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- 101.02 Above Normal Rainfall
- 101.03 Blank
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- 101.07 Calendar Day
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- 101.12 Contract Information Book
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- 101.22.1 Frequency Manual
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- 101.25 Itemized Proposal
- 101.26 Laboratory
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- 103.06 Wage and Labor Requirements
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- 104.04 Maintenance of Traffic
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  - (c) Blank
  - (d) Traffic Control for Patching on a Two-Lane Roadway
- 104.05 Removal and Disposal of Structures and Obstructions
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- 105.02 Plans and Working Drawings
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- 105.05 Cooperation by Contractor
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- 105.08 Construction Stakes, Lines, and Grades
  - (a) Construction Engineering by the State
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- 105.09 Duties of Technician and Inspector
- 105.10 Inspection of Work
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- 105.13 Maintenance During Construction
- 105.14 Failure to Maintain Roadway, Structures, Barricades, and Construction Signs
- 105.15 Acceptance and Final Inspection
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- 106.01 Source of Supply and Quality Requirements
  - (a) Approved or Pregualified Materials

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- (b) Material Records
  - 1. Documentation of Material Delivery
  - 2. Delivery Ticket Information
  - 3. Payment Procedures
- (c) Buy American Requirement
- 106.02 Samples, Tests, Cited Specifications
- 106.03 Plant Inspection
- 106.04 Field Laboratory
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- 107.02 Permits, Licenses, and Taxes
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- 107.06 Equal Employment Opportunity Trainees
- 107.07 Sanitary Conditions Requirements
- 107.08 Public Convenience and Safety
  - (a) Employee Safety
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  - (b) Hold Harmless Clause
- 107.10 Blank
- 107.11 Bridges over Navigable Waters
- 107.12 Traffic Control Devices
- 107.13 Use of Explosives
- 107.14 Protection and Restoration of Property and Landscape
- 107.14.1 Erosion Control Plan and Proof of Publication
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- 107.16 Responsibility for Damage Claims
- 107.17 Opening Sections of Project to Traffic
- 107.18 Contractor's Responsibility for Work
- 107.19 Contractor's Responsibility for Utility Property and Services
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- 107.21 Personal Liability of Public Officials
- 107.22 Waiver of Legal Rights
- 107.23 Governing Law
- 107.24 Severability

### SECTION 108 -- PROSECUTION AND PROGRESS

- 108.01 Subletting of Contract
- 108.02 Notice to Proceed
- 108.03 Prosecution of the Work
- 108.04 Prephase Site Construction Meetings
- 108.05 Limitation of Operations

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- 108.06 Character of Workers, Methods, and Equipment
- 108.07 Determination and Extension of Contract Time
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- 109.01 Measurement of Quantities
  - (a) General Requirements
  - (b) Scales and Measurement by Mass (Weight)
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  - (h) Rental of Equipment
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- 109.02 Scope of Payment
- 109.03 Compensation for Altered Quantities
- 109.04 Cost Reduction Incentive
  - (a) Cost Reduction Incentive Proposal Requirements
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## 109.05 Extra Work and Force Account Work

- (a) Labor Costs
- (b) Bond and Insurance
- (c) Materials
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- (f) Subcontracting
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- (i) Cost Breakdown
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- 110.01 Description
- 110.02 Limitations
- 110.03 Method of Measurement
- 110.04 Basis of Payment

### SECTION 111 -- STOCKPILED MATERIALS

- 111.01 Description
- 111.02 General Requirements
- 111.03 Structural Steel and Concrete Structural Members
  - (a) Delivered to the Job Site
  - (b) Acceptably Stored at the Fabricator's or Manufacturer's Storage Facilities
- 111.04 Dowel Bar Assemblies
- 111.05 Granular Base, Subbase Materials, and Aggregates for HMA and Concrete Pavements
- 111.06 Bridge Expansion Joints
  - (a) Type SS
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#### SECTION 201 -- CLEARING AND GRUBBING

- 201.01 Description
- 201.02 General
- 201.03 Clearing and Grubbing
- 201.04 Scalping
- 201.05 Hedge Removal
- 201.06 Method of Measurement
  - (a) Area Basis
  - (b) Lump Sum Basis
  - (c) Linear Basis
  - (d) Individual Unit Basis

#### 201.07 Basis of Payment

- (a) Area Basis
- (b) Lump Sum Basis
- (c) Linear Basis
- (d) Individual Unit Basis
- (e) Clearing Right-of-Way
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### SECTION 202 -- REMOVAL OF STRUCTURES AND OBSTRUCTIONS

- 202.01 Description
- 202.02 General Requirements
  - (a) Type X Waste
  - (b) Type Y Waste
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## 202.03 Removal of Bridges, Culverts, and Other Drainage Structures

- (a) Complete
- (b) Portions
- (c) Disposal of Concrete
- 202.04 Removal of Pipe and Tile Drains
- 202.05 Removal of Pavement, Sidewalks, Curbs, Surface, Surface Milling, etc
- 202.06 Removal of Houses and Buildings
- 202.06.1 Inspection and Removal of Asbestos
- 202.07 Removal of Underground Storage Tanks Containing Petroleum Products or Other Hazardous Chemicals
  - (a) Type A Waste
  - (b) Type B Waste
  - (c) Type C Waste
- 202.08 Remediation of Contaminated Soil and Groundwater
- 202.09 Remediation of Other Regulated Materials
- 202.10 Transportation and Disposal of Regulated Materials
- 202.11 Blank
- 202.12 Method of Measurement
- 202.13 Basis of Payment

