

# VERMONT AGENCY OF TRANSPORTATION

## CONSTRUCTION & MATERIALS BUREAU

### MATERIAL TESTING & CERTIFICATIONS SECTION



# MATERIAL SAMPLING MANUAL

## Procedures

Procedures for the acceptance of materials for VTTrans' projects.

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## INTRODUCTION

This manual has been prepared by the Agency's Material Testing and Certifications Section to familiarize the reader with the Agency's adopted practices for accepting materials. The Materials Sampling Manual (MSM) includes tiered testing requirements based on acceptable levels of risk and service identified for each level. The material and sampling requirements are different for each level. These requirements are outlined in level-specific Material Sampling and Testing Frequency Charts (Appendix B).

Projects are assigned to a particular level based on the factors outlined in Section 4 of the Agency's Quality Assurance Program (QAP). For the purposes of this manual, the terms Resident Engineer and District Transportation Administrator will be synonymous for projects under the respective authority of each. The Resident Engineer is responsible for ensuring that their project's material acceptance requirements are met based on the Material Sampling and Testing Frequency Charts (Appendix B) and the Pay Item and Certification Quick Reference (Appendix A).

The Resident Engineer's decision regarding the acceptability of material for a project will require consideration of the following: material certifications, visual inspections, and material test results. In addition, the status of a given product, material, material source, material producer, or contractor on a pre-approval list (such as products listed on the Agency's Approved Products List, or contractors in the Umbrella Certification Program) will also require consideration in the Acceptance decision.

It is the responsibility of the Resident Engineer to inform the Material Testing and Certifications Section of any change in design or authorization for material specification changes.

For the purposes of this document the definitions of the QAP apply, see Section 3.0 of the QAP. The QAP and other Agency documents referenced within this text are available on the Agency website; <https://vtrans.vermont.gov/highway/construct-material>.

## CERTIFICATION TO FHWA

Upon final acceptance of any Federal-aid highway projects, the Material Testing and Certifications Manager is responsible for preparing, on behalf of the Vermont Secretary of Transportation, a report that states: "The results of the tests used in the acceptance program indicate that the materials incorporated in the construction work, and the construction operations controlled by sampling and testing, were in conformity with the approved plans and specifications." Any exceptions to the contract provisions must be noted and explained. Requirements and regulatory information are contained in Title 23 Code of Federal Regulation (23 C.F.R. § 637, Subpart B).

It is the responsibility of the Resident Engineer to provide an explanation for any materials permanently incorporated into the work that are not in conformance with the contract provisions. Explanations must include the material involved, quantity involved, reason for nonconformance with specifications, and state why the material was incorporated into the project.

## APPROVED SOURCE LISTS

Some materials are required to be obtained from suppliers or producers that have previously demonstrated conformance with the Agency's Quality Assurance Program and specification requirements. These approved source lists are maintained by the Material Testing and Certifications Section and are discussed below.

## 1. APPROVED AGGREGATE SOURCE LIST

The 'Approved Aggregate Source List' is a tool used to determine which aggregate production facilities have been deemed Acceptable for use on Agency projects. The list includes aggregates produced for unbound, Portland cement concrete, and bituminous concrete applications. The 'Approved Aggregate Source List,' applicable forms, and detailed information regarding its use, can be found on the Geotechnical Engineering Sections website.

## 2. APPROVED CEMENTITIOUS SOURCE LIST

The 'Approved Cementitious Source List' is a tool used to determine which cementitious production facilities and cementitious materials have been Approved for use on Agency projects. The list is populated with cementitious materials that have successfully completed annual evaluation and demonstrated conformance with the applicable specifications. The 'Approved Cementitious Source List,' applicable forms, and detailed information regarding its use, can be found on the Material Testing and Certifications website.

## 3. APPROVED CONCRETE PRODUCER LIST

The 'Approved Concrete Producer List' is a tool used to determine which ready-mix concrete and precast concrete production facilities have been approved for use on Agency projects. The list is populated with facilities that have undergone annual inspection and satisfied the requirements of the Qualified Laboratory Program and applicable specifications for the materials being produced. The 'Approved Concrete Producer List,' applicable forms and detailed information regarding its use, can be found on the Material Testing and Certifications website.

## 4. APPROVED BITUMINOUS CONCRETE PRODUCER LIST

The 'Approved Bituminous Concrete Producer List' is a tool used to determine which bituminous concrete production facilities have been approved for use on Agency projects. The list is populated with facilities that have undergone annual inspection and satisfied the requirements of the Qualified Laboratory Program and applicable specifications for the materials being produced. The 'Approved Bituminous Concrete Producer List,' applicable forms, and detailed information regarding its use, can be found on the Material Testing and Certification website.

## 5. APPROVED PERFORMANCE-GRADED BINDER PRODUCER LIST

The 'Approved Performance-Graded Binder Producer List' is a list of performance-graded binder production facilities that have been approved for use on Agency projects. The list is populated with suppliers and grades that have successfully completed the annual evaluation and demonstrated conformance with the applicable specifications. The 'Approved Performance-Graded Binder Producer List,' applicable forms, and detailed information regarding its use, can be found on the Material Testing and Certifications website.

## 6. UMBRELLA CERTIFICATION PROGRAM (UCP)

The 'Umbrella Certification Program' is a list of companies that have become an approved supplier for specific materials as defined by the Agency. The UCP is not intended to replace, but rather work in conjunction with, other methods employed by VTrans to certify materials. The 'Umbrella Certification Program, applicable forms, and detailed information regarding its use, can be found on the Material Testing and Certifications website.

## MATERIAL ACCEPTANCE

As discussed in the introduction, there are several methods of material acceptance employed by the Agency. Each of these material acceptance tools maintained by the Material Testing and Certifications Section are discussed below, including how to determine for which pay items each are to be applied, and where to find the necessary information and forms.

## 1. MATERIAL SAMPLING AND TESTING

The minimum material sampling frequency for materials designated for testing is listed in the level-specific Material Sampling and Testing Frequency Charts (Appendix B).

VTrans' material specifications reference material standards and test methods published by the American Association of State Highway and Transportation Officials (AASHTO) and the American Society for Testing and Materials (ASTM). The proper sampling and testing of materials being incorporated into Agency projects is required to determine whether the materials' properties conform to the Agency's contract requirements.

Each sample must be representative of the material used. Random sample point selection is required whenever feasible. The Resident Engineer is responsible for maintaining a summary of quantities so that the total amount of sampled material represents the final project quantity for any given item. Personnel from the Agency's Central Laboratory located in Berlin, VT, are available to assist other Agency personnel with any questions or concerns regarding procedures for sampling or processing samples. Contact information for these staff is available on the Agency website.

The minimum sample size is determined by the tests to be performed. The sample size listed should be large enough to accommodate re-testing, if required. Not all samples are transported to the Agency's Central Laboratory; some materials are transported to the Agency's Regional Laboratories. Resident Engineers are responsible for the timely delivery of samples to the Central Laboratory, and ensuring the samples remain only in the custody of Agency personnel.

Sample identification tags and cards will be provided by the Material Testing and Certifications Section. Sample tags and cards should be completed **with all the indicated information** and attached to the sample container immediately after the sample is taken. Sample tags and cards should be attached in a manner which will prevent their loss or damage during handling and transport. Examples of properly filled out sample cards for commonly sampled materials can be found in Appendices C, D, and E. As an alternative, labels with all required information can be printed and affixed to the sample in lieu of the sample tag. When samples consist of more than one container, each container will have an attached sample tag.

## 2. MINOR QUANTITIES

For pay items that are designated as requiring sampling and testing, every effort should be made to acquire at least one sample during the time of construction. Circumstances in the construction operation, the quantity of the item used, and the application in which a material is used are important considerations before any quantity should be considered as minor.

The minor quantity threshold is defined for each pay item in the Material Sampling and Testing Frequency Charts (Appendix B). These quantity thresholds are based on total project quantity for a given pay item, not the quantity being placed at one time. Materials which meet the criteria for minor quantities shall be from known, reliable sources, perform satisfactorily, and meet the requirements for the purpose intended.

Minor quantities of materials may be accepted without sampling and testing, except as noted below. The acceptance of a minor quantity is the sole responsibility of the Resident Engineer. The Resident Engineer must provide written documentation on the 'Minor Quantity Declaration Form.' This form shall be submitted to the Material Acceptance Unit as the basis for declaring a quantity a 'minor quantity,' prior to incorporating the material into the project.

## 3. APPROVED NON-DURABLE PAVEMENT MARKING BATCH LIST (ANDPMBL)

The 'Approved Non-Durable Pavement Marking Batch List' is a tool used to accept certain types of pavement markings by documenting the use of paint batches that have been previously tested and approved by the Agency. The materials

for which this acceptance tool may be applied are listed in the Pay Item and Certification Quick Reference (Appendix A). The 'ANDPMBL' list, applicable forms, and detailed information regarding its use, can be found on the Material Testing and Certifications website.

#### 4. APPROVED PRODUCTS LIST (APL)

The 'Approved Products List' is a tool used to determine which products have been Approved for use on Agency projects. The materials for which this acceptance tool may be applied are listed in the Pay Item and Certification Quick Reference (Appendix A). The 'Approved Products List,' applicable forms, and detailed information regarding its use, can be found on the Material Testing and Certifications website.

#### 5. MATERIAL CERTIFICATION

A list of materials requiring certification, and certification forms for a given project, will be produced, and made available by the Materials Acceptance Unit for each new project.

It is the responsibility of the Resident Engineer to ensure that the appropriate certifications are obtained by the Contractor and submitted to the Materials Acceptance Unit for audit **prior** to incorporating the materials into the project. See the Pay Item and Certification Quick Reference (Appendix A) for the list of pay items and materials requiring certification. It shall be the responsibility of the Resident Engineer to verify that the material certification represents the materials incorporated into the project.

At the Engineer's discretion, sampling of any material for which a certification is required may be performed either at the point of manufacture or after delivery to the site of the work. In such cases, the results of the material sample tests shall take precedence over certifications in determining the acceptability of the material in question.

The Resident Engineer may waive certification requirements when Working Drawings, approved in accordance with Section 105, or Contract Documents identify components by a specific product name and/or number.

- A. Buy America. For permanently incorporated steel and iron materials, the following requirements shall apply.
- 1) To comply with Buy America provisions, a manufacturer must certify that all manufacturing processes, including any coating application, occurred in the United States. Coating includes all processes which protect or enhance the value of the material to which the coating is applied.
  - 2) To identify a chain-of-custody documentation trail that identifies the product as one that meets the Buy America provisions, each supplier or fabricator involved in the manufacturing processes of a product will be required to include in their certification a statement that each process performed by them which alters the physical form or shape or changes its chemical composition was entirely performed in the United States.
  - 3) The Buy America requirements of 23 CFR § 635.409 allow for the minimal use of foreign steel. Criteria for the minimal use of foreign steel can be found in the CFR or the Standard Specifications for Construction's Buy America Provisions.

