Edge Drain (Tubing) 909.07B
Elastomeric Bearings, Pads 914.12
Electrical Cable.....918.03
Electrical Conduit (Galvanized Steel and Non-Metallic)..... 918.01A
Electrical Conduit (Polyethylene).....918.01D
Electrical Conduit (Polyvinyl Chloride) 918.01B
Electrical Traffic Control Devices.....921.03
Embedded, Galvanic Anodes 712.03Y
Emulsified Asphalt 904.03C
Emulsion, Latex Admixture for Concrete 903.03
End Sections, Grate, for Culverts 401.03E
End Sections, Slope, Steel……..... 909.05C
End Sections, Steel 909.05C
End Sections, Precast Concrete..... 909.04E
End Sections, Guardrail..... 908.11A
End-of-Pour Joint Devices/Deformed Steel Bars 914.08
Epoxies for Adhesive Systems 712.03J
Epoxy Binder, Joint Spall Repair 914.05
Epoxy Coated Dowel Bars..... 914.07A
Epoxy Coated Steel Reinforcing Bars 905.03
Epoxy Coating for Bar Reinforcement.....905.03
Epoxy Coating for Dowel Bars..... 914.07A
Epoxy Mastic 712.03D
Epoxy Resin Adhesive for Crack Injection 914.06
Excelsior Mulch Blankets..... 917.15B
Expansion Anchors, Structure 712.03K
Expansion Baskets 914.07
Expansion Caps for Dowel Bars.....914.07C

Expansion Joint Devices, Bridge 706.03K4
Expansive Grout Type E-1, Admixture 702.02C
External Type Gasket for Pipe 909.03
Extruded Aluminum Sections for Sign Panels 919.02A1

-F-

Fabric, Bituminous, Cotton, Fiberglass ..... Misc. #14
Fabric, Filter, for Underdrain (Geotextile Blanket) 910.03A
Fabric for Chain Link Fence 907.04A
Fabric for Woven Wire Fence 907.03A
Fabric Reinforcement, Welded Steel Wire (Mesh) 905.06
Fast Set Patching, Hydraulic Mortar 703
Fence, High Tensile Wire 907.05A
Fence, Horizontal Rail 907.04C
Fence Fabric, Chain Link 907.04A
Fence Fabric, Woven Wire 907.03A
Fence Gates, Chain Link 907.04D
Fence Gates, Woven Wire 907.03F
Fence Pedestrian, Posts and Rail 907.04C
Fence Protective 907.06
Fence Posts, Steel 907.04C
Fence Posts, Wood ..... (907.03E & 907.05B) 912.07B
Fertilizer 917.10
Fiber Joint Filler, Bituminized 914.03
Fiberglass Fabric ..... Misc. #14
Filter Bags, Geotextile 910.03A
Filter Fabric for Wrapped Underdrain (Knitted Sock) 910.03A
Fine Aggregate 902
Flexible Metal Conduit 918.01
Fly Ash, Mineral Filler for Bituminous Mixtures 902
Fly Ash, Pozzolanic Admixture for Concrete 901.07
Foam Backer Rod 914.04B
Foundation Piling 906.05

-G-

Galvanic Anodes, Embedded 712.03Y
Galvanized Bridge Tube Railing 908.09B
Galvanized Conduit, Electrical 918.01A
Galvanized Slotted Drain Pipe ..... Misc. #5

Galvanized Steel Sheets, Corrugated 909.05A1
Gasket, Compression 909.03
Gasket, External Type for Pipe 909.03
Geocomposite Wall Joint Drain 910.05B
Geogrid 910.03D
Geotextile Blanket 910.03A
Geotextile Pipe Wrap Liner 910.03A
Geotextile Rip Rap Liner 910.03B
Geotextile Separator 910.03C
Glare Screen 804.01
Glass Beads 920.02
Granular Material 902
Grass Seed 917.12
Gray Iron Castings 908.05
Grounding Rods 918.02C
Grounding System 918.02
Grout Under Masonry Plates 712.03X
Grout, For Full-Depth Concrete Pavement Repairs 603.03B2
Grouting Cracks by Pressure Injection, Intrusion 914.06
Grouts and Mortars ..... 702.02A, B, C
Guar Gum Base Adhesive, Mulch Binder 917.15C
Guardrail Anchorage, Bridge, Beam Elements, End Sections, Shoes and Departing End Terminals 908.11A
Guardrail Approach Terminals 908.11A
Guardrail Hardware 908.11B
Guardrail Offset Blocks, Recycled Plastic or Rubber 912.08Q
Guardrail Posts and Blocks, Wood (Dimension Sawed) 912.08
Guardrail Posts for Beam Guardrail, Steel 908.12
Guardrail Reflectorized Washer 908.13
Guardrail Steel Beam Elements 908.11A
Guide Posts 912.07B
Guy Wire, Electrical 918.11A

-H-

H Piling 906.05
Handholes, Polymer, Light Weight Composite 918.06D
Handholes, Precast 918.06
Hanger Assemblies, Coating Systems 915
Hardware, Fence 907.04E
Hardware, Guardrail 908.11B

Hardware, Sign 919.02C
Headwall, Precast Concrete 401.03E
Herbicide, Spray 917.16
High Strength Steel Bolts, Nuts and Washers 906.07
High Tensile Fence Wire 907.05A
Highway Lighting Materials (Luminaires) 918.09
Hollow Load and Non-Load Bearing Block (Concrete) 913.05
Hot Poured Rubber, Joint Sealer 914.04A
Hydraulic Anchor Systems 712.03J

-I-

Insulation, Blankets and Polystyrene ..... 903.07C & D
Interim Linseed Oil Curing Compound 903.07A
Iron Pipe, Cast and Ductile Iron and Fittings ..... Misc. #2

-J-

Jacked-In-Place Steel Pipe 909.05D
Joint Filler 914.03, 914.03B
Joint Filler, Fiber (Bituminized) 914.03
Joint Seal, Hot Poured Rubber 914.04A
Joint Sealer, Pipe Gaskets (O-Ring) 909.03
Joint Sealer for Pipe, Cold Applied (Mastic) 909.09
Joint Sealing Compound, Hot Poured 914.04A
Joint Spall Repair, Epoxy 914.05
Joint Wall Drain, Geocomposite 910.05B

-K-

-L-

Lane Ties 914.09
Latex Base Adhesive for Mulch 917.15C
Latex Emulsion Admixture for Concrete 903.03
Lead Sheet (Waterstop) 908.07
Light Standards 918.08
Lighted Arrows 922.07A
Limestone Dust, Bituminous Mineral Filler 902
Liner for Culverts ..... Spec. Prov. #1
Liner for Riprap 910.03B
Linseed Oil Interim Curing Compound 903.07A

Liquid Asphalt, MC & RC-250 ..... 904.03B
Load Transfer, Dowel Bars (Steel) 914.07
Load Transfer Assemblies, Dowel Baskets 914.07
Load-Bearing Block (Concrete) 913.05
Loop Sealant, Traffic..... 921.08B
Low Dusting Blasting Abrasive ..... 715.02 & 716.02
Lumber, Structural 912.05
Luminaires 918.09

-M-

Mail Box Posts 912.07B
Malleable Iron Castings 908.03
Manhole, Block 913.05
Manhole, Brick 913.03C
Manhole Castings 908
Manhole Covers and Lids 908
Marking Tape, Cold Plastic, Permanent 811.03D4
Marking Tape, Temporary Lane 922.06A
Masonry Plate, Grout 712.03X
Masonry Units, Precast Drainage 913.06
Mastic (Cold Applied Joint Sealer for Pipe) 909.09
Mechanical Reinforcement Splicing 712.03L
Membrane, Preformed Waterproofing 914.11
Membrane Curing Compound 903.06
Mesh Reinforcement (Pavement) 905.06
Metal End Sections 909.05C
Metallic Waterstop, Sheet Copper 908.08
Metallic Waterstop, Sheet Lead 908.07
Mineral Filler for Bituminous Mixtures 902
Mortars and Grouts ..... 702.02A, B, C
Mulch Anchoring 917.15C
Mulch Binder, Tackifiers, Non-Asphalt Emulsion 917.15C
Mulch Blanket, Excelsior and Straw 917.15B2
Mulch Blanket, High Velocity 917.15B1
Mulch Blanket, Straw 917.15B2
Mulching Materials for Nursery Stock 917.14

-N-

Non-Load Bearing Block....913.05
Non-Reinforced Concrete Pipe....909.04C
Non-Shrink Mortars and Grouts, Type H1 (Non-Metallic)....702.02B
Nursery Stock (Trees, Bushes)....917.03

-O-

O-Ring, Compression Gasket....909.03
Open-Graded Aggregate....902
Outlet, Drainage Pipe (Underdrain)....909.07C1, 2, & 3
Outlet Ending (Underdrain)....404.02C
Overband Crackfill....502.02B

-P-

PVC Sanitary Sewer Pipe....909.06
Paint for Coating Existing Steel Structures (Prime, Intermediate, Top)....915
Paint for Pavement Marking....811.03D
Patching, Fast Set Hydraulic Mortar....703
Pavement Lane Ties....914.09
Pavement Marking, Glass Beads....920.02
Pavement Marking, Modified Urethane....811.03D8
Pavement Marking, Polyurea....811.03D7
Pavement Marking, Thermoplastic, Liquid....811.03D5
Pavement Marking, Thermoplastic, Sprayable and Preform....811.03D6
Pavement Marking, Waterborne, Liquid, Paint....811.03D1
Pavement Marking Regular Dry Paint....811.03D3
Pavement Marking Tape, Cold Plastic....811.03D4
Pavement Marking Tape, Type R/NR....922.06A
Pavement Markers, Raised (Temporary)....922.06B
Pavement Reinforcement (Mesh)....905.06
Pavement Tie Bars....914.09
Penetrating Water Repellents....706.03S
Perforated Poly-Tubing, Underdrain....909.07B
Pile Points....906.05
Piling, H Piling and Special Sections....906.05
Piling, Steel Sheet....906.06
Piling, Steel Shells....906.05
Piling, Timber....912.06
Pipe, Cast and Ductile Iron....Misc. #2

Pipe, Clay ..... Misc. #3
Pipe, Concrete ..... 909.04A - C
Pipe, Corrugated Aluminum Alloy 909.05B
Pipe, Corrugated Polyethylene (CPE/HDPE) 909.06
Pipe, Corrugated Steel 909.05A
Pipe, Downspouts ..... 909.08A, B
Pipe, Gasket 909.03
Pipe, Plastic, Class B 909.06
Pipe Joint Sealers 909.09
Pipe, Steel Casing 909.05D
Pipe Wrap, Geotextile 910.03A
Plastic Drums 922.03
Plastic Guardrail Blocks 912.08Q
Plywood for Signs 919.02A2
Poles, Tower Lighting 918.10A
Polyethylene Pipe for Culverts and Sewers(CPE/HDPE) 909.06
Polyethylene Tubing for Underdrain 909.07B
Polymer Coated Corrugated Steel Pipe 909.05A1
Polymer Coating for HMA Pavement at Snowmobile Crossings 502-SP
Polystyrene, Insulation 903.07D
Polyvinyl Chloride Pipe (CPV/PVC) 909.06
Portable Signs 922.07C
Post Tensioning, Tendons 905.08
Posts, Delineator, Flexible (Plastic) 919.03D
Posts, Delineator, Steel 919.03D
Posts, Dimension Sawed (Wood) 912.08
Posts, Drainage Marker 909.10
Posts, Mailbox 912.07B
Posts, Signs, Steel 919.04
Posts, Wood for Fencing 912.07B
Posts, Wood Sign 912.08, 919.05
Posts for Chain Link Fence (Steel) 907.04C
Posts for Woven Wire Fence (Steel) 907.03D
Pozzolanic Admixture for Concrete (Fly Ash) 901.07
Precast Concrete Bases 913.07
Precast Concrete Box Sections 909.04D
Precast Concrete End Sections 909.04E
Precast Concrete 3 Sided or Arch Sections 909.04G
Precast Concrete Handholes 918.06

Precast Concrete Headwalls 401.03E
Precast Reinforced Concrete Drainage Structures 913.06
Precast Sumps 913.07
Prefabricated Drainage System 910.05A
Preformed Waterproofing Membrane 914.11
Premixed Grouts and Mortars, Type H1 (Non-Metallic) 702.02B
Prestress Strand for Concrete 905.07
Prestressed Concrete Beams 708.03A
Protective Coating for Concrete, Water Repellent 706.03S
Protective Fence 907.06

-Q-

Qualified Products List ..... Page 68

-R-

R C 250, Liquid Asphalt Waterproofing Primer 904.03B
Railing, Bridge Tube Element (Galvanized) 908.09B
Railroad Ballast ..... Spec. Prov. #3
Raised Pavement Markers (Temporary) 922.06B
Recertifiers ..... Page 54
Recycled Plastic or Rubber Guardrail Offset Block 912.08Q
Recycled Rubber Adjusting Rings 909.01
Recycled Rubber Joint Filler 914.03B
Reflective Sheeting 919.02B1
Reflective Sheeting, Temporary Signs 922.02B
Reflectorized Washers, Guardrail 908.13
Reflectors, Delineator 919.03A, 919.03B
Reflectors, Marker, Concrete Barriers 922.04A
Regular Dry Pavement Marking Paint 811.03D3
Reinforced Concrete Pipe 909.04A
Reinforcing Steel Bars 905.03
Release Agents, Asphalt 501.02
Retarding Admixtures 903.02
Rip Rap 916.01C
Rubber, Recycled, Joint Filler 914.03B
Rubber, Hot Poured, Joint Sealant 914.04A
Rustic Construction, Timber 912.09

-S-

Sand Lime Brick....913.03
Sawn Wood Posts and Blocks....912.08
Sealant for Perimeter of Beam Plates....713.02B
Sealer for Pipe Joints, Cold Applied (Mastic)....909.09
Seeding Mixtures....917.12
Selecting and Shipping Samples....Page 91
Separator, Geotextile....910.03C
Sewer Pipe, Concrete....909.04A - C
Sewer Pipe, PVC Sanitary....909.06
Shear Developers (Studs)....906.09
Sheet Copper (Waterstop)....908.08
Sheet Lead (Waterstop)....908.07
Sheeting, Reflective....919.02B1
Sheeting, Reflective, Temporary Signs....922.02B
Shelf Life, Curing Compound (Linseed Oil Base)....903.07A
Shipping and Selecting Samples....Page 91
Shotcrete, Waterproofing....710.03D
Shredded Bark, Mulching Materials....917.14
Sign Hardware....919.02C
Sign Paddles....922.11
Sign Posts....919.04, 919.05
Sign Support Structures....919.07
Signals, Electrical Traffic Control....921.03
Signs, Permanent....919.02
Signs, Portable....922.07C
Signs, Temporary, Prismatic....922.02
Signs, Temporary, Cover....922.02D
Signs, Temporary, Reflective Sheeting....922.02B
Silt Fence....916.02
Silt Fence, Geotextile....910.04
Slag Cement....901.06
Sleeves, Steel for Guardrail....908.11C
Sleeves, Steel for Wood Sign Posts....919
Slope Paving Block....913.09
Slotted Drain Pipe, Galvanized....Misc. #5
Sod....917.13
Span Wire, Electrical....921.02
Splicing, Reinforcement (Mechanical)....712.03L

Sprays, Chemical (Weed Control) 917.16
Standard Mortars and Grouts 702.02A
Steel Barbed Wire 907.03B
Steel Beam Guardrail Elements 908.11A
Steel Castings 908.04
Steel H Piling 906.05
Steel Pipe, Jacked-In-Place 909.05D
Steel Posts for Beam Guardrail 908.12
Steel Posts for Fence 907.03D, 907.04C
Steel Posts for Signs 919.04
Steel Reinforcing Bars 905.03
Steel Sheet, Corrugated Galvanized 909.05A1
Steel Sheet Piling 906.06
Steel Sleeves for Guardrail 908.11C
Steel Sleeves for Wood Sign Posts 919
Straight Tie Bars, Lane Ties 914.09
Strain Poles (Traffic Signal) 921.05
Strain Pole Band Clamps 921.05A
Strand for Prestressed Concrete 905.07
Straw Mulch Blankets 917.15B
Structural Plate for Pipe (Corrugated) ..... Misc. #8
Structural Steel 906
Structural Tile 913.08
Structural Timber and Lumber 912.05
Structure Expansion Anchors 712.03K
Stud Shear Developers 906.09
Subbase 902
Sumps, Precast 913.07

-T-

Tackifiers for Mulch 917.15C
Tape, Bond Breaker 603.03B11
Tape, Lane Marking, Temporary 922.06A
Temporary Concrete Barriers 922.04
Temporary Overlay and Chip Seal Markers 922.06B
Temporary Seal for Cracks Injection 914.06
Temporary Signs 922.02
Tendons for Post Tensioning 905.08
Tension Wire 907.04B

Tested Stock Listings ..... Page 88
Thermoplastic Pavement Marking 811.03D5, 811.03D6
Three Coat/Clear System, Post 907.03D
Tie Bar Grouting Systems 603.03B2
Tie Bars for Longitudinal Sawed Joints 914.09
Tile, Structural 913.08
Timber and Lumber, Structural 912.05
Timber Piling 912.06
Tower Lighting Units 918.10A
Traffic Cones 922.03A
Traffic Loop Sealant 921.08B
Treated Wood 912.05
Trusses, Sign Support 919.07
Truck Mounted Attenuator ..... Spec. Prov. #6
Tube Railing, Galvanized 908.09B

-U-

Underdrain Outlet Endings 404.02C
Underdrain Pipe ..... 909.07A, B, C

-V-

Vests 922.11

-W-

Wall Joint Drain, Geocomposite 910.05B
Warning Flashers and Lights 922.07B
Washers, Reflectorized 908.13
Water 911
Water Main Materials 923
Water Reducing/Retarding Admixture 903.02
Water Repellent, Penetrating Sealer 706.03S
Waterproofing Membrane, Preformed 914.11
Waterproofing Primer, Liquid Asphalt, RC 250 ..... 904.03B
Waterstop (Metallic) 908.07, 908.08
Watertight Joints 909.03
Weed Spray (Herbicides) 917.16
Welded Wire Reinforcement (Mesh) 905.06
Wire, Electrical Cable 918.03
Wire, High Tensile Fence 907.05A
Wire, Rope 908.11B

Wire Mesh.....905.06
Wood Fence Posts 912.07B
Wood Mulch/Chips.....917.14
Wood Posts and Lath for Silt Fence 916.02
Wood Posts for Guardrail (Dimensioned Sawed).....912.08
Wood Posts for Signs 912.08, 919.05
Woven Wire Fence Materials 907.03
Wrap, Filter Fabric 910.03A

-X- -Y- -Z-

MATERIALS ACCEPTANCE REQUIREMENTS

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
401.03E End Section Grate for Culverts	VI	-	-	-	See Standard Plans for Sizes.
401.03E Precast Concrete Headwalls	Gen Cert	-	-	-	24" or less. For larger than 24" construct per Section 706 of Standard Specifications.
404.02C Underdrain Outlet Endings	VI	-	-	-	See Standard Plans.
501.02 Asphalt, Release Agents	VI	-	-	-	
NOTE: Must be approved by the project engineer. No fuel or oil based agents.					
502.02B Overband Crackfill, Asphalt Rubber (Alt. 2)	Gen Cert	-	-	-	Must be a Qualified Product (502.02B).
502-SP Protective Polymer Coating For HMA Pavement at Snowmobile Trail Crossing	See Remark	None	-	-	See Special Provision.
603.03B2 Adhesive Systems for Grouting Dowel Bars and Tie Bars for Full-Depth Concrete Pavement Repairs	Gen Cert	-	-	-	Must be a Qualified Product (603.03B2).
NOTE: Use for grouting to existing concrete in the same direction of traffic in the same lane as the repair. For grouting lane ties (deformed bars positioned transverse to the direction of traffic located between traffic lanes) select from Adhesive Anchor Systems for Structural Anchors and Lane Ties (712.03J).					
603.03B11 Bond Breaker Tape	VI	-	-	-	
702.02A Standard Mortars and Grouts	VI	-	-	-	
702.02B Non-Shrinking Mortar and Grout, Type H-1(Non-Metallic) Pre Mixed	Gen Cert	-	-	-	Must be a Qualified Product (702.02B).
702.02C Admixture for Expansive Grout, Type E-1	Test Data Cert	-	-	-	
NOTE: Certification to include manufacturers recommended dosage per sack of cement. Include all General Certification documentation and sample of the cement with which it is being used with CV samples.					
703 Prepackaged Hydraulic Fast Set Mortar	Gen Cert	-	-	-	Must be a Qualified Product (703).
706.03K4 Expansion Joint Devices for Bridges	See Remark	-	-	-	See Bridge Standard Plans for list of approved devices and details.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
706.03S Penetrating Water Repellent (Protective Coating for Concrete)	Gen Cert	-	-	-	Must be a Qualified Product (706.03S).
707.02 Bushings for Pins and Link Plates	Gen Cert	-	-	-	Must be a Qualified Product (707.02).
708.03A Prestressed Concrete Bridge Beams	Fabrication Inspection & VI	-	-	-	MQAP Manual Section 4.04. VI must be conducted upon delivery to jobsite.
710.03D Waterproofing Shotcrete	VI	-	-	-	
712.03A1c Abrasive, Low Dusting	Gen Cert	-	-	-	See Section 715.02.
712.03D Epoxy Mastic	VI	-	-	-	
712.03J Adhesive Anchor Systems for Structural Anchors and Lane Ties	Gen Cert	-	-	-	Must be a Qualified Product (712.03J).
712.03K Structure Expansion Anchors (Mechanical Expansion Anchors)	Gen Cert See Remark	-	-	-	Must be a Qualified Product (712.03K). Pull-out testing is required per MQAP Manual Section 4.03.
712.03L Mechanical Reinforcement Splicing	Gen Cert See Note	1 per project	2 splices	-	See Note. Must be a Qualified Product (712.03L).
NOTE: The contractor must make test splices, witnessed by the Engineer, on the largest bar sizes that are to be spliced. See Bridge Field Services Advisory (BFSA) 2012-03. Test splice consists of 2 pieces of reinforcing bar joined by the coupler with 12 inches of bar exposed on each end of the coupler.					
712.03Y Embedded Galvanic Anodes	Gen Cert See Remark	-	-	-	Must be a Qualified Product (712.03Y).
712.03X Grout Under Masonry Plates	VI	-	-	-	
713.02B Sealant for Perimeter of Beam Repairs	Gen Cert	-	-	-	Must be a Qualified Product (713.02B).
715.02 Coating Systems for New Hanger Assemblies	Gen Cert See Remark	-	-	-	Must be a Qualified Product (915).

