

TABLE OF CONTENTS

Section	Title
---------	-------

SECTION 100 -- GENERAL PROVISIONS

SECTION 101 -- DEFINITIONS AND TERMS

101.01	Abbreviations
101.02	Above Normal Rainfall
101.03	Blank
101.04	Bid Bond
101.05	Bidder
101.06	Bridge
(a)	Length
(b)	Roadway Width
101.07	Calendar Day
101.08	Blank
101.09	Change Order
101.10	Construction Limits
101.11	Contract
101.12	Contract Information Book
101.13	Contract Item (Pay Item)
101.14	Contract Time
101.15	Contractor
101.16	Culvert
101.17	Department
(a)	Materials and Tests Division
(b)	Contract Services Section
(c)	Procurement and Distribution Division
101.18	Commissioner
101.19	Engineer
101.20	Equipment
101.21	Extra Work
101.22	Force Account Work
101.22.1	Frequency Manual
101.23	Holidays
101.24	Invitation for Bids
101.25	Itemized Proposal
101.26	Laboratory
101.27	Major and Minor Contract Items
101.28	Materials
101.29	Notice to Proceed
101.30	Open to Unrestricted Traffic
101.31	Pavement Structure
101.32	Performance Bond
101.33	Plans
101.33.1	Professional Engineer
101.34	Profile Grade
101.35	Project
101.36	Proposal
101.37	Proposal Book
101.38	Reasonably Close Conformance
101.39	Right-of-Way
101.40	Road
101.41	Roadbed
101.42	Roadside
101.43	Roadside Development
101.44	Roadway
101.45	Schedule of Pay Items
101.46	Shoulder

TABLE OF CONTENTS

Section Title

101.47 Sidewalk
101.48 Special Provisions
101.49 Specifications
101.50 Specified Completion Date
101.51 State
101.52 Street
101.53 Structures
101.53.1 Substantial Completion
101.54 Blank
101.55 Subcontractor
101.56 Subgrade
101.57 Substructure
101.58 Superintendent
101.59 Superstructure
101.60 Supplemental Specifications
101.61 Surety
101.62 Technician or Inspector
101.63 Titles (Headings)
101.64 Township, Town, City
101.65 Traveled Way
101.66 Work
101.67 Work Day
101.68 Working Drawings

SECTION 102 -- BIDDING REQUIREMENTS AND CONDITIONS

102.01 Prequalification and Bidding
102.02 Certification Regarding Lobbying for Contracts, Grants, Loans, and Cooperative Agreements

SECTION 103 -- AWARD AND EXECUTION OF CONTRACT

103.01 Disadvantaged Business Enterprise Program
 (a) General Requirements
 (b) Definitions
 1. DBE
 2. Small Business Concern
 3. Socially and Economically Disadvantaged Individuals
 4. Certified DBE
 (c) Goal
 1. DBE Joint Venture Type A
 2. DBE Joint Venture Type B
 (d) Affirmative Actions
 (e) Guidelines for Determining Good Faith Efforts
 (f) Affirmative Action Certification
 (g) Subcontracts
 (h) Leases and Rentals
 (i) Records and Reports
103.02 Specific Equal Employment Opportunity Responsibilities
103.03 Blank
103.04 Insurance
 (a) Worker's Compensation and Employer's Liability
 (b) Commercial General Liability
 (c) Business Automobile Liability
 (d) Railroad's Protective Liability
 (e) Owner's and Contractor's Protective Liability Insurance Coverage for Operations of Designated Contractor
 (f) Basis of Payment

TABLE OF CONTENTS

Section Title

103.05	Waiver of Damages
103.06	Wage and Labor Requirements
(a)	Nondiscrimination of Employees
(b)	Affidavits and Payrolls
(c)	Wage Stipulations
1.	General Decision Included in Contract Information Book
2.	General Decision Not Included in Contract Information Book
103.07	Accident Prevention and Safety
SECTION 104 -- SCOPE OF WORK	
104.01	Intent of Contract
104.02	Differing Site Conditions, Suspension of Work and Significant Changes in the Character of Work
(a)	Differing Site Conditions
(b)	Suspensions of Work Ordered by the Engineer
(c)	Significant Changes in the Character of Work
(d)	Pre-established Remedies to Changed Conditions
104.03	Extra Work
104.04	Maintenance of Traffic
(a)	Special Detours
(b)	Maintenance Directed by the Engineer
(c)	Blank
(d)	Traffic Control for Patching on a Two-Lane Roadway
104.05	Removal and Disposal of Structures and Obstructions
104.06	Removal and Disposal of Regulated Materials
(a)	For Such Materials which are Identified in the Proposal Book as Being Present on the Project Site
(b)	For Such Materials which are not Identified in the Proposal Book as Being Present on the Project Site
104.07	Rights in and Use of Materials Found in the Project Site
104.08	Final Clean-Up
SECTION 105 -- CONTROL OF WORK	
105.01	Authority of the Engineer
105.02	Plans and Working Drawings
105.03	Conformance with Plans and Specifications
105.04	Coordination of Plans, Standard Specifications, Supplemental Specifications, and Special Provisions
105.05	Cooperation by Contractor
105.06	Cooperation with Utilities
105.07	Cooperation Between Contractors
105.08	Construction Stakes, Lines, and Grades
(a)	Construction Engineering by the State
(b)	Construction Engineering by the Contractor
(c)	Production Staking by the Contractor
105.09	Duties of Technician and Inspector
105.10	Inspection of Work
105.11	Removal of Unacceptable and Unauthorized Work
105.12	Load Restrictions
105.13	Maintenance During Construction
105.14	Failure to Maintain Roadway, Structures, Barricades, and Construction Signs
105.15	Acceptance and Final Inspection
(a)	Partial Acceptance
(b)	Final Acceptance
105.16	Claims for Adjustment and Disputes
105.17	Field Office
105.18	Method of Measurement
105.19	Basis of Payment

TABLE OF CONTENTS

Section Title

SECTION 106 -- CONTROL OF MATERIAL

106.01 Source of Supply and Quality Requirements

- (a) Approved or Prequalified Materials
- (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

106.05 Storage of Materials

106.06 Handling Materials

106.07 Unacceptable Materials

106.08 Hazard Communication Program

106.09 Department Furnished Materials

106.10 Proportioning Materials

106.11 Sample Asbestos Exclusion Letter

SECTION 107 -- LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

107.01 Laws to be Observed

107.02 Permits, Licenses, and Taxes

107.03 Patented Devices, Materials, and Processes

107.04 Restoration of Surfaces Opened by Permit

107.05 Federal Aid Provisions

107.06 Equal Employment Opportunity Trainees

107.07 Sanitary Conditions Requirements

107.08 Public Convenience and Safety

- (a) Employee Safety
- (b) Dust and Air Pollution
- (c) Protection to Traffic
- (d) Notice to Local Public Officials
- (e) Convenience to Traffic and Property Owners

107.09 Railroad-Highway Requirements

- (a) Protection of Track Ballast
- (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

107.15 Forest Protection

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

107.20 Furnishing Right-of-Way

107.21 Personal Liability of Public Officials

107.22 Waiver of Legal Rights

107.23 Governing Law

107.24 Severability

TABLE OF CONTENTS

Section Title

SECTION 108 -- PROSECUTION AND PROGRESS

- 108.01 Subletting of Contract
- 108.01.1 Release of Retainage to Subcontractors
- 108.02 Notice to Proceed
- 108.03 Prosecution of the Work
- 108.04 Prephase Site Construction Meetings
- 108.05 Limitation of Operations
- 108.06 Character of Workers, Methods, and Equipment
- 108.07 Determination and Extension of Contract Time
- 108.08 Failure to Complete on Time
- 108.09 Default and Termination of Contract
- 108.10 Termination of Contractor's Responsibility
- 108.11 Contract Documentation

SECTION 109 -- MEASUREMENT AND PAYMENT

- 109.01 Measurement of Quantities
 - (a) General Requirements
 - (b) Scales and Measurement by Mass (Weight)
 - (c) Measurement by Volume
 - (d) Measurement of Asphalt Materials
 - (e) Measurement of PCC
 - (f) Measurement of Aggregates
 - (g) Measurement of Timber or Lumber
 - (h) Rental of Equipment
 - (i) Manufactured Materials
- 109.02 Scope of Payment
- 109.03 Compensation for Altered Quantities
- 109.04 Cost Reduction Incentive
 - (a) Cost Reduction Incentive Proposal Requirements
 - (b) Approval of Proposal
 - (c) Method of Measurement
 - (d) Basis of Payment
- 109.05 Extra Work and Force Account Work
 - (a) Labor Costs
 - (b) Bond and Insurance
 - (c) Materials
 - (d) Equipment
 - (e) Miscellaneous
 - (f) Subcontracting
 - (g) Compensation
 - (h) Statements
 - (i) Cost Breakdown
- 109.06 Eliminated Pay Items
- 109.07 Partial Payments
- 109.08 Final Payment