The use of minimal foreign steel shall be documented via a Material Acceptance Request Form, Buy America Minimal Use Declaration and accompanied by one of the following:

- a) Invoice demonstrating the cost of the material as delivered to the project.
- b) Quote demonstrating the cost to purchase and deliver the material to the project.

It is the responsibility of the Resident Engineer to ensure the total cost of foreign steel on a contract does not exceed Buy America Provisions however the MAU will maintain documentation of the total contract cost of foreign steel incorporated for the Material Record.

- B. Build America, Buy America. The following requirements apply for permanently incorporated manufactured products and construction materials.

- 1) To comply with Build America, Buy America provisions, Contractors must certify that all materials incorporated into the project meet the requirements of the Build America, Buy America Act Pub. L. No. 117-58 § 70901-52.

Certification will be project wide via the Buy America/Build America, Buy America certification form.

Types of Certifications. Unless otherwise specified, certifications shall be prepared by the manufacturer for products delivered to the project and shall be one of the following types:

1. Type A. A Type A Certification shall certify that the component materials and finished products have been tested by means identified in the Manufacturer's Quality Controls and the results conform to all requirements of the Agency, the State, pertinent Plans, Special Provisions, and Specification for the Contract item.
2. Type D. A Type D Certification shall consist of a Type A certification accompanied by a Certificate of Analysis (C of A) showing actual chemical and physical analysis of material used in the manufacture of products and a Certificate of Compliance (C of C) demonstrating that the properties of the finished product meet applicable specifications.

All project related certification documents to be audited by the Materials Acceptance Unit shall be submitted through DocExpress.

Small Quantity Certification Waiver (SQCW). At the discretion of the Engineer, certification requirements may be waived for materials with small quantities, if the material is not directly associated with the safety of a structure or roadway. A small quantity is a quantity where the total quantity of a material installed on a project has a value of \$5,000.00 or less. Materials where a SQCW has been submitted must still meet or exceed the specified material requirements.

## SAMPLING

Sampling shall be based on point-of-placement material sampling. Point-of placement material sampling refers to the act of obtaining material samples as close as practical to the final point of placement of the material. Sampling locations are identified in Appendix B, however when options are allowed sampling shall occur as close to the point of final placement as practical.

### 1. SAMPLE POINT SELECTION

Sample points will be the point at which a material is sampled based on quantity, unit of time, or other parameters. These parameters can be found in Appendix B. Sample points may be selected in two manners, random or selective.

- a) Random. Sample points chosen in a random manner are intended to identify points that will result in a representative sample. Representative samples are obtained from a lot of material in such a manner that all parts of the lot have a known and equal probability of being included in the sample. Random sample points will be identified in accordance with ASTM D3665, unless otherwise specified.
- b) Selective. Sample points chosen in a selective manner are intended to identify locations for a specific reason or purpose.

### 2. SAMPLING METHOD

Samples may be obtained utilizing one of three distinct methods: independent, split, or replicate. The sampling method utilized may vary dependent on the sample type.

- a) Independent. Independent samples will be a single sample for testing obtained from a single field sample, without regard to any other samples.



- b) Split. Split samples will be two or more samples for testing obtained from a single field sample.
- c) Replicate. Replicate samples will be two or more field samples taken at the same time and location with a single test sample obtained from each field sample.

## TYPES OF SAMPLES

Samples are classified as one of five types:

### 1. ACCEPTANCE SAMPLING AND TESTING

Acceptance sampling and testing is defined as sampling, testing, and the assessment of test results to determine if the materials and workmanship represented by those test results are in conformity with the requirements of the approved plans and specifications. The Resident Engineer is responsible for making the acceptance decision by determining if the material and workmanship being incorporated into the project are in conformity with the approved plans and specifications.

It is the intent of 23 C.F.R. § 637.205(e) that all acceptance sampling performed on Federal-Aid Highway projects shall be obtained randomly. The Agency recognizes that there may be practical limitations to achieving this goal. Therefore, the Agency will employ practical measures to ensure adequate numbers of samples are taken.

Acceptance samples will be obtained and tested by qualified Agency personnel or representatives. Laboratories where acceptance testing is performed must be qualified laboratories as outlined in the Agency's Qualified Laboratory Program (QLP). A list of Qualified Laboratories will be made available on the Agency website. The requirements for personnel and laboratory qualifications are defined in the Agency's QAP, QLP, and Qualified Technician Program (QTP) and are available on the Agency website.

Re-sampling is warranted only if it is determined by the Agency that the original sample was not representative of the material being incorporated into the work.

Re-testing is warranted only if it is determined by the Agency that the test results were not obtained in accordance with the requirements of the QAP.

Proper sampling and testing procedures are identified in the Material Sampling and Testing Frequency Charts (Appendix B)

### 2. QUALITY CONTROL SAMPLING AND TESTING

Quality control, including process control, sampling and testing is defined as sampling and testing performed by the *Contractor, Producer, or Manufacturer* in the manufacturing, production, transport, and placement of materials to ensure the materials and workmanship incorporated into the project are in conformity with the requirements of the approved plans and specifications. Acceptance sampling and testing shall not be used for process or quality control purposes.

Quality control sample locations shall be chosen in a random manner as required in 23 CFR § 637.205(e).

Quality control sample test results shall not be used as the sole basis for making the acceptance decision.

### 3. INDEPENDENT ASSURANCE SAMPLES

Independent Assurance (IA) sampling and testing is defined as system-based sampling and testing that is conducted by the IA Unit to provide an unbiased and independent evaluation of the qualified sampling and testing personnel and the testing equipment used in the Acceptance program.

IA sample locations shall be chosen in a selective manner to satisfy the requirements of 23 CFR § 637.207(2)(ii)

IA samples will be split, or replicate samples obtained concurrently with acceptance samples. IA sample test results will be compared with the test results of the split or replicate acceptance samples. IA technicians have no direct responsibility for acceptance samples or test results being compared.

IA sample test results shall not be evaluated as part of the acceptance decision.

#### 4. INVESTIGATIVE SAMPLES

Investigative samples are selective samples obtained by qualified Agency personnel or representatives. These samples are typically obtained for research purposes, forensic purposes, or for other investigative or information purposes. Investigative samples may be independent, split, or replicate.

Investigative sample test results shall not be evaluated as part of the acceptance decision.

#### 5. VERIFICATION SAMPLES

Verification samples are selective samples which, in the opinion of the sampler, represent the quality of the material or an item of construction. Verification samples may be independent, split, or replicate.

The Agency performs verification sampling and testing to verify the quality of the material or veracity of material certification and may be evaluated as part of the acceptance decision.

### MATERIAL SAMPLING AND TESTING FREQUENCY CHARTS

As explained in the introduction, the Agency's Material Testing and Certifications Section have prepared this manual to familiarize the reader with the Agency's adopted practices for sampling, testing, and independently comparing materials that may be incorporated into Agency projects. The MSM includes tiered testing requirements that coincide with the QAP project inspection levels as detailed in Section 4.0 of the QAP. Sampling requirements for a given material may be different for each QAP project inspection level, to reflect the potential risk associated with each of these project inspection levels.

The Resident Engineer is responsible for ensuring that their project's sampling and testing requirements are met based on the Material Sampling and Testing Frequency Charts (Appendix B). Minimum sampling requirements for acceptance are given in the Material Sampling and Testing Frequency Charts (Appendix B). The sampling frequency may be increased for specific project needs. **Sampling frequency should be increased whenever there is uncertainty regarding the quality of the material or workmanship.**

It is to be interpreted in the Material Sampling and Testing Frequency Charts (Appendix B) that all sampling frequencies indicated are applicable per project. For example, '1/400 CY' should be interpreted to mean '1/400 CY/project'.

The frequency charts contained in Appendix B include material sampling and testing requirements for pay items contained in the current Standard Specifications for Construction. Material sampling and testing requirements for Special Specifications can be found in the 'Special Specifications Material Sampling Requirements' on the Agency's website: <https://vtrans.vermont.gov/materials-sampling-manual-msm>.

### MARKING OF SAMPLES

All samples that are to be tested at the Agency's Central Laboratory or other Qualified Laboratories must be properly identified with a sample card, sample tag, or printed label. Sample identification should be completed **with all the indicated information** and attached to the sample container immediately after the sample is taken. Sample identification should be attached in a manner which will prevent their loss or damage during handling and transport.

The individual receiving the sample at the laboratory shall date and initial the sample identification immediately upon receipt.

**Clearly indicate the project line-item number for the sampled material on the card. Sample tags should be made out in accordance with Appendix C.**

## SAMPLING CONSIDERATIONS

### SAMPLING REINFORCING BARS

#### Size of Sample

The minimum length of straight bar or element required for testing is three feet, and the minimum number of test sections required is two. These may be obtained either from a single 6-foot straight section or from two bent bars that also contain at least three feet of straight bar.

### SAMPLING FRESH CONCRETE

#### Care and Identification of Concrete Cylinders for Compressive Strength Testing

1. Specimens shall be molded on a level, rigid surface, free of vibration and other disturbances. Test cylinders must be stored on a level surface. Specimens received at the Central Laboratory with ends which are not cast with a plane perpendicular to the axis will be discarded.
2. Initial Curing: Immediately after molding and finishing, the specimens shall be stored for a period up to 48 hours in a temperature range from 16 to 27°C (60 to 80°F) in an environment preventing moisture loss from the specimens. For concrete mixtures with a specified strength of 40 MPa (6000 psi) or greater, the initial curing temperature shall be between 20 and 26°C (68 and 78°F). Various procedures are capable of being used during the initial curing period to maintain the specified moisture and temperature conditions. An appropriate procedure or combination of procedures shall be used. Shield all specimens from direct sunlight and, if used, radiant heating devices. The storage temperature shall be controlled using heating and cooling devices, as necessary. Record the temperature using a maximum-minimum thermometer. If cardboard molds are used, protect the outside surface of the molds from contact with wet burlap or other sources of water.
3. Standard Curing: On completion of initial curing and within 30 minutes after removing the molds, cure specimens with free water always maintained on their surfaces at a temperature of  $23 \pm 2^\circ\text{C}$  ( $73.5 \pm 3.5^\circ\text{F}$ ) using water storage tanks or moist rooms complying with the requirements of Specification M 201, except immediately before testing. Specimens that are to be transported to the Central Laboratory within the initial 48 hour curing period shall remain in their molds in a moist environment, until they are received in the laboratory. Standard cured specimens which are not to be transported within the initial 48 hour curing period shall be removed from the molds and stored in a concrete curing box conforming to that described in AASHTO M 201.
4. Field Curing: Store cylinders in or on the structure as near as practical to the point of deposit of the concrete represented by that sample. Protect all surfaces of cylinders from the elements in as near as possible the same way as the formed work. Provide the cylinders with the same temperature and moisture environment as the structural work. Test the specimens in the moisture condition resulting from the specified curing treatment. To meet these conditions, specimens made for the purpose of determining when a structure is capable of being put in service shall be removed from the molds at the time of removal of form work.
5. Prior to transporting, cure and protect specimens as required in 2., 3., and 4. above. Specimens shall not be transported until at least 8 hours after final set. Final set can be safely assumed to occur 10 hours after mixing. During transporting, protect the specimen with suitable cushioning material to prevent damage from jarring. During cold weather, protect the specimens from freezing with suitable insulation material. Prevent moisture

loss during transportation by wrapping the specimen in plastic, wet burlap, by surrounding them with wet sand or tight-fitting plastic caps on plastic molds. Transportation time shall not exceed 4 hours.