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
715.02 Abrasive, Low Dusting	Gen Cert	-	-	-	Must be a Qualified Product (715.02).
716.02 Abrasive, Low Dusting	Gen Cert	-	-	-	See Section 715.02.
803.02B Detectable Warning Surfaces	Gen Cert	-	-	-	Must be a Qualified Product (803.02B).
804.01 Glare Screen	VI	-	-	-	Included in Concrete Spec.
808.03C Temporary Fence Materials	VI	-	-	-	
811.03D1 Waterborne, Liquid Pavement Marking Materials	Gen Cert	-	-	-	Must be a Qualified Product. MQAP Manual Section 6.15. Must be a Qualified Product (811.03D1).
811.03D2 Low Temperature Waterborne, Liquid Pavement Marking Materials	Gen Cert	-	-	-	Must be a Qualified Product. MQAP Manual Section 6.15. Must be a Qualified Product (811.03D2).
811.03D3 Regular Dry Paint, Liquid Pavement Marking Materials	Gen Cert	-	-	-	Must be a Qualified Product. MQAP Manual Section 6.15. Must be a Qualified Product (811.03D3).
811.03D4 Cold Plastic Tape, Liquid Pavement Marking Materials	Gen Cert	-	-	-	Must be a Qualified Product. MQAP Manual Section 6.16. Must be a Qualified Product (811.03D4).
811.03D5 Thermoplastic Liquid Pavement Marking Materials	Gen Cert	-	-	-	Must be a Qualified Product. MQAP Manual Section 6.15. Must be a Qualified Product (811.03D5).
811.03D5 Thermoplastic, Blocks Rumble Strips and Snowmobile Crossings	Gen Cert	-	-	-	Must be a Qualified Product. MQAP Manual Section 6.15. Must be a Qualified Product (811.03D5).
811.03D6 Thermoplastic, Sprayable, Liquid Pavement Marking Materials	Gen Cert	-	-	-	Must be a Qualified Product. MQAP Manual Section 6.15. Must be a Qualified Product (811.03D6).
811.03D7 Polyurea, Liquid Pavement Marking Materials	Gen Cert	-	-	-	Must be a Qualified Product. MQAP Manual Section 6.15. Must be a Qualified Product (811.03D7).
811.03D8 Modified Urethane, Liquid Pavement Marking Materials	Gen Cert	-	-	-	Must be a Qualified Product. MQAP Manual Section 6.15. Must be a Qualified Product (811.03D8).
901 Cement	Appr Mfr *	See Remark	10 lb	45 ton	See Special Instructions, see MQAP Manual Section 3.07.
901.06 Slag Cement	Appr Mfr *	-	10 lb	-	See Special Instructions for Cement.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
901.07 Fly Ash, Pozzolanic Admixtures for Concrete	Appr Mfr *	-	10 lb	-	See Special Instructions for Cement.
902 **Prequalified Aggregate Sources** **See Current List** of all **Prequalified Aggregate Sources at Construction Field Services Web Page.** Instructions to Construction Field Services web page: From MDOT home page (michigan.gov/mdot), click on Maps and Publications (left side), then click on Manuals, Guides, Advisories & Memos, then Materials Source Guide. The link to the **Prequalified Aggregate Source List** is under Additional Resources. Actual Current List of Prequalified Aggregate Sources web page address: http://www.michigan.gov/documents/mdot/MDOT_PrequalifiedAggregateSourceList_387538_7.pdf					See Special Instructions
902 **Non-Prequalified Aggregate Sources (see below)**					
902 Coarse Aggregates	Test	1 per 1000 ton	60 lb	100 ton	
902 Dense-Graded Aggregates	Test	1 per 1000 ton	60 lb	500 ton	
902 Open-Graded Aggregates	Test	1 per 1000 ton	60 lb	100 ton	
902 Granular Material Class I	Test	1 per 1000 ton	60 lb	100 ton	
902 Granular Material Class II (Subbase) and Class IIA	Test	1 per 3000 cyd	60 lb	500 cyd	
902 Class II (Abutment B. F.)	Test	1 per structure	60 lb	100 cyd	
902 Granular Material Class III	Test	1 per 10,000 cyd	60 lb	500 cyd	
902 Granular Material Class IIIA	Test	1 per 1000 cyd	25 lb	100 cyd	
902 Fine Aggregate	Test	1 per 1000 ton	25 lb	100 ton	

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
902 Mineral Filler for HMA Mixtures	Test See Remark	1 per project	1 qt	10 ton	Refer to Section 902.11 of the 2012 Standard Specifications.
903.01 Air Entraining Admixtures	Gen Cert	-	-	-	Must be a Qualified Product (903.01).
903.02 Water Reducing and Water Reducing Retarding Admixtures for Concrete	Gen Cert	-	-	-	Must be a Qualified Product (903.02).
903.03 Latex Admixture for Concrete	Appr Mfr *	1 per lot	1 qt	-	
903.04 Concrete Accelerators 1. Calcium Chloride 2. All Others	 VI Gen Cert	 - -	 - -	 - -	For calcium chloride note the chemical composition. Other accelerators must be Qualified Products (903.04).
903.06 Membrane Curing Compound	Test Data Cert	1 per lot or batch	1 qt	200 gal	
NOTE: Curing compounds must not be used after ONE year from manufacture. Date of manufacture must be clearly printed on the outside of containers.					
903.07A Interim Curing (Linseed Oil Based)	Test Data Cert	1 per lot or batch	1 qt	50 gal	See Note for 903.06 above.
903.07C Insulating Blanket	Test Data Cert	-	-	10 sheets	
903.07D Polystyrene Insulation	Test Data Cert	-	-	-	
904.03A Asphalt Binder for HMA Mixtures	See Remark	1 per batch	(2) 1 qt containers	-	See Special Instructions.
904.03B Liquid Asphalt (MC)	Gen Cert	1 per batch	See Remark	-	1 gal from the top and 1 gal from the bottom of tank.
904.03B Liquid Asphalt (RC-250)	Gen Cert	1 per batch	2 qt	5 gal	

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
904.03C Emulsified Asphalt	Appr Mfr * See Remark	See Remark	See Remark	-	See Special Instructions.
905.03 Bar Reinforcement (Uncoated)	Appr Mfr *	1 per project per mfr per size	See Remark	500 lb	2 pcs. One 24 in. & one 36 in. Test Data Cert to Construction Field Services.
NOTE: Sample ID to include name of epoxy coating company, epoxy resin trade name and lot number, bar manufacturer and heat number. Sample size, 2 pieces, 1 of which is 24 in. and 1 of 36 in.					
905.03 Bar Reinforcement (Epoxy Coated) 1. Bar 2. Epoxy Coating Companies 3. Epoxy Coating Material (905.03C)	Appr Mfr * Appr Mfr * Gen Cert	1 per project per mfr per size	See Note	500 lb	2 pcs. One 24 in. & one 36 in. Test Data Cert to Construction Field Services. Epoxy coating must be a Qualified Product (905.03C).
NOTE: Sample ID to include name of epoxy coating company, epoxy resin trade name and lot number, bar manufacturer and heat number. Sample size, 2 pieces, 1 of which is 24 in. and 1 of 36 in.					
905.03D Bar Chairs and Wire Ties for Epoxy Coated Steel Reinforcement	VI	-	-	-	
905.06 Welded Steel Wire Reinforcement (Mesh)	Appr Mfr *	1 per project per mfr	See Remark	500 syd	Test Data Cert to Construction Field Services. See Note.
NOTE: One piece, full width of fabric with two transverse wires. Longitudinal wires must extend 6 in. to 8 in. either side of transverse wires. Sampling not required when larger wire is less than 0.13 in. (w1.5) in dia. Include on sample ID the size that the wires are supposed to be. Sample may be folded or cut into approx. 3 ft. sections. If cut, pieces should be wired together and identified.					
905.07 Strand for Prestressed Concrete	Appr Mfr *	1 per heat	2 pcs each 80 in long	-	Obtain sample 5 ft. from end of reel. Test Data Cert to Construction Field Services.
905.08 Tendons for Post Tensioning of Box Beams - Prestressing Strand	Appr Mfr * See Remark	1 per heat	2 pcs each 80 in long	-	Sampling and testing may be waived if strand from same reel is tested for beam fabrication. Obtain sample at least 5 ft. from end of reel. Test Data Cert to Construction Field Services.
905.08 Post Tensioning Bar	Test	1 per heat per project	2 pcs each 30 in long	-	Test Data Cert must be attached to Sample Identification form for lab testing.
906 Structural Steel	Fabrication Inspection & VI	-	-	-	MQAP Manual Section 4.05. VI must be conducted upon delivery to jobsite.
906.05 Foundation Piles: H Piling, Steel Shells and Pile Points	Test Data Cert	-	-	-	

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
906.05 Pile Cutoffs	Gen Cert	-	-	-	
906.06 Steel Sheet Piling	Gen Cert	-	-	-	
906.07 High Strength Steel Bolts	Test	1 per dia per length per heat per project	3 each bolts, nuts & washers	-	Bolt, nut and washer Test Data Cert must identify the manufacturer and must be attached to the Sample ID.
906.09 Shear Developers (Studs)	Gen Cert or Test Data Cert See Remark	-	-	-	Must be a Qualified Product (906.09). Other stud shear developers may be used when the manufacturer provides Test Data Certification that the studs meet the requirements of AWS D1.5-96, all section 7.
907.03A - C Woven Wire Fence (Woven Wire Fabric, Barbed Wire, Smooth Line Wire)	Test Data Cert	1 per project per mfr	Full width of roll 5 ft 6 ft 4 ft	400 ft	
907.03D Woven Wire Fence (Steel Posts)	Test Data Cert	1 per project per mfr	1 post	25 posts	
907.03E Woven Wire Fence (Treated Wood Posts)	See Remark	-	-	-	See Section 912.07B.
907.03F Woven Wire Fence (Gates)	VI	-	-	-	
907.04A Steel Chain Link Fence (Fabric)	Test Data Cert	See Remark	5 ft full width of roll	250 ft	1 per height and/or mesh size, per project and 1 per mfr per project.
907.04B Steel Chain Link Fence (Tension Wire)	Gen Cert	1 per project per mfr	3 ft	500 ft	

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
907.04C Steel Chain Link Fence (Post for Fence and Gates), (Pedestrian Fence and Structure Fencing (Steel))	Test Data Cert	1 per project per mfr	1 post	25 posts	
NOTE: An alternative zinc/clear coat system will be allowed for pipe sections only. This alternative coating system shall comply with subsection 907.03D of the Standard Specifications for Construction.					
907.04C Steel Chain Link Fence (Top Rail), ((Horz. Rail) (Pedestrian Fence))	Test Data Cert	1 per project per mfr See Remark	5 ft	250 ft	See Table 907-1 of 2012 Standard Specs for Construction
NOTE: An alternative zinc/clear coat system will be allowed for pipe sections only. This alternative coating system shall comply with subsection 907.03D of the Standard Specifications for Construction.					
907.04D & E Steel Chain Link Fence (Gates, Fence Fittings and Hardware)	VI	-	-	-	
907.05A High Tensile Wire Fence (Wire)	Test	1 per project per mfr	3 ft	250 ft	
907.05B High Tensile Wire Fence (Treated Wood Posts)	See Remark	-	-	-	See Section 912.07B.
907.05C High Tensile Wire Fence (Hardware)	VI	-	-	-	
907.06 Protective Fence	VI	-	-	-	
908 Castings, Manhole **908.03** Malleable Iron **908.04** Steel **908.05** Gray Iron	VI	-	-	-	
908.07 Sheet Lead	Gen Cert	-	-	25 sft	
908.08 Sheet Copper	Gen Cert	1 per consignment	13 in square or equivalent area	25 sft	May be accepted in field if weight requirements can be documented.
908.09A Tubing, Steel Railings Base Plate, Angle, and Post Elements (Galvanized)	Tested Stock See Remark	1 per heat per project	1 base plate, 1 post 18 in length	-	Test Data Cert document must be attached to the sample ID.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
908.09B Tubing, Steel Railings Rail Elements (Tube) (Galvanized)	Tested Stock See Remark	1 per heat per project	36 in long, galv	-	Chemical analysis must include silicon. Test Data Cert document must be attached to the sample ID.
908.09C Tubing, Steel Railings Hardware (Anchor Studs)	Test	1 per heat per diameter per project	A bolt, nut, washer, coupling and base plate, if applicable	-	
908.10 Hardware for Timber Construction	VI	-	-	-	
908.11A Guardrail, Steel Beam Elements, End Sections	Appr Mfr *	1 per project per mfr	1 piece at least 1 ft length	125 ft	Including Anchorage, Bridge, Shoes, Departing End Terminals. Test Data Cert to Construction Field Services.
908.11A Guardrail Approach Terminals	Appr Mfr *	-	-	-	Test Data Cert to Construction Field Services.
908.11B & C B. Hardware C. Steel Sleeves, Soil Plates, Bearing Plates, Backup Plates	VI	-	-	-	Item supplied by guardrail supplier.
908.11B Wire Rope	Gen Cert	-	-	-	
908.12 Steel Posts for Beam Guardrail	Appr Mfr *	1 per 1000 posts or fraction thereof	1 post	25 posts	Test Data Cert to Construction Field Services.
908.13 Reflective Washers	VI See Remark	-	-	-	Inspect galvanizing, dimensions and type of sheeting.
908.14 Anchor Bolts, Anchor Studs, Anchor Rods and Anchor Base Plates	Test*** See Remark	1 per heat per diameter per project	1 bolt, nut, washer, coupling and base plate if applicable	-	Non MDOT Standard Plan Bolts require Shop Drawings along with the Test Data Cert document. *** For cantilever foundations: 1 per heat per dia per foundation, max 3 per project.
908.14D Anchor Bolts and Nuts for Other Purposes	Gen Cert	-	-	-	

NOTE: Only applies to pedestral foundations for pedestrian signals, push buttons, controller cabinets, and HAWK signals and repeaters. For all other anchor bolts see 908.14.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
909.01 Recycled Rubber Adjusting Rings for Manholes and Drainage Castings	Gen Cert	-	-	-	Must be a Qualified Product (909.01).
909.03 Watertight Joint Systems	Gen Cert	-	-	-	Must be a Qualified Product (909.03).
909.03 Gasket, Compression (O-Rings)	VI	-	-	-	Part of Watertight Joint System.
909.03 Gasket, External Rubber Type	VI	1 per lot or shipment	18 in length full width of gasket	-	Part of Watertight Joint System.
909.04A Reinforced Concrete Pipe	Appr Mfr *	1 percent of number of pcs of each size	See Remark	5 pieces of 42 in or smaller	See Special Instructions.
909.04B Reinforced Concrete Elliptical Pipe	Appr Mfr *	1 percent of number of pcs of each size	See Remark	5 pieces of 42 in or smaller	See Special Instructions.
909.04C Non-Reinforced Concrete Pipe	Appr Mfr *	See Remark	See Remark	10 pcs	See Special Instructions.
909.04D Precast Concrete Box Sections	Appr Mfr * See Remark	-	-	-	Spans 20 ft. and greater require QA inspection. QA inspection may be required for spans from 10-20 ft Box = 4 sided. See MQAP Manual section 3.10.
909.04E Precast Concrete End Section for Culverts and Sewers	Appr Mfr *	1 percent of number of pcs	Full size units	10 pcs	Strength test by coring or cylinders, VI dimensions and conditions. Test for air content. .
909.04G Precast Concrete Three-Sided or Arch Culverts	Appr Mfr See Remark	-	-	-	Spans 20 ft. and greater require QA inspection. QA inspection may be required for spans from 10-20 ft, See MQAP Manual section 3.10.
909.05A Corrugated Steel Pipe	Appr Mfr *	See Remark	See Remark	-	See Special Instructions. General Cert to Construction Field Services.
909.05A1 Corrugated Steel Sheets (Galvanized)	Gen Cert	See Remark	See Remark	-	See Special Instructions.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
909.05A1 Polymer Coating, Galvanized Corrugated Steel Pipe	Gen Cert	-	-	-	Coating must be from Qualified Products List (909.05A1).
909.05A4 Coupling Bands	Gen Cert	-	-	5 pcs	
909.05B Corrugated Aluminum Alloy Sheet	Gen Cert	See Remark	See Remark	25 sheets	See Special Instructions.
909.05B Corrugated Aluminum Alloy Pipe	Gen Cert	1 per 1000 ft	See Remark	250 ft	Sample Size: A 6 in by 3 in (minimum) section cut from the end of the pipe avoiding the seams. Do not damage coating.
909.05C Steel End Section	Gen Cert	-	-	4 pcs	
909.05D 1. Steel Pipe (Jacked-in-Place)	Gen Cert	-	-	-	
909.05D 2. Casing, Steel Pipe	VI	-	-	-	
909.06 1. Corrugated Polyethylene Pipe (CPE/HDPE), (Smooth Lined Type S)	Test or Tested Stock if ≥12 in. dia	≥12 in. dia 1 per 1000 ft straight lengths	See Remark	12 in. dia and over, 100 ft	Over 12 in. dia- one 10 ft length and one 6 ft length plus coupling. See Special Instructions.
909.06 2. Corrugated Polyvinyl Chloride (CPV) Pipe	Test	1 per 1000 ft straight lengths	See Remark	12 in. dia and over, 100 ft	Over 12 in. dia- one 10 ft and one 6 ft. length plus coupling.
909.06 3. Class B (CPE/HDPE & CPV)	Gen Cert See Note	-	-	-	Must be a Qualified Product (909.06).
NOTE: Watertight Joint Systems (909.03) and Pipe (401 & 402; Class B Bury) must be listed on QPL. Pipe (909.06) must be accepted by "Test" or "Tested Stock" for use on project.					
909.06 4. Smooth Polyvinyl Chloride (PVC) Pipe and Fittings for Sanitary Sewer	VI	1 per 6000 ft	1 piece, 5 ft in length	-	If bell and spigot joint, sample from spigot end.
909.07A Pipe for Underdrains Smooth Perforated Plastic Pipe (PVC)	Test	1 per 2500 ft or fraction thereof	5 ft length	250 ft	
909.07B Pipe for Underdrains Corrugated Plastic Tubing (Perforated and Non-Perforated) (Wrapped and Non-Wrapped)	Appr Mfr * 4-, 6-, or 8-in dia	1 per 5000 ft sample from coils	See Remark	250 ft	Sample Size, one 10 ft length plus coupling. For perforated tubing wrapped in fabric, tie fabric securely in place before cutting sample.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
909.07C Outlet Pipe for Underdrains 1. Polyvinyl Chloride (PVC) Pipe	Test	1 per 2500 ft or fraction thereof	5 ft length	250 ft	See 404.02C for Underdrain Outlet Endings.
909.07C Outlet Pipe for Underdrains 2. Corrugated Steel Pipe	Appr Mfr *	See Remark	See Remark	-	See Special Instructions for 909.05A, Test Data Cert to Construction Field Services. See 404.02C for Underdrain Outlet Endings.
909.07C Outlet Pipe for Underdrains 3. Corrugated Aluminum Alloy Pipe	Gen Cert	1 for 1000 ft	6 in x 3 in	250 ft	See 404.02C for Underdrain Outlet Endings. See 909.05B.
909.08A Bridge Deck Downspouts	VI	-	-	-	
909.08B Culvert, Downspouts 1. Corrugated Steel Pipe	Appr Mfr *	See Remark	See Remark	-	See 909.05A Corrugated Steel Pipe. Test Data Cert to Construction Field Services.
909.08B Culvert, Downspouts 2. Corrugated Aluminum Alloy Pipe	Gen Cert	1 per 1000 ft	6 in x 3 in	250 ft	See 909.05B.
909.08B Culvert, Downspouts 3. Corrugated Polyethylene Pipe (Corrugated Lined Type C) (CPE/HDPE)	Test	See Remark	See Remark	<12 in. dia up to 250 ft >12 in. dia up to 100 ft	See 909.06 (1)
909.08C Bridge Deck Drain Extensions (Polyethylene)	Gen Cert	-	-	-	
909.09 Cold Applied Pipe Joint Sealer (Mastic)	Test	1 per shipment from a single container	1 qt	10 gal	
909.10 Drainage Marker Post	See Delineator Posts	-	-	-	
910.03A Geotextiles 1. Blankets 2. Filter Bags	Test	See Remark	See Remark	See Remark	See Special Instruction 910.03. Anticipate up to 28 calendar days for the testing of geotextile samples.
910.03A Knitted Sock Pipe Wrap	See Remark	-	-	-	See 909.07B Certified with Corrugated Plastic Tubing.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
910.03B Liner for Rip-Rap	Test	See Remark	See Remark	See Remark	See Special Instruction 910.03. Anticipate up to 28 calendar days for the testing of geotextile samples.
910.03B Liner for Heavy Rip-Rap	Test	See Remark	See Remark	See Remark	See Special Instruction 910.03. Anticipate up to 28 calendar days for the testing of geotextile samples.
910.03C Separator/Stabilization Geotextile	Test	See Remark	See Remark	See Remark	See Special Instruction 910.03. Anticipate up to 28 calendar days for the testing of geotextile samples.
910.03D Geogrids	Test	1 per type per project	1 pc 6 ft long full roll width	-	Sample must be rolled not folded. Anticipate up to 28 calendar days for the testing of geotextile samples.
910.04 Silt Fence; (Geotextile Fabric only)	Gen Cert	-	-	-	Must be a Qualified Product (910.04).
910.05A Prefabricated Drainage System	Appr Mfr *	1 per 10,000 ft or less	1 pc 6 ft long plus 3 syd filter-wrap	-	Test Data Cert must be attached to sample ID Form.
910.05B Wall Drain	Test	1 per 1000 ft or less	1 pc 6 ft long plus 3 syd filter-wrap	100 sft	
911 Water	Test See Remark	1 per source	1 qt	-	Water approved for drinking by the Michigan Dept of Public Health may be used without sampling and testing.
912.05 Structural Timber and Lumber	Appr Mfr *	Each Charge	22 cores See Remark	-	48 cores if treatment is creosote. General Cert to Construction Field Services.
912.06 Timber Piles	VI	-	-	-	
912.07B Treated Wood; Fence Posts, Guide Posts, Guard Posts and Mail Box Posts	VI	-	-	-	
912.08 Wood Posts and Blocks for Guardrail and Highway Signs (Dimension Sawed)	Appr Mfr *	Each Charge	22 cores	-	Cedar post need not be treated. General Cert to Construction Field Services.