SECTION 110 -- MOBILIZATION AND DEMOBILIZATION

- 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

TABLE OF CONTENTS

Section	Title
---------	-------

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
(b)	Type M
111.07	Structural Supports for Signals, Signs and Luminaries
111.08	Precast Concrete Median Barrier
111.09	Additional Requirements
111.10	Method of Measurement
111.11	Basis of Payment

SECTION 200 -- EARTHWORK

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
(f)	Exclusions

SECTION 202 -- REMOVAL OF STRUCTURES AND OBSTRUCTIONS

202.01	Description
202.02	General Requirements
(a)	Type X Waste
(b)	Type Y Waste
(c)	Type Z Waste
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

TABLE OF CONTENTS

Section	Title
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
203.06	Waterway Excavation
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
	(g) Measurement of Subgrade Treatment
	(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
SECTION 204 -- GEOTECHNICAL INSTRUMENTATION	
204.01	Description
204.02	Materials

TABLE OF CONTENTS

Section Title

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	
205.03 Control Measures	
(a) Silt Fence	
(b) Temporary Mulching	
(c) Check Dams	
1. Revetment Riprap	
2. Straw Bales	
(d) Interceptor Ditches	
(e) Sediment Traps	
(f) Sediment Basins	
(g) Ditch Inlet Protection	
(h) Slope Drains	
(i) Temporary Seeding	
(j) Vegetative Filter Strips	
(k) Splashpads	
(l) Deck and Curb Inlet Protection	
(m) Detention Ponds	
(n) Retention Ponds	
205.04 Maintenance	
205.05 Removal	
205.06 Method of Measurement	
205.07 Basis of Payment	
SECTION 206 -- STRUCTURE EXCAVATION	
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	

TABLE OF CONTENTS

Section	Title
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
SECTION 210 -- FINAL TRIMMING AND CLEANING	
210.01	Description
210.02	Construction Requirements
210.03	Method of Measurement
210.04	Basis of Payment
SECTION 211 -- B BORROW FILL AND BACKFILL	
211.01	Description
211.02	Materials
(a)	Gradation for Structure Backfill
(b)	Gradations for Other Types of Backfill
(c)	Coarse Aggregate For End Bent Backfill
(d)	Flowable Mortar Substitution
211.03	General Requirements
211.04	Mechanical Compaction
211.05	Blank
211.06	Embankment for Bridges
211.07	B Borrow Around Bents
211.07.1	Aggregate For End Bent Backfill
211.08	Spandrel Filling
211.09	Method of Measurement
211.10	Basis of Payment
SECTION 212 -- STOCKPILED SELECTED MATERIALS	
212.01	Description
212.02	Materials
212.03	Construction Requirements
212.04	Method of Measurement
212.05	Basis of Payment
SECTION 213 -- FLOWABLE MORTAR	
213.01	Description
213.02	Materials
213.03	Proportioning

TABLE OF CONTENTS

Section	Title
---------	-------

213.04 Mix

- (a) Flow
- (b) Average Penetration Resistance
- (c) Mixing Equipment
- (d) Placement
- (e) Limitation of Operations

213.05 Blank

213.06 Method of Measurement

213.07 Basis of Payment

SECTION 214 -- Blank

SECTION 215 -- CHEMICAL MODIFICATION OF SUBGRADE SOILS

215.01 Description

215.02 Materials

215.03 Testing And Mix Design

215.04 Storage and Handling

215.05 Weather Limitations

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 300 -- 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

TABLE OF CONTENTS

Section	Title
---------	-------

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
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

TABLE OF CONTENTS

Section Title

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
- 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
 - (d) Shoulders
- 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
 - 2. 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

TABLE OF CONTENTS

Section	Title
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
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

TABLE OF CONTENTS

Section	Title
---------	-------

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

(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 Mechanical 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)

TABLE OF CONTENTS

Section	Title
---------	-------

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

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

501.27 Tolerance

(a) Plastic Unit Weight

(b) Water to Cementitious Ratio

(c) Flexural Strength

(d) Air Content

501.28 Adjustment Points

(a) Flexural Strength

1. Lots

2. Sublots

(b) Air Content

1. Lots

2. Sublots

(c) Thickness

(d) Smoothness

501.29 Appeals

TABLE OF CONTENTS

Section Title

(a) Flexural Strength	
(b) Air Content	
501.30 Method of Measurement	
501.31 Basis of Payment	
SECTION 502 -- PORTLAND CEMENT CONCRETE PAVEMENT, PCCP	
502.01 Description	
502.02 Materials	
502.03 Concrete Mix Design	
502.04 Concrete Mix Criteria	
(a) Portland Cement Concrete	
(b) High-Early Strength Concrete	
502.05 Job Control	
502.06 General	
502.07 Preparation of Grade	
502.08 Preparation of Subbase	
502.09 Placement	
502.10 Concrete Mixing and Transportation	
(a) Central Mixed Concrete	
(b) Shrink Mixed Concrete	
(c) Transit Mixed Concrete	
502.11 Weather Limitations	
502.12 Placing Concrete	
502.13 Joints	
502.14 Finishing	
502.15 Curing	
502.16 Form Removal	
502.17 Pavement Inspection	
502.18 Opening to Traffic	
(a) Construction	
(b) Non-Construction	
502.19 Shoulder Corrugations	
(a) Formed Corrugations	
(b) Milled Corrugations	
502.20 Pavement Smoothness	
502.21 Pavement Thickness	
(a) Sections	
(b) PCCP Adjusted Payment	
(c) PCCP Non-Payment	
(d) PCCP Removal	
(e) PCCP Thickness	
502.22 Method of Measurement	
502.23 Basis of Payment	
SECTION 503 -- PCCP JOINTS	
503.01 Description	
503.02 Materials	
503.03 Joints	
(a) Type D-1 Contraction Joint	
(b) Longitudinal Joint	
(c) Transverse Construction Joints	
(d) Longitudinal Construction Joint	
(e) Terminal Joints	
(f) Expansion Joints	
(g) Retrofitted Tie Bars	
503.04 Dowel Bar Assemblies	
503.05 Sealing Cracks and Joints	

TABLE OF CONTENTS

Section Title

503.06 Random Crack Remediation

- (a) Transverse
 - 1. Retrofit Load Transfer
 - 2. PCCP Replacement
- (b) Longitudinal

503.07 Method of Measurement

503.08 Basis of Payment

SECTION 504 -- PCCP FINISHING AND CURING

504.01. Description

504.02 Materials

504.03 Finishing

504.04 Curing

- (a) Liquid Membrane Forming Compounds
- (b) Double Burlap
- (c) Waterproof Covers
- (d) Straw

504.05 Method of Measurement

504.06 Basis of Payment

SECTION 505 – TESTS AND PROCEDURES

505.01 Test Methods and Procedures

- (a) Exceptions to AASHTO T 23
- (b) Exceptions to AASHTO T 97
- (c) Exceptions to AASHTO T 121
- (d) Exceptions to AASHTO T 141
- (e) Exceptions to AASHTO T 152

SECTION 506 -- PCCP PATCHING

506.01 Description

506.02 Materials

506.03 Concrete Mix Design

506.04 Concrete Mix Criteria

506.05 Trial Batch

506.06 Job Control

506.07 PCCP Removal

- (a) Partial Depth Removal
- (b) Full Depth Removal

506.08 Concrete Mixing and Transportation

- (a) Central Mixed Concrete
- (b) Shrink Mixed Concrete
- (c) Transit Mixed Concrete

506.09 Weather Limitations

506.10 Placing Concrete

- (a) Partial Depth
- (b) Full Depth

506.11 Opening to Traffic

506.12 Method of Measurement

506.13 Basis of Payment

SECTION 507 -- EQUIPMENT

507.01 Production, Transportation, and Placement of PCC Mixtures

507.02 Mixing Plant

- (a) Plant Inspection
- (b) Proportioning System

TABLE OF CONTENTS

Section	Title
	(c) Material Storage
	1. Aggregates
	2. Cementitious Materials
	3. Admixtures
	(d) Hoppers
	(e) Mixing System
	1. Central or Stationary Mixers
	2. Truck Mixers
507.03	Transportation
	(a) Truck Mixers and Truck Agitators
	(b) Non-Agitator Trucks
507.04	Placement Equipment
	(a) Slipform
	(b) Form Riding Equipment
	(c) Hand Placement
	1. Steel Forms
	2. Wood Forms
	3. Finishing Equipment
	4. Vibrators
507.05	Curing
507.06	Texturing Equipment
507.07	Sawing Equipment
507.08	Miscellaneous Equipment
	(a) Hand Tools
	(b) Joint Sealing
	(c) Grinding
507.09	Testing Facility and Equipment
	(a) Testing Facility
	(b) Testing Equipment
	(c) Profilograph
	(d) Straightedge - 4.9 m (16 ft)
	(e) Straightedge - 3 m (10 ft)