## SECTION 203 -- EXCAVATION AND EMBANKMENT

- 203.01 Description
- 203.02 Common Excavation
- 203.03 Rock Excavation
- 203.04 Unclassified Excavation
- 203.05 Peat Excavation

### Section Title

203	በቤ	Waterway	Excavation
ZUS.	w	vvalerway	r.xcavamon

203.07 Class Y Excavation

203.08 Borrow or Disposal

203.09 General Requirements

203.10 Disposal of Excavated Material (Except Waterway and Peat Excavation)

203.11 Disposal of Waterway Excavation

203.12 Disposal of Peat

203.13 Slides

203.14 Drainage

203.15 Excavating Rock

203.16 Peat Deposit Treatment

(a) Treatment of Existing Fills

(b) Treatment by Removal

(c) Treatment by Displacement

203.17 Cased Test Holes

203.18 Embankment Construction

203.19 Embankment Over and Around Structures

203.20 Rock and Shale Embankment

(a) Rock Embankment

(b) Shale. Shale and Soft Rock Mixtures. or Soft Rock

(c) Shale and Thinly Layered Limestone

203.21 Embankment on Hillsides or Slopes

203.22 Embankment Over Existing Roadbeds

203.23 Embankment Other Than Rock and Shale, With Density Control

203.24 Method of Making Density Tests

(a) Laboratory

(b) Field

203.25 Embankment Without Density Control

203.26 Proofrolling

203.27 Method of Measurement

(a) Contract Quantity

(b) Measured Quantities

(c) Measurement on a Linear Basis

(d) Measurement of Excavation Items on a Weight Basis

(e) Measurement of Embankments

(f) Measurement of Borrow

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(h) Measurement of Water for Shale, Shale and Soft Rock Mixtures, or Soft Rock

(i) Lump Sum

(j) Measurement of Exploratory Cores

203.28 Basis of Payment

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204.01 Description

204.02 Materials

204.03 Settlement Plates

(a) Installation of Settlement Plates

(b) Instrument Readings and Settlement Period

204.04 Method of Measurement

204.05 Basis of Payment

### SECTION 205 -- TEMPORARY EROSION AND SEDIMENT CONTROL

205.01 Description

205.02 Materials

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205.03 Temporary Per	rimeter Protection
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- (a) Straw Bales
- (b) Silt Fence
- 205.04 Temporary Slope Protection
- 205.05 Sediment Control in Side Ditches
- 205.06 Sediment Basin
- 205.06.1 Fish Pool and Sediment Trap
- 205.07 Temporary Inlet Protection
- 205.08 Maintenance of Erosion and Sediment Control Measures
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- 205.10 Method of Measurement
- 205.11 Basis of Payment

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- 206.01 Description
- 206.02 Class X Excavation
  - (a) General Excavation
  - (b) Excavation for Foundations of Traffic Support Structures
- 206.03 Wet Excavation
- 206.04 Dry Excavation
- 206.05 Foundation Excavation, Unclassified
- 206.06 General Requirements
- 206.07 Disposal of Excavated Material
- 206.08 Preparation of Foundation Surfaces
- 206.09 Cofferdams and Temporary Construction Dikes
- 206.10 Method of Measurement
- 206.11 Basis of Payment
  - (a) Culverts and Retaining Walls
  - (b) Bridges
  - (c) Traffic Structure Supports

## SECTION 207 -- SUBGRADE

- 207.01 Description
- 207.02 General Requirements
- 207.03 Subgrade for HMA Base Courses
- 207.04 Subgrade for Approaches
- 207.05 Subgrade for Cement Concrete Base and Pavement
- 207.06 Special Subgrade Treatment
- 207.07 Method of Measurement
- 207.08 Basis of Payment

#### SECTION 208 -- FINISHING SHOULDERS, DITCHES, AND SLOPES

- 208.01 Description
- 208.02 Finishing Shoulders
- 208.03 Finishing Ditches
- 208.04 Finishing Slopes
- 208.05 Blank
- 208.06 Finishing at Contract Drainage Structures
- 208.07 Method of Measurement
- 208.08 Basis of Payment

## SECTION 209 -- FINISHING EARTH GRADED ROADS

- 209.01 Description
- 209.02 Construction Requirements
- 209.03 Method of Measurement
- 209.04 Basis of Payment

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210.01 Desc 210.02 Con 210.03 Met	10 FINAL TRIMMING AND CLEANING ription struction Requirements and of Measurement of Payment	
211.01 Desc 211.02 Mat (a) Gradd (b) Gradd (c) Coars (d) Flow 211.03 Gen 211.04 Mec 211.05 Blan 211.07 B Bc 211.07.1 Ag 211.08 Span 211.09 Met	erials ation for Structure Backfill ations for Other Types of Backfill e Aggregate For End Bent Backfill able Mortar Substitution eral Requirements hanical Compaction ankment for Bridges rrow Around Bents agregate For End Bent Backfill	
212.01 Desc 212.02 Mat 212.03 Con 212.04 Met		
213.01 Desc 213.02 Mat 213.03 Prop 213.04 Mix (a) Flow (b) Aver (c) Mixir (d) Place (e) Limit 213.05 Blan 213.06 Met	erials ortioning age Penetration Resistance g Equipment ment ation of Operations	
214.01 Desc 214.02 Mat 214.03 Con 214.04 Met	1	
215.01 Desc 215.02 Mat 215.03 Test 215.04 Stor	•	OILS