NOTE: All post must be treated except Northern White Cedar. General Certification document required for Northern White Cedar in lieu of approved manufacturer.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
912.08Q Recycled Plastic or Rubber Guardrail Offset Blocks	Gen Cert	-	-	-	Must be a Qualified Product. May only be used on Steel Posts (912.08Q).
912.09 Timber for Rustic Construction	Gen Cert	-	-	-	
913.03 Clay and Sand Lime Brick and Block	Test	1 per 250,000 or fraction thereof	6 pcs	1000 pcs	
913.03C Concrete Brick	Test Data Cert	See Remark	6 pcs	1000 pcs	1 from each 10,000 bricks or fraction thereof; 2 from lots more than 10,000 to 100,000; 3 from each lot over 100,000.
913.05 Concrete Block	Test Data Cert	See Remark	4 pcs	1000 pcs	One from lot of 10,000 or fraction thereof; 2 from lots more than 10,000.
913.06 Precast Reinforced Concrete Units for Drainage Structures	Appr Mfr *	1 percent per size	See Remark	10 pcs total	Submit QA cylinder test results and core samples. Submit sample 1-3 sq.in. from wall of unit if absorption is required.
913.07 Precast Concrete Bases, for Drainage Structures	Appr Mfr *	5 percent of total	-	10 pcs total	
913.08 Structural Tile	Test	1 per proj.	6 tiles	1000 tiles	
913.09 Slope Pavement Blocks	Appr Mfr *	1 per 25,000	6 blocks	1000 pcs	
914.03 Bituminized Fiber Joint Filler	Test Data Cert	1 per 1000 sft or fraction thereof	2 ft See Remark	150 sft	Sample for structure to be at least 5 in. wide. ¼ in. filler need not be sampled.
914.03B Recycled Rubber Joint Filler	Gen Cert	-	-	-	Must be a Qualified Product (914.03B).
914.04A Hot-Poured Joint Sealant	Test or Tested Stock	1 per batch from a single container	5 lb.	100 lb	Do not submit melted samples.
914.04B Backer Rod for Use with Hot-Poured Joint Sealant	VI	-	-	-	
914.05 Epoxy Binder, For Joint Spall Repair	Test or Tested Stock	1 per lot or batch number	See Remark	5 gal	See Special Instructions.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
914.06 Epoxy Resin Adhesive and Temporary Seal (Crack Injection)	Gen Cert	-	-	-	Must be a Qualified Product (914.06).
914.07 Transverse Pavement Joints 1. Dowel Bars	Appr Mfr *	1 per project per mfr	1 bar	240 bars	Test Data Cert to Construction Field Services. Epoxy coating must be a Qualified Product (905.03C).
2. Dowel Baskets (Load Transfer Assemblies)	Appr Mfr *	1 per 3000 assemblies or fraction thereof	Full size unit	20 assemblies	Bond Release Agent must be a Qualified Product (914.07A). See Special Instructions 914.07.
914.07A Coatings for Dowel Bars 1. Epoxy Coating Companies	Appr Mfr *	1 per project per mfr	1 bar	240 bars	Test Data Cert to Construction Field Services.
2. Epoxy Coating Material	Gen Cert	-	-	-	Coating must be a Qualified Product (905.03C).
3. Bond Release					
a. Bituminous Material	Gen Cert	-	-	20 gal max	
b. Alternate Bond Release Agents	Gen Cert	-	-	-	Must be a Qualified Product (914.07A) or meet Standard Spec 914.07A.
914.07C Dowel Bar Expansion Caps	VI	-	-	-	Caps must conform to Standard Plan R-40 Series.
914.08 End-of-Pour Joint Devices	VI	-	-	-	
914.08 Deformed Bars 1. Bars 2. Epoxy Coating	Appr Mfr * Gen Cert	1 per project per mfr	-	500 lb	Test Data Cert to Construction Field Services. Epoxy Coating must be Qualified Product (905.03C).
914.09 Straight and Bent Tie Bars for Longitudinal Pavement Joints (Lane Ties) 1. Bars 2. Epoxy Coating	Appr Mfr * Gen Cert	1 per project per mfr	2 bar	500 lb	Test Data Cert to Construction Field Services. Coating must be a Qualified Product (905.03C). See Note.
NOTE: Epoxy Coating must be a Qualified Product. Sample ID to include name of Coater, Bar manufacturer, Resin manufacturer, and Resin trade name.					
914.10 Bolts for Structure Expansion Anchors	Test	1 per 5000 pcs or fraction thereof	1 bolt	250 units	

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
914.11 Preformed Waterproofing Membrane and Joint Waterproofing Membrane	Gen Cert See Remark	-	-	-	Must be a Qualified Product (914.11). Do not use on Treated Wood Materials.
914.12 Elastomeric Bearing Pads	Test Data Cert See Remark	-	-	-	Show Test Result for Shear Modulus, ASTM D4014.
915 Coating Systems for Steel Structures, Hanger Assemblies and End Diaphragms	Gen Cert	-	-	-	Must be a Qualified Product (915).
916.01A Cobblestone	VI	-	-	-	
916.01C Riprap	VI	-	-	-	
916.02 Silt Fence 1. Fabricated Fence 2. Fabric (see 910.04) **NOTE:** Sample to include identifying markings of fabricator. Indicate on sample ID description of markings. Note where markings were found.	Appr Mfr * Gen Cert	See Remark	See Remark	500 ft	General Certification to Construction Field Services 1 sample for the first 3000 ft or fraction thereof; 1 sample for each additional 10,000 ft or fraction thereof; 1 piece 8 ft long by full fence height include 2 attached posts and lath. As per 910.04 of Standard Specifications, fabric must be from the Qualified Product List (910.04).
917.03 Nursery Stock	VI	-	-	-	
917.04 Tree Wrapping Material	VI	-	-	-	
917.05 Balling Material	VI	-	-	-	
917.06A Wire for Bracing and Guying	VI	-	-	-	
917.06B Hose for Bracing and Guying	VI	-	-	-	
917.06C Stakes for Bracing and Guying	VI	-	-	-	
917.08 Compost	VI	-	-	-	
917.10 Chemical Fertilizer for Grass Seed	VI See Remark	-	-	-	Provide the bag label, showing the guaranteed analysis.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
917.12 Grass Seeding Mixtures Grass Seed Varieties	VI See Remarks Gen Cert	1 per lot per shipment	¼ lb	100 lbs	For projects that include more than 5 acres of seeding, see Grass Seed Testing Special Provision in contract. Varieties of seed must be Qualified Product (917.12).
917.13 Sod	VI	-	-	-	
917.13A Pegs for Sodding	VI	-	-	-	
917.14 Mulching Materials for Nursery Stock	VI	-	-	-	Only shredded bark, wood chips not allowed.
917.15B1 & 2 High Velocity Mulch Blankets and Standard Mulch Blanket	Gen Cert	-	-	-	Must be a Qualified Product (917.15B 1 & 2). High velocity - netting 2 sides. Standard - netting 1 side.
917.15C Mulch Anchoring - Latex, Recycled Newsprint, Wood Fiber, Guar Gum, Other Tackifiers	Gen Cert	-	-	-	Must be a Qualified Product (917.15C).
917.16 Weed Control (Herbicides)	Test Data Cert	-	-	-	
918.01 Flexible Metal Conduit	VI	-	-	-	
918.01A Electrical Conduit, Rigid (Galvanized Steel)	Gen Cert	See Remark	6 ft, include coupling, if applicable	400 ft	1 sample for 2500 ft or fraction thereof; 2 samples over 2500 to 10,000 ft; 1 sample for each additional 10,000 ft.
918.01B & C Electrical Conduit (Polyvinyl Chloride) Schedule 40 and 80	Gen Cert	See Remark	6 ft sample w/ bell end incl coupling	400 ft	1 sample for 2500 ft or fraction thereof; 2 samples over 2500 to 10,000 ft; 1 sample for each additional 10,000 ft.
918.01D & E Electrical Conduit (Polyethylene/HDPE) Schedule 40 and 80	Gen Cert	See Remark	See Remark	400 ft	1 sample for 2500 ft or fraction thereof; 2 samples over 2500 to 10,000 ft; 1 sample for each additional 10,000 ft; 6 ft plus a separate section consisting of 2- 18 in. long pcs. connected by the joint.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
918.01F Electrical Conduit (Rigid Fiberglass)	Gen Cert	See Remark	6 ft sample w/ bell end incl. coupling	400 ft	1 sample for 2500 ft or fraction thereof; 2 samples over 2500 to 10,000 ft; 1 sample for each additional 10,000 ft.
918.02 Grounding System	VI	-	-	-	
918.02C Grounding Rods	VI	-	-	-	
918.03 Electrical Cable	See Note	-	-	-	
NOTE: Suitability and compliance with specifications will be determined by the agency responsible for maintaining the system. This agency shall provide the project engineer with a memo or other appropriate form indicating that the inspection (including review of Test Data Cert) has been made and that the material is acceptable.					
918.06 Precast Concrete Handholes and Manholes for Electrical and Telephone Connections	Appr Mfr *	1 percent per size	-	10 pcs	General Cert to Construction Field Services.
918.06D Light Weight Composite Handholes	Gen Cert	-	-	-	Must be a Qualified Product (918.06D).
918.08 Light Standards	Test Data Cert & VI	-	-	-	VI must be conducted upon delivery to jobsite.
918.08C Light Standards, Frangible Transformer Bases	Gen Cert	-	-	-	Must be a Qualified Product (918.08C).
918.09 Luminaries	Gen Cert	-	-	-	
918.10A Tower Lighting Units	Fabrication Inspection & VI	-	-	-	MQAP Manual Section 4.10. VI must be conducted upon delivery to jobsite.
918.11A Guy Wire	Test	1 per size	3 ft	-	
919 Steel Sleeves for Wood Posts	Gen Cert	-	-	-	
919.02 Signs (Permanent)	See Remark	-	-	-	See Joint Construction IM 1997 C-S. General Cert must be attached and inspected at project site.

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Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
919.02A1 Metal Sections (Extruded Aluminum)	Tested Stock See Remark	1 from each width in shipment	12 in. long and full width of section	-	Test Data Cert must be attached to the Sample ID form.
919.02A2 Plywood	Gen Cert See Remark	-	-	-	Grade mark on materials serves as certification.
919.02A3 Aluminum Sheet	Tested Stock See Remark	See Note	Min. of 12 in. square	100 sft	Test Data Cert must be attached to the Sample ID form.
NOTE: 2 samples per heat per Tested Stock Supplier up to 10,000 sft; 4 samples per heat per Tested Stock Supplier over 10,000 sft.					
919.02B1 Reflective Sheeting	Gen Cert See Remark	1 per run or lot	See Remark	1 roll, for less than 3 in. in width	Must be a Qualified Product (919.02B1) 4 pcs each 12 in. square. For rolls less than 12 in. width, at least 7.5 ft.
919.02C Sign Hardware	Gen Cert See Remark	-	-	-	Identifying marks on items may serve as certification.
919.03A Delineators 1. Plastic Reflectors	Gen Cert	1 per shipment per color	21 pcs	25 pcs each color	
919.03B Delineators 2. Reflective Sheeting Reflectors	Gen Cert	1 per shipment per color	2 pcs each color	25 pcs each color	
919.03D Delineator Posts 1. Steel	Gen Cert	1 per project per mfr	1 post	80 post	
919.03D Delineator Posts 2. Plastic	Gen Cert	-	-	-	Must be a Qualified Product (919.03D).
919.04 Steel, Galvanized Sign Posts	Test Data Cert	1 per project per mfr	See Remark	20 posts	Sample 30 in. length min. length. Posts for temporary signs may be painted.
919.05 Wood Sign Posts	Appr Mfr *	Each charge	22 cores	20 posts	General Cert to Construction Field Services. See 912.08.
919.06 Break-Away Column Sign Supports	Fabrication Inspection & VI See Remark	-	-	-	MQAP Manual Section 4.06 and Subsection 919.06 of the Standard Specifications. VI must be conducted upon delivery to jobsite.

MATERIALS ACCEPTANCE REQUIREMENTS

See Miscellaneous area at the end of table for materials deleted from the 2012 Standard Specifications for Construction.
*** Must be tested unless provided by an Approved Manufacturer.**
**** When the Basis of Acceptance is not "Test", the sampling criteria below may be used when there are concerns with material quality.**

Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
919.07 Sign Support Structures Cantilever, Overhead Lane Assignment, Truss and Bridge Sign Connections	Fabrication Inspection & VI See Remark	-	-	-	MQAP Manual Section 4.06. VI must be conducted upon delivery to jobsite.
920.02 Glass Beads	Gen Cert	1 from each lot	2 lb	500 lbs	
921.02 Span Wire	Gen Cert	1 per size	3 ft	-	
921.03 Traffic Signals and Mounting Assemblies	See Note	-	-	-	
NOTE: Compliance with specifications will be determined by the agency responsible for maintaining the system. Agency must provide the project engineer with a memo or other appropriate form indicating that the inspection has been made and the material is acceptable.					
921.05 Traffic Signal Strain Poles	VI & Test Data Cert	-	-	-	VI must be conducted upon delivery to jobsite.
921.05A Strain Pole Band Clamps	Gen Cert	-	-	-	Must be a Qualified Product (921.05A).
921.08B Traffic Loop Sealant	Gen Cert	2 from each lot	Tubes	-	
922.02 Temporary Traffic Control Temporary Signs	Gen Cert See Remark	-	-	-	See section 922.01 of the 2012 Standard Specifications for Construction.
922.02B Temporary Traffic Control Reflective Sheeting (Signs)	Gen Cert See Remark	-	-	-	See section 922.01 of the 2012 Standard Specifications for Construction. ASTM D4956 Type VIII prismatic sheeting or higher.
922.02D Temporary Traffic Control Sign Covers	Gen Cert See Remark	-	-	-	See section 922.01 of the 2012 Standard Specifications for Construction.
922.03 Temporary Traffic Control A. Cones B. Drums	Gen Cert See Remark	-	-	-	See section 922.01 of the 2012 Standard Specifications for Construction.
922.03E Temporary Traffic Control Type III Barricade, Reflective Sheeting	Gen Cert See Remark	-	-	-	See section 922.01 of the 2012 Standard Specifications for Construction.

MATERIALS ACCEPTANCE REQUIREMENTS

See Miscellaneous area at the end of table for materials deleted from the 2012 Standard Specifications for Construction.
*** Must be tested unless provided by an Approved Manufacturer.**
**** When the Basis of Acceptance is not "Test", the sampling criteria below may be used when there are concerns with material quality.**

Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
922.04 Temporary Traffic Control Temporary Concrete Barriers (TCB)	Test Data Cert See Remark	Each project	-	-	Contractor testing and Cert Verification per MTM-716 & NCHRP 350/MASH, for TCB with steel wire rope or steel bar pin and loop connections. For other TCB connections - Gen Cert – pull testing per MTM 716 not required.
922.04A Barrier Reflector Markers Temporary and Permanent	Gen Cert See Remark	-	-	-	See section 922.01 of the 2012 Standard Specifications for Construction.
922.06A Temporary Traffic Control Temporary Pavement Markings; Type R and NR Tape	Gen Cert	-	-	-	Must be a Qualified Product (922.06A).
922.06A2 Temporary Traffic Control Temporary Pavement Markings; Paint	Gen Cert	-	-	-	Must be a Qualified Product (811.03D).
922.06B Temporary Traffic Control Temporary Raised Pavement Markers	Gen Cert	-	-	-	Must be a Qualified Product (922.06B).
922.07A Temporary Traffic Control Lighted Arrows; Type B and C (Solar Assist)	Gen Cert See Remark	-	-	-	See section 922.01 of the 2012 Standard Specifications for Construction. Contractor to allow two week lead time for inspection.
922.07B Temporary Traffic Control Warning Flashers and Lights; Type A, B, C	Gen Cert See Remark	Each project	3 each type	-	See section 922.01 of the 2012 Standard Specifications for Construction. Units submitted for test when required by project engineer will be returned to the contractor upon completion of testing.
922.07C Temporary Traffic Control Portable Changeable Message Signs	Gen Cert See Remark	-	-	-	See section 922.01 of the 2012 Standard Specifications for Construction. Contractor to allow two week lead time for inspection.
922.11 Temporary Traffic Control Sign Paddles and Vests	VI See Remark	-	-	-	High visibility vest meeting MDOT work zone safety and mobility policy.

MATERIALS ACCEPTANCE REQUIREMENTS

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*** Must be tested unless provided by an Approved Manufacturer.**
**** When the Basis of Acceptance is not "Test", the sampling criteria below may be used when there are concerns with material quality.**

Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
922.12A Temporary Traffic Control Dust Palliative 1. Calcium Chloride Solids	Test Data Cert	1 per project	5 lb	5000 lb	
922.12A Temporary Traffic Control Dust Palliative 2. Calcium Chloride Solutions	Test Data Cert	1 per project	1 qt	1000 gal	
923 Watermain Materials	Gen Cert	-	-	250 ft of pipe	See contract documents as applicable.
Misc. #2 Culvert, Cast and Ductile Iron	Gen Cert	-	-	250 ft	
Misc. #3 Clay Pipe	Gen Cert	See Remark	See Remark	10 pieces	See Special Instructions.
Misc. #5 Galvanized Slotted Drain Pipe	VI See Remark	-	-	-	MDOT approval of Design is required. Coating thickness checked at project site.
Misc. #7 ABS Pipe	Test	1 per 6000 ft	1 piece, 6 ft in length	600 ft	If bell and spigot joint, sample from bell end.
Misc. #8 Corrugated Galvanized Steel Structural Plated	Gen Cert	1 per 100 plates or fraction thereof	1 piece at least 3 in. by 3 in.	10 plates	
Misc. #9 Aluminum Alloy Structural Plates	Gen Cert	-	-	-	
Misc. #13 Pavement Warning Strips	VI	-	-	-	
Misc. #14 Bituminized Cotton Fabric and Fiberglass Fabric	Gen Cert	See Remark	1 piece full width of roll, min of 3 ft	5 rolls	1 per 100 rolls (50 sft per roll) or fraction thereof; for lots of more than 100 rolls - 1 sample plus 1 for each 500 rolls or fraction thereof. Do not sample from first 3-4 ft of roll.
Special Provision #1 Liner for Culverts A. Polyethylene Plastic Pipe	Gen Cert	-	-	-	
Special Provision #2 B. Reinforced Plastic Mortar Pipe	Gen Cert	-	-	-	
Special Provision #3 Railroad Ballast	Test	1 per 5000 ton	60 lb	500 tons	See UPTRAN Specifications for Trackwork.

MATERIALS ACCEPTANCE REQUIREMENTS

See Miscellaneous area at the end of table for materials deleted from the 2012 Standard Specifications for Construction.
*** Must be tested unless provided by an Approved Manufacturer.**
**** When the Basis of Acceptance is not "Test", the sampling criteria below may be used when there are concerns with material quality.**

Spec. No. and Material Name	Basis of Acceptance	Sample Frequency If Required by the Engineer**	Sample Size	Maximum VI Quantity	Remarks (QPL Reference)
Special Provision #6 Truck Mounted Attenuator	Gen Cert	-	-	-	See Special Provision in Contract.
Special Provision #7 Traffic Signal Mast Arm Pole and Mast Arm (Trunkline)	Fabrication Inspection & VI	-	-	-	See MQAP Manual Section 4.11. VI must be conducted upon delivery to jobsite.

********** See following pages for SPECIAL INSTRUCTIONS **********

SPECIAL INSTRUCTIONS

901 Cement

Samples of fly ash and slag cement must be accompanied by a sample of the Portland cement with which it is being used. The plastic lined cement sample bags furnished by the laboratory will hold 10 pounds when full.

902 Prequalified Aggregate Sources

Quality Assurance tests will be conducted by Department personnel at the frequencies stated in Section 3.04.08 of the *Pre-Qualified Supplier Program,* found in the *Materials Quality Assurance Procedures Manual*.

Every Project Engineer will verify passing quality assurance tests by contacting the Region/Transportation Service Center's Material's Supervisor. Enter a telephone record memo or copy of the test report in the project file.

The statement on each delivery ticket required in Section 3.04.05.B of the *Pre-Qualified Supplier Program,* is to be provided by the supplier, and represents the results of quality control testing. This statement does not signify acceptance by MDOT.

904.03A Asphalt Binder for HMA Mixtures

If the Asphalt Binder is supplied from a source currently on the Approved Asphalt Binder Certifier List, a certification meeting the requirements of Section 3.05.05 of the Materials Quality Assurance Procedures Manual is required. See the contract documents for sampling, acceptance, and daily monitoring requirements.

If the binder is supplied from a source that is **not** currently shown in the Approved Asphalt Binder Certifier List, the asphalt binder must be sampled, tested, and approved for use prior to incorporation into the project. See contract documents for sampling, acceptance, and monitoring requirements.

See Current List of Asphalt Binder Certifiers at Construction Field Services Web Page.

Instructions to Construction Field Services web page: From MDOT home page (michigan.gov/mdot), click on about MDOT (left side), then click on Highway Field Services, and then click Construction Field Services. The Approved Asphalt Binder Certifier List is under Resources & Publications.