6. Molds shall be labeled with required identification before the specimens are cast and this identification shall be transferred to the cylinders immediately after removal from the molds. Each cylinder should be identified by number and/or letter, which is also entered on the back of the 'Report on Concrete Cylinders' cards (Appendix D).
7. If the Resident Engineer requires 'early breaks' to determine the strength of concrete prior to 28 days, the Resident Engineer shall notify the Central Laboratory 24 hours in advance of the desired time of the cylinder break.
8. The 'Report on Concrete Cylinders' sample card should be transferred with the first group of cylinders to be tested. Subsequent groups of cylinders from the same batch require an attached photocopy of the original 'Report on Concrete Cylinders' sample card.

## SAMPLING BITUMINOUS MIXTURES

### Marking of Samples

Sample identification shall be made out in accordance with Appendix C. In addition to the information required on the sample identification, be sure to include the combined aggregate bulk specific gravity, the mix design number, the load slip number, the computed slip asphalt content, the mix temperature, the asphalt specific gravity, the time batched and the test number. Do not use the sample container as a sample tag.

### Sampling at the Paver

Bituminous mixtures sampled on-project shall be sampled from the paver or material transfer vehicle hopper in accordance with AASHTO R 97. Contractor assisted sampling will be allowed provided the sampling is witnessed by a qualified state inspector.

## SAMPLING OF LIQUID ASPHALT PRODUCTS, P.G. BINDERS, AND EMULSIONS

### Safety Precautions

Bituminous materials may be as hot as 350° F and will cause severe burns if spilled or splashed on the body. The technician performing this operation should inform other staff on site, and if possible be observed. If a VTrans representative is not permitted to take samples due to producer safety protocols, sampling must be witnessed by a VTrans representative, and the sample immediately taken into custody by the VTrans representative.

The following safety precautions shall be employed:

1. Gloves and long sleeve shirts with sleeves rolled down shall be worn while sampling and sealing containers.
2. Face shields must be worn while sampling.
3. The person taking the sample shall stand away from the sampling valve as far as practical and upwind of the valve to avoid being splashed with the liquid.
4. The sample shall be taken such that splashing of hot materials is prevented.
5. During sealing, the sample container shall be placed on a firm, level surface to prevent splashing, dropping, or spilling of the material.
6. A plug of solidified material can form within the pipe nipple leading from the sampling valve, which could cause a bubble to form and splatter when the sample is drawn off. The nipple should be checked for solidified material prior to sampling. If necessary, **with the valve closed**, the nipple should be reamed or heated to remove any solidified material.

### Sample Container – Additional Information

Samples shall be placed in containers that comply with the following:

1. Performance graded binder – 1-quart metal can with double compression lid.
2. Asphalt Emulsion – 1-quart wide mouth plastic jars with screw top containing a fiber board Teflon coated insert.