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- 215.06 Preparation Of Subgrade
- 215.07 Spreading of Chemical Modifiers
- 215.08 Mixing
- 215.09 Compaction
- 215.10 Method of Measurement
- 215.11 Basis of Payment

## SECTION 216 -CELLULAR CONCRETE FILL, CCF

- 216.01 Description
- 216.02 Materials
- 216.03 Mix Design
- 216.04 Properties and Tests
  - (a) CCF Cast Density
  - (b) Foam Density
- 216.05 Storage and Handling
- 216.06 Weather Limitations
- 216.07 Preparation of Subgrade
- 216.08 Installation
- 216.09 Lots
- 216.10 Testing
- 216.11 Method of Measurement
- 216.12 Basis of Payment

### **SECTION 400 -- BASES**

- SECTION 301 -- Blank
- SECTION 302 -- Blank

### SECTION 303 -- COMPACTED AGGREGATE BASE, SURFACE, OR SHOULDERS

- 303.01 Description
  - (a) Type O Mix
  - (b) Type P Mix
- 303.02 Materials
- 303.03 Preparation of Type P Mixture
  - (a) Mixer Unit
  - (b) Conveyors and Feeders
  - (c) Water Pump and Meter
  - (d) Mixing
- 303.04 Calcium Chloride
- 303.05 Preparation of Subgrade or Subbase
- 303.06 Handling and Transporting Mixtures
- 303.07 Spreading Mixtures
- 303.08 Control of Width
- 303.09 Compacting Aggregate
- 303.10 Checking and Correcting Surface
- 303.11 Temperature Limitations
- 303.12 Priming Compacted Aggregate Base
- 303.13 Blank
- 303.14 Protection of Surface
- 303.15 Method of Measurement
- 303.16 Basis of Payment

### SECTION 304 -- SUBBASE

- 304.01 Description
- 304.02 Materials
- 304.03 Subgrade Preparation
- 304.04 Spreading

### Section Title

- 304.05 Compacting
- 304.06 Surface Requirements
- 304.07 Method of Measurement
- 304.08 Basis of Payment

### **SECTION 305 -- RECONDITIONING**

- 305.01 Description
- 305.02 Materials
- 305.03 Repairing
- 305.04 Rubblizing Existing PCCP
- 305.05 Patching Asphalt Pavement
- 305.06 Patching PCCP or PCCP Base
  - (a) Patching with PCC
  - (b) Patching with HMA Mixture
- 305.07 Retrofit Load Transfer for PCCP
- 305.08 Sealing Cracks and Joints in Asphalt Pavement
- 305.09 Filling Cracks and Joints in Concrete Pavement
- 305.10 Widening
  - (a) Widening with HMA Mixture
  - (b) Widening with PCC
  - (c) Widening with Compacted Aggregate
- 305.11 Method of Measurement
- 305.12 Basis of Payment
- SECTION 306 -- Blank

### SECTION 307 -- PORTLAND CEMENT CONCRETE BASE

- 307.01 Description
- 307.02 Materials
- 307.03 General Requirements
- 307.04 Joints
- 307.05 Blank
- 307.06 Final Finish
- 307.07 Curing
- 307.08 Monolithic Curb
- 307.09 Method of Measurement
- 307.10 Basis of Payment
- SECTION 308 -- BLANK
- SECTION 309 -- BLANK
- SECTION 310 BLANK

### **SECTION 400 -- ASPHALT PAVEMENTS**

## SECTION 401 -- QUALITY CONTROL/QUALITY ASSURANCE, QC/QA, HOT MIX ASPHALT, HMA, PAVEMENT

- 401.01 Description
- 401.02 Quality Control
- 401.03 Materials
- 401.04 Design Mix Formula
- 401.05 Volumetric Mix Design
- 401.06 Recycled Materials
- 401.07 Lots and Sublots
- 401.08 Job Mix Formula
- 401.09 Acceptance of Mixtures
- 401.10 General
- 401.11 Preparation of Surfaces to be Overlaid
- 401.12 Process Control

### Section Title

- 401.13 Weather Limitations
- 401.14 Spreading and Finishing
- 401.15 Joints
- 401.16 Density
  - (a) Mainline ESAL Equal To or Greater Than 1,000,000
  - (b) Blank
  - (c) Mainline ESAL Less Than 1,000,000
- 401.17 Shoulder Corrugations
  - (a) Formed Corrugations
  - (b) Milled Corrugations
- 401.18 Pavement Smoothness
- 401.19 Adjustment Points
  - (a) Mixture
  - (b) Density
    - 1. Mainline ESAL Equal To or Greater Than 1,000,000
    - Blank
  - (c) Smoothness
- 401.20 Appeals
  - (a) Mixture
  - (b) Density
    - 1. Mainline ESAL Equal To or Greater Than 1,000,000
    - 2. Blank
- 401.21 Method of Measurement
- 401.22 Basis of Payment