Actual Current List of Approved Asphalt Binder Certifier web page address: http://michigan.gov/documents/AppBinderCertlist_49824_7.pdf

904.03C Emulsified Asphalt

Size of Sample – For CV Sampling see Section 3.06.06 of the *Materials Quality Assurance Procedures Manual*. For all other sampling see contract documents for criteria. Submit the samples in plastic containers only.

909.04A **Reinforced Concrete Pipe**
909.04B

Size of Sample - Full size units for strength test. For absorption tests, 26-inch square to 81-inch square in area from the wall of each piece of pipe tested.

Number of Samples - One percent of the number of pieces of each size.

Reinforced concrete pipe 42-inch diameter and larger may be tested by coring. Size of core will be 4-inch nominal diameter (but not less than 3 ¼ inches actual). Up to 1 percent of the number of pieces of pipe for each size, but not less than 3 pieces, will be selected for coring. One core will be drilled and tested from each of these test pieces. Reinforcement will be inspected prior to incorporation in the pipe.

Maximum for VI – 5 pieces of 42" diameter and smaller.

909.04C **Nonreinforced Concrete Pipe**

Size of Sample - Same as reinforced concrete pipe.

Number of Samples - One percent of the number of pieces, but not less than 2 pieces of each size except that at the option of the department the following sampling schedule will apply for 4 inches through 24 inches in diameter sewer pipe for quantities of 500 or more:

Sampling Schedule - Per the following:

Concrete Pipe	Number of Samples
500 to 1,000 pieces	6
1,001 to 2,000 pieces	8
2,001 to 5,000 pieces	11
Over 5,000 pieces	2 samples per 1,000 or fraction thereof

Maximum for VI – 10 pieces.

909.05A **Corrugated Steel Pipe**

Size of Sample - A 6-inch by 3-inch (minimum) section cut from the pipe. The sample should be taken from the end of the pipe avoiding the seams. Care should be taken to assure the coating is not damaged during sampling.

Number of Samples - Per the following:

Diameter of Pipe	Quantity Represented (maximum)
12 inches or less	2500 ft
15 inches through 54 inches	1000 ft
60 inches and over	500 ft

Less than 5 percent of the quantity in the above table may be visually inspected.

909.05A1 **Corrugated Galvanized Steel Sheets**

Size of Sample - One strip the full width of the sheet and 3 ½ inches in the direction of the length of the sheet. The strip may be cut from the end of the sheet for material coated in coils. If the sheets were individually coated after being cut to length, as indicated by heavy accumulations of zinc at one end, the sample strip shall be cut from the end opposite the heavy accumulation and after cutting 4 inches from the end of the sheet.

Number of Samples - Per the following:

Diameter of Pipe (max)	Length of Sheet	Quantity Represented
12 inches or less	44 inches or less	2500 ft
15 through 54 inches	50 to 175 inches, approx*	1000 ft
60 inches and over	190 inches and over*	500 ft

*Larger pipe may be made from combination of shorter sheets. Less than 5 percent of the quantity in the table above may be visually inspected.

NOTE: Normally each heat and thickness is to be sampled. Exception may be made where quantities are limited and/or mixtures of heat numbers are excessive.

909.05B Corrugated Aluminum Alloy Sheets

Size of Sample - A transverse strip full width of the sheet and at least 3 inches in length cut from the end of the sheet.

Number of Samples - A sample shall be taken from each of 3 different sheets for lots weighing 5 tons or less, from 4 sheets for lots weighing more than 5 tons and less than 10 tons, and from 5 sheets for lots weighing 10 tons or more.

Maximum for VI – 25 sheets.

909.06 Corrugated Polyethylene Pipe (Smooth Lined Type S or Corrugated Type C)

Sampling Frequency - Straight Lengths, 12-inch diameter and over - 1 per 1000 ft

If the manufacturer has developed a history of five consecutive passing tests over the past two years for a given diameter of pipe (12 to 24-inch), at the discretion of the MDOT testing laboratory the sampling frequency may become 1 per 2500 ft for that diameter of pipe provided the stockpile consists of pipe manufactured with a single “Plant” and “Date” code. The Tested Stockpile sampling frequency of one sample per 1000 ft of pipe (12 to 36-inch) may be re-instituted if the manufacturer experiences three failing test results for a given diameter of pipe over a one year period. Up to date information on sampling frequency may be acquired from MDOT’s Construction Field Services Division.

Size of Sample - Over 12-inch diameter - one 10-ft length and one 6-ft length plus coupling

Maximum for VI - 12-inch diameter and over - 100 ft

For perforated pipe wrapped in geotextile fabric, tie fabric securely in place on sample before cutting pipe sample. Do not disturb fabric after cutting.

Suppliers shall provide MDOT inspector with list of date codes on pipe in stockpile to be tested prior to sampling.

Each size pipe is a different material. Stockpile each pipe size separately.

Preparation of 30 & 36 Inch Diameter Corrugated Polyethylene Pipe

The manufacturer will be responsible for preparing the sample specimens and delivering them to the laboratory for testing.

Preparation by manufacturer of each 20 foot length of pipe sample include:

1. Cut three specimens from each length of pipe sampled, at least once the diameter in length. (For 30 in. pipe this would mean three specimens just over 30 inches in length, cuts may be made in the valley of the first corrugation beyond 30 inches, etc.)

2. Cut 1 specimen from each length of pipe sampled at least 60 inches in length.

3. Assemble a joint from each length of pipe sampled with approximately 6 inches of pipe protruding from each end of the joint.

4. Mark all specimens cut from the sample length of pipe so they can be identified at the laboratory as having come from the same length of pipe.

Call the CFS- Materials Testing Laboratory in Lansing with any questions regarding the above instructions. (517-322-1217)

Perforated Pipe

Twelve inches in diameter and above shall be tested for acceptance on a project-by-project basis when specified by Special Provision (No Tested Stock).

Soil tight sleeves shall be submitted with a pipe section 12 inches minimum length and gasket fully inserted into one end of the sleeve. A second gasket shall be supplied already installed on either the 10-ft specimen or on a separate specimen at least 12 inches in length, from the same stockpile.

Single Gasket Bell and Spigot Fused Coupling System - Couplers shall be submitted as attached part of 10-ft specimen and a second piece of the specimen, minimum of 12 inches in length, with gasket installed shall be included with the sample.

Each size pipe is a different material. Stockpile each pipe size separately.

For perforated pipe and tubing wrapped in geotextile fabric, tie fabric securely in place on sample before cutting pipe sample. Do not disturb fabric after cutting.

910.03 Geotextiles

Sampling Frequency - Obtain samples to represent the required quantity of geotextile according to the following schedule:

Geotextile	First Sample	Additional Samples
Blanket	360 to 1200 syd	7,500 syd or less
Liner for Riprap	360 to 1200 syd	5,000 syd or less
Separator/Stabilization	360 to 1200 syd	25,000 syd or less
Liner for Heavy Riprap	360 to 1200 syd	4,000 syd or less

Maximum for VI - 360 syd (3240 sq ft)

Size of Sample - Sample must be a minimum of 75 sft, taken across the full roll width. For rolls over 15 ft wide, sample must ne a minimum of 5 ft long, taken across the full roll width.

Geotextile samples submitted for testing must be identified with the lot number and/or roll number, the name of the manufacturer, and the product or style number.

NOTES:

Geotextiles must be unwrapped one full roll circumference prior to sampling.

Geotextiles must be **rolled**, not folded, and shipped in a manner to prevent creases in the fabric.

914.05 Epoxy Binder, For Joint Spall Repair

Normal Sampling Frequency - 1 per lot or batch number

Size of Sample - For material mixed at 1:1 ratio - 2 quart, 1 quart of each component: For material mixed at 2:1 ratio - 1/2 gallon of resin and 1 quart of curing agent. Material limited to shelf life of one year from date of manufacture. Material must be labeled with date of manufacture. MAY BE "TESTED STOCK" ITEM.

Maximum for VI - 5 gallons

914.07 Load Transfer Assemblies; Dowel Baskets

Sampling Frequency - 1 per 3000 assemblies

Size of Sample - One full assembly

Assemblies must meet the requirements of Standard Plan, R-40-H.

All shipments of load transfer assemblies will be accompanied by proper certification documentation.

- Certification from steel (dowel bar) manufacturer.
- Certification from epoxy coating company.
- Documentation on epoxy coating.
- Certification from assembly manufacturer.
- Documentation on bond release.

When shipment is made to a project, each bundle will bear a legible tag with the following information:

- Assembly manufacturer name and plant location.
- Control section/project number.
- Lot number or other identification that will also be shown on the accompanying certification.
- Supplier and/or contractor's name.

Misc. #3 Clay Pipe

Normal Sampling Frequency - One percent of the number of pieces, but not less than 2 pieces of each size except that at the option of the department the following sampling

schedule will apply for 4-inch through 24-inch diameter sewer pipe for quantities of 500 or more:

Sampling Schedule - Per the following:

Clay Pipe	Number of Samples
500 to 1,000 pieces	6
1,001 to 2,000 pieces	8
2,001 to 5,000 pieces	11
Over 5,000 pieces	2 samples per 1,000 or fraction thereof

Size of Sample - Full size units for strength test. For absorption tests, 26 inches square to 82 inches square in area from the wall of each piece of pipe tested.

Maximum for VI - 10 pieces

APPROVED SUPPLIERS

The firms listed in this section have received written permission from the Construction Field Services Division to recertify material for use on Michigan Department of Transportation projects. Supplying materials is also allowed by manufacturers listed in the Approved Manufacturers List.

When recertification of any materials is made by any firm not found on this list, please notify the Construction Field Services Division, Materials Control, immediately.

See also Section 3.02 of the Materials Quality Assurance Procedures Manual.

APPROVED SUPPLIERS

A.J. Rehmus & Son, Inc., Bay City, MI
ABC Coating Co. of Illinois, Inc., Peotone, IL
ABC Coating Co. of Michigan, Inc., Wyoming, MI
ABC Coating Co. of Minnesota, Inc., Minneapolis, MN
ABC Coating Co. of Oklahoma, Inc., Tulsa, OK
Action Traffic & Maintenance Co., Flint, MI
Allied Seed, L.L.C., Nampa, ID
Alro Steel Corporation, Alpena, MI
Ambassador Steel Corporation, Comstock Park, MI, Lansing, MI, and Bourbonnais, IL
Austin Morgan Companies, Clarkston, MI
B&R Reinforcing, Columbus, OH
BARNSCO, Walled Lake, MI
Bella Concrete Construction, LLC, Houghton Lake, MI
Boomer Construction Materials, Detroit, MI
Burt Forest Products Co., Ann Arbor, MI
C & D Hughes, Inc., Charlotte, MI
C.A. Hull Co., Inc., Walled Lake, MI
Cadillac Culvert, Cadillac, MI
Carroll Distributing and Construction Supply, Inc. (Store 16), Wyoming, MI
Causie Contracting, Inc., Mason, MI
Chiles Michigan, Inc., Flat Rock, MI
CMA Supply, South Bend, IN
Co-Pipe Products, Taylor, MI
Concrete Central Inc., Grand Rapids, MI
CSI Geoturf, Inc., Highland, Traverse City, and Byron Center, MI
D.J. McQuestion & Sons, Inc., LeRoy, MI
Dale Dukes & Sons, Inc., Big Rapids, MI
Davis Construction, Lansing, MI
Dayton Superior Corporation, Miamisburg, OH, Oregon, IL, Valparaiso, IN
Diane Dukes, Inc., Big Rapids, MI
Doan Construction, Ypsilanti, MI
Dornbos Sign & Safety Inc., Charlotte, MI
Eastlund Concrete Construction, Holt, MI
East Jordan Iron Works, Inc., Wyoming, MI
Edward R. White Contractor, Inc., Waterford, MI
Elsey Construction Products, Harper Woods, MI
Environmental Protection Products, Williamsburg, MI
Ersco Corp., Wyoming, MI
ETNA Supply Co., Chesterfield, Flint, Grand Ledge, Grand Rapids and Holland, MI
ETNA Supply Co., Jackson, Kalamazoo, Mt. Pleasant and Muskegon, MI
ETNA Supply Co., Saginaw, Sault Ste. Marie, Springfield, Traverse City and Wixom, MI
ETNA Supply Co., South Bend, IN and Toledo, OH
Evergreen Seed Supply, Deshler, OH
F&M Concrete Construction, LLC, Dimondale, MI
Firelands Supply Co., Norwalk, OH
Fort Wayne Contracting, Inc., Detroit, MI
Frederick Steel Company, Cincinnati, OH
Future Fence Co., Sterling Heights, MI
G3 Steel Group, Troy, MI
Geo Products, Birmingham, MI
Give ‘Em-A-Brake Safety, Grandville, MI
Grant Welding Service, Grant, MI
Harbor Pipe and Supply, Traverse City, MI
Harris Rebar, Bethlehem, PA

APPROVED SUPPLIERS

HD Supply Waterworks, Canton, Kentwood and Shelby Twp., MI
Hunt Brothers Concrete Contractors, Inc., Whittemore, MI
Hymmco, Saginaw, MI
Indiana Material Handling, IMH Products, Inc., Indianapolis, IN
J & J Contracting, Ithaca, MI
J.D. Russell Co., Utica, MI
Jacklin Steel Supply Co., Escanaba, MI
Jensen Bridge and Supply Co., Grand Rapids and Sandusky, MI
John Deere Landscapes, Ann Arbor, and Grand Blanc, MI
John Deere Landscapes, Clinton and Commerce Townships, MI
John Deere Landscapes, Grand Rapids, Holland, and Kalamazoo, MI
John Deere Landscapes, Dimondale, Livonia, Madison Heights, and Saginaw, MI
John Deere Landscapes, Shelby Township
John Deere Landscapes, Taylor, and Traverse City, MI
Kalamazoo Forest Products, Inc., Otsego, MI
Kamminga & Roodvoets, Inc., Grand Rapids, MI
Kenmark, Inc., Buckley, MI
Kerkstra Precast Inc., Grandville, MI
Klein Brothers Hardwood, Inc., Milford, MI
L.J. Construction, Inc., Clifford, MI
L.W. Lamb, Inc., Saugatuck, MI
Lane Enterprises, Inc., Carlisle, PA
Mack Industries, Inc., White Lake, MI
Manthei Development Corp., Charlevoix, MI
Martin J. Concrete, Inc., Coopersville, MI
Marx Contracting, Sterling Heights, MI
Meadow Burke, Palisades Park, NJ
Metro Rebar, West Bloomfield, MI
Michigan Highway Signs, Flint, MI
Michigan Pipe and Valve, Kalamazoo, MI, Lansing, MI, and Jackson, MI
Michigan Pipe and Valve, Saginaw, MI, and Traverse City, MI
Midway Contractor Supply, Negaunee, MI
Midwest Pipe Coatings, Schererville, IN
Milbocker & Sons, Inc., Allegan, MI
Miller Products & Supply Company, Iron Mountain, MI
Nashville Construction Co., Nashville, MI
Nationwide Fence & Supply Co., Chesterfield, MI
North Coast Roofing Systems, Grand Rapids, MI
Northern Concrete Pipe, Bay City, Charlotte, Clarkston, and Wyoming, MI
Northern Construction Services Corp., Niles, MI
NuTek Steel, Toledo, OH
OEM Distribution, LLC, Detroit, MI
Oglesby Construction, Inc., Norwalk, OH
P.K. Contracting, Inc., Lake City, MI
Rathco Safety Supply, Inc., Portage, MI
Power Line Supply Company, Reed City, MI
Remington Construction Company, Inc., Mattawan, MI
Rhino Seed and Landscape Supply, Bradley and Brighton, MI
Rightway Fence Co., Sterling Heights, MI
Sanches Construction Company, Lansing, MI
Simcote, Inc., Saint Paul, MN and Marion, OH
Snowden, Inc., Escanaba, MI
Standale Lumber, Grandville, MI
Striker Supply, Traverse City, MI

APPROVED SUPPLIERS

Terry Sweeney and Company, Novi, MI
Titusville Fabricators, Inc., Franklin, PA
Tri-Valley Landscaping, Inc., Saginaw, MI
UP Concrete Pipe Co., Escanaba, MI
Van Laan Construction Supply, Dutton, MI
Wady Industries, Maqouketa, IA
Watson Bowman Acme Corp., Amherst, NY
Weyand Bros. Inc., Saginaw, MI

APPROVED MANUFACTURERS

The materials in this section may be accepted for use on Michigan Department of Transportation projects on the basis of certification from the suppliers listed under specific materials.

This Approved Manufacturers List is in accordance with the 2012 Standard Specifications for Construction.

See also Section 3.02 of the Materials Quality Assurance Procedures Manual.

APPROVED MANUFACTURERS

Spec. # and Material Name	Approved Manufacturers	Manufacturers Location
901 Cement	Buzzi Unicem USA Cemex Fairborn Central Plains Cement-Sugar Creek Plant Continental Cement Company ESSROC Canada, Inc. ESSROC Materials, Inc. Holcim (US) Inc., St. Genevieve Plant CRH Canada Group, Inc. Illinois Cement Company LaFarge North America LeHigh St. Marys/Blue Circle Cement, Great Lakes Region St. Marys/Blue Circle Cement, Great Lakes Region St. Marys/Blue Circle Cement, Great Lakes Region St. Marys Cement Inc. (US)	Chattanooga, TN, Festus MO, Greencastle, IN Fairborn, OH Sugar Creek, MO Hannibal, MO Ontario, Canada Logansport, IN, and Martinsburg, WV Bloomsdale, MO Mississauga, Ontario, Canada LaSalle, IL Alpena, MI, and Paulding, OH Mitchell, IN Detroit, MI Bowmanville, Ontario, Canada St. Mary's, Ontario, Canada Charlevoix, MI (Distributed to Detroit, Ferrisburg, and Green Bay)
901.06 Slag Cement	Lafarge North America Lafarge North America Skyway Cement Company, LLC St. Marys/Blue Circle Cement St. Marys/Blue Circle Cement	South Chicago, IL Stoney Creek, Ontario, Canada Chicago, IL Detroit, MI, and Sparrows Point, MD Bowmanville, Ontario, Canada

Spec. # and Material Name	Approved Manufacturers		Class	Source or Plant Location
901.07 Pozzolanic Admixtures (Fly Ash) for Concrete	Distributer	Producer		
	Fly Ash Direct	Zimmer Power Plant	F	Moscow, OH
	Fly Ash Direct	Miami Fort	F	Miami Fort Unit 7, North Bend, OH
	Fly Ash Direct	Miami Fort	F	Miami Fort Unit 8, North Bend, OH
	Fly Ash Direct	Reliant Energy	F	Avon Lake Unit 9, Cleveland, OH
	Headwaters Resources	Centerion Energy	C	Bayshore Plant, Oregon, OH
	Headwaters Resources	Consumers Energy	C	Campbell Unit #1, West Olive, MI
	Headwaters Resources	Eckert Power Plant	C	Lansing Board Water & Light, Lansing, MI
	Headwaters Resources	Erickson Power Plant	C	Lansing Board Water & Light, Lansing, MI
	Headwaters Resources	First Energy's Ashtabula Plant	C	Ashtabula, OH
	Headwaters Resources	First Energy's Sammis Plant	F	Sammis Power Station, Stratton, OH
	Headwaters Resources	Monroe Power Plant	F	Monroe, Michigan
	Headwaters Resources	N. Indiana Public Service Co.	C	Schafer Station, Unit 15,Wheatfield, IN
	CRH Canada Group, Inc.	Detroit Edison	C	Bell River Unit #1, St. Clair, MI
	CRH Canada Group, Inc	Detroit Edison	C	Bell River Unit #2, St. Clair, MI
	LaFarge North America	NRG	C	Will Co. Plant, Romeoville, IL
	LaFarge North America	Wisconsin Power & Light Co.	C	Columbia, Portage, WI
	LaFarge North America	Wisconsin Power & Light Co.	C	Edgewater Sta. Unit 5, Sheboygan, WI
	LaFarge North America	Wisconsin Power & Light Co.	C	Pleasant Prairie, Kenosha, WI
	LaFarge North America	Wisconsin Power & Light Co.	C	Weston #3, Wausau, WI
	LaFarge North America	Presque Isle Power Plant	C	Presque Isle, Marquette, MI
	Mineral Resource Technologies, LLC	Rush Island Power Plant	C	Rush Island, Festua, MO
	Mineral Resource Technologies, LLC	Labadie Power Plant	C	Silo C&D, Labadie, MO

APPROVED MANUFACTURERS

Spec. # and Material Name		Approved Manufacturers	Manufacturers Location
903.03 Latex Admixture For Concrete	Modifier A Latex Styrofan 1186 Tylac 97-314 Gen-Flo 8074	Trinseo BASF Corporation Polytherm Systems, Inc., General Tires	
904.03C Emulsified Asphalt		**See Current List of Emulsified Asphalts at Construction Field Services Web Page.** Instructions to Construction Field Services web page: From MDOT home page (michigan.gov/mdot), click on about MDOT (left side), then click on Highway Field Services, and then click Construction Field Services. The Approved Emulsified Asphalt Suppliers List is under Resources & Publications. Actual Construction Field Services web page address: http://www.michigan.gov/documents/mdot_c&t_emulsionlist_66894_7.pdf	
905.03 Bar Reinforcement (Uncoated)		American Steel & Wire ArcelorMittal Steel ASI Alton Steel, Inc. Austeel Barbary Coast Byer Steel (formerly A.B. Steel) CMC Steel CMC Steel (Texas) CMC Steel Cascade Steel Rolling Mills EVRAZ Rocky Mountain Steel Gerdau Ameristeel Corporation Beaumont Steel Mill Div. Charlotte Steel Mill Div. Jackson Steel Mill Div. Jacksonville Steel Mill Div. Knoxville Steel Mill Div. Midlothian Steel Mill Div. St. Paul Steel Mill Div. Sayreville Steel Mill Div. Nucor Steel Nucor Steel Auburn, Inc. Nucor Steel Birmingham, Inc. Nucor Steel Connecticut, Inc Nucor Steel Jackson, Inc. Nucor Steel Kankakee, Inc. Nucor Steel Marion, Inc. Steel Dynamics Inc.	Joliet, IL Harriman, TN Alton, IL Mississippi, Norfolk, Illinois Cincinnati, OH Seguin, TX Cayce-West, Columbia, SC McMinnville, OR Pueblo, CO Vidor, TX Charlotte, NC Jackson, TN Jacksonville, FL Knoxville, TN Midlothian, TX St. Paul, MN Sayreville, NJ Auburn, NY Birmingham, AL Wallingford, CT Flowood, MS Bourbonnais, IL Marion, OH Pittsboro, IN

APPROVED MANUFACTURERS

Spec. # and Material Name	Approved Manufacturers	Manufacturers Location
905.03C Bar Reinforcement (Epoxy Coated)	**Epoxy Coating Companies** ABC Coating Co. ABC Coating Co. of OK, Inc. ABC Coating Co. of MI, Inc. ABC Coating Co. of IL, Inc. ABC Coating Co. of MN, Inc., Ambassador Steel Corp., American Highway Technology (A Division of Dayton Superior) CMC Rebar CMC Coating of Texas Co-Steel Sayreville Dayton Superior Corporation Gerdau Ameristeel, Muncie Epoxy Coating Harris Rebar JC Supply & Manufacturing Lane Enterprise, Epoxy Coating Div. Midwest Pipe Coatings Simcote Simcote Simcote Titusville Fabricators, Inc. Wady Industries, Inc.	 Tulsa, OK Wyoming, MI Peotone, IL Minneapolis, MN Bourbonnais, IL Kankakee, IL Kankakee, IL Waxahachie, TX Sayreville, NJ Valparaiso, IN Muncie, IN Bethlehem, PA Ontario, CA, Carlyle, IL Carlisle, PA Schereville, IN Saint Paul, MN Marion, OH Pittsburgh, PA Maquoketa, IA
905.06 Welded Steel Wire Reinforcement (Mesh)	Engineered Wire Products Hallett Wire Products Co. Insteel Wire Products Iowa Steel & Wire Numesh Nucor Steel Connecticut, Inc. Oklahoma Steel & Wire Co. Inc. Structural Reinforcement Products Inc.	Warren, OH Glen Falls, NY Wallingford, CT
905.07 Strand for Prestressed Concrete	Insteel Wire Products RettCo Steel, LLC Sumiden Wire Products Corporation Strand-Tech Martin, Inc.	
905.08 Tendons for Lateral Post Tensioning	RettCo Steel, LLC Sumiden Wire Products Corporation Strand-Tech Martin, Inc.	
908.11A Guardrail, Steel Beam Elements, Anchorage, Bridge, Shoes, Departing End Terminals (End Sections)	Contech Engineered Solutions, LLC Gregory Highway Products Highway Safety Corporation IMH Products, Inc. R.G. Steel Corporation SPIG Industry LLC Trinity Industries, Inc.	