**Only new, clean sample containers shall be used. Suitable containers may be obtained from the Central Laboratory.**

## APPENDIX A: Pay Item and Certification Quick Reference

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |   |                         |               |   |                                 |
|--|---|-------------------------|---------------|---|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION  | ITEM UNIT               | MATERIAL CODE | MATERIAL DESCRIPTION                      | Material Acceptance Requirement |
| 217.1000                                   | REINFORCED SOIL SLOPE   | SY                      | 720.02        | Geotextile for Roadbed Separator          | Approved Products List          |
| 219.1000                                   | SLOPE STABILIZATION NAIL  | LF                      | 760.01(a)(1)  | Slope Stabilization Nails, Bars, Solid    | Type D Certification            |
|  |   |                         | 760.01(a)(2)  | Slope Stabilization Nails, Bars, Hollow   | Type D Certification            |
|  |   |                         | 760.01(b)     | Slope Stabilization Nails, Bearing Plates | Type D Certification            |
|  |   |                         | 760.01(c)     | Slope Stabilization Nails, Nuts           | Type D Certification            |
| 219.2000                                   | SLOPE STABILIZATION SYSTEM, SHOTCRETE FACING                      | SF                      | 713.01(a)     | Reinforcing Steel                         | Type D Certification            |
|  |   |                         | 713.01(b)     | Low-Alloy Reinforcing Steel               | Type D Certification            |
|  |   |                         | 713.01(c)     | Epoxy-Coated Reinforcing Steel            | Type D Certification            |
|  |   |                         | 713.01(d)     | Dual-Coated Reinforcing Steel             | Type D Certification            |
|  |   |                         | 713.01(e)     | Continuous Galvanized Reinforcing Steel   | Type D Certification            |
|  |   |                         | 713.01(f)     | Low-Carbon, Chromium, Steel Bars          | Type D Certification            |
|  |   |                         | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel   | Type D Certification            |
|  |   |                         | 713.01(h)     | Solid Stainless Reinforcing Steel         | Type D Certification            |
| 713.03                                     | Welded Wire Reinforcement   | Buy America Declaration |               |   |                                 |
| 219.3000                                   | SLOPE STABILIZATION SYSTEM, WIRE MESH FACING                      | SF                      | 760.04        | Wire Mesh Facing                          | Buy America Declaration         |
| 221.1000<br>221.2000                       | ROCK SLOPE STABILIZATION DOWEL<br>ROCK SLOPE STABILIZATION ANCHOR | LF                      | 760.01(a)(1)  | Slope Stabilization Nails, Bars, Solid    | Type D Certification            |
|  |   |                         | 760.01(a)(2)  | Slope Stabilization Nails, Bars, Hollow   | Type D Certification            |
|  |   |                         | 760.01(b)     | Slope Stabilization Nails, Bearing Plates | Type D Certification            |
|  |   |                         | 760.01(c)     | Slope Stabilization Nails, Nuts           | Type D Certification            |
| 221.3000                                   | ROCK SLOPE STABILIZATION SHEAR KEY                                | LF                      | 760.01(a)(1)  | Slope Stabilization Nails, Bars, Solid    | Buy America Declaration         |
| 221.5000                                   | ROCK SLOPE STABILIZATION NAIL                                     | LF                      | 760.01(a)(1)  | Slope Stabilization Nails, Bars, Solid    | Type D Certification            |
|  |   |                         | 760.01(a)(2)  | Slope Stabilization Nails, Bars, Hollow   | Type D Certification            |
|  |   |                         | 760.01(b)     | Slope Stabilization Nails, Bearing Plates | Type D Certification            |
|  |   |                         | 760.01(c)     | Slope Stabilization Nails, Nuts           | Type D Certification            |
| 221.5000                                   | ROCK SLOPE STABILIZATION SHOTCRETE                                | CY                      | 713.05        | Fiber Reinforcement                       | Buy America Declaration         |
| 225.0300                                   | RETAINING WALL, CAST-IN-PLACE CONCRETE                            | LS                      | 713.01(d)     | Dual-Coated Reinforcing Steel             | Type D Certification            |
|  |   |                         | 713.01(e)     | Continuous Galvanized Reinforcing Steel   | Type D Certification            |
|  |   |                         | 713.01(f)     | Low-Carbon, Chromium, Steel Bars          | Type D Certification            |
|  |   |                         | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel   | Type D Certification            |
|  |   |                         | 713.02        | Mechanical Splices for Bar Reinforcement  | Type D Certification            |
|  |   |                         | 713.03        | Welded Wire Reinforcement                 | Buy America Declaration         |
| 225.0400                                   | RETAINING WALL, PRECAST CONCRETE                                  | LS                      | 713.01(d)     | Dual-Coated Reinforcing Steel             | Type D Certification            |
|  |   |                         | 713.01(e)     | Continuous Galvanized Reinforcing Steel   | Type D Certification            |
|  |   |                         | 713.01(f)     | Low-Carbon, Chromium, Steel Bars          | Type D Certification            |
|  |   |                         | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel   | Type D Certification            |
|  |   |                         | 713.02        | Mechanical Splices for Bar Reinforcement  | Type D Certification            |
|  |   |                         | 713.03        | Welded Wire Reinforcement                 | Buy America Declaration         |
|  |   |                         | 760.05        | Precast Concrete Retaining Wall Systems   | Approved Products List          |
| 225.0500                                   | RETAINING WALL, CONCRETE  | LS                      | 713.01(d)     | Dual-Coated Reinforcing Steel             | Type D Certification            |
|  |   |                         | 713.01(e)     | Continuous Galvanized Reinforcing Steel   | Type D Certification            |
|  |   |                         | 713.01(f)     | Low-Carbon, Chromium, Steel Bars          | Type D Certification            |
|  |   |                         | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel   | Type D Certification            |
|  |   |                         | 713.02        | Mechanical Splices for Bar Reinforcement  | Type D Certification            |
|  |   |                         | 713.03        | Welded Wire Reinforcement                 | Buy America Declaration         |
| 227.0100                                   | RETAINING WALL, MECHANICALLY STABILIZED EARTH                     | LS                      | 704.18        | Select Backfill for MSE Structures        | Type D Certification            |
|  |   |                         | 713.01(d)     | Dual-Coated Reinforcing Steel             | Type D Certification            |
|  |   |                         | 713.01(e)     | Continuous Galvanized Reinforcing Steel   | Type D Certification            |
|  |   |                         | 713.01(f)     | Low-Carbon, Chromium, Steel Bars          | Type D Certification            |
|  |   |                         | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel   | Type D Certification            |
|  |   |                         | 713.02        | Mechanical Splices for Bar Reinforcement  | Type D Certification            |
|  |   |                         | 720.02        | Geotextile for Roadbed Separator          | Approved Products List          |
| 760.06                                     | Mechanically Stabilized Earth (MSE) Wall Systems                  | Approved Products List  |               |   |                                 |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |  |           |               |   |                                 |
|--|--|-----------|---------------|---|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION                               | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                        | Material Acceptance Requirement |
| 248.5000                                   | INSTRUMENTATION AND MONITORING PLAN            | LS        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged               | Approved Products List          |
| 248.5100                                   | SLOPE INCLINOMETER                             | LF        |               |   |                                 |
| 248.5200                                   | OBSERVATION WELL                               | LF        |               |   |                                 |
| 248.5300                                   | SHAPE ARRAY INSTRUMENT                         | EA        |               |   |                                 |
| 248.5400                                   | TILTMETER                                      | EA        |               |   |                                 |
| 248.5501                                   | SETTLEMENT PLATFORM, TYPE I                    | EA        |               |   |                                 |
| 248.5502                                   | SETTLEMENT PLATFORM, TYPE II                   | EA        |               |   |                                 |
| 248.5603                                   | PIEZOMETER, TYPE III                           | EA        |               |   |                                 |
| 248.5700                                   | DATALOGGER                                     | EA        |               |   |                                 |
| 248.5800                                   | PRESSURE CELL                                  | EA        |               |   |                                 |
| 250.0100                                   | CONSTRUCTION VIBRATION AND CRACK MONITORING    | LS        |               |   |                                 |
| 312.5100                                   | EMULSIFIED ASPHALT FOR FDR, EMULSION           | CWT       | 702.02(a)(3)  | Anionic Emulsified Asphalt, MS-2h           | Approved Products List          |
|  |  |           | 702.02(a)(4)  | Anionic Emulsified Asphalt, HFMS-2          | Approved Products List          |
|  |  |           | 702.02(a)(5)  | Anionic Emulsified Asphalt, HFMS-2h         | Approved Products List          |
|  |  |           | 702.02(a)(6)  | Anionic Emulsified Asphalt, HFMS-2s         | Approved Products List          |
|  |  |           | 702.02(a)(7)  | Anionic Emulsified Asphalt, SS-1h           | Approved Products List          |
|  |  |           | 702.02(b)(3)  | Cationic Emulsified Asphalt, CMS-2h         | Approved Products List          |
|  |  |           | 702.02(b)(4)  | Cationic Emulsified Asphalt, CSS-1          | Approved Products List          |
|  |  |           | 702.02(b)(5)  | Cationic Emulsified Asphalt, CSS-1h         | Approved Products List          |
| 404.1100                                   | TACK COAT, EMULSIFIED ASPHALT                  | CWT       | 702.02(a)(1)  | Anionic Emulsified Asphalt, RS-1            | Approved Products List          |
|  |  |           | 702.02(a)(2)  | Anionic Emulsified Asphalt, RS-1h           | Approved Products List          |
|  |  |           | 702.02(b)(1)  | Cationic Emulsified Asphalt, CRS-1          | Approved Products List          |
|  |  |           | 702.02(b)(2)  | Cationic Emulsified Asphalt, CRS-1h         | Approved Products List          |
| 404.1200                                   | TACK COAT, POLYMER-MODIFIED EMULSIFIED ASPHALT | CWT       | 702.02(c)(1)  | Polymer-Modified Emulsified Asphalt, CRS-1P | Approved Products List          |
| 404.3100                                   | FOG SEAL, EMULSIFIED ASPHALT                   | CWT       | 702.02(b)(5)  | Cationic Emulsified Asphalt, CSS-1h         | Approved Products List          |
| 404.5100                                   | SEAL COAT, EMULSIFIED ASPHALT                  | CWT       | 702.02(a)(7)  | Anionic Emulsified Asphalt, SS-1            | Approved Products List          |
|  |  |           | 702.02(a)(8)  | Anionic Emulsified Asphalt, SS-1h           | Approved Products List          |
|  |  |           | 702.02(b)(4)  | Cationic Emulsified Asphalt, CSS-1          | Approved Products List          |
|  |  |           | 702.02(b)(5)  | Cationic Emulsified Asphalt, CSS-1h         | Approved Products List          |
| 414.5300                                   | EMULSIFIED ASPHALT FOR CIR                     | CWT       | 702.02(a)(3)  | Anionic Emulsified Asphalt, MS-2h           | Approved Products List          |
| 415.5300                                   | EMULSIFIED ASPHALT FOR CCPR                    | CWT       | 702.02(a)(4)  | Anionic Emulsified Asphalt, HFMS-2          | Approved Products List          |
|  |  |           | 702.02(a)(5)  | Anionic Emulsified Asphalt, HFMS-2h         | Approved Products List          |
|  |  |           | 702.02(a)(6)  | Anionic Emulsified Asphalt, HFMS-2s         | Approved Products List          |
|  |  |           | 702.02(b)(4)  | Cationic Emulsified Asphalt, CSS-1          | Approved Products List          |
|  |  |           | 702.02(b)(5)  | Cationic Emulsified Asphalt, CSS-1h         | Approved Products List          |
| 418.1000                                   | ASPHALTIC APPROACH MATERIAL                    | SF        | 707.15        | Asphaltic Plug Joint Binder                 | Approved Products List          |
| 501.3700                                   | PERFORMANCE-BASED CONCRETE, CLASS PCD          | CY        | 715.03        | Steel for Corrugated Metal Forms            | Type D Certification            |
| 501.3800                                   | PERFORMANCE-BASED CONCRETE, CLASS PCS          | CY        | 719.01(a)     | Epoxy Bonding System, Type IV               | Approved Products List          |
| 501.3900                                   | PERFORMANCE-BASED CONCRETE, CLASS SCC          | CY        | 719.01(b)     | Epoxy Bonding System, Type V                | Approved Products List          |
|  |  |           | 719.01(c)     | Epoxy Bonding System, Type VI               | Approved Products List          |
|  |  |           | 725.01(d)     | Liquid Membrane-Forming Compounds           | Approved Products List          |
| 503.1000                                   | DRILLED SHAFT IN EARTH                         | LF        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged               | Approved Products List          |
| 503.1500                                   | DRILLED SHAFT IN ROCK                          | LF        | 713.01(a)     | Reinforcing Steel                           | Type D Certification            |
|  |  |           | 713.01(b)     | Low-Alloy Reinforcing Steel                 | Type D Certification            |
|  |  |           | 713.01(c)     | Epoxy-Coated Reinforcing Steel              | Type D Certification            |
|  |  |           | 713.01(d)     | Dual-Coated Reinforcing Steel               | Type D Certification            |
|  |  |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel     | Type D Certification            |
|  |  |           | 713.01(f)     | Low-Carbon, Chromium, Steel Bars            | Type D Certification            |
|  |  |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel     | Type D Certification            |
|  |  |           | 713.01(h)     | Solid Stainless Reinforcing Steel           | Type D Certification            |
|  |  |           | 730.03        | Steel Casing for Drilled Shafts             | Type D Certification            |