### SECTION 402 -- HOT MIX ASPHALT, HMA, PAVEMENT

- 402.01 Description
- 402.02 Materials
- 402.03 Job Mix Formula
- 402.04 Mix Criteria
  - (a) Composition Limits for Base Mixtures
  - (b) Composition Limits for Intermediate Mixtures
  - (c) Composition Limits for Surface Mixtures
  - (d) Composition Limits for HMA Rumble Strip Mixtures
  - (e) Composition Limits for HMA Wedge and Leveling Mixtures
- 402.05 Recycled Materials
- 402.06 Acceptance of Mixtures
  - (a) Mainline and Shoulders
  - (b) Wedge and Leveling and Rumble Strips
- 402.07 Preparation of Mixtures
- 402.08 General
- 402.09 Preparation of Surfaces to be Overlaid
- 402.10 Weather Limitations
- 402.11 Spreading and Finishing
- 402.12 Joints
- 402.13 Compaction
- 402.14 Low Temperature Density Requirements
- 402.15 Shoulder Corrugations
  - (a) Formed Corrugations
  - (b) Milled Corrugations
- 402.16 Pavement Smoothness
- 402.17 Method of Measurement
- 402.18 Basis of Payment

## SECTION 403 -- COLD MIX ASPHALT, CMA, PAVEMENT

403.01 Description

### Section Title

- 403.02 Materials
- 403.03 Weather Limitations
- 403.04 Equipment
- 403.05 Preparation of Mixtures
- 403.06 Preparation of Subgrade or Base
- 403.07 Spreading Mixture
- 403.08 Curing
- 403.09 Compaction
- 403.10 Surface Tolerances
- 403.11 Method of Measurement
- 403.12 Basis of Payment

### SECTION 404 -- SEAL COAT

- 404.01 Description
- 404.02 Asphalt Material
- 404.03 Cover Aggregate
- 404.04 Weather Limitations
- 404.05 Equipment
- 404.06 Preparation of Surface
- 404.07 Applying Asphalt Material
- 404.08 Application of Cover Aggregate
- 404.09 Method of Measurement
- 404.10 Basis of Payment

### SECTION 405 -- PRIME COAT

- 405.01 Description
- 405.02 Asphalt Material
- 405.03 Cover Aggregate
- 405.04 Weather Limitations
- 405.05 Equipment
- 405.06 Preparation of Surface
- 405.07 Application of Asphalt Material
- 405.08 Cover Aggregate
- 405.09 Method of Measurement
- 405.10 Basis of Payment

### SECTION 406 -- TACK COAT

- 406.01 Description
- 406.02 Asphalt Material
- 406.03 Equipment
- 406.04 Preparation of Surface
- 406.05 Application of Asphalt Material
- 406.06 Method of Measurement
- 406.07 Basis of Payment

### SECTION 407 -- DUST PALATIVE

- 407.01 Description
- 407.02 Asphalt Material
- 407.03 Weather Limitations
- 407.04 Equipment
- 407.05 Preparation of Surface
- 407.06 Application of Asphalt Material
- 407.07 Method of Measurement
- 407.08 Basis of Payment

## SECTION 408 -- EQUIPMENT

- 408.01 Production, Transportation, and Laydown of Asphalt Mixtures
- 408.02 Mixing Plant

### Section Title

- (a) HMA Mixing Plant
  - 1. Plant Inspection
  - 2. Proportioning Systems
  - 3. Material Storage
    - a. Aggregates
    - b. Asphalt
  - 4. Aggregate Feed System
  - 5. Drier Unit
  - 6. Dust Collector
  - 7. Mixing Unit
  - 8. Mix Load-out Scales
  - 9. Hot Surge Bins
  - 10. Sampling Point Requirements
- (b) CMA Mixing Plant

## 408.03 HMA Laydown Operations

- (a) Distributor
- (b) Hauling Equipment
- (c) Laydown Equipment
  - 1. Paver
  - 2. Widener
  - 3. Other Mechnical Devices
- (d) Compaction Equipment
  - 1. Tandem Roller
  - 2. Three Wheel Roller
  - 3. Pneumatic Tire Roller
  - 4. Vibratory Roller
  - 5. Trench Roller
  - 6. Speciality Roller/Compactor
- (e) Miscellaneous Equipment
  - 1. Aggregate Spreader
  - 2. Rotary Power Broom
- (f) Smoothness Equipment
  - 1. Profilograph
  - 2. Straightedge 4.9 m (16 ft)
  - 3. Straightedge 3 m (10 ft)

SECTION 409 -- Blank.