APPROVED MANUFACTURERS

Spec. # and Material Name		Approved Manufacturers	Manufacturers Location
908.11A Guardrail Approach Terminals Remarks: Approach Terminals are proprietary items, accepted as complete units. All systems must be approved by the NCHRP and MDOT Barrier Advisory Commission.	<u>Type1</u> SRT 350 X-Lite-Flared FLEAT - 350 refer to Design Std. Plans 61(X) latest version <u>Type 2</u> X-Lite-Tangent-50 SKT - 350 refer to Design Std. Plans 62(X) latest version <u>Type 3</u> CAT FLEAT - MT refer to Design Std. Plans 63(X) latest version	Trinity Industries, Inc. Lindsay Transportation Solutions (a.k.a. Barrier Systems) <u>* Road Systems, Inc.</u> Gregory Highway Products R.G. Steel Corporation Highway Safety Corporation Lindsay Transportation Solutions (a.k.a. Barrier Systems) <u>* Road Systems, Inc.</u> Gregory Highway Products R.G. Steel Corporation Highway Safety Corporation Trinity Industries, Inc. <u>* Road Systems, Inc.</u> Gregory Highway Products R.G. Steel Corporation Highway Safety Corporation	*NOTES: Road Systems, Inc. (RSI) developed both SKT 350 and FLEAT-350 systems. RSI does not manufacture beams. The 3 listed companies under RSI are distributors and distribute SKT and FLEAT <u>smart</u> parts that make-up the approved approach terminals.
908.12 Steel Posts for Beam Guardrail		Contech Engineered Solutions, LLC Gregory Highway Products Highway Safety Corporation IMH Products, Inc. R.G. Steel Corporation SPIG Industry LLC Trinity Industries, Inc.	
909.04A Reinforced Concrete Pipe		Co-Pipe Products, Inc. County Materials Corporation Independent Concrete Pipe Corporation Northern Concrete Pipe Upper Peninsula Pipe Co.	Taylor, MI Marathon, WI Mishawaka, Maxwell, & Indianapolis, IN Bay City, Charlotte, Clarkston, and Wyoming, MI; Toledo (Sylvania), OH Escanaba, MI
909.04C Non-Reinforced Concrete Pipe		Co-Pipe Products, Inc. Independent Concrete Pipe Corporation Northern Concrete Pipe Upper Peninsula Pipe Co.	Taylor, MI Mishawaka, Maxwell, & Indianapolis, IN Bay City, Charlotte, Clarkston, and Wyoming, MI; Toledo (Sylvania), OH Escanaba, MI
909.04D Precast Concrete Box Sections		County Materials Corporation Hanson Pipe & Products Independent Concrete Pipe Corporation Mack Industries Northern Concrete Pipe Upper Peninsula Pipe Co.	Marathon, WI Windsor, Canada Mishawaka, Maxwell, & Indianapolis, IN White Lake, MI, and Toledo, OH Bay City, Charlotte, Clarkston, and Wyoming, MI; Toledo (Sylvania), OH Escanaba, MI

APPROVED MANUFACTURERS

Spec. # and Material Name	Approved Manufacturers		Manufacturers Location
909.04E Precast Concrete End Section For Culverts & Sewers	County Materials Corporation Independent Concrete Pipe Corporation Northern Concrete Pipe Upper Peninsula Pipe Co.		Marathon, WI Mishawaka, Maxwell, & Indianapolis, IN Bay City, Charlotte, Clarkston, and Wyoming, MI; Toledo (Sylvania), OH Escanaba, MI
909.04G Precast Concrete Three-Sided or Arch Culverts **NOTES:** **1)** Manufacturers are only approved for the culvert design(s) listed. **2)** Approved on an experimental basis and will require evaluation during and after construction. Contact the department's Structural Fabrication Unit to coordinate evaluation process. **3)** Use is restricted to models 42/0-3 and 48/0-1 and is only permitted when detailed on the plans and when analyzed by the department's Hydraulics Unit. 4) Use is restricted to Arch-Box (AB) Series up to 48 feet in span length. ** Effective January 1, 2011, all manufacturers must be certified by the Precast/Prestressed Concrete Institute (PCI), the National Precast Concrete Association (NPCA), or the American Concrete Pipe Association (ACPA).		Design[1]	
	Advance Concrete Products	Adspan	Highland, MI
	Advanced Infrastructure Tech. (Composite Bridge System)	CBS[2]	Orono, ME
	Contech Engineered Solutions, LLC	BEBO[2, 3]	Huber Heights, OH
	Contech Engineered Solutions, LLC	Conspan	Huber Heights, OH
	Mack Industries	Conspan	White Lake, MI
	Northern Concrete Pipe	Hanson	Bay City, MI
	Northern Concrete Pipe	Hyspan	Bay City, MI
	Northern Concrete Pipe	P3 System[2]	Wyoming, MI
	StressCon	Ecospan[2, 4]	Detroit, Kalamazoo, and Zilwaukee, MI
	Upper Peninsula Concrete	Conspan	Escanaba, MI
909.05A Corrugated Steel Pipe	Armco Steel Corporation Bark River Culvert & Equipment Co. Contech Engineered Solutions, LLC Jensen Bridge & Supply Co. Lane Enterprises, Inc. Cadillac Culvert St. Regis Culvert, Inc. Worthington Steel		South Bend, IN Escanaba, MI Mason, MI, Mitchell and South Bend, IN, Portage, WI, Shakopee, MN, Ashland and Winchester, KY, Anderson, SC, and Canfield, OH Grand Rapids and Sandusky, MI Pulaski, PA Cadillac, MI Charlotte, MI Delta, OH
909.07B Pipe for Underdrains Corrugated Plastic Tubing (Perforated & Non-Perforated) (Wrapped & Non-Wrapped)	Advanced Drainage Systems, Inc. Baughman Tile Co., Inc. Cervell Drainage Products Hancor, Inc. Haviland Drainage Prinsco, Inc.		Napoleon, OH, and Owosso, MI Paulding, OH Lordstown, OH Findlay, OH Haviland, OH Chatsworth, IL

APPROVED MANUFACTURERS

Spec. # and Material Name		Approved Manufacturers	Manufacturers Location
909.07C Pipe for Underdrains Underdrain Outlet 2. Corrugated Steel Pipe		Armco Steel Corporation Bark River Culvert & Equipment Co. Contech Engineered Solutions, LLC Jensen Bridge & Supply Co. Lane Enterprises, Inc. Michigan Culvert Co. Cadillac Culvert St. Regis Culvert, Inc.	South Bend, IN Escanaba, MI Mason, MI, Mitchell & South Bend, IN, Portage, WI, Shakopee, MN, Ashland and Winchester, KY, Anderson, SC, and Canfield, OH Grand Rapids and Sandusky, MI Pulaski, PA Mason, MI Cadillac, MI Charlotte, MI
909.08B Downspouts from Other Bridge Decks 1. Corrugated Steel Pipe		Armco Steel Corporation Bark River Culvert & Equipment Co. Contech Engineered Solutions, LLC Jensen Bridge & Supply Co. Lane Enterprises, Inc. Michigan Culvert Co. Cadillac Culvert St. Regis Culvert, Inc.	South Bend, IN Escanaba, MI Mason, MI, Mitchell and South Bend, IN, Portage, WI, Shakopee, MN, Ashland and Winchester, KY, Anderson, SC, and Canfield, OH Grand Rapids and Sandusky, MI Pulaski, PA Mason, MI Cadillac, MI Charlotte, MI
910.05A Prefabricated Drainage System Products name approved, all others must be tested per project	<u>Approved Products</u> AdvanEdge 18" SITEDRAIN Strip 6412, 6418, 6424 (TNS-R042 or SKAPS GT-142) CCW –HC Drain (Mirafi 140N) Stripdrain 80 and 100 JDRainSWD (Mirafi 140N) MDM Hydraway Drain 2000 PDS 30	Advanced Drainage Systems, Inc. American Wick Drain Corporation Carlisle Coating Waterproofing Contech Engineered Solutions, LLC JDR Enterprises, Inc. Monsanto Co. Pro Drain Systems	Columbus and Napoleon, OH, Owosso, MI Monroe, NC Bloomfield Hills, MI Alpharetta, GA St. Louis, MO Highland, MI
912.05 Structural Timber & Lumber		American Timber and Steel Co., Inc. Central Nebraska Wood Preservers, Inc. Iowa Wood Preservers, Inc. John Biewer Lumber Company Straits Wood Treating, Inc. Midwest Timber Woodstock, Inc.	Norwalk, OH Sutton, NE Oskaloosa, IA Lansing and St Clair, MI Bay City, MI Edwardsburg, MI West Branch, MI

APPROVED MANUFACTURERS		
Spec. # and Material Name	Approved Manufacturers	Manufacturers Location
912.08 Wood Posts and Blocks for Guardrail and Highway Signs (Dimension Sawed)	American Timber and Steel Co., Inc. Central Nebraska Wood Preservers, Inc. Iowa Wood Preservers, Inc. John Biewer Lumber Company Straits Wood Treating, Inc. Midwest Timber Woodstock, Inc.	Norwalk, OH Sutton, NE Oskaloosa, IA St. Clair, MI Bay City, MI Edwardsburg, MI West Branch, MI
913.06 Precast Reinforced Concrete Units for Drainage Structures	Advance Concrete Products Co. Bush Concrete Products, Inc. Carlesimo Products, Inc. Consumers Concrete Products Co-Pipe Products, Inc. County Materials Corporation Elmer's Grand Valley Concrete Products Hanson Pipe and Products (form. Centennial) Kerkstra Precast, Inc. Mack Industries Mack Vault of Toledo-a Div. of Mack Industries Northern Concrete Pipe Norwalk Concrete Industries Quality Precast, Inc. Upper Peninsula Pipe Co.	Highland, MI (Specialty Items) Muskegon, MI Farmington, MI Kalamazoo, MI Taylor, MI Marathon, WI Traverse City, MI Grand Rapids, MI Windsor, Ontario, Canada Grandville and Jenison, MI White Lake, MI Bowling Green, OH Bay City, Charlotte, Clarkston, and Wyoming, MI Norwalk, OH Kalamazoo, MI Escanaba, MI
913.07 Precast Concrete Bases, Sumps	See Spec. 913.06, Drainage list	
913.09 Slope Pavement Blocks	4D, Inc. Bark River Concrete Products Best Block Company Carlesimo Products, Inc. Concrete Service, Inc. Consumers Concrete Products Fendt Builder's Supply, Inc. Ferguson Block Co., Inc. Grand Blanc Cement Products Jansen Block Co. Northern Concrete Pipe	Midland, MI Bark River, MI Warren, MI Farmington, MI Traverse City, MI Kalamazoo and South Haven, MI Ann Arbor and Farmington Hills, MI Davison, MI Grand Blanc, MI Grand Rapids, MI Grand Rapids, MI

APPROVED MANUFACTURERS

Spec. # and Material Name	Approved Manufacturers	Manufacturers Location
914.07 Transverse Pavement Joints 1. Dowel Bars For coating info. See QPL 905.03C for approved material and manufacturers. See Spec. 905.03C for Epoxy Coating Manufacturers (Coaters).	American Steel & Wire ASI Alton Steel, Inc. Austeel Barbary Coast Barnsco Bayou Steel Corporation Boomer Construction Materials Byer Steel (formerly A.B. Steel) CMC Steel CMC Steel (Texas) CMC Steel Cascade Steel Rolling Mills Erect-A-Line Gerdau Ameristeel Corporation Charlotte Steel Mill Div. Jackson Steel Mill Div. Jacksonville Steel Mill Div. Knoxville Steel Mill Div. Midlothian Steel Mill Div. St. Paul Steel Mill Div. Sayreville Steel Mill Div. JC Supply & Manufacturing Nucor Steel Nucor Steel Auburn, Inc. Nucor Steel Kankakee, Inc. Nucor Steel Marion, Inc. Nucor Steel Utah, Inc. Roadway Construction Products	Joliet, IL Alton, IL Mississippi, Norfolk, Illinois Walled Lake, MI Harriman, TN Detroit, MI Cincinnati, OH Seguin, TX Cayce-West, Columbia, SC McMinnville, OR Dallas, TX Charlotte, NC Jackson, TN Jacksonville, FL Knoxville, TN Midlothian, TX St. Paul, MN Sayreville, NJ Ontario, CA, Carlyle, IL Auburn, NY Bourbonnais, IL Marion, OH Plymouth, UT Clarkson, KY
914.07 Load Transfer Assemblies; Dowel Baskets	American Highway Technology (A Division of Dayton Superior) Barnsco Dayton Superior Corporation Boomer Construction Materials Erect-A-Line JC Supply & Manufacturing Roadway Construction Products	Kankakee, IL Walled Lake, MI Valparaiso, IN Detroit, MI Dallas, TX Ontario, CA, Carlyle, IL Clarkson, KY
914.08 Transverse End of Pour Joint Devices B. Deformed Bars	Bar Manufacturers See Reinforcement Bar Manufacturers Spec. 905.03	Epoxy Coating Material See Reinforcement Bar, Spec 905.03C and QPL 905.03C.
914.09 Straight and Bent Tie Bars for Longitudinal Pavement Joints, (Lane Ties)	Bar Manufacturers See Reinforcement Bar Manufacturers Spec. 905.03	Epoxy Coating Material See Reinforcement Bar, Spec 905.03C and QPL 905.03C.
916.02 Silt Fence Qualified Geotextile Fabric products listed in the QPL 910.04.	American Excelsior Co. Inc. C.S.I. / Geo Turf, Inc. DGI Industries Environmental Protection Products Geo-Synthetics Geoproducts, Inc. Hanes Geo Components. Jensen Bridge & Supply Co. Klein Brothers Hardwood Inc. Pallen Enterprises Rhino Seed and Landscape Supply	Westland, MI Highland, MI Bennington, NH Williamsburg, MI Waukesha, WI Birmingham, MI Charlotte, NC, Wixom and Wyoming, MI Grand Rapids and Sandusky, MI Milford, MI Conyer, GA Bradley, MI

APPROVED MANUFACTURERS		
Spec. # and Material Name	Approved Manufacturers	Manufacturers Location
918.06 Precast Concrete Handholes & Manholes for Electrical & Telephone Connections	Advance Concrete Products Bush Concrete Products, Inc. Carlesimo Products, Inc. Consumers Concrete Products Elmer's Grand Valley Concrete Products, Inc. Hartford Concrete Products, Inc. Kerkstra Precast, Inc. Mack Industries Northern Concrete Pipe Norwalk Concrete Industries Quality Precast, Inc.	Highland, MI Muskegon, MI Farmington, MI Kalamazoo, MI Traverse City, MI Grand Rapids, MI Hartford City and Ashley, IN Jenison, MI White Lake, MI Bay City, Charlotte, Clarkston, and Wyoming, MI Norwalk, OH Kalamazoo, MI
919.05 Wood Sign Posts	American Timber and Steel Co., Inc. John Biewer Lumber Company Straits Wood Treating, Inc. Midwest Timber Woodstock, Inc.	Norwalk, OH St. Clair, MI Bay City, MI Edwardsburg, MI West Branch, MI

QUALIFIED PRODUCTS LIST

The materials in this section may be accepted for use on Michigan Department of Transportation projects based on the trade name, model number, etc., as listed.

This Qualified Products List is in accordance with the 2012 Standard Specifications for Construction.

Also see Section 6.01 if the MQAP Manual.

QUALIFIED PRODUCTS LIST (QPL)

Spec. # and Material Name	Product Name	Manufacturers or Suppliers
502.02B Overband Crackfill, Asphalt Rubber	Alt. 2 K-T 1190 AR Plus Type 2 Deery 102 Roadsaver 221 Dura-Fill 3405 1190 ColJoint ARS II	 Bit-Mat Products Crafco, Inc. Crafco, Inc. Crafco, Inc. P&T Products, Inc. Right Pointe Colas Solutions
603.03B2 Adhesive Systems for Grouting Dowel Bars and Tie Bars for Full-Depth Concrete Pavement Repairs **NOTE:** Use these Qualified Products for grouting repairs to existing concrete in the same direction of traffic in the same lane of repair. For grouting lane ties (deformed bars positioned transverse to the direction of traffic located between traffic lanes) use QPL 712.03J, "Adhesive Systems for Structural Anchors and Lane Ties".	Ultrabond 1, 2, 3 Ultrabond 365 UltraBond HS-200 Ultrabond RT66 Ultrabond Speed Set 2 Inject-Tite Standard Set Inject-Tite Fast Set Aka Bond Aka Bond 550XP Aka Bond 550XPP Sonneborn Rapid Gel BHS-1250 BHS-1250XP CanRez 800 Araldite AW / HW 8561 Spec Bond 201 Highway Fast Set Epoxy TRU Grip HI-Modepoxy 590 Tru-Grip 591 Dural Fast Set Epoxy Gel Futura Bond 566 Hilti RSE DOT Epcon A7 Epcon-Ceramic 6 SurePoxy 117 Kelipoxy II Dynapoxy EP-430 FAST Poly-Carb Mark 198.4 Polyject/Polybac 1257 Polyject/Polybac 1295 AC 50 Silver AC 100+ Gold PE 1000+ Pure 50+ Pure 110+ T308+ Speed Bond #1 Sikadur Injection Gel Sikadur 881 DBA Sikadur DOT-SP13 Arcylic -Tie AT Epoxy Tie Dowel Bar Adhesive #5 Pro Poxy 300 Pro Poxy 300 FAST CIA Gel 7000 Rezi-Weld Gel Paste Rezi-Weld Gel Paste State	Adhesives Technology Corp. Adhesives Technology Corp. Adhesives Technology Corp. Adhesives Technology Corp. Adhesives Technology Corp. ANKR-Tite Fastening Systems ANKR-Tite Fastening Systems Axson North America (Formerly Akemi Plastics) Axson North America (Formerly Akemi Plastics) Axson North America (Formerly Akemi Plastics) BASF Construction Chemical Blackhawk Sales Company, Inc. Blackhawk Sales Company, Inc. Cansto Coatings Ciba Specialty Chemicals Corp. Conspec by Dayton Superior, Inc. Dayton Superior Corp. J. Dedoes, Inc. J. Dedoes, Inc. Euclid Chemical Company Futura Adhesives & Chemicals Hilti, Inc. ITW Ramset/Red Head ITW Ramset/Red Head Kaufman Products Kelken Construction Systems Pecora Corporation Poly-Carb, Inc. Poly-Carb, Inc. Polygen, Inc. Polygen, Inc. Powers Fasteners, Inc. Powers Fasteners, Inc. Powers Fasteners, Inc. Powers Fasteners, Inc. Powers Fasteners, Inc. Powers Fasteners, Inc. Prime Resins, Inc. Sika Corporation Sika Corporation Sika Corporation Simpson Strong-Tie Company, Inc. Simpson Strong-Tie Company, Inc. Superior Epoxies & Coatings Unitex Unitex USP Structural Connectors W.R. Meadows, Inc. W.R. Meadows, Inc.