SECTION 600 -- INCIDENTAL CONSTRUCTION

SECTION 601	-- GUARDRAIL
601.01	Description
601.02	Materials
601.03	General Requirements
601.04	Guardrail Erection
601.05	Curved W-Beam Guardrail Systems
601.06	Guardrail Transitions
601.07	Guardrail End Treatments
601.07.1	Impact Attenuators
601.08	Extension of Existing Guardrail
601.09	Removal of Existing Guardrail
601.10	Adjusting Existing Guardrail Height
601.11	Resetting Guardrail
601.12	Method of Measurement
601.13	Basis of Payment
SECTION 602	-- CONCRETE BARRIER
602.01	Description
602.02	Materials

TABLE OF CONTENTS

Section Title

- 602.03 Concrete Barrier and Concrete Glare Screen
 - (a) Precast Concrete Barrier and Concrete Glare Screen
 - (b) Cast-in-Place Concrete Barrier and Concrete Glare Screen
 - (c) Finishing
 - (d) Sealing
 - (e) Joints
 - (f) Reflectorization

- 602.04 Temporary Concrete Barrier
 - (a) Placement
 - (b) Connection
 - (c) Anchorage
 - (d) Delineation

602.05 Method of Measurement

602.06 Basis of Payment

SECTION 603 -- FENCES

- 603.01 Description
- 603.02 Materials
- 603.03 General Requirements
- 603.04 Setting Posts
- 603.05 Placing Barbed and Tension Wire and Fabric
- 603.06 Resetting Fence
- 603.07 Method of Measurement
- 603.08 Basis of Payment

SECTION 604 -- SIDEWALKS, CURB RAMPS AND STEPS

- 604.01 Description
- 604.02 Materials
- 604.03 Portland Cement Concrete Sidewalks and Curb Ramps
 - (a) General Requirements
 - (b) Excavation
 - (c) Forms
 - (d) Placing Concrete
 - (e) Finishing
 - (f) Joints
 - (g) Curing
- 604.04 Portland Cement Concrete Steps
- 604.05 Reconstructed Portland Cement Concrete Sidewalk
- 604.06 Re-Laid Portland Cement Concrete Sidewalk
- 604.07 HMA Sidewalk
 - (a) Excavation and Forms
 - (b) Bed Course
 - (c) Placing HMA Sidewalk
- 604.08 Backfilling and Finishing Shoulders and Slopes
- 604.09 Method of Measurement
- 604.10 Basis of Payment

SECTION 605 -- CURBING

- 605.01 Description
- 605.02 Materials
- 605.03 Precast Cement Concrete Curbing
 - (a) Excavation
 - (b) Installation
 - (c) Joints
 - (d) Backfilling

TABLE OF CONTENTS

Section	Title
605.04	Cast in Place Cement Concrete Curbing
(a)	Excavation
(b)	Forms
(c)	Proportioning and Placing
(d)	Curb Turnouts and Combined Concrete Curb and Gutter Turnouts
(e)	Joints
(f)	Curing
(g)	Backfilling
(h)	Curb Machine
(i)	Integral Curb Walk
605.05	Reflecting Cement Concrete Curbing
605.06	Cement Concrete Center Curbing
605.07	HMA Curbing
(a)	Excavation
(b)	Preparation of Bed
(c)	Mixture
(d)	Placing
(e)	Painting and Sealing
605.08	Resetting Curbing
(a)	Salvage of Curbing
(b)	Curb Removal
(c)	Excavation
(d)	Resetting
(e)	Backfilling
605.09	Method of Measurement
605.10	Basis of Payment
SECTION 606 -- Blank	
SECTION 607 -- PAVED SIDE DITCH OR CONCRETE GUTTER	
607.01	Description
607.02	Materials
607.03	General Requirements
607.04	Cement Concrete Gutter and Turnout
607.05	Method of Measurement
607.06	Basis of Payment
SECTION 608 -- SHOULDER DRAINS	
608.01	Description
608.02	Materials
608.03	General Requirements
608.04	Method of Measurement
608.05	Basis of Payment
SECTION 609 -- Blank	
SECTION 610 -- SURFACES FOR APPROACHES	
610.01	Description
610.02	Materials
610.03	General Requirements
610.04	Existing Approaches and Crossovers
610.05	Reinforced Concrete Bridge Approach
(a)	Machine Method
(b)	Hand Method
610.06	Method of Measurement
610.07	Basis of Payment

TABLE OF CONTENTS

Section	Title
---------	-------

SECTION 611 -- CROSSOVERS, DRIVEWAYS AND MAILBOX INSTALLATIONS

- 611.01 Description
- 611.02 Materials
- 611.03 General Requirements
- 611.04 Temporary Crossovers
- 611.05 Mailbox Assembly
- 611.06 Method of Measurement
- 611.07 Basis of Payment

SECTION 612 -- UNDERSEALING

- 612.01 Description
- 612.02 Materials
- 612.03 Shoulders
- 612.04 Drilled Holes
- 612.05 Pumping Asphalt
- 612.06 Method of Measurement
- 612.07 Basis of Payment

SECTION 613 -- SALVAGED ROAD MATERIALS

- 613.01 Description
- 613.02 Materials
- 613.03 Construction Requirements
- 613.04 Method of Measurement
- 613.05 Basis of Payment

SECTION 614 -- CONCRETE HEADER

- 614.01 Description
- 614.02 Materials
- 614.03 PCC Header
- 614.04 Reconstructed Cement Concrete Header
- 614.05 Method of Measurement
- 614.06 Basis of Payment

SECTION 615 -- MONUMENTS, MARKERS AND PARKING BARRIERS

- 615.01 Description
- 615.02 Materials
- 615.03 Reinforced Cement Concrete Right-of-Way Markers
- 615.04 Monuments
- 615.05 Bench Mark Posts
- 615.06 Parking Barriers
- 615.07 Setting Right-of-Way Markers
- 615.08 Resetting Right-of-Way Markers
- 615.09 Setting Monuments
- 615.10 Re-Established Monuments
- 615.11 Setting Bench Mark Posts and Tablets
- 615.12 Reset Bench Mark Posts
- 615.13 Method of Measurement
- 615.14 Basis of Payment

SECTION 616 -- RIPRAP AND SLOPEWALL

- 616.01 Description
- 616.02 Materials
- 616.03 Placing Dumped Riprap
- 616.04 Placing Revetment, Class 1, and Class 2 Riprap
- 616.05 Placing Uniform Riprap
- 616.06 Blank
- 616.07 Placing Grouted Riprap
- 616.08 Placing Precast Cement Concrete Riprap

TABLE OF CONTENTS

Section Title

616.09 Slopewall
616.09.1 Undermined Paved Side Ditch
616.10 Installation of Geotextile Under Riprap
616.11 Method of Measurement
616.12 Basis of Payment

SECTION 617 -- GEOGRID FOR SUBGRADE STABILIZATION OR MODIFICATION

617.01 Description
617.02 Materials
617.03 Foundation Preparation
617.04 Geogrid Placement
617.05 Fill Placement
617.06 Method of Measurement
617.07 Basis of Payment

SECTION 618 -- Blank

SECTION 619 -- PAINTING BRIDGE STEEL

619.01 Description
619.02 Materials
619.03 Quality Control and Quality Assurance
 (a) Acceptance Testing Definitions
 1. Lot
 2. Series
 3. Phase
 (b) Testing Procedure
 (c) Test Methods and Procedures
619.04 Prosecution of Work
619.05 Inspection Access to Bridges
619.06 Maintaining Traffic
619.07 Environmental and Safety Requirements
 (a) Pollution Control
 (b) Waste Disposal
 1. Laws to be Observed
 2. Time Limitations
 3. Marking of Spent Material Containers
 4. Instruction for Disposal of Paint Waste
 5. Instructions for Disposal of Other Project Generated Waste
619.08 Surface Preparation
 (a) Pressure Washing
 (b) Solvent Cleaning
 (c) Near-White Blast Cleaning
 (d) Commercial Blast Cleaning
 (e) Hand Tool Cleaning.
 (f) Brush-Off Blast Cleaning
 (g) Power Tool Cleaning
 (h) Power Tool Cleaning to Bare Metal
619.09 Paint Systems
 (a) Structural Steel Paint System
 (b) Partial Paint System
619.10 Painting
 (a) Weather Limitations
 (b) Storage
 (c) Mixing
 (d) Thinning