| PAY ITEM AND CERTIFICATION QUICK REFERENCE |                                       |           |               |  |                                 |
|--|---------------------------------------|-----------|---------------|--|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION                      | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                                   | Material Acceptance Requirement |
| 505.1000                                   | STEEL PILING, HP 10 X 42              | LF        | 730.01        | Steel Piling   | Type D Certification            |
| 505.1200                                   | STEEL PILING, HP 10 X 57              | LF        |               |  |                                 |
| 505.1500                                   | STEEL PILING, HP 12 X 53              | LF        |               |  |                                 |
| 505.1550                                   | STEEL PILING, HP 12 X 63              | LF        |               |  |                                 |
| 505.1600                                   | STEEL PILING, HP 12 X 74              | LF        |               |  |                                 |
| 505.1650                                   | STEEL PILING, HP 12 X 84              | LF        |               |  |                                 |
| 505.1700                                   | STEEL PILING, HP 14 X 73              | LF        |               |  |                                 |
| 505.1800                                   | STEEL PILING, HP 14 X 89              | LF        |               |  |                                 |
| 505.1900                                   | STEEL PILING, HP 14 X 102             | LF        |               |  |                                 |
| 505.2000                                   | STEEL PILING, HP 14 X 117             | LF        |               |  |                                 |
| 505.3500                                   | PERMANENT STEEL SHEET PILING          | LF        | 731.02        | Steel Sheet Piling                                     | Type D Certification            |
| 506.5000                                   | STRUCTURAL STEEL, ROLLED BEAM         | LB        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                          | Approved Products List          |
| 506.5500                                   | STRUCTURAL STEEL, PLATE GIRDER        | LB        | 708.03        | Structural Steel Coating Systems                       | Approved Products List          |
| 506.5600                                   | STRUCTURAL STEEL, CURVED PLATE GIRDER | LB        | 714.02        | Structural Steel                                       | Type D Certification            |
| 506.5700                                   | STRUCTURAL STEEL, TRUSS               | LB        | 714.03        | High-Strength Low-Alloy Structural Steel               | Type D Certification            |
| 506.6000                                   | STRUCTURAL STEEL                      | LB        | 714.04        | Carbon Steel Bolts, Nuts, and Washers                  | Type D Certification            |
| 506.7500                                   | STRUCTURAL STEEL                      | LS        | 714.05        | High-Strength Structural Bolts and Assemblies, 120 KSI | Type D Certification            |
|  |                                       |           | 714.06        | High-Strength Structural Bolts and Assemblies, 150 KSI | Type D Certification            |
|  |                                       |           | 714.07        | Anchor Bolts for Bearing Devices                       | Type D Certification            |
|  |                                       |           | 714.10        | Welded Stud Shear Connectors                           | Type D Certification            |
|  |                                       |           | 714.11        | Steel Tubing   | Type D Certification            |
|  |                                       |           | 714.12        | Direct Tension Indicators                              | Type D Certification            |
|  |                                       |           | 714.13        | Tension Control Assemblies                             | Type D Certification            |
|  |                                       |           | 726.06        | Galvanizing  | Type D Certification            |
|  |                                       |           | 726.07        | Metalizing   | Type D Certification            |
| 506.8500                                   | RIVET REPLACEMENT                     | EA        | 714.05        | High-Strength Structural Bolts and Assemblies, 120 KSI | Type D Certification            |
|  |                                       |           | 714.12        | Direct Tension Indicators                              | Type D Certification            |
| 507.1100                                   | REINFORCING STEEL, LEVEL I            | LB        | 713.01(a)     | Reinforcing Steel                                      | Type D Certification            |
|  |                                       |           | 713.01(b)     | Low-Alloy Reinforcing Steel                            | Type D Certification            |
|  |                                       |           | 713.01(c)     | Epoxy-Coated Reinforcing Steel                         | Type D Certification            |
| 507.1200                                   | REINFORCING STEEL, LEVEL II           | LB        | 713.01(d)     | Dual-Coated Reinforcing Steel                          | Type D Certification            |
|  |                                       |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel                | Type D Certification            |
|  |                                       |           | 713.01(f)     | Low-Carbon, Chromium, Steel Bars                       | Type D Certification            |
|  |                                       |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel                | Type D Certification            |
| 507.1300                                   | REINFORCING STEEL, LEVEL III          | LB        | 713.01(h)     | Solid Stainless Reinforcing Steel                      | Type D Certification            |
| 507.1600                                   | DRILLING AND GROUTING DOWELS          | LF        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                          | Approved Products List          |
|  |                                       |           | 713.01(a)     | Reinforcing Steel                                      | Type D Certification            |
|  |                                       |           | 713.01(b)     | Low-Alloy Reinforcing Steel                            | Type D Certification            |
|  |                                       |           | 713.01(c)     | Epoxy-Coated Reinforcing Steel                         | Type D Certification            |
|  |                                       |           | 713.01(d)     | Dual-Coated Reinforcing Steel                          | Type D Certification            |
|  |                                       |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel                | Type D Certification            |
|  |                                       |           | 713.01(f)     | Low-Carbon, Chromium, Steel Bars                       | Type D Certification            |
|  |                                       |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel                | Type D Certification            |
|  |                                       |           | 713.01(h)     | Solid Stainless Reinforcing Steel                      | Type D Certification            |
| 507.1900                                   | MECHANICAL BAR CONNECTOR              | EA        | 713.02        | Mechanical Splices for Bar Reinforcement               | Type D Certification            |
| 508.1500                                   | SHEAR CONNECTORS                      | LS        | 714.10        | Welded Stud Shear Connectors                           | Buy America Declaration         |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |  |           |               |  |                                 |
|--|--|-----------|---------------|--|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION                                 | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                                     | Material Acceptance Requirement |
| 510.2100                                   | PRESTRESSED CONCRETE BOX BEAMS                   | LF        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                            | Approved Products List          |
| 510.2200                                   | PRESTRESSED CONCRETE VOIDED SLABS                | LF        | 713.01(a)     | Reinforcing Steel  | Type D Certification            |
| 510.2300                                   | PRESTRESSED CONCRETE GIRDERS                     | LF        | 713.01(b)     | Low-Alloy Reinforcing Steel                              | Type D Certification            |
|  |  |           | 713.01(c)     | Epoxy-Coated Reinforcing Steel                           | Type D Certification            |
|  |  |           | 713.01(d)     | Dual-Coated Reinforcing Steel                            | Type D Certification            |
|  |  |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel                  | Type D Certification            |
|  |  |           | 713.01(f)     | Low-Carbon, Chromium, Steel Bars                         | Type D Certification            |
|  |  |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel                  | Type D Certification            |
|  |  |           | 713.01(h)     | Solid Stainless Reinforcing Steel                        | Type D Certification            |
|  |  |           | 713.06        | Prestressing Strand                                      | Type D Certification            |
|  |  |           | 714.02        | Structural Steel   | Type D Certification            |
|  |  |           | 714.03        | High-Strength Low-Alloy Structural Steel                 | Type D Certification            |
|  |  |           | 714.04        | Carbon Steel Bolts, Nuts, and Washers                    | Type D Certification            |
|  |  |           | 714.05        | High-Strength Structural Bolts and Assemblies, 120 KSI   | Type D Certification            |
|  |  |           | 725.01(d)     | Liquid Membrane-Forming Compounds                        | Approved Products List          |
|  |  |           | 780.01(a)     | Concrete Repair Material, Type I                         | Approved Products List          |
| 510.2400                                   | GROUTING SHEAR KEYS                              | LF        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                            | Approved Products List          |
| 510.2500                                   | PRESTRESSED CONCRETE SOLID SLABS                 | LF        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                            | Approved Products List          |
| 510.2600                                   | PRESTRESSED CONCRETE NEXT D BEAMS                | LF        | 713.01(a)     | Reinforcing Steel  | Type D Certification            |
| 510.4000                                   | PRESTRESSED CONCRETE DECK PANELS                 | SF        | 713.01(b)     | Low-Alloy Reinforcing Steel                              | Type D Certification            |
|  |  |           | 713.01(c)     | Epoxy-Coated Reinforcing Steel                           | Type D Certification            |
|  |  |           | 713.01(d)     | Dual-Coated Reinforcing Steel                            | Type D Certification            |
|  |  |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel                  | Type D Certification            |
|  |  |           | 713.01(f)     | Low-Carbon, Chromium, Steel Bars                         | Type D Certification            |
|  |  |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel                  | Type D Certification            |
|  |  |           | 713.01(h)     | Solid Stainless Reinforcing Steel                        | Type D Certification            |
|  |  |           | 713.06        | Prestressing Strand                                      | Type D Certification            |
|  |  |           | 714.02        | Structural Steel   | Type D Certification            |
|  |  |           | 714.03        | High-Strength Low-Alloy Structural Steel                 | Type D Certification            |
|  |  |           | 714.04        | Carbon Steel Bolts, Nuts, and Washers                    | Type D Certification            |
|  |  |           | 714.05        | High-Strength Structural Bolts and Assemblies, 120 KSI   | Type D Certification            |
|  |  |           | 725.01(d)     | Liquid Membrane-Forming Compounds                        | Approved Products List          |
|  |  |           | 780.01(a)     | Concrete Repair Material, Type I                         | Approved Products List          |
| 513.1030                                   | FIELD PAINTING STEEL, THREE COAT SYSTEM          | LS        | 708.03        | Structural Steel Coating Systems                         | Approved Products List          |
| 514.1000                                   | WATER REPELLENT, SILANE                          | GAL       | 726.10        | Water Repellent, Silane                                  | Approved Products List          |
| 516.1000                                   | BRIDGE EXPANSION JOINT, ASPHALTIC PLUG           | LF        | 707.13        | Asphaltic Plug Joints for Bridges                        | Approved Products List          |
| 516.1100                                   | BRIDGE EXPANSION JOINT, VERMONT                  | LF        | 714.02        | Structural Steel   | Type D Certification            |
| 516.1200                                   | BRIDGE EXPANSION JOINT, FINGER PLATE             | LF        | 714.03        | High-Strength Low-Alloy Structural Steel                 | Type D Certification            |
| 516.2000                                   | PARTIAL REMOVAL AND MODIFICATION OF BRIDGE JOINT | LF        | 714.04        | Carbon Steel Bolts, Nuts, and Washers                    | Type D Certification            |
|  |  |           | 714.05        | High-Strength Structural Bolts and Assemblies, 120 KSI   | Type D Certification            |
|  |  |           | 714.10        | Welded Stud Shear Connectors                             | Type D Certification            |
|  |  |           | 719.01(b)     | Epoxy Bonding System, Type V                             | Approved Products List          |
|  |  |           | 726.06        | Galvanizing  | Type D Certification            |
| 519.1000                                   | MEMBRANE WATERPROOFING, SPRAY APPLIED            | SY        | 726.08(a)     | Waterproofing Membrane System, Type I                    | Approved Products List          |
| 519.2000                                   | SHEET MEMBRANE WATERPROOFING, TORCH APPLIED      | SY        | 726.08(b)     | Waterproofing Membrane System, Type II                   | Approved Products List          |