QUALIFIED PRODUCTS LIST (QPL)

Spec. # and Material Name	Product Name		Manufacturers or Suppliers
702.02B Non-Shrinking Mortar and Grout Type H-1(Non-Metallic) Pre Mixed H-2 eliminated.	MBT 928 Grout		BASF Construction Chemical, Shakopee, MN
	MBT Construction Grout		BASF Construction Chemical, Shakopee, MN
	Set Grout		BASF Construction Chemical, Shakopee, MN
	Boomer Premium Grout		Boomer Construction Materials, Detroit, MI
	Upcon Super Flow Grout		Bostik Const. Prod. Co., Cleveland, OH
	Celtite 10-50 Hi-Flow		Celtite Inc., Georgetown, KY
	Conspec 100		Conspec by Dayton Superior, Kansas City, KS
	Enduro 50 Grout		Conspec by Dayton Superior, Kansas City, KS
	Gifford-Hills Supreme Grout		Cormix, Inc., Cleveland, OH (form. Gifford-Hill)
	1107 Advantage Grout		Dayton Superior, Kansas City, KS
	Sure Grip Grout		Dayton Superior, Kansas City, KS
	NS Grout		Euclid Chemical Co., Cleveland, OH
	Five Star Grout		Five Star Products, Inc.
	Pro-Grout 90		G.C.M., Inc., Bensalem, PA
	SureGrout		Kaufman Products, Inc., Baltimore, MD
	Crystex		L&M Construction Chemicals, Inc., Omaha, NE
	Duragrout		L&M Construction Chemicals, Inc., Omaha, NE
	Quikrete Precision Grout		Quikrete Technical Center, Atlanta, GA
	SC Miltipurpose Grout		SpecChem
	Superb Grout 611		Specco Industries, Lemont, IL
	Sealite 588 Grout		W. R. Meadows, Inc., Elgin, IL
703 Prepackaged Hydraulic Fast Set* Mortar **NOTE:** *Percentage based upon weight of prepackaged bag containing both cement and sand. Example Calculation: 50 lb bag approved at 60% extension = 50 x 0.60 = 30 lb coarse aggregate per bag.		Max. Aggregate Extension, %	
	Emaco 10-60 Rapid Mortar	60*	BASF Construction Chemical
	Emaco Set 45	60*	BASF Construction Chemical
	Burke Fast Patch 928	50*	Edoco, a Dayton Superior Co., Kansas City, KS
	Chem Speed 65	50*	Chem Masters
	HD-50 Heavy Duty Concrete Patch	60*	Dayton Superior Corp.
	Express Repair	60*	Euclid Chemical Co.
	Five Star Highway Patch	60*	Five Star Products, Inc.
	Durapatch Hiway	50*	L&M Construction Chemicals, Inc.
	Planitop 18	60*	Mapei Corporation
	Commercial Grade Fast Set DOT Mix	45.5*	Quikrete
706.03S Protective Coating for Concrete (Penetrating Water Repellent Treatment of Structure Concrete Surfaces)		Application Rate, sq ft/gal	
	Hydrozo Enviroseal 20	125-200	BASF Construction Chemical
	Hydrozo Enviroseal 40	125-200	BASF Construction Chemical
	Barracade Silane 40	125	Euclid Chemical Co.
	Aquapel Plus 20% Silane	125	L&M Construction Chemicals, Inc.
	Stifel S	125	Nox-Crete Chemicals
	Powerseal 40	125-200	Vexcon Chemicals
707.02 Bushings for Pins & Link Plates	CJ		TriStar
	Garmax		Garlock

QUALIFIED PRODUCTS LIST (QPL)

Spec. # and Material Name	Product Name			Manufacturers or Suppliers
712.03J Adhesive Systems for Structural Anchor & Lane Ties* **NOTE:** *Lane Ties defined as deformed bars positioned transverse to the direction of traffic located between lanes. For grouting dowel bars and tie bars (bars positioned to existing concrete in the direction of the traffic in the same lane as the repair) use QPL 603.03B2, "Adhesive Systems for Grouting Dowel Bars for Full-Depth Concrete Pavement Repairs". Note 1. Anchors shall be installed per manufacturer's recommendations with a minimum embedment depth of 12 diameters for reinforcing steel and 9 diameters for threaded bolts. Note 2. Material is limited to the shelf life recommendations by the manufacturer.	Name	Adhesive Type	Mixing & Inject.	
	Ultrabond 1	Epoxy	Yes	Adhesives Technology Corp.
	HS-200	Epoxy	Yes	Adhesives Technology Corp.
	Tru-Grip 591	Epoxy	Yes	J. Dedoes, Inc.
	HY-150 MAX	Epoxy	Yes	Hilti, Inc.
	RE 500	Epoxy	Yes	Hilti, Inc.
	Hilti HTE 50	Epoxy	Capsule	Hilti, Inc.
	Hilti HIT-HY 200-A	Urethane-Methacrylate	Yes	Hilti, Inc.
	Hilti HIT-HY 200-R	Methacrylate	Yes	Hilti, Inc.
	HVU	Urethane-Methacrylate	Capsule	Hilti, Inc.
	Ceramic 6	Epoxy	Yes	ITW Ramset/Red Head
	Epcon Acrylic 7	Methacrylate	Yes	ITW Ramset/Red Head
	Super Por-Rok	Non-Shrink Grout	Yes	Novex Systems International, Inc.
	AC100 Plus	Epoxy	Yes	Powers Fasteners, Inc.
	Acrylic-Tie	Methacrylate	Yes	Simpson Strong-Tie Anchor Systems
	EDOT	Epoxy	Yes	Simpson Strong-Tie Anchor Systems
	Epoxy-Tie	Epoxy	Yes	Simpson Strong-Tie Anchor Systems
	SET	Epoxy	Yes	Simpson Strong-Tie Anchor Systems
	Pro-Poxy 300	Epoxy	Yes	Unitex
	CIA-Gel 7000	Epoxy	Yes	USP Structural Connectors
	Rezi Weld Gel Paste State	Epoxy	Yes	W.R. Meadows, Inc.
712.03K Structure Expansion Anchors (Mechanical Expansion Anchors) Pull-out Testing is required per MQAP Manual Section 4.03. **NOTE**: Mechanical Expansion Anchors shall be set by applying the manufacturer's specified torque. The turn of the nut method will not be an acceptable alternative.	1. Pre-Drilled Flush Type a) Hiliti HDI (3/8" (10mm), ½" (13mm), 3/4" (19mm), dia. anchors only) 2. Pre-Drilled Stud Type - Not suitable for lane ties or for guardrail end shoes because of exposed thread. a) Hilti Kwik-Bolt II or Kwik-Bolt III 3/8" (10mm) dia. anchor - min. embedment = 2 ½" (65mm) 1/2" (13mm) dia. anchor - min. embedment = 3 ½" (90mm) 5/8" (16mm) dia. anchor - min. embedment = 4" (100mm)			
712.03L Mechanical Reinforcement Splicing **NOTE:** Splices used to connect precast structural elements shall be high strength splices.	BPI Barsplicer System			BarSplice Products, Inc., Dayton, OH
	Grip-Twist Threaded Position Coupler			BarSplice Products, Inc., Dayton, OH
	Taper Threaded Grip-Twist			BarSplice Products, Inc., Dayton, OH
	Zap Screwlok			BarSplice Products, Inc., Dayton, OH
	Bar-Lock L-Series			Dayton Superior Corp., Miamisburg, OH
	DB SAE			Dayton Superior Corp., Miamisburg, OH
	Lenton			ERICO International Corporation, Solon, OH
	Lenton Form Saver			ERICO International Corporation, Solon, OH
	Lenton Interlok (High Strength)			ERICO International Corporation, Solon, OH
	Lenton Position Coupler			ERICO International Corporation, Solon, OH
	NMB Splice Sleeve (High Strength)			Splice Sleeve North America, Inc., Livonia, MI
712.03Y Embedded Galvanic Anodes	MasterProtect CP Models: 8065, 8105, 8150			BASF Chemical Company
	Sentinel-GL			Euclid Chemical Co.
	Sika Galvashield XP			Sika Corporation
	Sika Galvashield XP+			Sika Corporation
	Galvashield XP			Vector Corrosion Technologies
	Galvashield XP+			Vector Corrosion Technologies
713.02B Sealant for Perimeter of Beam Repairs **NOTE:** No silicone materials - only polyurethane (PU) or PU blended materials that are paintable. Typically 1 week cure prior to painting. All non-sag material.	Sonolastic NP 1			BASF Construction Chemicals, Shakapee, MN
	Bostik 2020			Bostik US
	Duralink (F1200)			Chem Link
	Sherwin Williams Stampede 1			Sherwin-Williams
	Sikaflex-15LM			Sika Corporation
	Vulkem 116			Tremco, Inc.
	XtraBond 9500			Premier Industrial Supply
715.02 Coating Systems for New Hanger Assemblies	See Coating Systems for Steel Structures, Hanger Assemblies and End Diaphragms QPL 915			

QUALIFIED PRODUCTS LIST (QPL)

Spec. # and Material Name	Product Name		Manufacturers or Suppliers
715.02 Abrasive, Low Dusting **NOTE:** The blasting profile produced by these abrasives will depend on the equipment used. It is the responsibility of the contractor to produce a profile within the 1.0 to 2.8 mils specified range. The abrasive additive, Blastox may be used with any of the listed low-dusting abrasives.	Black Diamond Abrasive GMA Garnet Blast Black Shot Granulated Slag StarBlast XL Emerald Creek Garnet Blackjack MSM, Waupaca Materials Blast Away Superior Blast Hornet Abrasive Ebony Grit Black Beauty Norblast E-1015 M-1015		U.S. Minerals, Dyer, IN GMA Garnet Pty Ltd, Narngulu, WA, Australia Bell & MacKenzie Co. Ltd, Hamilton, Ontario Dupont, Wilmington, DE Emerald Creek Garnet, Fernwood, ID Faulks Brothers Constr. Co., Inc., Waupaca, WI Gibbco, Inc. Lesktech Limited Mohawk Garnet, Inc., Wahnapitae, ON Opta Minerals Inc. Reed Minerals Division, Highland, IN Transtech Inc., Covington, KY Universal Ground Cullets, Inc., Brook Park, OH Universal Ground Cullets, Inc., Brook Park, OH
803.02B Detectable Warning Surfaces (ADA Compliant Sidewalk Ramps), 1. Cast-in-Place	Access Tile Cast In Place Replaceable AlertCast Cast in Place Truncated Dome Warning System Composite Wet Set Replaceable, Rectangular and Radius DetecTile Replaceable Tactile Panel EJIW Detectable Warning Plate Armor-Tile Cast in Place Stainless Armor-Tile Cast in Place Composite NF Detectable Warning Plate TufTile		Access Products, Inc., Buffalo, NY AlertTiles, Wilmington, NC ADA Solutions, North Billerica, MA ADA Solutions, North Billerica, MA DetecTile Corporation East Jordan Iron Works, East Jordan, MI Engineered Plastics, Inc., Williamsville, NY Engineered Plastics, Inc., Williamsville, NY Neenah Foundry Company, Neenah, WI TufTile
2. Surface Applied* *NOTE: Surface applied detectable warning surfaces may only be used to retrofit existing concrete	Surface Applied Panel System with Beveled Edges Alerttile Armor-Tile Surface Applied Composite Warning System TopMark		ADA Solutions, North Billerica, MA Detectable Warning Systems, Wilmington, NC Engineered Plastics, Inc., Williamsville, NY Ennis-Flint
811.03D1 Waterborne, Liquid Pavement Marking Material	White BP-5760 TM-2204 982211 982221 982201	Lead Free Yellow P8479 TM-2205 982212 982222 982202	 Sherwin-Williams Sherwin-Williams Ennis-Flint Ennis-Flint Ennis-Flint
811.03D2 Low Temperature Waterborne, Liquid Pavement Marking Material	White 985251 TM2372	Lead Free Yellow 985252 TM2373	 Ennis-Flint Sherwin-Williams
811.03D3 Regular Dry Paint, Liquid Pavement Marking Material	White TM-5604 982271	Lead Free Yellow TM-5607 982282	 Sherwin-Williams Ennis-Flint

QUALIFIED PRODUCTS LIST (QPL)

Spec. # and Material Name	Product Name	Manufacturers or Suppliers
811.03D4 Cold Plastic Tape, Permanent (Long Line, Legends & Crosswalks)	**Wet Reflective Long Line:** White / Yellow / Adhesive 380 AW / 381 AW / P50 DeltaLine XRP-R / DeltaLine XRP-R / D-20 **Standard Long Line:** White / Yellow / Adhesive 380I ES / 381I ES / P50 Director 60 / Director 60 / DP-E4 Director 60 HPT / Director 60 HPT / DP-E4 **Shadow Tape:** Black / Adhesive 385 ES / P50 Director 60 / DP-E4 **Special Markings (symbols, legends, stop bars, crosswalks, crosshatching):** White / Yellow / Adhesive 270 ES / 271 ES / P50 380I ES / 381I ES / P50 ATM 300 / ATM 300 / ATM Permanent Primer Director 60 / Director 60 / DP-E4 Director 60 HPT / Director 60 HPT / DP-E4	 3M Brite-line Technologies, LLC 3M Swarco Swarco 3M Swarco 3M 3M Advanced Traffic Markings Swarco Swarco
811.03D5 Thermoplastic, Liquid Pavement Marking Material	White / Yellow 884285 / 884685 Swarcotherm EWH 131 / Swarcotherm EYH 132 Viatherm E413W	 Ennis-Flint Swarco Cleansol
811.03D5 Thermoplastic, Blocks Rumble Strips	E411W (Block) Rumble Strip	Cleansol
811.03D6 Thermoplastic, Sprayable, Liquid Pavement Marking Material	White Alkyd / Yellow Alkyd 01-WAK-BADA / 01-YAK-AADA 01-WHK-BADA / 01-YHK-AADA W1SS7056 / Y1SS7006 W2SS7056 / Y2SS7006 884822 / 883241 884824 / 883240 1157MWHSI / 2798MYHSI 3023MWASI / 3021MYHSI	 Crown Technology Crown Technology Dobco-Sherwin Williams Dobco-Sherwin Williams Ennis-Flint Ennis-Flint Swarco Swarco
811.03D7 Polyurea, Liquid Pavement Marking Material	5000 LPM White 5001 LPM Yellow LS90 White and Yellow HPS-5 White and Yellow	3M 3M Epo-Plex Ennis Flint
811.03D8 Modified Urethane, Liquid Pavement Marking Material	HPS-4 White and Yellow MFUA-10 White and Yellow	Ennis-Flint Swarco
811.03D9 Preformed Thermoplastic, Preformed Pavement Marking Material	PreMark HotTape SWARCO Preformed Thermoplastic	Ennis-Flint Ennis-Flint Swarco

QUALIFIED PRODUCTS LIST (QPL)

ADMIXTURES FOR CONCRETE
Air Entraining - ASTM C 260; Chemical - ASTM C 494
(See Notes Following Listing of Admixtures)

Spec. # and Material Name	Manufacturer or Supplier and Trade Name	Type	Producer and Description	Recommended Dosage min. or range fl oz/cwt
	BASF CONSTR. CHEM.			
903.01 Air Entraining Admixtures	MasterSet DELVO	D	Water-reducer retarder	3
	MasterAir AE 400	AE	Air-entraining	1- 4
903.02 Water Reducing and Water Reducing Retarding Admixtures for Concrete	MasterGlenium 3400	F	High-range water-reducer	3
	MasterGlenium 7500	A	Water-reducer	1.5
		F	High-range water-reducer	3 - 15
903.04 Concrete Accelerators	MasterGlenium 7700	MR	Mid-range water-reducer	2 - 4
		F	High-range water-reducer	4 – 15
	MasterGlenium 7710	F	High-range water-reducer	4
	MasterAir AE 90	AE	Air-entraining	1
	MasterAir VR 20	AE	Air-entraining (vinsol resin)	1
	MasterAir VR 10	AE	Air-entraining (vinsol resin)	1
	MasterAir AE 200	AE	Air-entraining	1
	MasterPolyheed 900	A	Water-reducer	4
		MR	Mid-range water-reducer	7
	MasterPolyheed 997	A	Water-reducer	3
		MR	Mid-range water-reducer	6
		F	High-range water-reducer	10
	MasterPolyheed 1725	A	Water-reducer	2.5 - 4
		MR	Mid-range water-reducer	5.5 - 7
		F	High-range water-reducer	8 - 12
	MasterPolyheed 100	A	Water-reducer	4
		MR	Mid-range water-reducer	8
	MasterPozzolith 200	A	Water-reducer	2
		D	Water-reducer retarder	4
	MasterPozzolith 322	A	Water-reducer	3
		D	Water-reducer retarder	5
	MasterPozzolith 700	A	Water-reducer	2
		D	Water-reducer retarder	5
	MasterSet AC 534	C	Accelerator (non-chloride)	10
	MasterSet FP 20	C	Accelerator (non-chloride)	10
	PS 1481	MR	Mid-range water-reducer	3
		F	High-range water-reducer	6
	MasterGlenium 7511	A	Water-reducer	2 - 4
		MR	Mid-range water-reducer	4 - 6
		F	High-range water-reducer	6 - 15
	MasterRheobuild 1000	MR	Mid-range water-reducer	9
		F	High-range water-reducer	13

(Continued)

QUALIFIED PRODUCTS LIST (QPL)

ADMIXTURES FOR CONCRETE
Air Entraining - ASTM C 260; Chemical - ASTM C 494
(See Notes Following Listing of Admixtures)

Spec. # and Material Name	Manufacturer or Supplier and Trade Name	Type	Producer and Description	Recommended Dosage min. or range fl oz/cwt
	EUCLID CHEMICAL CO.			
903.01 Air Entraining Admixtures	Eucon AEA 92	AE	Air-entraining	1.5
	Accelguard 80	C	Accelerator (non-chloride)	18 - 32
903.02 Water Reducing and Water Reducing Retarding Admixtures for Concrete	Accelguard NCA	C	Accelerator (non-chloride)	15
	Eucon Air Mix 200	AE	Air-entraining	3
	EUCON MR	A	Water-reducer	4.5
903.04 Concrete Accelerators		MR	Mid-range water-reducer	5.5
		F	High-range water-reducer	12
	EUCON MRX	MR	Mid-range water-reducer	3.5
		F	High-range water-reducer	7.5
	EUCON WR-91	A	Water-reducer	3
		MR	Mid-range water-reducer	5
		D	Water-reducer retarder	6
	EUCON A+	A	Water-reducer	3.5
		MR	Mid-range water-reducer	4.5
	EUCON Retarder75	D	Water-reducer retarder	3.5
	EUCON SPC	F	High-range water-reducer	5 - 12
	EUCON AIR MAC12	AE	Air-entraining	1.5 - 4
	PLASTOL 341	F	High-range water-reducer	7.5
	PLASTOL 5500	F	High-range water-reducer	3
	PLASTOL 6400	F	High-range water-reducer	4.5 – 12

(Continued)

QUALIFIED PRODUCTS LIST (QPL)

ADMIXTURES FOR CONCRETE
Air Entraining - ASTM C 260; Chemical - ASTM C 494
(See Notes Following Listing of Admixtures)

Spec. # and Material Name	Manufacturer or Supplier and Trade Name	Type	Producer and Description	Recommended Dosage min. or range fl oz/cwt
903.01 Air Entraining Admixtures	**GENERAL RESOURCE TECHNOLOGY (GRT)**			
903.02 Water Reducing and Water Reducing Retarding Admixtures for Concrete	KB-1200	A	Water-reducer	3 - 5
		MR	Mid-range water-reducer	5 - 8
	Melchem	F	High-range water-reducer	8 - 20
	Polychem VR	AE	Air-entraining (vinsol resin)	0.5
903.04 Concrete Accelerators	Polychem AE	AE	Air-entraining	1
	Polychem SA	AE	Air-entraining	0.5
	Polychem SA-50	AE	Air-entraining	1 - 3
	Polychem 400 NC	A	Water-reducer	3 - 5
	Polychem Super Set	C	Accelerator (non-chloride)	16 - 32
	Polychem R	D	Water-reducer retarder	3 - 5
	Polychem SPC	F	High-range water-reducer	5.5

(Continued)

QUALIFIED PRODUCTS LIST (QPL)

ADMIXTURES FOR CONCRETE
Air Entraining - ASTM C 260; Chemical - ASTM C 494
(See Notes Following Listing of Admixtures)

Spec. # and Material Name	Manufacturer or Supplier and Trade Name	Type	Producer and Description	Recommended Dosage min. or range fl oz/cwt
903.01 Air Entraining Admixtures	**PREMIERE CONCRETE ADMIXTURES**			
903.02 Water Reducing and Water Reducing Retarding Admixtures for Concrete	EcoFlo Green	A	Water-reducer	1.5 - 3
		MR	Mid-range water-reducer	4.5 - 7.5
		F	High-range water-reducer	8 - 16
	Optiflo 700	A	Water-reducer	3 - 5
903.04 Concrete Accelerators		MR	Mid-range water-reducer	5 - 10
	OptiFlo 50	A	Water-reducer	3 - 5
		MR	Mid-range water-reducer	5 - 6
		D	Water-reducer retarder	6
	OptiFlo 500	A	Water-reducer	2 - 3.5
		D	Water-reducer retarder	3.5 - 5
	OptiFlo MR	A	Water-reducer	3 - 5
		MR	Mid-range water-reducer	5 - 12
		F	High-range water-reducer	12 - 16
	OptiFlo Plus	MR	Mid-range water-reducer	5 - 12
		E	Water-reducer accelerator (non-chloride)	12 - 90
	OptiFlo 100R	D	Water-reducer retarder	3 - 5
	ConAir	AE	Air-entraining	0.5 - 4
	ConAir 260	AE	Air-entraining	0.5 - 4
	ConAir X	AE	Air-entraining	0.5 - 4
	UltraFlo 2000	A	Water-reducer	2 - 4
		MR	Mid-range water-reducer	4 - 6
		F	High-range water-reducer	6 - 12
	UltraFlo 4600	MR	Mid-range water-reducer	7 - 12
		F	High-range water-reducer	12 - 20
	UltraFlo 5600	MR	Mid-range water-reducer	6 - 10
		F	High-range water-reducer	10 - 24
	UltraFlo DP	F	High-range water-reducer	5 - 12
	NitroCast K	E	Water-reducer accelerator (non-chloride)	10 - 90
	ProLong L	D	Water-reducer retarder	4 - 8