TABLE OF CONTENTS

Section	Title
---------	-------

	(e) Application of Paint
	(f) Curing Time
	(g) Stencil Identification
619.11	Shop Painting
619.12	Field Painting New Steel Bridge
619.13	Painting Existing Steel Bridges
619.14	Drain Castings Treatment
619.15	Claims
619.16	Responsibility for Damage
619.17	Method of Measurement
619.18	Basis of Payment
SECTION 620 -- Blank	
SECTION 621 -- SEEDING AND SODDING	
621.01	Description
621.02	Materials
621.03	Preparation of Ground Before Seeding
621.04	Preparation of Ground Before Applying Erosion Control Blankets
621.05	Applying Fertilizer, Seed, and Mulch
	(a) Fertilizer
	(b) Seed
	(c) Mulch
	1. Method A
	2. Method B
	3. Method C
	4. Method D
	5. Method E
	(d) Excelsior Blankets
	(e) Paper Mat
	(f) Straw Mat
	(g) Wood Cellulose Fiber Mulch
621.06	Seed Mixtures
	(a) Seed Mixture R
	(b) Seed Mixture U
	(c) Seed Mixture P
	(d) Seed Mixture CV
	(e) Seed Mixture D
	(f) Seed Mixture T
	1. Spring Mix
	2. Fall Mix
	(g) Seed Mixture Grass
	1. Type 1
	2. Type 2
	(h) Seed Mixture Legume
	1. Type 1
	2. Type 2
621.07	Mulched Seeding
621.08	Preparation of Ground Before Sodding
621.09	Laying Sod
621.10	Watering Sod
621.11	Seasonal Limitations
621.12	Method of Measurement

TABLE OF CONTENTS

Section Title

- 621.13 Basis of Payment
 - (a) Warranty Bond
 - (b) Changed Fertilizer
 - (c) Mulching

SECTION 622 -- PLANTING TREES, SHRUBS, AND VINES

- 622.01 Description
- 622.02 Materials
- 622.03 Care and Handling of Plants
 - (a) Bare Rooted Plants
 - (b) Balled and Burlapped Plants and Container Grown Plants
- 622.04 Collected Plants
- 622.05 Excavation for Plant Holes
- 622.06 Planting Season
- 622.07 Pruning
- 622.08 Planting, Backfilling, and Watering
 - (a) Plants with Bare Roots
 - (b) Balled and Burlapped Plants
 - (c) Seedlings for Wildlife Habitat
- 622.09 Liquid Fertilizer Application
- 622.10 Mulching
- 622.11 Guying and Staking
- 622.12 Plant Protection
 - (a) Borer Control Coatings
 - (b) Wrapping for Rodent Protection
- 622.13 Retaining Walls and Tree Wells
- 622.14 Tree Root Protection
- 622.15 Pipe Underdrains
- 622.16 Damage to Plants
- 622.17 Grass and Weed Control
- 622.18 Care, Inspection, and Replacement
 - (a) Care
 - (b) Inspection and Replacement
- 622.19 Crown Vetch Plants and Seedlings
- 622.20 "Do Not Mow or Spray" Signs and "Do Not Disturb" Signs
- 622.21 Method of Measurement
- 622.22 Basis of Payment

SECTION 700 -- STRUCTURES

SECTION 701 -- DRIVEN PILING

- 701.01 Description
- 701.02 Materials
- 701.03 Handling of Epoxy Coated Piles
- 701.04 Equipment for Driving Piles
 - (a) Approval of Pile Driving Equipment
 - 1. Wave Equation Analysis Method
 - 2. Alternate Method
 - (b) Pile Hammers
 - 1. Gravity Hammers
 - 2. Steam and Air Hammers
 - 3. Diesel Hammers
 - 4. Pile Driving Aids

TABLE OF CONTENTS

Section	Title
	(c) Pile Driving Appurtenance
	1. Hammer Cushion
	2. Pile Drive Head
	3. Pile Cushion
	4. Leads
	5. Followers
	6. Jets
701.05	Test Piles
701.06	Driven Pile Capacity
	(a) Wave Equation Analysis Program, or WEAP
	(b) Dynamic Formula
	(c) Dynamic Pile Load Test
	(d) Static Load Test
	1. Load Test Procedure
	2. Hydraulic Jacks and Load Gages
	3. General Requirements
701.07	Piling Length
701.08	Required Bearing Capacity
701.09	Preparation and Driving
	(a) Pilot Holes
	(b) Location and Alignment Tolerance
	(c) Heaved Piles
	(d) Installation Sequence
	(e) Inspection
	(f) Pouring Concrete
701.10	Unsatisfactory Piles
701.11	Splicing Piles
701.12	Steel H Pile Tips
701.13	Cut-Off Lengths
701.14	Method of Measurement
701.15	Basis of Payment
	(a) Timber Piles Furnished
	(b) Timber Piles Driven
	(c) Epoxy Coated Piles
SECTION 702 -- STRUCTURAL CONCRETE	
702.01	Description
702.02	Classes of Concrete
702.03	Materials
702.04	Shipping and Storage
702.05	Proportioning
702.06	Batching
	(a) Portland Cement
	(b) Water
	(c) Aggregates
	(d) Bins and Scales
	(e) Batching
702.07	Mixing
702.08	Mixing at Site of Work
702.09	Ready-Mixed Concrete
	(a) General Requirements
	(b) Mixers and Agitators
	(c) Mixing and Delivery
	(d) Non-Agitating Equipment
702.10	Pumping Concrete
702.11	Cold Weather Concrete
702.12	Consistency

TABLE OF CONTENTS

Section	Title
702.13	Forms
(a)	Construction
(b)	Ties
(c)	Walls
(d)	Surface Treatment
(e)	Metal Forms
1.	Removable
2.	Permanent
(f)	Precast Concrete Deck Panels
(g)	Removal and Re-Use of Forms
(h)	Test Beams
702.14	Falsework and Centering
(a)	Design and Construction
(b)	Removal
702.15	Joints
(a)	Construction Joints
(b)	Expansion Joints
(c)	Folded Metal Joints
(d)	Sliding Joints
702.16	Drainage Pipes Through Concrete Masonry
702.17	Incased Pipes and Conduits
702.18	Roadway Surface Drainage
702.19	Pouring Bent Caps
702.20	Placing Concrete
(a)	General Requirements
(b)	Chutes and Troughs
(c)	Vibrating
(d)	Depositing Concrete Under Water
(e)	Placing Footing Concrete
(f)	Concrete Foundation Seal
702.21	Finishing Concrete Surfaces
(a)	Class 1 Finish
(b)	Class 2 Finish
(c)	Class 3 Finish
702.22	Curing Concrete
(a)	Protective Covering Curing Methods
(b)	Membrane Forming Curing Compound
(c)	Curing-Sealing Materials
702.23	Waterproofing
702.24	Application of Loads to and Acceptance of New Concrete
702.25	Field Drilled Holes in Concrete
702.26	Artificial Lighting
702.27	Method of Measurement
702.28	Basis of Payment
SECTION 703 -- REINFORCING BARS	
703.01	Description
703.02	Materials
703.03	Bar List
703.04	Protection of Materials
703.05	Bending
703.06	Placing and Fastening
703.07	Method of Measurement
703.08	Basis of Payment
SECTION 704 -- CONCRETE FLOOR SLABS	
704.01	Description

TABLE OF CONTENTS

Section	Title
---------	-------

704.02	Materials
704.03	Forms
704.04	Placing Reinforcement and Concrete
704.05	Finishing Concrete
704.06	Curing
704.07	Method of Measurement
704.08	Basis of Payment

SECTION 705 -- SIDEWALKS ON STRUCTURES

705.01	Description
705.02	Materials
705.03	Construction Requirements
705.04	Method of Measurement
705.05	Basis of Payment

SECTION 706 -- RAILINGS

706.01	Description
706.02	Materials
706.03	Concrete Railing
706.04	Pipe Railing
706.05	Aluminum and Steel Railings
706.06	Method of Measurement
706.07	Basis of Payment