SECTION 410 - Blank

### **SECTION 500 -- CONCRETE PAVEMENT**

SECTION 501 -- QUALITY CONTROL/QUALITY ASSURANCE, QC/QA, PORTLAND CEMENT CONCRETE PAVEMENT, PCCP

- 501.01 Description
- 501.02 Quality Control
- 501.03 Materials
- 501.04 Concrete Mix Design
- 501.05 Concrete Mix Criteria
- 501.06 Trial Batch
- 501.07 Lots and Sublots
- 501.08 Acceptance
- 501.09 General
- 501.10 Preparation of Grade
- 501.11 Preparation of Subbase
- 501.12 Placement
- 501.13 Process Control

### Section Title

- 501.14 Concrete Mixing and Transportation
- 501.15 Weather Limitations
- 501.16 Placing Concrete
- 501.17 CMD Adjustments
- 501.18 Joints
- 501.19 Finishing
- 501.20 Curing
- 501.21 Form Removal
- 501.22 Pavement Inspection
- 501.23 Opening to Traffic
  - (a) Construction
  - (b) Non-Construction
- 501.24 Shoulder Corrugations
  - (a) Formed Corrugations
  - (b) Milled Corrugations
- 501.25 Pavement Smoothness
- 501.26 Pavement Thickness
  - (a) PCCP Removal
  - (b) PCCP Non-Payment
  - (c) PCCP Thickness
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    - 4. Approval of Formulation
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# Section Title

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- (c) White and Yellow Waterborne Traffic Paint
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909.07 Blank

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  - (c) Specific Requirements
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    - 5. Welded Steel Wire Fabric for Concrete Reinforcement
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- 910.06 Bronze and Copper Alloy
  - (a) Bronze Castings
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- 910.07 Steel Drain Pipe
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- 910.10 Guardrail Posts
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  - (e) Square Steel Posts
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  - (f) Portable Construction Sign Trailer
- 910.15 Delineator Posts
- 910.16 Copper Flashing
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- 910.18 Fence, Fittings, and Gates
  - (a) Farm Field or Woven Wire Fence
  - (b) Steel Fabric Chain Link Fence
    - 1. Tension Wire
    - 2. Stretcher Bars, Truss Rods, and Turnbuckles
    - 3. Braces
    - 4. Barbed Wire
  - (c) Aluminum Fabric Chain Link Fence
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- 911.01 Untreated Lumber
  - (a) General
    - 1. Boards
    - 2. Dimension Lumber
    - 3. Structural Lumber
    - 4. Timbers
    - 5. Timbers, Round
    - 6. Yard Lumber
    - 7. Surfaced or Dressed Lumber
    - 8. Rough Lumber
  - (b) Species and Grade
  - (c) Inspection
  - (d) Tolerances
  - (e) Untreated Piling
- 911.02 Treated Lumber
  - (a) General
  - (b) Bridge Lumber

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- (c) Piling
- (d) Guardrail Posts, Braces, and Battens
- (e) Sign Posts
- (f) Sawed Timber Posts and Blocks for Thrie-Beam and W-Beam Guardrail
  - 1. Species and Grades
  - 2. Department Grade GRP
    - a. Splits
    - b. Checks
    - c. Shakes
    - d. Stains
    - e. Slope of Grain
    - f. Wane
    - g. Knots
  - 3. Department Grade GRB
    - a. Splits
    - b. Checks
    - c. Shakes
    - d. Stains
    - e. Wane
    - f. Knots
  - 4. General Requirements
    - a. Decay
    - b. Unsound Wood
    - c. Crook or Bow
    - d. Dimensional Tolerances
  - 5. Pressure Treating Posts and Blocks
    - a. Machining
    - b. Blank
    - c. Inspection Before Treatment
    - d. Test for Moisture Content
    - e. Preservative Treatment
    - f. Material for Preservative Treatments

    - g. Treatment Methods h. Sorting and Spacing
    - i. Conditioning
    - j. Treatment
    - k. Inspection During Treatment
    - l. Retentions
    - m. Penetration
    - n. Inspection After Treatment
    - o. Branding
    - p. Conformance
    - q. Records
    - r. Independent Inspections
  - 6. Field Treatment of Posts and Blocks
  - 7. Rejection for Degrade After Treatment
- (g) Preservatives
  - 1. Waterborne Preservatives

# SECTION 912 -- CONCRETE CURING MATERIALS AND ADMIXTURES

- 912.01 Curing Materials
  - (a) Burlap Cloth made from Jute or Kenaf
  - (b) Waterproof Paper Blankets
  - (c) White Polyethylene Sheeting, Film
  - (d) White Burlap Polyethylene Sheet
  - (e) Liquid Membrane Forming Compounds

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- (f) Polyethylene Film.
- 912.02 Curing-Sealing Materials
- 912.03 Admixtures for Use in Concrete
  - (a) Air Entraining Admixtures
  - (b) Chemical Admixtures for Concrete
    - 1. Type A
    - 2. Type B
    - 3. Type C
    - 4. Type D
    - 5. Type E
    - 6. Type F
    - 7. Type G
    - 8. High Range Water Reducing and High Range Water Reducing and Retarding Admixture Systems
  - (c) Test Report
- 912.04 Latex Modifiers