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QUALIFIED PRODUCTS LIST (QPL)

ADMIXTURES FOR CONCRETE
Air Entraining - ASTM C 260; Chemical - ASTM C 494
(See Notes Following Listing of Admixtures)

Spec. # and Material Name	Manufacturer or Supplier and Trade Name	Type	Producer and Description	Recommended Dosage min. or range fl oz/cwt
	RUSSTECH			
903.01 Air Entraining Admixtures	LC-400R	D	Water-reducer retarder	3.5 - 6
	RSA-10	AE	Air-entraining	1
903.02 Water Reducing and Water Reducing Retarding Admixtures for Concrete	Superflo 2000 RM	F	High-range water-reducer	8 - 20
903.04 Concrete Accelerators				

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QUALIFIED PRODUCTS LIST (QPL)

ADMIXTURES FOR CONCRETE
Air Entraining - ASTM C 260; Chemical - ASTM C 494
(See Notes Following Listing of Admixtures)

Spec. # and Material Name	Manufacturer or Supplier and Trade Name	Type	Producer and Description	Recommended Dosage min. or range fl oz/cwt
	SIKA CORP.			
903.01 Air Entraining Admixtures	MultiAir 25	AE	Air-entraining	1
	Plastiment ES	D	Water-reducer retarder	2 - 4
903.02 Water Reducing and Water Reducing Retarding Admixtures for Concrete	Plastocrete 10N	A	Water-reducer	2
		D	Water-reducer retarder	3.5
	Plastocrete 161	A	Water-reducer	3
		D	Water-reducer retarder	6
903.04 Concrete Accelerators	Plastiment XR	D	Water-reducer retarder	3
	Sika AEA-14	AE	Air-entraining	2
	Sika AIR 260	AE	Air-entraining	2
	Sika AIR 360	AE	Air-entraining	1
	Sika AER-C	AE	Air-entraining	1 - 5
	Sikament AFM	A	Water-reducer	2
		MR	Mid-range water-reducer	6
		F	High-range water-reducer	11
	Sikament SPMN	MR	Mid-range water-reducer	6.5
		F	High-range water-reducer	10
	Sikament 686	A	Water-reducer	3
		MR	Mid-range water-reducer	5.5
		F	High-range water-reducer	8
	SikaPlast 200	A	Water-reducer	3
		G	High-range water-reducer	13
		MR	Mid-range water-reducer	6.5
	SikaSet NC	C	Accelerator (non-chloride)	10
	Sikatard 440	D	Water-reducer retarder	3
	Rapid - 1	C	Accelerator (non-chloride)	20
	ViscoCrete 1000	A	Water-reducer	1.5
		MR	Mid-range water-reducer	3
		F	High-range water-reducer	8
	ViscoCrete 2100	F	High-range water-reducer	5
	ViscoCrete 4100	F	High-range water-reducer	5
	ViscoCrete 6100	F	High-range water-reducer	5

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QUALIFIED PRODUCTS LIST (QPL)

ADMIXTURES FOR CONCRETE
Air Entraining - ASTM C 260; Chemical - ASTM C 494
(See Notes Following Listing of Admixtures)

Spec. # and Material Name	Manufacturer or Supplier and Trade Name	Type	Producer and Description	Recommended Dosage min. or range fl oz/cwt
	W.R. GRACE & COMPANY			
903.01 Air Entraining Admixtures	ADVA 405	F	High-range water-reducer	11 - 18
	ADVA Cast 575	F	High-range water-reducer	3.5 - 10
903.02 Water Reducing and Water Reducing Retarding Admixtures for Concrete	ADVA Cast 585	F	High-range water-reducer	4 - 10
	Daracem 19	F	High-range water-reducer	12.5
	Daracem 65	A	Water-reducer	4
		MR	Mid-range water-reducer	6 - 9
903.04 Concrete Accelerators	Daraset 400	C	Accelerator (non-chloride)	15
	Daratard 17	D	Water-reducer retarder	2
	Daravair 1400	AE	Air-entraining	1
	Darex II AEA	AE	Air-entraining	1 - 5
	Mira 62	A	Water-reducer	4.5
		MR	Mid-range water-reducer	6 - 12
		F	High-range water-reducer	12 - 15
	Mira 110	MR	Mid-range water-reducer	9 - 12
		F	High-range water-reducer	12 - 15
	Polarset	C	Accelerator (non-chloride)	8
	Recover	D	Water-reducer retarder	2.5 - 6
	Terapave AEA	AE	Air-entraining	1.5
	WRDA 82	A	Water-reducer	3

SPEC. 903 ADMIXTURE NOTES:

1. Dosage Rate

   The dosage rate indicated is that recommended by the producer or that used in qualification tests for approval of the admixture. There is no assurance that the desired water-reduction and/or retardation will be achieved with these dosages with a particular cement being used, as the effect is dependent on the cement chemistry, concrete temperature, and other factors. Increasing the dosage appreciably above that recommended may result in abnormal behavior of the concrete, such as extremely long or very short setting times. Reducing the dosage below that recommended may have the effect of substantially no change from concrete without the admixture. The dosage shown for retarding admixtures will normally produce a 1- to 3-hour retardation in the setting of the concrete, compared to similar concrete without the admixture, when used at normal temperatures (approximately 70°F). Increased dosage, within reasonable limits, will usually increase the retardation. Use of a retarding admixture will not slow the stiffening of concrete due to loss of slump.

2. Air-Entraining Admixtures

   The contractor is responsible for verifying the compatibility of all chemical admixtures and the air-entraining admixture. If admixtures are from more than one manufacturer, run a trial batch prior to concrete placement. Provide test results for slump, air-entrainment and seven-day compression for two (2) cylinders. Actual dosage for Air-Entrainers may vary from those listed on the Qualified Products List as required by the mix design.

3. Lignin Type Admixtures

   Lignin (or lignosulfonate) admixtures typically will cause the entrainment of additional air in air-entrained concrete. This type admixture does not generally entrain air by itself, but makes other air-entraining materials much more efficient. Thus, a change in dosage of either the chemical admixture or the air-entraining admixture may have a more significant effect on the air content than normally expected. It is the contractor's responsibility to be sure the specific admixture proposed for use is compatible with his operations so that excessive air content in the concrete is not developed. Most lignosulfonate type water-reducers will provide a moderate retardation if used at higher dosage rates.

4. High-Range Water-Reducers

   Type F and G high range water-reducing (HRWR) admixtures (frequently called "superplasticizers") are capable of greater water reduction and greater strength gain than regular Type A water-reducers, or can provide substantial increase in slump while maintaining a cohesive concrete without loss of strength. Type G admixtures will also provide retardation of setting similar to Type D admixtures. Problems with this type of admixture include the following: (a) Loss of slump is frequently much more rapid than with plain concrete or when other admixtures are used, especially for older formulations of superplasticizers; (b) Effectiveness depends on the chemistry of the Portland cement, and the cements generally available in Michigan do not have the most favorable chemistry; (c) The air-void system may be adversely affected. Type F and G admixtures are to be used only according to the provisions of the Standard Specifications.

5. Admixtures Containing Chlorides

   Some Type A and D admixtures may contain chlorides, as noted in the above listing. Section 903.03 of the Standard Specifications permits the use of these admixtures, except they are prohibited in concrete for bridge superstructure, prestressed concrete, and concrete containing galvanized steel or aluminum.

   (End of Admixture Notes)

QUALIFIED PRODUCTS LIST (QPL)

Spec. # and Material Name	Product Name		Manufacturers or Suppliers
905.03C Bar Reinforcement (Epoxy Coating) **NOTE:** Epoxy Coating Material Only. The Coating Applicator and Bar Manufacturer can be Approved Manufacturers, see Approved Manufacturers List.	Epoxy Coating Product Name	Repair Coating Product Name	
	Scotchkote 413	Scotchkote 323R	3M
	Resicoat RB-600	Thermal Chem BarPatch #803	Akzo Nobel Powder Coatings
	Nap-Gard 7-2719	Nap-Gard 7-1870 or 7-2727	Axalta Coating Systems (Dupont Powder Coating)
	Nap-Gard 7-2750	Nap-Gard 7-1868	Axalta Coating Systems (Dupont Powder Coating)
	Greenbar 720A009	Greenbar 920-G-966/ 920-C-966	Valspar
	Vectrashield PFY80006	Vectrashield Patch Kit	Valspar
906.09 Shear Developers (Studs)	Markings		
	B		Bluearc Stud Welding
	C		Cox Industries
	N		Nelson Stud Welding Co. (Div. of Gregory Ind.)
	X		Stud Welding Associates, Inc.
	TW		Tru-Weld from Tru-Fit Products Corp.
909.01 Recycled Rubber Adjusting Rings for Manholes and Drainage Structures	Flex-O-Ring		American Highway Products
	Pivoted Turnbuckle		American Highway Products
	Pro-Ring		Cretex Specialty Products
	Infra-Riser		East Jordan Iron Works
	Ladtech HDPE		Ladtech, Inc.
	HDPE Recycled Manhole Adjusting Ring		P. Spear Company
	UGT Grade Ring		Underground Technologies
	Whirlygig		Whirlygig, Inc.

QUALIFIED PRODUCTS LIST (QPL)

Spec. #	Pipe Material	Joint System	Pipe Diameter (Inches)	Approved Manufacturers
909.03 Watertight Joint Systems	Corrugated Polyethylene Pipe	Bell/Spigot N-12WT Pro-Link Ultra WT Rubber Gasket	12 thru 60	ADS – Hancor
	Corrugated Polyethylene Pipe	Compression Gasket	12 thru 24	Baughman Tile Co.
	Corrugated Polyethylene Pipe	Haviland Smooth-Flow WT Compression Gasket	12 thru 36	Haviland Drainage Products Co.
	Corrugated Polyethylene Pipe	MaxSeal Gasket	12 thru 60	JM Eagle
	Corrugated Polyethylene Pipe	Hamilton Kent In-Line Bell Spring Seal	12 thru 15	Lane Enterprises
	Corrugated Polyethylene Pipe	SpringSeal Gasket	18 thru 24	Lane Enterprises
	Corrugated Polyethylene Pipe	Gold Flow Corrugated SLCP Compression Gasket	12 thru 36	Prinsco, Inc.
	Corrugated Polyethylene Pipe	Gold Flow WT w/SpringSeal gaskets	12 thru 36	Prinsco, Inc
	Corrugated Polyethylene Pipe	Storm Seal Gasketed Bell/Spigot Rubber or Polyisoprene Gasket	12 thru 48	Quality Culvert, Inc., Wausau
	Corrugated Polyethylene Pipe	Bell/Spigot Polyisoprene Gaskets	12 thru 60	Southeast Culvert, Inc.
	Corrugated Polyethylene Pipe	Vertex Single Compression Gasket	12 thru 60	Southeast Culvert, Inc.
	Corrugated Polyvinyl Chloride Pipe (PVC)	Integrally Formed Elastomeric Gasket, Bell/Spigot	12 thru 36	Contech Engineered Solutions, LLC
	Concrete Pipe	Single Offset Self-Lubricating Gasket, Tylox - Hamilton Kent	12 thru 24	Co-Pipe Products Inc.
	Concrete Pipe	Compression Gasket Press Seal Gasket Co.	12 thru 24	Independent Concrete Pipe Co.
	Concrete Pipe	Press Seal Gasket Corp.-4G, 4F; Hamilton Kent-Tylox Super Seal; Universal Polymer & Rubber-Profile Gasket	12 thru 33	Northern Concrete Pipe, Inc.
	Concrete Pipe	Press Seal Gasket Corp.-4G, 4F, O-ring, M875;	36 thru 72	Northern Concrete Pipe, Inc.
	Concrete Pipe	Hamilton Kent-Tylox Super SeaPress Seal Gasket Corp.O-ring, M875;	78 thru 144	Northern Concrete Pipe, Inc.
	Concrete Pipe	Compression Gasket, Profile Cross Section, O-Ring Cross Section, Pipe Gasket & Supply	12 thru 24	Upper Peninsula Concrete Pipe Co.
	Concrete Pipe	Profile X-Section Gasket, Hamilton Kent	12 thru 36	County Materials Corp.
	Corrugated Metal Pipe	H12 Hugger Band with Single Bolt Bar and Strap with Compression Gasket	12 thru 24	Contech Engineered Solutions, LLC
	Corrugated Metal Pipe	Gasket-Bidco Wrap 12 x 3/8 Band	12 thru 18 Band 7 24 thru 30 Band 12 & larger Band 21	Jensen Bridge & Supply Co.
	Corrugated Metal Pipe	12 Bolted Band Angle with Compression Gasket Bidco Wrap 6 x 1/8 Band	12 thru 72	Cadillac Culvert
	Corrugated Metal Pipe	Bolted Corrugated Steel Band with Compression Gasket Ensolite IV Series	12 thru 24	St. Regis Culvert Inc.

QUALIFIED PRODUCTS LIST (QPL)

Spec. # and Material Name	Product Name	Manufacturers or Suppliers
909.05A1 Polymer Coated Corrugated Steel Pipe	Trenchcoat Protective Film	Valfilm USA
909.06 Class B Bury Plastic Pipe Smooth Lined Corrugated Plastic Pipe (CPE/HDPE); Corrugated Polyvinyl Chloride Pipe (CPV)	Size: 12 – 24 inch (CPE/HDPE) Size: 12 – 24 inch Blue Seal (CPE/HDPE) Size: 12 – 24 inch A-2000 PVC (CPV) Size: 12 – 24 inch HDPE Corrugated Class B (CPE/HDPE) Size: 12 – 24 inch Lane HDPE (CPE/HDPE) Size: 12 – 24 inch GoldFlo WT HDPE (CPE/HDPE)	Advanced Drainage Systems (ADS) Advanced Drainage Systems (ADS) - Hancor Contech Engineered Solutions, LLC Lane Enterprises Lane Enterprises Prinsco, Inc.
909.10 Drainage Marker Post	See Delineator Posts 2. Plastic Material, QPL 919.03D	
910.04 Silt Fence (Geotextile Fabric only)	Belton 940 Geoturf S1200 Geoturf S1240 Geoturf S1240OR Geoturf S1400 Kintex SF-3 GTF - 180 Propex 2130 SKAPS W100 TerraTex SF-D Willacoochee, Style 1210	Belton Industries, Inc., Norcross, SC CSI Geoturf, Inc., Highland, MI CSI Geoturf, Inc., Highland, MI CSI Geoturf, Inc., Highland, MI CSI Geoturf, Inc., Highland, MI Geoproducts, Inc., Birmingham, MI LinQ Industrial Fabrics Propex Fabrics, Inc., Austell, GA Skaps Industries, Athens, GA Hanes Geo Components, Winston-Salem, NC Willacoochee Industrial Fabrics, Inc., Willacoochee, GA
912.08Q Recycled Plastic Or Rubber Guardrail Offset Blocks	Model **Type B/BD** Dura-Bull Bloclout SPI #4 Diamond Block Eco-Block Mondo Block #NREC P-Block Thrie Beam Block EDEN Block Polylumber PL6814R King Block **Type T/TD** Mondo Block Steel Post Model #NREC Thrie Beam Block EDEN Block Polylumber King Size King Block	 Creative Building Products Diamond Roadway Products Eco-Composites LLC Mondo Polymer Technologies Monroeville Industrial Moldings Monroeville Industrial Moldings Project Back to EDEN Ramco International Trinity Industries, Inc. Mondo Polymer Technologies Monroeville Industrial Moldings Project Back to EDEN Ramco International Trinity Industries, Inc.
914.03B Recycled Rubber Joint Filler	Reflex	The J D Russell Company

QUALIFIED PRODUCTS LIST (QPL)

Spec. # and Material Name	Product Name	Manufacturers or Suppliers
914.06 Epoxy Resin Adhesive & Temporary Seal (Crack Injection)	Crackbond LR321 Crackbond SLV302 Akabond 817 Akabond 818 Akabond 819 MBT P&R Concresive 1380 MBT P&R Concresive 1360 BHS-1617 BHS-1618 BHS-1619 Arndite 8560 True Grip 150 NIP124LV CI 060 Dynapoxy EP-450 E Bond 550 Sikadur 35, Hi-Mod LV Sikadur 52 Pro Poxy 50 Super LV	Adhesives Technology Corp. Adhesives Technology Corp. Axson, Eaton Rapids, MI (formerly Akemi Corp.) Axson, Eaton Rapids, MI (formerly Akemi Corp.) Axson, Eaton Rapids, MI (formerly Akemi Corp.) BASF Construction Chemical, Shakopee, MN BASF Construction Chemical, Shakopee, MN Blackhawk Sales Co, Inc., Rock Island, IL Blackhawk Sales Co, Inc., Rock Island, IL Blackhawk Sales Co, Inc., Rock Island, IL Ciba Corporation, East Lansing, MI J. Dedoes, Inc., Milford, MI Epoxy Unlimited, Harrison Twp, MI Hilti Inc., Columbus, OH Pecora Corporation Ridgemoor Supply, Kentwood, MI Sika Corporation, Lyndhurst, NJ Sika Corporation, Lyndhurst, NJ Unitex, Kansas City, MO
914.07A Transverse Pavement Joint 1. Dowel Bar Coating (Epoxy) 2. Bond Release	See Reinforcement Bar Coating, QPL 905.03C	
	Bond Release Agent - Tectyl 506 BCG Protec 6116 DS MA	Tectyl Ashland Bradley Coatings Group
914.08 Transverse Pavement Joint, <u>Deformed</u> Dowel Bar Coating	See Reinforcement Bar Coating, QPL 905.03C	
914.09 Straight & Bent Tie Bars for Longitudinal Pavement Joints (Lane Ties), Coating	See Reinforcement Bar Coating, QPL 905.03C	
914.11 Preformed Waterproofing Membrane **NOTE:** Not to be used on Treated Wood Materials.	Carlisle CCW 711-Highway and Bridge Membrane Geotac Waterproofing Membrane Geotac Polyester HS Protecto Wrap M400 AR Sealtight Mel-Dek	Carlisle Coatings and Waterproofing Crafco Inc. Crafco Inc. Protecto Wrap Co. W.R. Meadows, Inc.

QUALIFIED PRODUCTS LIST (QPL)

Spec. # and Material Name	Product Name	Manufacturers or Suppliers	
915 Coating Systems for Steel Structures, Hanger Assemblies and End Diaphragms **NOTES:** *Indicates product can be used on faying surfaces of slip critical bolted connections which require Class "B". +Information from the Slip Coefficient and Creep Resistance Test Certificate is given for use with primed bolted connections to meet Class "B" requirements. #Alternative primer can only be used on faying surfaces of slip critical bolted connections which require Class "B".		Coats	
	*Carbozinc 859 *+100 hrs min cure, 6 mils max DFT, 10 oz/gal max thin* Carboguard 893 Carbothane 133 VOC #Carbozinc 11 HS Inorganic Zinc Primer *+18 hrs min cure, 6 mils max DFT, 15 oz/gal max thin*	1st 2nd 3rd	Carboline Company Approved for use on projects let prior to 05/31/19
	*Carbozinc 859 *+100 hrs min cure, 6 mils max DFT, 10 oz/gal max thin* Carboguard 893 Carbothane 133 LH #Carbozinc 11 HS Inorganic Zinc Primer *+18 hrs min cure, 6 mils max DFT, 15 oz/gal max thin*	1st 2nd 3rd	Carboline Company Approved for use on projects let prior to 06/30/17
	Interzinc 52 Intergard 475 HS Interthane 990HS #Interzinc® 22 Inorganic Zinc-Rich Silicate *+24 hrs min cure, 5 mils max DFT, No thinner Allowed*	1st 2nd 3rd	International Protective Coatings Approved for use on projects let prior to 12/04/16
	*Amercoat 68HS *+168 hrs min cure, 3 mils max DFT, 4 oz/gal max thin* Amercoat 399 Amercoat 450H #Dimetcote 9VOC Zinc-Rich Primer *+24 hrs min cure, 4 mils max DFT, 7 oz/gal max thin*	1st 2nd 3rd	PPG Industries Approved for use on projects let prior to 10/30/16
	*Zinc Clad III HS *+168 hrs min cure, 5 mils max DFT, 12 oz/gal max thin* Macropoxy 646 Fast Cure Epoxy Acrolon 218 HS #Corothane I GalvaPac One Pack Zinc Primer *+24 hrs min cure, 4 mils max DFT, 0 oz/gal max thin*	1st 2nd 3rd	Sherwin-Williams Approved for use on projects let prior to 07/31/20

917.12 Seed Varieties Varieties of Seed on QPL Date of Testing Not to Exceed One Year Approved MDOT seed mixtures, see Table 917-1 in the Spec Book. *Species	*Kentucky Blue Grass Arc Baron Bristol Cannon Diva Guiness Midnight Nassau NuBlue NuBlue Plus Parade Raven RugbyII Touchdown Wildwood	*Perennial Ryegrass Advent Accent II Charger II Fiesta 4 Manhattan 5 Palmer III Pennant III Prelude III Prelude IV Quickstart II SR 4220 SR 4420	*Hard Fescue Aurora II Aurora Gold Matterhorn Nordic Reliant II Reliant IV Rescue Rescue 911 Scaldis II Spartan II SR 3100 SR 3150	*Creeping Red Fescue Cindy Lou Dawson Epic Hector Seabreeze GT Sea Link Shademaster II SR 5210	*Fults Salt Grass Fults Fults II Salty

QUALIFIED PRODUCTS LIST (QPL)

Spec. # and Material Name	Product Name	Manufacturers or Suppliers
917.15B1 Turf Mulch Blankets, High Velocity Mulch Blankets (Two Sided Net)	AEC Premier Straw Highway Double Net Curlex II Contech High Velocity ERO-MAT ECS-2 Mulch Blanket Enviroscape HV Straw Mulch Blanket S2000 ECB EX32 ECB S32 ETRS-2 RD S2 Erosion Control Blanket WS072B ECS-2D Erosion Control Blanket DS-150 Erosion King High Velocity Double Net Excel SS-2 (Regular) WinterStraw HVW	American Excelsior Co. American Excelsior Co. Contech Engineered Solutions, LLC East Coast Erosion Control Blankets Enviroscape ECM ErosionControlBlanket ErosionControlBlanket Erosion Tech S.I. Geosolutions / Land Green Fix America Hanes Geo Components North American Green Rhino Seed & Landscape Supply Western Excelsior Corp. Winters Excelsior Company
917.15B2 Turf Mulch Blankets, Mulch Blankets (Single Sided Net)	AEC Premier Straw Highway Single Net Curlex 1-CL Curlex I Contech ERO-MAT Futerra Mulch Blanket ECS-1 Mulch Blanket ECS-1D Mulch Blanket Enviroscape Straw Mulch Blanket S1000 ECB EX31 ECB S31 ETRS-1 RD WS05 Erosion Control Blanket DS-75 Xcel Excelior Erosion Control Blankets Erosion King Mulch Blanket S1 Erosion Control Blanket ERO-MAT V75S Excel SR-1 (Regular) WinterStraw SNW	American Excelsior Co. American Excelsior Co. American Excelsior Co. Contech Engineered Solutions, LLC Profile Products, LLC East Coast Erosion Control East Coast Erosion Control Enviroscape ECM ErosionControlBlanket ErosionControlBlanket Erosion Tech Green Fix America North American Green PPS Packaging Co. Rhino Seed & Landscape Supply Synthetic Ind. / BonTerra America Verdyol-Canada Western Excelsior Corp. Winters Excelsior Company
917.15C Mulch Binders (Tackifiers)	<u>1. Latex Base Adhesive</u> BUTOFAN NS 268 EZ Straw Seeding Mulch w/Tack <u>2. Paperfiber Mulch Binders</u> Applegate Mulch Cellin Fiber Mulch Geoturf Hydro Mulch Geoturf Hydro Mulch Plus Geopro Basis Plus Hydro Green Hydroseeding Mulch Hydro Green Hydroseeding Mulch Rhino Greenstar Rhino Greenstar Plus <u>3. Excelsior/Guar Gum Base Adhesive</u> Excel Fiber Mulch ConWed 2000 <u>4. Guar Gum Base Adhesive</u> Second Nature Tacpac GTX Geotack EcoTak-OP5 Finn A500 Hydro-Stik Landtack Lawn Tack <u>5. Hydrophilic Polymers</u> Agro Tack MP Exact-Tac (E-T) Geotack II Con-Tack A/T Eco-Tak-SAT 11 RMB Plus	 BASF Corp. Rhino Seed & Turf Supply Applegate Insulation System Cellin Manufacturing, Inc. CSI Geoturf, Inc. CSI Geoturf, Inc. Hanes Geo Components Nu-Wool, Inc. Nu-Wool, Inc. Rhino Seed & Landscape Supply Rhino Seed & Landscape Supply American Excelsior Co. Profile Products, LLC Central Fiber Corp. CSI Geoturf, Inc. Eastern Products, Inc. Finn Corporation Midwest Land Supply, Inc. Rhino Seed & Landscape Supply Agro Diversified Industries American Excelsior Co. CSI Geoturf, Inc. Profile Products, LLC Eastern Products, Inc. Reinco Mulch Binder Corp.