SECTION 707 -- PRECAST AND PRESTRESSED CONCRETE STRUCTURAL MEMBERS

707.01	Description
707.02	Materials
707.03	General Requirements
707.04	Steel and Concrete Requirements
	(a) Reinforcing Steel
	(b) Welding Reinforcing Steel
	(c) Concrete
707.05	Forms
707.06	Placing and Finishing Cement Concrete
707.07	Removal of Forms and Curing
707.08	Handling and Shipping
707.09	Placing Structural Members
707.09.1	Precast Prestressed Concrete Deck Panels
707.10	Method of Measurement
707.11	Basis of Payment

SECTION 708 -- PNEUMATICALLY PLACED MORTAR

708.01	Description
708.02	Materials
708.03	Preparing Surface
708.04	Reinforcement
708.05	Proportioning and Mixing
708.06	Placing Mortar
708.07	Finishing
708.08	Method of Measurement
708.09	Basis of Payment

SECTION 709 -- PORTLAND CEMENT CONCRETE SEALERS

709.01	Description
709.02	Materials
709.03	Surface Preparation
709.04	Environmental Requirements
	(a) General Requirements
	(b) Epoxy Penetrating Sealers

TABLE OF CONTENTS

Section Title

- (c) Other Portland Cement Concrete Sealers
- (d) Low Temperature Epoxy Penetrating Sealer

709.05 Sealer Application

- (a) General Requirements
- (b) Epoxy Penetrating Sealer
- (c) Other Portland Cement Concrete Sealers
- (d) Clear Sealers
- (e) Alternate To Concrete Sealers

709.06 Safety Precautions

709.07 Method of Measurement

709.08 Basis of Payment

SECTION 710 -- REPOINTING MASONRY IN STRUCTURES

710.01 Description

710.02 Materials

710.03 Repointing Concrete Masonry

710.04 Repointing Rubble Masonry

710.05 Repointing Dressed Stone and Brick Masonry

710.06 Method of Measurement

710.07 Basis of Payment

SECTION 711 -- STEEL STRUCTURES

711.01 Description

711.02 Materials

711.03 General Requirements

711.04 Certification of Fabricators

711.05 Shop Drawings

711.06 Storage of Materials

711.07 Mill Orders and Shipping Statements

711.08 Mill Test Reports

711.09 Notice of Beginning Work

711.10 Facilities for Inspection

711.11 Straightening Material

711.12 Finish

711.13 Flame Cutting

711.14 Edge Planing

711.15 Abutting Joints

711.16 End Connection Angles

711.17 Blank

711.18 Blank

711.19 Bent Plates

711.20 Fit of Stiffeners

711.21 Bolt Holes

- (a) High Tensile Strength Bolts, and Unfinished Bolts
- (b) Ribbed Bolts, Turned Bolts, or other Approved Bearing-Type Bolts

711.22 Punched Holes

711.23 Reamed or Drilled Holes

711.24 Subpunching and Reaming of Field Connections

711.25 Accuracy of Punched or Subdrilled Holes

711.26 Accuracy of Reamed Holes and Holes Drilled Full Size

711.27 Fitting for Bolting

711.28 Filler Plates

711.29 Toothed Expansion Plates

711.30 Blank

711.31 Blank

711.32 Welds

- (a) AWS Requirements

TABLE OF CONTENTS

Section	Title
	(b) Edge Blocks
711.33	Stud Shear Connectors
711.34	Annealing and Stress Relieving
711.35	Eyebars
711.36	Facing of Bearing Surfaces
711.37	Pins and Rollers
711.38	Boring Pin Holes
711.39	Pin Clearances
711.40	Threads for Bolts and Pins
711.41	Pilot and Driving Nuts
711.42	Finishing Cast Steel
711.43	Finished Members
711.44	Shop Assembling
	(a) Full Truss or Girder Assembly
	(b) Progressive Beam or Girder Assembly
	(c) Full Chord Assembly
	(d) Progressive Chord Assembly
	(e) Special Complete Structure Assembly
711.45	Drifting of Holes
711.46	Match Marking
711.47	Shop Cleaning and Painting
711.47.1	Shop Cleaning and Storage of ASTM A 709M Grade 345W (ASTM A 709 Grade 50W) Steel
	(a) Hot Rolled Products
	(b) Welded Areas
711.48	Furnishing Bolts
711.49	Weighing of Members
711.50	Full Size Tests
711.51	Acceptance
711.52	Shipping
711.53	General Requirements
711.54	Delivery of Materials
711.55	Handling and Storing
711.56	Falsework
711.57	Bearings and Anchorages
711.58	Field Straightening Material
711.59	Field Assembly of Steel
711.60	Misfits
711.61	Pin Connections
711.62	Blank
711.62.1	Diaphragm Connections
711.63	Bolted Connections Using High Strength Bolts
	(a) General
	(b) Bolts, Nuts, and Washers
	(c) Bolted Parts
	(d) Installation
	1. Bolt Tension
	2. Washers
	3. Calibrated Wrench Tightening
	4. Turn-of-Nut Tightening
	(e) Inspection
711.64	Bolted Connections Using Other Than High Strength Bolts
711.65	Final Clean-Up
711.66	Structural Steel Cutting, Rivet and Bolt Removal, and Drilled Bolt Holes in Repair Projects
711.67	Jacking and Supporting Beams
711.67.1	Field Cleaning and Storage of ASTM A 709M Grade 345W (ASTM A 709 Grade 50W) Steel
711.68	Painting

TABLE OF CONTENTS

Section Title

- 711.69 Method of Measurement
- 711.70 Basis of Payment
 - (a) Lump Sum Basis
 - (b) Unit Weight Basis

SECTION 712 -- TIMBER STRUCTURES

- 712.01 Description
- 712.02 Materials
- 712.03 General Requirements
- 712.04 Caps
- 712.05 Stringers
- 712.06 Bents
- 712.07 Wheel Guards and Railings
- 712.08 Painting
- 712.09 Single-Ply Plank Floors
- 712.10 Two-Ply Plank Floors
- 712.11 Method of Measurement
- 712.12 Basis of Payment

SECTION 713 -- TEMPORARY BRIDGES AND APPROACHES

- 713.01 Description
- 713.02 Materials
- 713.03 General Requirements
- 713.04 Temporary Bridge
- 713.05 Temporary Approaches
- 713.06 Maintenance
- 713.07 Removal
- 713.08 Method of Measurement
- 713.09 Basis of Payment

SECTION 714 -- CONCRETE CULVERTS AND RETAINING WALLS

- 714.01 Description
- 714.02 Materials
- 714.03 General Requirements
- 714.04 Extension of Existing Culverts
 - (a) Precast Concrete Box Sections Extension
 - (b) Cast-In-Place Concrete Culvert Extension
- 714.04.1 Precast Reinforced Concrete Box Section Joints
- 714.05 Sealing Existing Culverts
- 714.06 Method of Measurement
- 714.07 Basis of Payment

SECTION 715 -- PIPE CULVERTS, AND STORM AND SANITARY SEWERS

- 715.01 Description
- 715.02 Materials
 - (a) Type 1 Pipe
 - (b) Type 2 Pipe
 - (c) Type 3 Pipe
 - (d) Type 4 Pipe
 - (e) Type 5 Pipe
 - (f) Slotted Drain Pipe
 - (g) Slotted Vane Drain Pipe
 - (h) End Bent Drain Pipe
 - (i) Underdrain Outlet Pipe
 - (j) Grated Box End Sections
- 715.02.1 General Requirements
- 715.03 Excavation
- 715.04 Laying Pipe

TABLE OF CONTENTS

Section Title

715.05 Joining Pipe
715.06 Tee and Stub-Tee Connections
715.07 Blank
715.08 Backfilling
715.09 Pipe End Sections, Anchors, Grated Box End Sections, and Safety Metal End Sections
715.10 Re-Laid Pipe
715.11 Method of Measurement
715.12 Basis of Payment

SECTION 716 -- JACKED PIPE

716.01 Description
716.02 Materials
716.03 General Requirements
 (a) Jacking
 (b) Boring
716.04 Jacking Steel Pipe
716.05 Jacking Concrete Pipe
716.06 Method of Measurement
716.07 Basis of Payment

SECTION 717 -- STRUCTURAL PLATE PIPE, PIPE-ARCHES, AND ARCHES

717.01 Description
717.02 Materials
717.03 General Requirements
717.04 Backfill
717.05 Re-Laid Pipe and Pipe-Arch
717.06 Blank
717.07 Concrete Paved Inverts
717.08 Method of Measurement
717.09 Basis of Payment