# SECTION 913 -- MISCELLANEOUS

- 913.01 Water
- 913.02 Calcium Chloride
- 913.03 Sodium Chloride
- 913.04 Lime
  - (a) Hydrated Lime for Masonry
  - (b) Lime for Soil Modification
    - 1. Hydrated Lime and Quicklime
    - 2. Lime By-Products
- 913.05 Precast Concrete Curbing
- 913.06 Precast Concrete Units Not Otherwise Covered
- 913.07 Flexible Delineator Posts
- 913.07.1 Tubular Marker
- 913.08 Delineators
  - (a) Acrylic Plastic Delineators
  - (b) Reflective Sheeting Delineators
  - (c) Barrier Delineators
- 913.09 Glass Beads
- 913.10 Traffic Signs
  - (a) Sheet Signs
  - (b) Panel Signs
  - (c) Flexible Roll-Up Prismatic Reflective Sign
    - 1. Reflectivity
    - 2. Color
    - 3. Sheeting
    - 4. Durability
    - 5. Impact Resistance
    - 6. Sign Face Backing Fabric
    - 7. Cross Brace Assembly and Attaching Fasteners
    - 8. General Characteristics and Packaging
    - 9. Basis of Use
  - (d) Reflective Sheeting
    - 1. General
      - a. Reflectivity
      - b. Color
      - c. Adhesive
      - d. Sheeting
      - e. Durability
      - f. Impact Resistance
      - g. General Characteristics and Packaging

- 2. Enclosed Lens, Engineer Grade, and Super Engineer Grade, Reflective Sheeting
  - a. Reflectivity
  - b. Color
  - c. Adhesive
  - d. Sheeting
  - e. Durability
  - f. Impact Resistance
  - g. General Characteristics and Packaging
- 3. Encapsulated Lens, High Intensity, Reflective Sheeting
  - a. Reflectivity
  - b. Color
  - c. Adhesive
  - d. Sheeting
  - e. Durability
  - f. Impact Resistance
  - g. General Characteristics and Packaging
- 4. Flexible Encapsulated Lens Reflective Sheeting, High Intensity
  - a. Reflectivity
  - b. Color
  - c. Adhesive
  - d. Sheeting
  - e. Durability
  - f. Impact Resistance
  - g. General Characteristics and Packaging
- 5. Prismatic Lens, High Intensity, Reflective Sheeting
  - a. Reflectivity
  - b. Color
  - c. Adhesive
  - d. Sheeting
  - e. Durability
  - f. Impact Resistance
  - g. General Characteristics and Packaging
- 6. Prismatic Lens, Super High Intensity, Reflective Sheeting
  - a. Reflectivity
  - b. Color
  - c. Adhesive
  - d. Sheeting
  - e. Durability
  - f. Impact Resistance
  - g. General Characteristics and Packaging
- (e) Letters, Numerals, Symbols, and Accessories
  - 1. Embossed Reflective Sheeting Type
  - 2. Acrylic Plastic Type
- (f) Fiberglass Reinforced Plastic Sign Panels
  - 1. Mechanical Properties
  - 2. Physical Properties
    - a. Thickness
    - b. Length and Width
      - (1) Panel Length of 3660 mm (144 in.) or Less
      - (2) Panel Length Exceeding 3660 mm (144 in.)
      - (3) Panel Width of 3660 mm (144 in.) or Less
    - c. Squareness
    - d. Weather Resistance
    - e. Fire Resistance
    - f. Impact Resistance

- g. Coefficient of Linear Thermal Expansion
- h. Panel Smoothness
- i. Flatness
  - (1) Test Purpose
  - (2) Test Procedure
- j. Color
- (g) Samples and Tests
  - 1. Reflective Sheeting
  - 2. Traffic Signal Materials
- 913.11 Highway Illumination Materials
  - (a) Lighting Standards and Mast Arms, under 80 feet (24.4 m)
    - 1. General Requirements
    - 2. Aluminum Lighting Standards
      - a. Round Seamless
      - b. Single Longitudinal Welded
    - 3. Stainless Steel Lighting Standards
    - 4. Galvanized Steel Lighting Standards
    - 5. Wood Pole Lighting Standards
    - 6. Frangible Breakaway Bases
      - a. Cast Aluminum Transformer Base
      - b. Breakaway Coupling
    - 7. Anchor Bolts
  - (b) High Mast Standards of 24.5 m (80 ft) and Over
    - 1. High Mast Poles
    - 2. Welding
    - 3. Handholes
    - 4. Luminaire Ring Assembly
    - 5. Head Frame Assembly
    - 6. Winch Assembly
    - 7. External Drive System
    - 8. Cable Terminator
    - 9. Lightning Rod Assembly and Grounding System
    - 10. Anchor Bolts
  - (c) Wire and Cable
    - 1. Polyethylene Conduit
    - 2. Conductors in Cable-Duct
    - 3. Lighting Standard Circuit Wiring
    - 4. Sign and Underpass Wiring
    - 5. Aerial Cable
    - 6. High Mast Tower Luminaire Ring Conductors
    - 7. Power Cable-High Mast Poles
    - 8. Electrical Connectors
  - (d) Luminaires
    - 1. General Requirements
    - 2. Roadway Lighting Luminaires
    - 3. Sign Luminaires
    - 4. Underpass Luminaires
    - 5. High Mast Luminaires
  - (e) Circuit Breakers and Enclosure
    - 1. Circuit Breakers for Type II Service Point
    - 2. Circuit Breakers for Sign and Underpass Circuits
    - 3. Circuit Breakers for High Mast Poles
    - 4. E-Series Magnetic Circuit Breakers
  - (f) Multiple Relay Switches with Photocell Receptacles
  - (g) Shop Drawings