QUALIFIED PRODUCTS LIST (QPL)

Spec. # and Material Name	Product Name	Manufacturers or Suppliers
918.06D Light Weight Composite Handholes	Armorcast Box and Cover Assembly A6001640TAPCX12 PHA Series Hand Holes Quazite Box PG1730BA12 & Cover PG1730HA Polymer Concrete Pull Box & Cover FCA 173012 Synertech Underground Enclosure S1730B12FA & Cover S1730HBB0A	Arborcast Products Company Highline Products, Inc. Hubbell NewBasis Synertech Molded Products
918.08C Light Standards, Frangible Transformer Bases	<u>11 Inch Bolt Circle</u> TB1-17 Modified TB2-17 <u>13 Inch Bolt Circle</u> TB1-17 TB1-17 Modified	Akron Foundry Co. Akron Foundry Co.
919.02B1 Reflective Sheeting	<u>Type III</u> Series 3870 -- Nikkalite Ultralite Grade II <u>Type IV</u> Series 3930 T-6500 Series -- <u>Type IX</u> Series 3990 T-9500 Series -- <u>Type XI</u> Series 4000 T-11500 Series --	3M Avery Dennison Nippon Carbide
919.03D Delineator Post, Plastic, Flexible 1. Ground Mount	Survivor Delineator Post Flexi-Guide 400 Series Flexi-Guide 500 Series Flexstake HD 600 Series Flexstake HD 650 Series Flexstake TM 750 Series EZ Drive 2 Marker SH248GP3	Carsonite PEXCO, Davidson Traffic Control Products Flexstake Flexstake Flexstake Flexstake Safe-Hit
2. Surface Mount	City Post K71 Flexible Marker Post SM 700 Series TM 750 Series TSM Series Flexible Delineator Post	Pexco, Davison Traffic Control Products US Reflector Flexstake Flexstake New Direction Mfg., Inc.
921.05A Steel Clamps for Traffic Signal Strain Poles	Strain Clamps	Utility Metals
922.06A Temporary Traffic Control, Temporary Pavement Markings Type R and NR Tape **Paint** - See Specific Paint Type in QPL 811.03D *WR Tape is wet-night retro reflective	<u>White (Type)</u> 5160 (NR) 710 (WR) 620 (R) ATM 200 (R) Deltaline TWR (WR) Series 100 (R) Flex-O-Line 200 (NR) Prismoline (R) RW-140 (R) Aztec 100-W (NR) Aztec 102 (R) Director-2 (R) Visaline CG (NR) <u>Yellow (Type)</u> 5161 (NR) 711 (WR) 621 (R) ATM 200 (R) Deltaline TWR (WR) Series 100 (R) Flex-O-Line 200 (NR) Prismoline (R) RY-140 (R) 100-Y (NR) 390 (R) Director-2 (R) Visaline CG (NR)	3M 3M 3M ATM Brite-line Technologies, LLC Brite-line Technologies, LLC FOL Tape, LLC Linear Dynamics/ Carrier & Gable Market Manager Rd Tape, Trelleborg Ind. AB Tape4, LLC Tape4, LLC Volare/ Swarco Industries, Inc. Volare/ Swarco Industries, Inc.

QUALIFIED PRODUCTS LIST (QPL)		
Spec. # and Material Name	Product Name	Manufacturers or Suppliers
922.06B Temp. Raised Pavement Markers	Type 1: Model 932 Chip Seal Marker TRPM Chip Seal Marker Type 2: Model 932 Overlay Marker Temporary Overlay Marker Type 3: Stimsonite Model 88	Apex Universal, Inc. Bunzl Extrusions/Davidson Traffic Control Prod Apex Universal, Inc. Bunzl Extrusions/Davidson Traffic Control Prod Stimsonite Corporation

TESTED STOCK SUPPLIERS

The suppliers in this section may ship Tested Stock material to Michigan Department of Transportation projects with appropriate identification on material.

See Material Quality Assurance Procedures Manual, Section 2.01, General Tested Stock Procedures.

This Tested Stock List is in accordance with the 2012 Standard Specifications for Construction.

TESTED STOCK		
Spec # and Material Name	Tested Stock Manufacturers	Tested Stock Suppliers
908.09A Base Plates and Post Elements	Atlas Tube ALRO Steel (Lansing, Clare, Potterville, and Jackson) Bull Moose Tube	Cardinal Fabricating, Inc. Cox Bros.
908.09B Rail Elements (Tube)	Atlas Tube ALRO Steel (Lansing, Clare, Potterville, and Jackson) Bull Moose Tube	Cardinal Fabricating, Inc. Cox Bros.
909.06 1. Corrugated Polyethylene Pipe (CPE/HDPE) (Smooth Lined Type S)	Advanced Drainage Systems, Inc. Baughman Tile Company Prinsco, Inc. Quality Culvert, Inc.	Advanced Drainage Systems, Inc. Quality Culvert, Inc.
912.05 Structural Timber & Lumber	American Timber and Steel Co., Inc. John Biewer Lumber Company	
914.04A Hot-Poured Joint Sealant	Crafco, Inc. Deery American Corporation Koch Materials Co. W.R. Meadows, Inc. P&T Products Inc. Right Pointe Company	Asphalt Concrete Services Barnsco Crafco, Inc. DeWitt Products Ersco Corp. F&M Concrete Construction, LLC Grand River Infrastructure Hymmco Koch Materials Co. Marsh Products W.R. Meadows, Inc. Michigan Joint Sealing, Inc. Midway Contractor Supply National Highway Maintenance System P&T Products Inc. Pavement Sealants Corporation Rocform Corporation Scodeller Construction Terry Sweeney & Company Trumbull Asphalt Company
914.05 Epoxy Binder, For Joint Spall Repair		Barnsco D.S. Brown Company Rocform Corporation
919.02A1 Metal Sections (Extruded Aluminum)		Michigan Highway Signs Michigan Sign Co. Rathco, Inc. Rocal, Inc. Western Industries Control Co.
919.02A3 Aluminum Sheet		Dornbos Sign and Safety Inc. Michigan Highway Signs Michigan Sign Co. Rathco, Inc. Rocal, Inc.

SELECTING AND SHIPPING SAMPLES

The following instructions will apply for the selection, identification, and shipment of samples unless otherwise specified:

1. Samples shall be selected with care and shall be representative of the material sampled.

2. Pack samples to withstand rough shipment. Liquid materials shall be shipped in screw-top cans or friction-top cans with lids soldered in place unless otherwise specified or required. Friction-top cans with lids not soldered in place and glass jars must be surrounded and packed with suitable absorbent material in sufficient quantity to absorb all the liquid if the tops of the cans should come off or the glass jars should become broken. All packages containing liquid samples shall be marked "Fragile-Liquid."

   Mark pipe, tile, and concrete test specimens conspicuously, "Handle with Care-Fragile."

3. The sample identification form must be legibly prepared and filled out in detail. All available information for proper identification of the sample shall be given including the lot number, batch number, serial number, or other identification marks.

   The sample identification form shall be securely attached to the container in which the sample is shipped by means of a tag envelope. Also, include duplicate identification sheet inside wrappings, or if shipped in cloth sack, inside the sack.

4. Aggregate samples shipped to the Testing Laboratory shall be shipped in a closely woven bag. Do not use sacks which have contained sugar.

5. Cement and Pozzolanic Admixtures shall be shipped in plastic lined cloth bags.

6. The method of transportation of the samples will depend on the size, weight or quantity of material being shipped, and the time element. Small and light-weight samples shall be sent via UPS, bus, parcel post, or express. Large and heavy-weight samples shall be sent by motor freight. The sampler, being familiar with conditions, shall make shipment in the manner deemed most appropriate and economical.

7. Cloth bags, plastic liners, screw-top cans and friction-top cans may be obtained from the Laboratory. All containers must be clean and free from foreign materials. Cloth bags or sacks must be clean, free from tears or holes, and tightly woven to prevent loss of fine material.

8. All samples shall be consigned to the Michigan Department of Transportation, Construction Field Services Division, Secondary Governmental Complex, 8885 Ricks Road, Lansing, Michigan 48909, unless otherwise noted.

APPENDIX

Visual Inspection Items - Alphabetical

This list is intended as a quick reference, alphabetical by material name, for materials which normally require some form of testing but have VI quantities listed. It does not include materials which are accepted by VI basis only.

Visual Inspection Items - By Specification Number

This list is intended as a quick reference, by specification number for materials which normally require some form of testing but have VI quantities listed. It does not cover materials which are accepted on a VI basis only.

This Visual Inspection Items List is in accordance with the 2012 Standard Specification for Construction.

VISUAL INSPECTION ITEMS - Alphabeticall

SEC.	MATERIAL	MAXIMUM V.I.
Misc.	ABS Pipe	600 ln ft
919	Aluminum Sheet	100 sq ft
902	Aggregate, Coarse	100 tons
902	Aggregate, Dense-Graded	500 tons
902	Aggregate, Fine	100 tons
902	Aggregate, Open-Graded	100 tons
904	Asphalt, Liquid (RC-250)	5 gal - 150 lbs
905	Bar Reinforcement (all)	500 lbs
914	Bituminous Fiber Joint Filler	150 sq ft
501	Bituminous Mixtures	500 tons/project/mix
914	Bolts for Structure Exp. Anchor	250 units
914	Bond Release	20 gal max
922	Calcium Chloride Solids	5000 lbs
922	Calcium Chloride Solutions	1000 gals
Misc.	Cast & Ductile Iron Pipe	250 ft
901	Cement	45 tons
Misc.	Clay Pipe	10 pcs
913	Clay and Sand Lime Brick	1000 pcs
913	Concrete Block	1000 pcs
913	Concrete Brick	1000 pcs
909	Concrete Pipe, Non-Reinforced	10 pcs
909	Concrete Pipe, Reinforced & Elliptical	5 pcs of 42 in dia or less
Misc.	Corrugated Galv. Steel Plates	10 plates
909	Corrugated Aluminum Sheets	25 sheets
909	Corrugated Aluminum Alloy Pipe	250 ln ft
909	Corrugated Plastic Pipe	<12 in dia 250 ft
	“ “	>12 in dia 100 ft
909	Corrugated Plastic Pipe, Smooth Lined	Same as CPP
909	Corrugated Plastic Tubing for Underdrains	250 ft
909	Corrugated Steel Pipe	*
	12" or less	125 ln ft
	15" to 54"	50 ln ft
	60” or greater	25 ln ft
909	Corrugated Steel Pipe for Underdrains	*
909	Corrugated Steel Sheets	*
	12" or less	125 ln ft
	15” to 54”	50 ln ft
	60" or greater	25 ln ft
909	Coupling Bands	5 pcs
914	Deformed Bars	500 lbs
919	Delineator Posts, Steel	80 posts
919	Delineator Reflectors (Plastic and Reflective Sheeting)	25 pcs each color
914	Dowel Bars	240 pcs
918	Electrical Conduit, Plastic	400 ln ft
918	Electrical Conduit, Rigid	400 ln ft
914	Epoxy Binder	5 gals
Misc.	Fiberglass and Bit. Cotton Fabric	5 rolls
910	Geotextile Blanket	360 sq yd
910	Geotextile Liner/ Riprap	360 sq yd
910	Geotextile Liner/Heavy Riprap	360 sq yd
910	Geotextile Stabilizer/Separator	360 sq yd
916	Geotextile Silt Fence	500 ln ft
920	Glass Beads	500 lbs

(Continued)

VISUAL INSPECTION ITEMS - Alphabeticall

SEC.	MATERIAL	MAXIMUM V.I.
902	Granular, Class I	100 tons
902	Granular, Class II (Subbase)	500 cu yd
902	Granular, Class II (Abutment b.f.)	100 cu yd
902	Granular, Class IIA	500 cu yd
902	Granular, Class III	500 cu yd
902	Granular, Class IIIA	100 cu yd
908	Guardrail Beam Elements/End Sections	125 ln ft
908	Guardrail Posts, Stee	25 posts
918	Handholes, Precast Concrete	10 pcs
907	High Tensile Wire Fence (Wire)	250 ft
903	Insulating Blanket	10 sheets
903	Interim Curing (Linseed Based)	50 gals
914	Joint Assemblies	Fab. Insp. Req./20 assemblies
914	Joint Sealant, Hot Poured	100 lbs
909	Mastic (Cold-Applied Joint Sealer)	10 gals
903	Membrane Curing Compound	200 gals
908	Metallic Waterstop (Sheet Lead & Copper)	25 sq ft
902	Mineral Filler (Bit. Mixes)	10 tons
909	Polyethylene Pipe (Downspouts)	<12 in dia 250 ft
	“ “	>12 in dia 100 ft
913	Precast Concrete Bases and Sumps	10 pcs total
918	Precast Concrete Handholes	10 pcs
909	Precast Concrete End Sections	10 pcs
913	Precast Units for Dr. Structures	10 pcs total
909	PVC Pipe (Sanitary Sewer)	600 ft
907	Rail for Braces (Chain Link)	250 ft
919	Reflective Sheeting	1 roll for less than 3” width
905	Reinforcement Steel	500 lbs
917	Seed and Seeding Mixtures	100 lbs
913	Slope Paving Blocks	1000 pcs
909	Smooth Plastic Pipe for Underdrains (Outlet)	250 ft
907	Steel Chain Link Fence Fabric	250 ft
909	Steel End Sections	4 pcs
919	Steel, Galvanized Sign Posts	20 posts
907	Steel Posts/Chain Link Fence	25 line, 25 gate posts
919	Steel Posts/Delineator	80 posts
905	Steel Wire Fabric (Mesh)	500 sq yds
913	Structural Tile	1000 tiles
907	Top Rail (Chain Link)	250 ft
907	Tension Wire	500 ft
914	Tie Bars (Lane Ties)	500 lbs
910	Wall Drain	100 sq ft
919	Wood Sign Posts	20 posts

*See Remarks in Acceptance Requirements Section

VISUAL INSPECTION ITEMS – by Specification Number

SEC.	MATERIAL	MAXIMUM V.I.
501	Bituminous Mixtures	500 tons/project/mix
901	Cement	45 tons
902	Coarse Aggregate	100 tons
902	Dense-Graded Aggregate	500 tons
902	Open-Graded Aggregate	100 tons
902	Granular, Class I	100 tons
902	Granular, Class II (Subbase)	500 cu yds
902	Granular, Class II (Abutment b.f.)	100 cu yds
902	Granular, Class IIA	500 cu yds
902	Granular, Class III	500 cu yds
902	Granular, Class IIIA	100 cu yds
902	Fine Aggregate	100 tons
902	Mineral Filler (Bit. Mixes)	10 tons
903	Membrane Curing Compound	200 gals
903	Insulating Blanket	10 sheets
903	Interim Curing (Linseed Based)	50 gals
904	Liquid Asphalt (RC-250)	5 gals
905	Bar Reinforcement (all)	500 lbs
905	Steel Wire Fabric (Mesh)	500 sq yds
907	High Tensile Wire Fence (Wire)	250 ft
907	Steel Chain Link Fence Fabric	250 ft
907	Tension Wire	500 ft
907	Top Rail (Chain Link)	250 ft
907	Steel Posts/Chain Link Fence	25 line, 25 gate posts
907	Rail for Braces (Chain Link)	250 ft
908	Metallic Waterstop (Sheet Lead & Copper)	25 sq ft
908	Guardrail Beam Elements/End Sections	125 ft
908	Guardrail Posts, Steel	25 posts
909	Reinforced Concrete Pipe & Elliptical RCP	5 pcs of 42 in dia or less
909	Non-Reinforced Concrete Pipe	10 pcs
909	Corrugated Steel Pipe	*
	12" or less	125 ln ft
	15" to 54"	50 ln ft
	60" or greater	25 ln ft
909	Corrugated Steel Sheets	*
	12" or less	125 ln ft
	15" to 54"	50 ln ft
	60" or greater	25 ln ft
909	Steel End Sections	4 pcs
909	Coupling Bands	5 pcs
909	Corrugated Aluminum Sheets	25 sheets
909	Corrugated Aluminum Alloy Pipe	250 ln ft
909	PVC Pipe (Sanitary Sewer)	600 ln ft
909	Corrugated Plastic Pipe	<12 in dia - 250 ft
	" "	>12 in dia 100 ft
909	Corrugated Plastic Pipe, Smooth Lined	Same as CPP
909	Mastic (Cold-Applied Joint Sealer)	10 gals
909	Precast Concrete End Sections	10 pcs
909	Corrugated Steel Pipe for Underdrains	*
909	Smooth Plastic Pipe for Underdrains (Outlet)	250 ln ft
909	Corrugated Plastic Tubing for Underdrains	250 ln ft
909	Polyethylene Pipe (Downspouts)	<12 in dia 250 ft
	" "	>12 in dia 100 ft

(Continued)

VISUAL INSPECTION ITEMS – by Specification Number

SEC.	MATERIAL	MAXIMUM V.I.
910	Geotextile Blanket	360 sq yd
910	Geotextile Liner/Riprap	360 sq yd
910	Geotextile Stabilizer/Separator	360 sq yd
910	Geotextile Liner/Heavy Riprap	360 sq yd
910	Wall Drain	100 sq ft
913	Clay and Sand Lime Brick	1000 pcs
913	Concrete Brick	1000 pcs
913	Concrete Block	1000 units
913	Precast Units for Dr. Structures	10 pcs total
913	Precast Concrete Bases and Sumps	10 pcs total
913	Structural Tile	1000 tiles
913	Slope Paving Blocks	1000 pcs
914	Bituminized Fiber Joint Filler	150 sq ft
914	Hot Poured Joint Sealant	100 lbs
914	Epoxy Binder	5 gals
914	Dowel Bars	240 bars
914	Joint Assemblies	Fab. Insp. Req./20 assemblies
914	Bond Release	20 gal max
914	Deformed Bars	500 lbs
914	Tie Bars	500 lbs
914	Bolts for Structure Exp. Anchor	250 units
916	Geotextile Silt Fence	500 ft
917	Seed and Seeding Mixtures	100 lbs
918	Precast Concrete Handholes	10 pcs
918	Electrical Conduit, Polyethylene	400 ft
918	Electrical Conduit, Rigid	400 ft
919	Aluminum Sheet	100 sq ft
919	Reflective Sheeting	1 roll for less than 3” width
919	Delineator Reflectors (Plastic & Reflective Sheeting)	25 pcs each color
919	Steel Delineator Posts	80 posts
919	Galvanized Steel Sign Posts	20 posts
919	Wood Sign Posts	20 posts
920	Glass Beads	500 lbs
922	Calcium Chloride Solids	5000 lbs
922	Calcium Chloride Solutions	1000 gals
Misc.	ABS Pipe	600 ln ft
Misc.	Clay Pipe	10 pcs
Misc.	Cast & Ductile Iron Pipe	250 ft
Misc.	Fiberglass and Bit. Cotton Fabric	5 rolls
Misc.	Corrugated Galvanized Steel Plates	10 plates

*See Remarks in Acceptance Requirements Section