SECTION 718 -- UNDERDRAINS

718.01 Description
718.02 Materials
718.03 Pipe Installation
718.04 Geotextile
718.05 Underdrain Outlets
718.06 Underdrain Outlet Protectors
718.07 Video Inspection
718.08 Method of Measurement
718.09 Basis of Payment

SECTION 719 -- TILE DRAINS

719.01 Description
719.02 Materials
719.03 Trench Excavation
719.04 Laying Tile
719.05 Backfilling
719.06 Blank
719.07 Method of Measurement
719.08 Basis of Payment

SECTION 720 -- MANHOLES, INLETS, AND CATCH BASINS

720.01 Description
720.02 Materials
720.03 General Requirements
720.04 Grade Adjustment of Existing Structures
720.05 Method of Measurement
720.06 Basis of Payment

TABLE OF CONTENTS

Section	Title
SECTION 721 -- AUTOMATIC DRAINAGE GATES	
721.01	Description
721.02	Materials
721.03	Construction Requirements
721.04	Method of Measurement
721.05	Basis of Payment
SECTION 722 -- LATEX MODIFIED CONCRETE BRIDGE DECK OVERLAYS	
722.01	Description
722.02	Materials
722.03	Storage and Handling of Materials
722.04	Proportioning
722.05	Preparation of the Bridge Floor
(a)	Concrete Removal
1.	Deck Surface
2.	Bridge Floor
(b)	Cleaning
722.06	Patching of the Bridge Floor
(a)	Full Depth Patching
1.	Patching with Bridge Deck Patching Concrete
2.	Patching with Latex Modified Concrete
(b)	Partial Depth Patching
1.	Patching with Bridge Deck Patching Concrete
2.	Patching with Latex Modified Concrete
722.06.1	Overlay Dam
722.07	Mixing
722.08	Placing and Finishing
722.09	Texturing
722.10	Curing
722.11	Calibration of Continuous Mixers
(a)	Frequency
(b)	Equipment
(c)	Pre-calibration
(d)	Calibration
1.	Cement Meter
2.	Water Flow Meter
3.	Aggregate Bin Gates
4.	Latex Throttling Valve
5.	Admixture Dispensers
722.12	Patching an Existing Bridge Deck Overlay
(a)	Materials
(b)	Storage and Handling of Materials
(c)	Proportioning
(d)	Preparation of the Bridge Floor
(e)	Patching
(f)	Mixing
(g)	Placing and Finishing

TABLE OF CONTENTS

Section Title

(h) Texturing	
(i) Curing	
(j) Calibration of Continuous Mixers	
722.13 Method of Measurement	
722.14 Basis of Payment	
SECTION 723 -- Blank	
SECTION 724 -- STRUCTURAL EXPANSION JOINTS	
724.01 Description	
(a) Structural Expansion Joint	
(b) Replacement of Existing Structural Expansion Joint	
(c) Replacement of Existing Structural Expansion Joint Seal	
724.02 Materials	
(a) Expansion Joint SS	
(b) Expansion Joint M	
724.03 General Requirements	
(a) Expansion Joint SS	
(b) Expansion Joint BS	
(c) Expansion Joint M	
(d) Replacement of Existing Structural Expansion Joint	
(e) Replacement of Existing Structural Expansion Joint Seal	
724.04 Method of Measurement	
724.05 Basis of Payment	

SECTION 800 -- TRAFFIC CONTROL DEVICES AND LIGHTING

SECTION 801 -- TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS

801.01 Description	
801.02 Materials	
801.03 General Requirements	
801.04 Construction Signs	
(a) Type A	
(b) Type B	
(c) Type C	
(d) Type D	
(e) Temporary Panel Sign	
801.05 Detour Route Marker Assembly	
801.06 Road Closure Sign Assembly	
801.07 Barricades	
(a) Type III-A Barricade	
(b) Type III-B Barricade	
(c) Permanent Type III Barricade	
801.08 Cones and Tubular Markers	
801.09 Drums	
801.10 Temporary Pavement Marking	
(a) Temporary Pavement Marking Materials	
1. Paint	
2. Temporary Pavement Marking Tape	
a. Type I	
b. Type II	
3. Temporary Raised Pavement Marker	
4. Temporary Buzz Strips	
(b) Quality Assurance Unit	
801.11 Temporary Illumination	

TABLE OF CONTENTS

Section	Title
801.12	Construction Warning Lights
(a)	Type A
(b)	Type B
(c)	Type C
(d)	Vehicle Warning Lights
801.13	Electronic Devices
(a)	Flashing Arrow Sign
(b)	Changeable Message Signs
(c)	Temporary Worksite Speed Limit Sign Assembly
(d)	Temporary Traffic Signals
801.14	Temporary Traffic Control Zone
(a)	Temporary Traffic Control Signs
(b)	Maintenance of Traffic for Mobile Operations
(c)	Traffic Control for Temporary Traffic Stoppage
1.	On Multi-Lane Divided Highways
2.	On Non-Divided Highways
801.15	Method of Measurement
801.16	Basis of Payment
SECTION 802 -- SIGNS	
802.01	Description
802.02	Materials
802.03	Location of Signs and Sign Structures
802.04	Shop Drawings
802.05	Excavation and Backfill
802.06	Placing Concrete
802.07	Installing Supports
(a)	Posts
(b)	Structural Frames
1.	Trusses
2.	Monotube
3.	Cantilever Arms
4.	Bridge Brackets
802.08	Installing Signs
(a)	Sheet Signs
(b)	Panel Signs
802.09	Removal or Relocation of Signs or Support Assemblies
802.10	Roadway and Bridge Reference Signs
802.11	Method of Measurement
802.12	Basis of Payment
SECTION 803 – WELDING ALUMINUM ALLOYS	
803.01	Description
803.02	Materials
803.03	Welding Processes
(a)	Preparation of Materials
(b)	Welding Procedure
(c)	Weld Quality
(d)	Inspection
(e)	Corrections
1.	Cracks in Welds or Base Metal
2.	Excessive Porosity and Lack of Fusion
3.	Copper or Tungsten Inclusions
4.	Excessive Concavity of Crater, Undercut and Undersize Weld
5.	Overlap
803.04	Qualification of Procedures, Welders, and Welding Operators

TABLE OF CONTENTS

Section Title

SECTION 804 -- DELINEATORS

- 804.01 Description
- 804.02 Materials
- 804.03 Delineator Visibility
- 804.04 Posts
- 804.05 Flexible Delineator Posts
- 804.06 Method of Measurement
- 804.07 Basis of Payment

SECTION 805 -- TRAFFIC SIGNALS

- 805.01 Description
- 805.02 Materials
- 805.03 General Requirements
- 805.04 Pole Installation
- 805.05 Placing Signal Heads
- 805.06 Grounding
- 805.07 Wire and Cable Installations
- 805.08 Controller Cabinet, Signal Service, and Detector Housing Installation
- 805.09 Loop Wire Detector Installation
 - (a) Megohm Test Before Splice is Made at Detector Housing for Loop Wire
 - (b) Megohm Test Before Splice is Made at Detector Housing for Lead-in Cable
 - (c) Megohm Test After Splice is Completed at Cabinet
 - (d) Vehicle Simulator Test
 - (e) Acceptance Criteria
- 805.10 Magnetometer and Microloop Detectors
- 805.11 Steel Conduit
- 805.12 PVC Conduit
- 805.13 Foundations
- 805.14 Final Clean-Up
- 805.15 Method of Measurement
- 805.16 Basis of Payment

SECTION 806 -- BLANK

SECTION 807 -- HIGHWAY ILLUMINATION

- 807.01 Description
- 807.02 Maintenance of Highway Illumination
- 807.03 Materials
- 807.04 Excavation
 - (a) Trench Excavation
 - (b) Foundation Excavation
 - (c) Landscape Replacement
- 807.05 Backfilling
- 807.06 Placing Conduit
- 807.07 Connections in Base of Lighting Standards
- 807.08 Placing Wire and Cable
 - (a) Underground Through Cable-duct
 - 1. Cable-duct
 - 2. Cable Markers
 - (b) Underground Through Conduit
 - 1. Cable-duct
 - 2. Cable Markers
 - (c) In Conduit Risers
 - (d) Through Conduit in Bridge Copping
 - (e) Aerial Cable
- 807.09 Lighting Handholes
- 807.10 Concrete Foundations For Lighting Standards