- (h) Materials Certification
- 913.12 Construction Warning Lights
  - (a) Flash Requirements
    - 1. Flash Rate
    - 2. On-Time
      - a. Type A
      - b. Type B
  - (b) Optical Requirements
    - 1. Effective Intensity
    - 2. Lens Illumination
    - 3. Reflex-Reflective Performance
    - 4. Testing Procedure
  - (c) Lens Requirements
    - 1. Size of Lens
    - 2. Directional Lenses
    - 3. Lens Chromaticity
    - 4. Lens Luminous Transmittance
    - 5. Lens Material
  - (d) Head and Case
    - 1. Swivel Head
    - 2. Case
  - (e) Photoelectric Controls
- 913.13 Flashing Arrow Sign
  - (a) Solar Powered
  - (b) Diesel Powered
  - (c) AC Powered
- 913.13.1 Temporary Worksite Speed Limit Sign Assembly
- 913.14 Pavement Marking Material
  - (a) Traffic Paint
  - (b) Durable Marking Material
    - 1. Thermoplastic
    - 2. Preformed Plastic
      - a. Material Requirements
        - (1) Tensile Strength
        - (2) Adhesive Stability Test
        - (3) Adhesive Shear Strength
        - (4) Bend Test
      - b. Packaging
      - c. Basis For Use
    - 3. 100 Percent Solids Epoxy
      - a. Material Requirements
        - (1) Glass Beads
        - (2) Abrasion Resistance
        - (3) Hardness
        - (4) Tensile Strength
        - (5) Compressive Strength
        - (6) Weather Resistance
        - (7) Laboratory Drying Time
        - (8) Viscosity
      - b. Materials Preparation
      - c. Packaging and Storage
      - d. Basis For Use
  - (c) Temporary Pavement Marking Tape
  - (d) Raised Pavement Marker
    - 1. Snowplowable Raised Pavement Marker

- a. Prismatic Reflector
  - (1) Optical Performance
  - (2) Seal Test
  - (3) Heat Resistance Test
  - (4) Strength Test
  - (5) Impact Test
  - (6) Temperature Cycling Test
  - (7) Adhesive Tensile Strength Test
  - (8) Basis for Use
- b. Cast Metal Base
  - (1) Epoxy Adhesive
  - (2) Basis for Use
- c. Precast Cement Concrete Base
  - (1) Adhesive for Precast Concrete Base
  - (2) Packaging
  - (3) Basis for Use
- 2. Temporary Raised Pavement Marker
  - a. Optical Requirements
  - b. Strength Requirements
  - c. Adhesive
  - d. Acceptance Evaluation
  - e. Basis for Use
- 913.15 Traffic Signal Materials and Equipment
  - (a) Traffic Signal Controller and Cabinet
    - 1. Model Approval
    - 2. Controllers or Control Units Furnished and Installed by the Contractor
    - 3. Blank
    - 4. Bench Testing
    - 5. Pretimed Solid State Digital Controller
      - a. General
      - b. Controller Requirements
      - c. Spare Modules
      - d. Controller Enclosure
      - e. Power Requirements
      - f. Certification of Traffic Control Units
      - g. Warranty
    - 6. Traffic Actuated Solid State Digital Controller
      - a. General
      - b. Controller Requirements
      - c. Spare Modules
      - d. Controller Enclosure
      - e. Power Requirements
      - f. Certification of Traffic Control Units
        - (1) Certification of a Production Run Model
        - (2) Certification of Environmental Testing
      - g. Warranty
    - 7. Cabinet Requirements for Traffic Signal Controllers
      - a. General
      - b. G Cabinet
        - (1) Cast Aluminum Pedestal Base
        - (2) Pedestal Pole
        - (3) Pole Cap
      - c. M Cabinet
      - d. P-1 Cabinet
    - 8. Two Circuit Alternating Flasher

- a. General
- b. Cabinet Requirements
- (b) Interconnection Equipment.
  - 1. Hardwire Interconnection
    - a. Electro-Mechanical Dial Coordination Unit
      - (1) General
      - (2) Additional Requirements for Master Locations
      - (3) Additional Requirements for Secondary Locations
- (c) Blank
- (d) Signal Head Components
  - 1. Vehicle Signal Face
    - a. General
    - b. Housing, Door, and Visor
    - c. Lens
    - d. Reflector Assembly
    - e. Lamp Receptacle and Wiring
    - f. Section Coupling

    - g. Terminal Block h. Material Requirements
      - (1) Polycarbonate Signal Head
      - (2) Die-Cast Aluminum Signal Head
    - i. Certification
  - 2. Pedestrian Signal Head
    - a. Housing, Door, and Visor
    - b. Optical Unit
    - c. Lens
    - d. Message
    - e. Reflector Assembly
    - f. Light Distribution
    - g. Electrical
  - 3. Disconnect Hanger Junction Box
  - 4. Signal Bulbs
  - 5. Free Swinging Signal Support Assemblies
  - 6. Mid-Mast Arm Mount Signal Bracket
  - 7. Pedestal Mounted Control Cabinets or Pedestrian Signal Heads
- (e) Signal Support
  - 1. Steel Strain Pole
    - a. Maximum Load 35.6 kN (8000 lbs)
  - 2. Wood Strain Pole
  - 3. Signal Cantilever Structures
    - a. General
    - b. Signal Support
    - c. Combination Signal-Luminaire Support
    - d. Pole Requirements
      - (1) General
      - (2) Deflection
      - (3) Materials
      - (4) Hardware
      - (5) Anchor Base
    - e. Arm Requirements
      - (1) Signal Cantilever Arm
      - (2) Luminaire Mast Arm for Combination Support
      - (3) Materials
    - f. Anchor Bolts
    - g. Finish