| 522.2000                                   | STRUCTURAL LUMBER AND TIMBER, UNTREATED          | MFBM      | 709.01        | Structural Lumber and Timber                             | Type D Certification            |
|  |  |           | 709.01(h)     | Miscellaneous Hardware, Shapes, and Fabricated Materials | Buy America Declaration         |
|  |  |           | 726.06        | Galvanizing  | Buy America Declaration         |
| 522.2500                                   | STRUCTURAL LUMBER AND TIMBER, TREATED            | MFBM      | 709.01        | Structural Lumber and Timber                             | Type D Certification            |
|  |  |           | 709.01(h)     | Miscellaneous Hardware, Shapes, and Fabricated Materials | Buy America Declaration         |
|  |  |           | 726.01        | Timber Preservative                                      | Type D Certification            |
|  |  |           | 726.06        | Galvanizing  | Buy America Declaration         |
| 522.3000                                   | NONSTRUCTURAL LUMBER, UNTREATED                  | MFBM      | 709.01(h)     | Miscellaneous Hardware, Shapes, and Fabricated Materials | Buy America Declaration         |
|  |  |           | 726.06        | Galvanizing  | Buy America Declaration         |
| 522.3500                                   | NONSTRUCTURAL LUMBER, TREATED                    | MFBM      | 709.01(h)     | Miscellaneous Hardware, Shapes, and Fabricated Materials | Buy America Declaration         |
|  |  |           | 726.01        | Timber Preservative                                      | Type D Certification            |
|  |  |           | 726.06        | Galvanizing  | Buy America Declaration         |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE   |  |                      |               |  |                                 |
|--|--|----------------------|---------------|--|---------------------------------|
| ITEM NUMBER                                  | ITEM DESCRIPTION   | ITEM UNIT            | MATERIAL CODE | MATERIAL DESCRIPTION   | Material Acceptance Requirement |
| 522.4000                                     | STRUCTURAL GLUED LAMINATED TIMBER  | LS                   | 709.01(h)     | Miscellaneous Hardware, Shapes, and Fabricated Materials                               | Buy America Declaration         |
|  |  |                      | 709.03        | Structural Glued Laminated Timber  | Type D Certification            |
|  |  |                      | 726.01        | Timber Preservative  | Type D Certification            |
|  |  |                      | 726.06        | Galvanizing  | Buy America Declaration         |
| 525.1210<br>525.1220<br>525.1230             | BRIDGE RAIL REPAIR, HDSB, TYPE I<br>BRIDGE RAIL REPAIR, HDSB, TYPE II<br>BRIDGE RAIL REPAIR, HDSB, TYPE III  | LF<br>LF<br>LF       | 714.04        | Carbon Steel Bolts, Nuts, and Washers  | Type D Certification            |
|  |  |                      | 726.06        | Galvanizing  | Type D Certification            |
|  |  |                      | 726.07        | Metalizing   | Type D Certification            |
|  |  |                      | 731.01        | Bearing Pads   | Type D Certification            |
|  |  |                      | 732.04(a)     | Beam Guardrail (Equivalent to 728.02(b)(2) Heavy Duty Beam)                            | Type D Certification            |
|  |  |                      | 732.04(c)     | Steel Posts and Components   | Type D Certification            |
|  |  |                      | 732.04(e)     | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07 Anchor Bolts, Nuts, and Washers) | Type D Certification            |
| 525.1310<br>525.1320                         | BRIDGE RAIL REPAIR, BOX BEAM, TYPE I<br>BRIDGE RAIL REPAIR, BOX BEAM, TYPE II  | LF<br>LF             | 714.04        | Carbon Steel Bolts, Nuts, and Washers  | Type D Certification            |
|  |  |                      | 726.06        | Galvanizing  | Type D Certification            |
|  |  |                      | 726.07        | Metalizing   | Type D Certification            |
|  |  |                      | 731.01        | Bearing Pads   | Type D Certification            |
|  |  |                      | 732.03(a)     | Structural Steel Tubing  | Type D Certification            |
|  |  |                      | 732.03(b)     | Structural Carbon Steel (Non-Tubular)  | Type D Certification            |
|  |  |                      | 732.03(c)     | Bolts, Nuts, and Washers   | Type D Certification            |
|  |  |                      | 732.03(d)     | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07 Anchor Bolts, Nuts, and Washers) | Type D Certification            |
| 525.1330                                     | BRIDGE RAIL REPAIR, BOX BEAM, TYPE III   | LF                   | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged  | Approved Products List          |
|  |  |                      | 714.04        | Carbon Steel Bolts, Nuts, and Washers  | Type D Certification            |
|  |  |                      | 726.06        | Galvanizing  | Type D Certification            |
|  |  |                      | 726.07        | Metalizing   | Type D Certification            |
|  |  |                      | 731.01        | Bearing Pads   | Type D Certification            |
|  |  |                      | 732.03(a)     | Structural Steel Tubing  | Type D Certification            |
|  |  |                      | 732.03(b)     | Structural Carbon Steel (Non-Tubular)  | Type D Certification            |
|  |  |                      | 732.03(c)     | Bolts, Nuts, and Washers   | Type D Certification            |
| 525.3000                                     | BRIDGE RAILING, FASCIA MOUNTED   | LF                   | 714.04        | Carbon Steel Bolts, Nuts, and Washers  | Type D Certification            |
|  |  |                      | 726.06        | Galvanizing  | Type D Certification            |
|  |  |                      | 726.07        | Metalizing   | Type D Certification            |
|  |  |                      | 731.01        | Bearing Pads   | Type D Certification            |
|  |  |                      | 732.03(a)     | Structural Steel Tubing  | Type D Certification            |
|  |  |                      | 732.03(b)     | Structural Carbon Steel (Non-Tubular)  | Type D Certification            |
|  |  |                      | 732.03(c)     | Bolts, Nuts, and Washers   | Type D Certification            |
|  |  |                      | 732.03(d)     | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07 Anchor Bolts, Nuts, and Washers) | Type D Certification            |
| 525.3120<br>525.3130<br>525.3140<br>525.3230 | BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM<br>BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM<br>BRIDGE RAILING, GALVANIZED 4 RAIL BOX BEAM<br>BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM, CURBLESS | LF<br>LF<br>LF<br>LF | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged  | Approved Products List          |
|  |  |                      | 714.04        | Carbon Steel Bolts, Nuts, and Washers  | Type D Certification            |
|  |  |                      | 726.06        | Galvanizing  | Type D Certification            |
|  |  |                      | 726.07        | Metalizing   | Type D Certification            |
|  |  |                      | 731.01        | Bearing Pads   | Type D Certification            |
|  |  |                      | 731.02        | Elastomeric Material   | Type D Certification            |
|  |  |                      | 732.03(a)     | Structural Steel Tubing  | Type D Certification            |
|  |  |                      | 732.03(b)     | Structural Carbon Steel (Non-Tubular)  | Type D Certification            |
| 525.4030<br>525.4130                         | BRIDGE RAILING, ALUMINUM 3 RAIL<br>BRIDGE RAILING, ALUMINUM 3 RAIL, PEDESTRIAN   | LF<br>LF             | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged  | Approved Products List          |
|  |  |                      | 714.04        | Carbon Steel Bolts, Nuts, and Washers  | Type D Certification            |
|  |  |                      | 731.01        | Bearing Pads   | Type D Certification            |
|  |  |                      | 732.02(a)     | Aluminum Alloy (Equivalent to 715.02 Aluminum Alloy)                                   | Type D Certification            |
|  |  |                      | 732.02(b)     | Stainless Steel Bolts, Nuts, Washers, and Set Screws                                   | Type D Certification            |
|  |  |                      | 732.02(c)     | Structural Carbon Steel  | Type D Certification            |
|  |  |                      | 732.02(d)     | Steel Pipe (Equivalent to 740.04 Steel Pipe, Galvanized)                               | Type D Certification            |
|  |  |                      | 732.02(e)     | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07 Anchor Bolts, Nuts, and Washers) | Type D Certification            |
| 732.02(f)                                    | Fabric Pads (Equivalent to 731.01 Bearing Pads or 731.02 Elastomeric Material)   | Type D Certification |               |  |                                 |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |  |           |               |  |                                 |
|--|--|-----------|---------------|--|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION   | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION   | Material Acceptance Requirement |
| 525.4400                                   | BRIDGE RAILING, GALVANIZED HDSB/FASCIA MOUNTED/STEEL TUBING  | LF        | 714.04        | Carbon Steel Bolts, Nuts, and Washers  | Type D Certification            |
|  |  |           | 726.06        | Galvanizing  | Type D Certification            |
|  |  |           | 726.07        | Metalizing   | Type D Certification            |
|  |  |           | 731.01        | Bearing Pads   | Type D Certification            |
|  |  |           | 732.03(a)     | Structural Steel Tubing  | Type D Certification            |
|  |  |           | 732.03(b)     | Structural Carbon Steel (Non-Tubular)  | Type D Certification            |
|  |  |           | 732.03(c)     | Bolts, Nuts, and Washers   | Type D Certification            |
|  |  |           | 732.04(a)     | Beam Guardrail (Equivalent to 728.02(b)(2) Heavy Duty Beam)                            | Type D Certification            |
|  |  |           | 732.04(e)     | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07 Anchor Bolts, Nuts, and Washers) | Type D Certification            |
| 525.5000                                   | BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION | LF        | 713.01(a)     | Reinforcing Steel  | Type D Certification            |
|  |  |           | 713.01(b)     | Low-Alloy Reinforcing Steel  | Type D Certification            |
|  |  |           | 713.01(c)     | Epoxy-Coated Reinforcing Steel   | Type D Certification            |
|  |  |           | 713.01(d)     | Dual-Coated Reinforcing Steel  | Type D Certification            |
|  |  |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel  | Type D Certification            |
|  |  |           | 713.01(f)     | Low-Carbon, Chromium, Steel Bars   | Type D Certification            |
|  |  |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel  | Type D Certification            |
|  |  |           | 713.01(h)     | Solid Stainless Reinforcing Steel  | Type D Certification            |
| 525.5100                                   | BRIDGE RAILING, GALV. STEEL HAND RAIL/CONC. PARAPET COMB.    | LF        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged  | Approved Products List          |
|  |  |           | 714.04        | Carbon Steel Bolts, Nuts, and Washers  | Type D Certification            |
|  |  |           | 726.06        | Galvanizing  | Type D Certification            |
|  |  |           | 726.07        | Metalizing   | Type D Certification            |
|  |  |           | 731.01        | Bearing Pads   | Type D Certification            |
|  |  |           | 731.02        | Elastomeric Material   | Type D Certification            |
|  |  |           | 732.03(a)     | Structural Steel Tubing  | Type D Certification            |
|  |  |           | 732.03(b)     | Structural Carbon Steel (Non-Tubular)  | Type D Certification            |
|  |  |           | 732.03(d)     | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07 Anchor Bolts, Nuts, and Washers) | Type D Certification            |
| 525.5200                                   | BRIDGE RAILING, TEXAS RAIL WITH WINDOWS                      | LF        | 713.01(a)     | Reinforcing Steel  | Type D Certification            |
| 525.5210                                   | BRIDGE RAILING, TEXAS RAIL WITHOUT WINDOWS                   | LF        | 713.01(b)     | Low-Alloy Reinforcing Steel  | Type D Certification            |
| 525.5300                                   | BRIDGE RAILING, CONCRETE F-SHAPE                             | LF        | 713.01(c)     | Epoxy-Coated Reinforcing Steel   | Type D Certification            |
| 525.5400                                   | BRIDGE RAILING, CONCRETE SINGLE SLOPE                        | LF        | 713.01(d)     | Dual-Coated Reinforcing Steel  | Type D Certification            |
| 525.5500                                   | BRIDGE RAILING, CONCRETE VERTICAL FACE                       | LF        | 713.01(e)     | Continuous Galvanized Reinforcing Steel  | Type D Certification            |
|  |  |           | 713.01(f)     | Low-Carbon, Chromium, Steel Bars   | Type D Certification            |
|  |  |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel  | Type D Certification            |
|  |  |           | 713.01(h)     | Solid Stainless Reinforcing Steel  | Type D Certification            |
|  |  |           | 713.02        | Mechanical Splices for Bar Reinforcement   | Type D Certification            |
| 531.1500                                   | BEARING DEVICE ASSEMBLY, HIGH LOAD MULTI-ROTATIONAL          | EA        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged  | Approved Products List          |
| 531.1600                                   | BEARING DEVICE ASSEMBLY, PLAIN ELASTOMERIC PAD               | EA        | 714.02        | Structural Steel   | Buy America Declaration         |
| 531.1700                                   | BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD    | EA        | 714.03        | High-Strength Low-Alloy Structural Steel   | Buy America Declaration         |
| 531.1800                                   | BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD W/ EXT. LOAD PLATES | EA        | 714.05        | High-Strength Structural Bolts and Assemblies, 120 KSI                                 | Buy America Declaration         |
| 531.1900                                   | REMOVE AND REPLACE EXISTING ANCHOR BOLT                      | EA        | 714.08        | Anchor Bolts for Bearing Devices   | Buy America Declaration         |
|  |  |           | 726.06        | Galvanizing  | Buy America Declaration         |
|  |  |           | 726.07        | Metalizing   | Buy America Declaration         |
|  |  |           | 731.01        | Bearing Pads   | Type D Certification            |
|  |  |           | 731.02        | Elastomeric Material   | Type D Certification            |