TABLE OF CONTENTS

Section	Title
	(a) Cast-in-Place Foundations
	(b) Precast Foundations
	(c) Grading of Foundations
807.11	Placing Lighting Standards
	(a) Lighting Standards Under 24 m (80 ft) in Height
	(b) High Mast Lighting Standards of 24 m (80 ft) Height and Over
807.12	Grounding
807.13	Luminaire Installation
	(a) Roadway Luminaires
	(b) Sign Luminaires
	(c) Underpass Luminaires
	(d) High Mast Luminaires
807.14	Sign, Underpass, Roadway, and High Mast Lighting Location Identification
807.15	Service Point Power Entry
	(a) Types of Service Points
	1. Type I Service Point
	2. Type II Service Point
	(b) Sign and Underpass Circuits
	(c) Multiple Relay Switches
807.16	Testing of Highway Lighting System
	(a) Testing Lighting Circuitry
	(b) Testing and Inspecting Luminaires
807.17	Pay Item and Installation Summary Sheets
807.18	Method of Measurement
	(a) From the Face of the Concrete Foundation to the Center of the Handhole or Face of the Next Concrete Foundation
	(b) From Lighting Standard Bases or Handholes to Switch Boxes at Underpasses
	(c) From End to End of the Conduit when the Cable is in Conduit under a Roadway Surface or Shoulder
807.19	Basis of Payment
SECTION 808 -- PAVEMENT TRAFFIC MARKINGS	
808.01	Description
808.02	Materials
808.03	General Requirements
808.04	Longitudinal Markings
	(a) Center Lines
	(b) Lane Lines
	(c) Edge Lines
	(d) Barrier Lines
808.05	Transverse Markings
808.05.1	Curb Markings
808.06	Pavement Marking Material Application and Equipment
	(a) Traffic Paint
	1. Application
	2. Equipment
	(b) Durable Pavement Marking Material
	1. Thermoplastic
	a. Application
	b. Equipment
	2. Preformed Plastic
	a. Application
	b. Equipment
	3. Epoxy
	a. Application
	b. Equipment

TABLE OF CONTENTS

Section	Title
808.07	Marking Protection and Maintenance of Traffic
(a)	Vehicle Signs
(b)	Vehicle Warning Lights
(c)	Cones
(d)	Front Escort Vehicles
(e)	Marking Application Vehicles
(f)	Rear Escort Vehicles
808.08	Warranty for Durable Pavement Marking Material
808.09	Removal of Pavement Markings
808.10	Snowplowable Raised Pavement Markers
(a)	Surface Preparation
(b)	Location
(c)	Reflector Color
(d)	Installation
(e)	Removal of Markers
(f)	Replacement of Prismatic Reflectors
808.11	Method of Measurement
808.12	Basis of Payment

SECTION 900 -- MATERIALS DETAILS

SECTION 901 – PCC MATERIALS

901.01	Hydraulic Cement
(a)	General
(b)	Portland Cement
1.	Requirements
2.	Acceptance Criteria
a.	General Requirements
b.	Requirements for Domestic Source Qualification
c.	Requirements for Foreign Source Qualification
d.	Certification
(c)	Masonry Cement
901.02	Fly Ash Used as a Pozzolan
(a)	General
(b)	Acceptance Criteria
1.	Requirements
2.	Test and Calibration Procedure
3.	Documentation
901.03	Ground Granulated Blast Furnace Slag Used as a Pozzolan
(a)	General
(b)	Acceptance Criteria
1.	Requirements
2.	Test and Calibration Procedure
3.	Documentation
901.04	Silica Fume Used As a Pozzolanic Mineral Admixture
(a)	General
(b)	Acceptance Criteria
1.	Requirements
2.	Frequency of Testing
3.	Test and Calibration Procedure
4.	Documentation
901.05	Chemical Anchor Systems
(a)	Requirements
(b)	Laboratory Testing

TABLE OF CONTENTS

Section Title

901.06 PCC Sealer/Healers

- (a) Requirements
- (b) Laboratory Testing

901.07 Rapid Setting Patch Materials

- (a) Normal Weather Mixes
- (b) Hot Weather Mixes
- (c) Requirements
- (d) Test Report

SECTION 902 -- ASPHALT MATERIALS

902.01 Asphalt

- (a) Performance Graded Asphalt Binders
 - 1. Lots and Sublots
 - 2. Sampling
 - 3. Appeals
- (b) Asphalt Emulsions
- (c) Cutback Asphalts
 - 1. Medium Curing Asphalts With and Without Additives
 - 2. Slow Curing Asphalts With and Without Additives
- (d) Utility Asphalt
- (e) Asphalt for Coating Corrugated Metal Pipe

902.02 Sampling and Testing Asphalt Materials

902.03 Application Temperatures

SECTION 903 -- CLASSIFICATION OF SOILS

903.01 Definitions

903.02 Soils Having 0 to 19 Percent Retained on 2.00 mm (No. 10) Sieve

903.03 Soils Having 20 Percent or More Retained on 2.00 mm (No. 10) Sieve and More Than 20 Percent Passing 75 μ m (No. 200) Sieve

903.04 Soils Having 20% or More Retained on 2.00 mm (No. 10) Sieve and Less Than 20% Passing 75 μ m (No. 200) Sieve

903.05 Organic Soils

903.06 Marly Soils

SECTION 904 -- AGGREGATES

904.01 Fine Aggregates

- (a) For Portland Cement Concrete
- (b) For HMA Mixtures
- (c) For Pneumatic Placement
- (d) For Mortar
- (e) Mineral Filler
- (f) Snow and Ice Abrasives
- (g) Sizes of Fine Aggregates
- (h) Sampling and Testing

904.02 Coarse Aggregates

- (a) General Requirements
- (b) Classification of Aggregates
- (c) Coarse Aggregate Angularity
- (d) Surface Aggregate Requirements
- (e) Sizes of Coarse Aggregates
- (f) Sampling and Testing

904.03 Exceptions to AASHTO Standard Methods

- (a) Exceptions to AASHTO T 2
- (b) Exceptions to AASHTO T 11, T 27, and T 37
- (c) Exceptions to AASHTO T 27 for Coarse Aggregates
- (d) Blank
- (e) Exceptions to AASHTO T 103 and T 104
- (f) Exceptions to AASHTO T 85

TABLE OF CONTENTS

Section Title

904.04 Riprap

- (a) Dumped Riprap
- (b) Revetment, Class 1, and Class 2 Riprap
- (c) Grouted Riprap
- (d) Uniform Riprap
- (e) Precast Cement Concrete Riprap

SECTION 905 -- MASONRY UNITS

905.01 Clay or Shale Brick

- (a) Sewer Brick
- (b) Manhole Brick
- (c) Building Brick

905.02 Concrete Brick

905.03 Concrete Masonry Blocks

SECTION 906 -- JOINT MATERIALS

906.01 Joint Fillers

906.02 Joint Sealing Materials

- (a) Joint Sealers
 - 1. Silicone Joint Sealants
 - a. Physical Requirements
 - b. Field Evaluation
 - c. Specific Requirements for Installation of Silicone Joint Sealant
 - 2. Hot Poured Joint Sealant
 - a. General Requirements
 - b. Packaging and Marking
 - c. Requirements for Installation
 - d. Sampling and Testing
 - 3. Preformed Elastomeric Joint Seals
- (b) Backer Rod
 - 1. Requirements
 - 2. Certification