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- h. Certification
- i. Shop Drawings
- 4. Downguys, Anchors, Rods, and Guards
- (f) Messenger Cable
  - 1. Messenger Cable
  - 2. Span, Catenary, and Downguy Cable
  - 3. Tether and Support Cable
  - 4. Cable Hardware
    - a. Messenger Hangers
    - b. Cable Ring
    - c. Clamps
    - d. Servi-Sleeves
    - e. Straight Eye-Bolts
    - f. Hub-Eyes
  - 5. Signal Cable
    - a. Hook-up Wire
    - b. Signal Control Cable
    - c. Integral Messenger Interconnect Cable
    - d. 6 Pair/19 Telemetry Cable
    - e. Fiber Optic Interconnect Cable
    - f. Service Cable
    - g. Detection Wire and Sealant
      - (1) Loop Detector Lead-in Cable
      - (2) Roadway Loop Wire
      - (3) Sealant
    - h. Ground Wire
    - i. Splicing Kit
- (g) Ground Rod and Connections
- (h) Castings for Handholes
- (i) Entrance Switch
- (j) Conduit and Fittings
  - 1. Steel Conduit
  - 2. Polyvinyl Chloride Conduit
- (k) Detector Housing
- (l) Certification
- 913.16 Fabric for Waterproofing
- 913.17 Packaged, Dry, Combined Materials for Mortar and Concrete
- 913.18 Geotextile for Use Under Riprap
- 913.19 Geotextile for Use with Underdrains
- 913.20 Geotextile for Silt Fence
- 913.21 Geogrid for Stabilization or Modification

# SECTION 914 -- ROADSIDE DEVELOPMENT MATERIALS

- 914.01 Special Topsoil for Roadside Development
- 914.02 Blank
- 914.03 Fertilizer
- 914.04 Grass and Legume Seed
- 914.05 Mulch
  - (a) Mulch for Seeding
    - 1. Excelsior Mulch
    - 2. Wood Cellulose Fiber
    - 3. Excelsior Blanket
    - 4. Paper Mat
    - 5. Straw Mat
  - (b) Mulch for Plants
- 914.06 Leguminous Inoculants

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- 914.07 Sod
- 914.08 Plant Materials
  - (a) Quality of Plant Materials
  - (b) Plant Names
  - (c) Substitutions
  - (d) Grading Standards
  - (e) Nursery Inspection and Plant Quarantine
  - (f) Balled and Burlapped Plants
  - (g) Container Grown Plants
  - (h) Bare Rooted Plants
  - (i) Collected Plants
  - (j) Forms, Shapes, and Condition of Plants
  - (k) Inspection
  - (l) Shipment
  - (m) Certification
- 914.09 Miscellaneous Material
  - (a) Water
  - (b) Stakes for Bracing and Anchoring
  - (c) Tree Wound Dressing
  - (d) Porous Material
  - (e) Pipe
  - (f) Staples
  - (g) Plastic Net

# SECTION 915 -- BRIDGE PILES AND BEARINGS

- 915.01 Steel Shell Encased Concrete Piles and Epoxy Coated Steel Shell Encased Reinforced Concrete Piles
  - (a) General Requirements
  - (b) Fluted Steel Pile Shells
  - (c) Rounded Steel Pipe Shells
  - (d) Epoxy Coating for Piles
    - 1. Prequalification of Organic Coatings for Steel Piles
      - a. Product Data Sheet
      - b. Fingerprint
      - c. Materials Safety Data Sheets
      - d. Laboratory Report
        - (1) Tensile Strength and Elongation
        - (2) Impact Resistance
        - (3) Abrasion Resistance
        - (4) Salt Fog
    - 2. Application
      - a. Surface Preparation
      - b. Coating Application
        - (1) Thickness
        - (2) Cure
        - (3) Continuity of Coating
  - 3. Certification
- 915.02 Steel H Piles and Epoxy Coated Steel H Piles
- 915.03 Wood Piles
- 915.04 Elastomeric Bearings
  - (a) Description
  - (b) Materials
  - (c) Manufacturing Requirements
  - (d) Appearance and Dimensions
  - (e) Quality Assurance
  - (f) Certification

# Section Title

# SECTION 916 -- MATERIALS CERTIFICATIONS

# 916.01 General

# 916.02 Types of Certifications

- (a) Type A
- (b) Type B
- (c) Type C (d) Type D
- (e) Other Types
- (f) Requirements for Small Quantities of Materials
- (g) Buy American Requirement

# 916.03 Sample Forms

- (a) For Buy American Requirement
- (b) Sample Type A Certification Form
- (c) Sample Type B Certification Form (d) Sample Type C Certification Form
- (e) Sample Type D Certification Form
- (f) Sample Asbestos Exclusion Letter

# SECTION 917 -- QUALITY ASSURANCE AGGREGATE CERTIFICATION

- 917.01 General Requirements
- 917.02 Quality Control Plan
- 917.03 Source Approval Requirements
  - (a) Step 1
  - (b) Step 2
  - (c) Step 3
- 917.04 Removal from Certified Producer Status
- **917.05** Appeals