|  |  |           | 731.03        | Stainless Steel  | Type D Certification            |
|  |  |           | 731.04        | PTFE Material  | Type D Certification            |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |  |           |               |  |                                 |
|--|--|-----------|---------------|--|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION                                     | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                                   | Material Acceptance Requirement |
| 540.1000                                   | PRECAST CONCRETE STRUCTURE                           | LS        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                          | Approved Products List          |
| 540.2000                                   | PRECAST CONCRETE DECK PANELS                         | SF        | 713.01(a)     | Reinforcing Steel                                      | Type D Certification            |
|  |  |           | 713.01(b)     | Low-Alloy Reinforcing Steel                            | Type D Certification            |
|  |  |           | 713.01(c)     | Epoxy-Coated Reinforcing Steel                         | Type D Certification            |
|  |  |           | 713.01(d)     | Dual-Coated Reinforcing Steel                          | Type D Certification            |
|  |  |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel                | Type D Certification            |
|  |  |           | 713.01(f)     | Low-Carbon, Chromium, Steel Bars                       | Type D Certification            |
|  |  |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel                | Type D Certification            |
|  |  |           | 713.01(h)     | Solid Stainless Reinforcing Steel                      | Type D Certification            |
|  |  |           | 713.02        | Mechanical Splices for Bar Reinforcement               | Type D Certification            |
|  |  |           | 713.05        | Welded Wire Reinforcement                              | Type D Certification            |
|  |  |           | 714.02        | Structural Steel                                       | Type D Certification            |
|  |  |           | 714.03        | High-Strength Low-Alloy Structural Steel               | Type D Certification            |
|  |  |           | 714.04        | Carbon Steel Bolts, Nuts, and Washers                  | Type D Certification            |
|  |  |           | 714.05        | High-Strength Structural Bolts and Assemblies, 120 KSI | Type D Certification            |
|  |  |           | 725.01(d)     | Liquid Membrane-Forming Compounds                      | Approved Products List          |
| 541.1000                                   | CONCRETE, CLASS HPAA                                 | CY        | 725.01(d)     | Liquid Membrane-Forming Compounds                      | Approved Products List          |
| 541.1100                                   | CONCRETE, CLASS HPA                                  | CY        |               |  |                                 |
| 541.1200                                   | CONCRETE, CLASS HPB                                  | CY        |               |  |                                 |
| 541.2000                                   | CONCRETE, CLASS AA                                   | CY        |               |  |                                 |
| 541.2100                                   | CONCRETE, CLASS A                                    | CY        |               |  |                                 |
| 541.2200                                   | CONCRETE, CLASS B                                    | CY        |               |  |                                 |
| 541.2300                                   | CONCRETE, CLASS C                                    | CY        |               |  |                                 |
| 541.2400                                   | CONCRETE, CLASS D                                    | CY        |               |  |                                 |
| 541.2800                                   | CONCRETE, CLASS SCC                                  | CY        |               |  |                                 |
| 541.2900                                   | CONCRETE, CLASS LW                                   | CY        |               |  |                                 |
| 541.4500                                   | FLOWABLE FILL  | CY        |               |  |                                 |
| 541.4600                                   | FLOWABLE FILL, EXCAVATABLE                           | CY        |               |  |                                 |
| 541.5400                                   | MORTAR, TYPE IV                                      | CY        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                          | Approved Products List          |
| 542.1000                                   | HIGH PERFORMANCE CONCRETE, RAPID SET                 | CY        | 715.03        | Steel for Corrugated Metal Forms                       | Type D Certification            |
|  |  |           | 719.01(a)     | Epoxy Bonding System, Type IV                          | Approved Products List          |
|  |  |           | 719.01(b)     | Epoxy Bonding System, Type V                           | Approved Products List          |
|  |  |           | 719.01(c)     | Epoxy Bonding System, Type VI                          | Approved Products List          |
|  |  |           | 725.01(d)     | Liquid Membrane-Forming Compounds                      | Approved Products List          |
| 543.1000                                   | CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE     | LS        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                          | Approved Products List          |
| 544.1000                                   | PREFABRICATED BRIDGE UNIT SUPERSTRUCTURE             | LF        | 713.01(a)     | Reinforcing Steel                                      | Type D Certification            |
|  |  |           | 713.01(b)     | Low-Alloy Reinforcing Steel                            | Type D Certification            |
|  |  |           | 713.01(c)     | Epoxy-Coated Reinforcing Steel                         | Type D Certification            |
|  |  |           | 713.01(d)     | Dual-Coated Reinforcing Steel                          | Type D Certification            |
|  |  |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel                | Type D Certification            |
|  |  |           | 713.01(f)     | Low-Carbon, Chromium, Steel Bars                       | Type D Certification            |
|  |  |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel                | Type D Certification            |
|  |  |           | 713.01(h)     | Solid Stainless Reinforcing Steel                      | Type D Certification            |
|  |  |           | 713.02        | Mechanical Splices for Bar Reinforcement               | Type D Certification            |
|  |  |           | 713.05        | Welded Wire Reinforcement                              | Type D Certification            |
|  |  |           | 714.02        | Structural Steel                                       | Type D Certification            |
|  |  |           | 714.03        | High-Strength Low-Alloy Structural Steel               | Type D Certification            |
|  |  |           | 714.04        | Carbon Steel Bolts, Nuts, and Washers                  | Type D Certification            |
|  |  |           | 714.05        | High-Strength Structural Bolts and Assemblies, 120 KSI | Type D Certification            |
|  |  |           | 725.01(d)     | Liquid Membrane-Forming Compounds                      | Approved Products List          |
|  |  |           | 726.08(c)     | Waterproofing Membrane System, Type III                | Approved Products List          |
| 580.1001                                   | REPAIR OF CONCRETE SUPERSTRUCTURE SURFACE, CLASS I   | SY        | 719.01(b)     | Epoxy Bonding System, Type V                           | Approved Products List          |
| 580.1002                                   | REPAIR OF CONCRETE SUPERSTRUCTURE SURFACE, CLASS II  | SY        | 725.01(d)     | Liquid Membrane-Forming Compounds                      | Approved Products List          |
| 580.1003                                   | REPAIR OF CONCRETE SUPERSTRUCTURE SURFACE, CLASS III | CY        | 780.01(a)     | Concrete Repair Material, Type I                       | Approved Products List          |
| 580.1101                                   | REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I     | SY        | 780.01(b)     | Concrete Repair Material, Type II                      | Approved Products List          |
| 580.1102                                   | REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II    | SY        | 780.01(c)     | Concrete Repair Material, Type III                     | Approved Products List          |
| 580.1103                                   | REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III   | CY        | 780.01(d)     | Concrete Repair Material, Type IV                      | Approved Products List          |
| 580.1201                                   | CONCRETE REPAIR MATERIAL, TYPE I                     | CF        | 780.01(a)     | Concrete Repair Material, Type I                       | Approved Products List          |
| 580.1202                                   | CONCRETE REPAIR MATERIAL, TYPE II                    | CF        | 780.01(b)     | Concrete Repair Material, Type II                      | Approved Products List          |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |                                      |           |               |   |                                 |
|--|--------------------------------------|-----------|---------------|---|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION                     | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                                | Material Acceptance Requirement |
| 580.1203                                   | CONCRETE REPAIR MATERIAL, TYPE III   | CF        | 780.01(c)     | Concrete Repair Material, Type III                  | Approved Products List          |
| 580.1204                                   | CONCRETE REPAIR MATERIAL, TYPE IV    | CY        | 780.01(d)     | Concrete Repair Material, Type IV                   | Approved Products List          |
| 580.1600                                   | SURFACE PREPARATION FOR MEMBRANE     | SF        | 780.01(a)     | Concrete Repair Material, Type I                    | Approved Products List          |
|  |                                      |           | 780.01(b)     | Concrete Repair Material, Type II                   | Approved Products List          |
|  |                                      |           | 780.01(c)     | Concrete Repair Material, Type III                  | Approved Products List          |
|  |                                      |           | 780.01(d)     | Concrete Repair Material, Type IV                   | Approved Products List          |
| 590.0010                                   | BUS SHELTER                          | EA        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                       | Approved Products List          |
|  |                                      |           | 709.01        | Structural Lumber and Timber                        | Type D Certification            |
|  |                                      |           | 714.02        | Structural Steel                                    | Type D Certification            |
|  |                                      |           | 714.04        | Carbon Steel Bolts, Nuts, and Washers               | Type D Certification            |
|  |                                      |           | 714.08        | Anchor Bolts for Bearing Devices                    | Type D Certification            |
|  |                                      |           | 715.04        | Roofing Systems                                     | Type D Certification            |
|  |                                      |           | 719.01(a)     | Epoxy Bonding System, Type IV                       | Approved Products List          |
|  |                                      |           | 719.01(b)     | Epoxy Bonding System, Type V                        | Approved Products List          |
|  |                                      |           | 719.01(c)     | Epoxy Bonding System, Type VI                       | Approved Products List          |
| 601.0005                                   | 12 INCH CSP .064 (2-2/3 X 1/2)       | LF        | 711.01        | Corrugated Steel Pipe, Pipe Arches, and Underdrains | Buy America Declaration         |
| 601.0010                                   | 15 INCH CSP .064 (2-2/3 X 1/2)       | LF        |               |   |                                 |
| 601.0011                                   | 15 INCH CSP .079 (2-2/3 X 1/2)       | LF        |               |   |                                 |
| 601.0015                                   | 18 INCH CSP .064 (2-2/3 X 1/2)       | LF        |               |   |                                 |
| 601.0016                                   | 18 INCH CSP .079 (2-2/3 X 1/2)       | LF        |               |   |                                 |
| 601.0025                                   | 24 INCH CSP .064 (2-2/3 X 1/2)       | LF        |               |   |                                 |
| 601.0036                                   | 30 INCH CSP .079 (2-2/3 X 1/2)       | LF        |               |   |                                 |
| 601.0046                                   | 36 INCH CSP .079 (2-2/3 X 1/2)       | LF        |               |   |                                 |
| 601.0052                                   | 42 INCH CSP .109 (2-2/3 X 1/2)       | LF        |               |   |                                 |
| 601.0057                                   | 48 INCH CSP .109 (2-2/3 X 1/2)       | LF        |               |   |                                 |
| 601.0068                                   | 60 INCH CSP .138 (2-2/3 X 1/2)       | LF        |               |   |                                 |
| 601.0132                                   | 60 INCH CSP .109 (3 X 1)             | LF        |               |   |                                 |
| 601.0405                                   | 12 INCH PCCSP .064 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0410                                   | 15 INCH PCCSP .064 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0415                                   | 18 INCH PCCSP .064 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0416                                   | 18 INCH PCCSP .079 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0425                                   | 24 INCH PCCSP .064 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0426                                   | 24 INCH PCCSP .079 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0427                                   | 24 INCH PCCSP .109 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0436                                   | 30 INCH PCCSP .079 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0437                                   | 30 INCH PCCSP .109 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0446                                   | 36 INCH PCCSP .079 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0447                                   | 36 INCH PCCSP .109 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0452                                   | 42 INCH PCCSP .109 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0457                                   | 48 INCH PCCSP .109 (2-2/3 X 1/2)     | LF        |               |   |                                 |