906.03 Joint Mortar

906.04 Rubber Type Gaskets

906.05 Bituminous Mastic Pipe Joint Sealer

- (a) General Requirements
- (b) Detail Requirements
- (c) Certification

906.05.1 Joint Membrane System for Precast Reinforced Concrete Box Sections

906.06 Bridge Expansion Joints

- (a) Type SS
- (b) Type BS2, BS6, BS8, BS9, BS11, and 1-A
- (c) Type M

SECTION 907 -- CONCRETE, CLAY, AND PLASTIC DRAINAGE COMPONENTS

907.01 Non-Reinforced Concrete Pipe

907.02 Reinforced Concrete Pipe

907.03 Reinforced Concrete Horizontal Elliptical Pipe

907.04 Precast Concrete Manholes, Inlets, and Catch Basins

907.05 Precast Reinforced Concrete Box Sections

907.06 Blank

907.07 Blank

907.08 Clay Pipe

907.09 Perforated Clay Pipe

907.10 Blank

907.11 Drain Tile

907.12 Blank

907.13 Blank

TABLE OF CONTENTS

Section Title

907.14	Blank
907.15	Blank
907.16	Plastic Pipe Manufacturer Requirements
907.17	Corrugated Polyethylene Drainage Tubing
907.18	Perforated Polyvinyl Chloride Semicircular Pipe
907.19	Corrugated Polyethylene Pipe
907.20	Ribbed Polyethylene Pipe
907.21	Smooth Wall Polyethylene Pipe
907.22	Profile Wall Polyvinyl Chloride Pipe
907.23	Smooth Wall Polyvinyl Chloride Pipe
907.24	Smooth Wall Pipe for Outlets
(a)	Type PSM Polyvinyl Chloride Pipe and Fittings
(b)	Schedule 40 Polyvinyl Chloride Pipe
907.25	Solvent Cements for Polyvinyl Chloride Pipe and Pipe Fittings
907.26	Elastomeric Seals
SECTION 908 -- METAL PIPE	
908.01	Blank
908.02	Corrugated Steel Pipe and Pipe-Arches
908.03	Blank
908.04	Corrugated Aluminum Alloy Pipe and Pipe-Arches
908.05	Blank
908.06	Metal End Sections
908.07	Fiber Bonded Fully Bituminous Coated Corrugated Steel Culvert Pipe and Pipe-Arches
908.08	Polymer Precoated Galvanized Corrugated Steel Culvert Pipe and Pipe-Arches
908.09	Structural Plate Pipe, Pipe-Arches, and Arches
(a)	Steel
(b)	Aluminum Alloy
908.10	Cast Iron Soil Pipe
908.11	Steel Pipe
908.12	Straps, Hook Bolts and Nuts Used in Anchors
908.13	Fully Bituminous Coated and Lined Corrugated Steel Pipe and Pipe-Arches.
908.14	Slotted Drain or Slotted Vane Drain Pipe
SECTION 909 -- PAINT AND LIQUID EPOXY	
909.01	General Requirements
909.02	For Metal
(a)	Zinc Primers
1.	Two Component and Multi-Component Inorganic Zinc Silicate Primer
2.	Single Package Inorganic Zinc Silicate Primer
3.	Organic Zinc Primer
4.	Approval of Formulation
5.	Reapproval of Formulation
(b)	Epoxy Intermediate Paint
(c)	Polyurethane Finish Coat
(d)	Waterborne Finish Paint
1.	Vehicle Component
2.	Pigment Component
3.	Mixed Paint Properties
4.	Color
5.	Approval of Formulation
(e)	Finish Coat for Weathering Steel

TABLE OF CONTENTS

Section	Title
909.03	Structural Steel Coating System
(a)	Toxicity
(b)	Resistance
(c)	Approval of Structural Steel Coating System
(d)	Structural Steel Coating System Re-approval.
909.04	Field Paint for Wood or Metal
909.05	White and Yellow Traffic Paint
(a)	Standard Traffic Paint
1.	General Requirements
2.	Specific Requirements
(b)	Fast Dry Traffic Paint
1.	General Requirements
2.	Specific Requirements
(c)	White and Yellow Waterborne Traffic Paint
1.	Composition Requirements
2.	Specific Requirements
3.	Formulation Approval
4.	Formulation Reapproval
909.06	Blank
909.07	Blank
909.08	Blank
909.09	Epoxy Penetrating Sealers
(a)	Polysulfide Type
(b)	Unmodified Type
(c)	Specific Requirements
(d)	Low Temperature Epoxy Penetrating Sealer
(e)	Packaging and Marking
(f)	Approval of Formulation
909.10	Proprietary PCC Sealers
(a)	Properties
(b)	Test Report
909.11	Epoxy-Resin-Base System for Bonding Plastic Concrete to Hardened Concrete
SECTION 910 -- METAL MATERIALS	
910.01	Reinforcing Bars and Dowel Bars
(a)	General
(b)	Specific Requirements
1.	Billet Steel Bars
2.	Threaded Tie Bar Assembly
3.	Splicing Systems
4.	Blank
5.	Welded Steel Wire Fabric for Concrete Reinforcement
6.	Welded Deformed Steel Wire Fabric for Concrete Reinforcement
7.	Uncoated 7 Wire Strand for Prestressed Concrete
8.	Steel Spiral Reinforcement
9.	Epoxy Coated Reinforcing Bars
10.	Dowel Bars
(c)	Inspection, Sampling, and Testing
910.02	Structural Steel
(a)	Structural Steel
(b)	High Strength Structural Steel
(c)	Charpy V-Notch Toughness Tests
(d)	Mill Test Reports
(e)	High Strength Bolts, Nuts, and Washers
1.	General Use
2.	Assembly of Structural Steel in Bridges
a.	Bolts

TABLE OF CONTENTS

Section	Title
	b. Nuts
	c. Tests
	(1) Rotational Capacity
	(2) Proof Loads
	(3) Wedge Tension Test
	d. Certification
(f)	Bolts other than High Strength Bolts
1.	General
2.	Unfinished Bolts
3.	Turned Bolts
4.	Ribbed Bolts
910.03	Permanent Metal Forms
910.04	Steel Forgings and Steel Shafting
(a)	Carbon Steel Forgings
(b)	Cold Finished Carbon Steel Shafting
(c)	Alloy Steel Forgings
(d)	Certification
910.05	Castings
(a)	Steel Castings
1.	Steel Castings for Highway Bridges
2.	Chromium Alloy Steel Castings
(b)	Iron Castings
(c)	Ductile Iron Castings
(d)	Malleable Castings
(e)	Carbon Steel Castings
910.06	Bronze and Copper Alloy
(a)	Bronze Castings
(b)	Copper Alloy Plates
910.07	Steel Drain Pipe
910.08	Blank
910.09	Guardrail
(a)	Steel Beam Rail
(b)	Aluminum Rail
910.10	Guardrail Posts
(a)	Steel Guardrail Posts
(b)	Aluminum Guardrail Posts
(c)	Wood Guardrail Posts
910.11	Guardrail Accessories, Fittings, and Hardware
(a)	For Steel Beam Guardrail
(b)	For Aluminum Guardrail
(c)	For Steel Tube Guardrail
910.12	Certification of Guardrail Suppliers
910.13	Steel Fence Posts
(a)	Tubular Steel Fence Posts
1.	Group 1
2.	Group 2
(b)	Fence Fastenings
910.14	Sign Posts
(a)	Steel, Flanged, Channel Posts
1.	General Requirements
2.	Deflection Test Requirements
3.	Type of Posts
(b)	Wide Flange Posts
(c)	Structural Steel Posts
(d)	Structural Aluminum Posts
(e)	Square Steel Posts

TABLE OF CONTENTS

Section Title

- 1. Steel
- 2. Fabrication
- 3. Protective Coating
- (f) Portable Construction Sign Trailer
- 910.15 Delineator Posts
- 910.16 Copper Flashing
- 910.17 Bronze or Copper Alloy Plates
- 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
 - (d) Gates
 - 1. Steel Gates
 - 2. Aluminum Gates
 - (e) Control Procedures for Furnishing Fence and Accessories
 - 1. General Requirements
 - 2. Suppliers of Pretested Approved Stockpiled Material
 - 3. Suppliers Not Furnishing Pretested Approved Stockpiling Material
- 910.19 Overhead Sign Structures
 - (a) Aluminum Overhead Sign Structures, Box Truss and Bridge Attached
 - (b) Steel Overhead Sign Structures, Box Truss, Cantilever, Monotube, and Bridge Attached
- 910.20 Steel Bridge Railing Components
- 910.21 Steel Sheet Piling
- 910.22 Welding Supplies
 - (a) Aluminum Alloy Base Metals
 - 1. Bare Wire Electrodes and Welding Rods
 - 2. Filler Metal
 - 3. Shielding Gases
- SECTION 911 -- WOOD MATERIALS
- 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
 - (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

TABLE OF CONTENTS

Section	Title
	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
- (f) Polyethylene Film.

912.02 Curing-Sealing Materials

TABLE OF CONTENTS

Section	Title
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)	Backing Material
1.	Sheet Signs
2.	Panel Signs
3.	Demountable Letters, Numbers, and Symbols
(b)	Sheeting Material
1.	Reflective Sheeting
2.	Nonreflective Sheeting
3.	Transparent Sheeting
(c)	Letters, Numerals, Symbols, and Accessories
(d)	Fasteners
1.	Sheet Signs
2.	Panel Signs and Temporary Panel Signs
3.	Aluminum Rivets
(e)	Basis for Use
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

TABLE OF CONTENTS

Section	Title
	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

TABLE OF CONTENTS

Section	Title
	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

TABLE OF CONTENTS

Section	Title
	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

TABLE OF CONTENTS

Section	Title
	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
	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

TABLE OF CONTENTS

Section	Title
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	Temporary Seed
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
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

TABLE OF CONTENTS

Section	Title
---------	-------

- | | |
|--|-------------------|
| | (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 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 |

TABLE OF CONTENTS

Section	Title
---------	-------

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
--------	---------