| 601.0526                                   | 54 INCH PCCSP .079 (3 X 1)           | LF        |               |   |                                 |
| 601.0527                                   | 54 INCH PCCSP .109 (3 X 1)           | LF        |               |   |                                 |
| 601.0542                                   | 72 INCH PCCSP .109 (3 X 1)           | LF        |               |   |                                 |
| 601.0615                                   | 18 INCH PCCSP(PI) .064 (2-2/3 X 1/2) | LF        |               |   |                                 |
| 601.0625                                   | 24 INCH PCCSP(PI) .064 (2-2/3 X 1/2) | LF        |               |   |                                 |
| 601.0636                                   | 30 INCH PCCSP(PI) .079 (2-2/3 X 1/2) | LF        |               |   |                                 |
| 601.0646                                   | 36 INCH PCCSP(PI) .079 (2-2/3 X 1/2) | LF        |               |   |                                 |
| 601.0657                                   | 48 INCH PCCSP(PI) .109 (2-2/3 X 1/2) | LF        |               |   |                                 |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |  |           |               |  |                                 |
|--|--|-----------|---------------|--|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION                                 | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                                   | Material Acceptance Requirement |
| 601.0805                                   | 12 INCH RCP CLASS III                            | LF        | 710.01        | Reinforced Concrete Pipe                               | Type D Certification            |
| 601.0806                                   | 12 INCH RCP CLASS IV                             | LF        |               |  |                                 |
| 601.0810                                   | 15 INCH RCP CLASS III                            | LF        |               |  |                                 |
| 601.0811                                   | 15 INCH RCP CLASS IV                             | LF        |               |  |                                 |
| 601.0815                                   | 18 INCH RCP CLASS III                            | LF        |               |  |                                 |
| 601.0816                                   | 18 INCH RCP CLASS IV                             | LF        |               |  |                                 |
| 601.0817                                   | 18 INCH RCP CLASS V                              | LF        |               |  |                                 |
| 601.0820                                   | 21 INCH RCP CLASS III                            | LF        |               |  |                                 |
| 601.0821                                   | 21 INCH RCP CLASS IV                             | LF        |               |  |                                 |
| 601.0825                                   | 24 INCH RCP CLASS III                            | LF        |               |  |                                 |
| 601.0826                                   | 24 INCH RCP CLASS IV                             | LF        |               |  |                                 |
| 601.0827                                   | 24 INCH RCP CLASS V                              | LF        |               |  |                                 |
| 601.0835                                   | 30 INCH RCP CLASS III                            | LF        |               |  |                                 |
| 601.0836                                   | 30 INCH RCP CLASS IV                             | LF        |               |  |                                 |
| 601.0837                                   | 30 INCH RCP CLASS V                              | LF        |               |  |                                 |
| 601.0845                                   | 36 INCH RCP CLASS III                            | LF        |               |  |                                 |
| 601.0846                                   | 36 INCH RCP CLASS IV                             | LF        |               |  |                                 |
| 601.0850                                   | 42 INCH RCP CLASS III                            | LF        |               |  |                                 |
| 601.0855                                   | 48 INCH RCP CLASS III                            | LF        |               |  |                                 |
| 601.0866                                   | 60 INCH RCP CLASS IV                             | LF        |               |  |                                 |
| 601.0870                                   | 66 INCH RCP CLASS III                            | LF        |               |  |                                 |
| 601.0905                                   | 12 INCH CPEP                                     | LF        | 710.03        | Corrugated Polyethylene Pipe (CPEP)                    | Approved Products List          |
| 601.0910                                   | 15 INCH CPEP                                     | LF        |               |  |                                 |
| 601.0915                                   | 18 INCH CPEP                                     | LF        |               |  |                                 |
| 601.0920                                   | 24 INCH CPEP                                     | LF        |               |  |                                 |
| 601.2603                                   | 8 INCH CPEP(SL)                                  | LF        |               |  |                                 |
| 601.2605                                   | 12 INCH CPEP(SL)                                 | LF        |               |  |                                 |
| 601.2610                                   | 15 INCH CPEP(SL)                                 | LF        |               |  |                                 |
| 601.2615                                   | 18 INCH CPEP(SL)                                 | LF        |               |  |                                 |
| 601.2620                                   | 24 INCH CPEP(SL)                                 | LF        |               |  |                                 |
| 601.2625                                   | 30 INCH CPEP(SL)                                 | LF        |               |  |                                 |
| 601.2630                                   | 36 INCH CPEP(SL)                                 | LF        |               |  |                                 |
| 601.2635                                   | 42 INCH CPEP(SL)                                 | LF        |               |  |                                 |
| 601.2640                                   | 48 INCH CPEP(SL)                                 | LF        |               |  |                                 |
| 601.2645                                   | 54 INCH CPEP(SL)                                 | LF        |               |  |                                 |
| 601.2650                                   | 60 INCH CPEP(SL)                                 | LF        |               |  |                                 |
| 601.2805                                   | 12 INCH CPPP(SL)                                 | LF        | 710.06        | Corrugated Polypropylene Pipe (CPPP)                   | Approved Products List          |
| 601.2810                                   | 15 INCH CPPP(SL)                                 | LF        |               |  |                                 |
| 601.2815                                   | 18 INCH CPPP(SL)                                 | LF        |               |  |                                 |
| 601.2820                                   | 24 INCH CPPP(SL)                                 | LF        |               |  |                                 |
| 601.2825                                   | 30 INCH CPPP(SL)                                 | LF        |               |  |                                 |
| 601.2830                                   | 36 INCH CPPP(SL)                                 | LF        |               |  |                                 |
| 601.2835                                   | 42 INCH CPPP(SL)                                 | LF        |               |  |                                 |
| 601.3436                                   | 35 INCH X 24 INCH PCCSPA .079 (2-2/3 X 1/2)      | LF        | 711.03        | Polymeric Coated Corrugated Steel Pipe and Pipe Arches | Buy America Declaration         |
| 601.3457                                   | 57 INCH X 38 INCH PCCSPA .109 (2-2/3X1/2)        | LF        |               |  |                                 |
| 601.4457                                   | 57 INCH X 38 INCH PCCSPA(SL) 0.109 (2-2/3 X 1/2) | LF        |               |  |                                 |
| 601.5005                                   | 12 INCH CSP ELBOW .064 (2-2/3 X 1/2)             | EA        | 711.01        | Corrugated Steel Pipe, Pipe Arches, and Underdrains    | Buy America Declaration         |
| 601.5010                                   | 15 INCH CSP ELBOW .064 (2-2/3 X 1/2)             | EA        |               |  |                                 |
| 601.5015                                   | 18 INCH CSP ELBOW .064 (2-2/3 X 1/2)             | EA        |               |  |                                 |
| 601.5036                                   | 30 INCH CSP ELBOW .079 (2-2/3 X 1/2)             | EA        |               |  |                                 |
| 601.5046                                   | 36 INCH CSP ELBOW .079 (2-2/3 X 1/2)             | EA        |               |  |                                 |
| 601.5405                                   | 12 INCH PCCSP ELBOW .064 (2-2/3 X 1/2)           | EA        | 711.03        | Polymeric Coated Corrugated Steel Pipe and Pipe Arches | Buy America Declaration         |
| 601.5410                                   | 15 INCH PCCSP ELBOW .064 (2-2/3 X 1/2)           | EA        |               |  |                                 |
| 601.5415                                   | 18 INCH PCCSP ELBOW .064 (2-2/3 X 1/2)           | EA        |               |  |                                 |
| 601.5425                                   | 24 INCH PCCSP ELBOW .064 (2-2/3 X 1/2)           | EA        |               |  |                                 |
| 601.5436                                   | 30 INCH PCCSP ELBOW .079 (2-2/3 X 1/2)           | EA        |               |  |                                 |
| 601.5456                                   | 42 INCH PCCSP ELBOW .109 (2-2/3 X 1/2)           | EA        |               |  |                                 |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |   |           |               |   |                                 |
|--|---|-----------|---------------|---|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION                          | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                                | Material Acceptance Requirement |
| 601.5802                                   | 12 INCH CPEP ELBOW                        | EA        | 710.03        | Corrugated Polyethylene Pipe (CPEP)                 | Approved Products List          |
| 601.5808                                   | 15 INCH CPEP ELBOW                        | EA        |               |   |                                 |
| 601.5814                                   | 18 INCH CPEP ELBOW                        | EA        |               |   |                                 |
| 601.5824                                   | 24 INCH CPEP ELBOW                        | EA        |               |   |                                 |
| 601.5902                                   | 12 INCH CPPP ELBOW                        | EA        | 710.06        | Corrugated Polypropylene Pipe (CPPP)                | Approved Products List          |
| 601.5908                                   | 15 INCH CPPP ELBOW                        | EA        |               |   |                                 |
| 601.5914                                   | 18 INCH CPPP ELBOW                        | EA        |               |   |                                 |
| 601.5924                                   | 24 INCH CPPP ELBOW                        | EA        |               |   |                                 |
| 601.6005                                   | 12 INCH CSPES .064 (2-2/3 X 1/2)          | EA        | 711.01        | Corrugated Steel Pipe, Pipe Arches, and Underdrains | Buy America Declaration         |
| 601.6010                                   | 15 INCH CSPES .064 (2-2/3 X 1/2)          | EA        |               |   |                                 |
| 601.6015                                   | 18 INCH CSPES .064 (2-2/3 X 1/2)          | EA        |               |   |                                 |
| 601.6025                                   | 24 INCH CSPES .064 (2-2/3 X 1/2)          | EA        |               |   |                                 |
| 601.6036                                   | 30 INCH CSPES .079 (2-2/3 X 1/2)          | EA        |               |   |                                 |
| 601.6046                                   | 36 INCH CSPES .079 (2-2/3 X 1/2)          | EA        |               |   |                                 |
| 601.6052                                   | 42 INCH CSPES .109 (2-2/3 X 1/2)          | EA        |               |   |                                 |
| 601.6057                                   | 48 INCH CSPES .109 (2-2/3 X 1/2)          | EA        |               |   |                                 |
| 601.6810                                   | 15 INCH RCPES CLASS III                   | EA        | 710.02        | Reinforced Concrete Pipe End Sections               | Type D Certification            |
| 601.6815                                   | 18 INCH RCPES CLASS III                   | EA        |               |   |                                 |
| 601.6825                                   | 24 INCH RCPES CLASS III                   | EA        |               |   |                                 |
| 601.6835                                   | 30 INCH RCPES CLASS III                   | EA        |               |   |                                 |
| 601.6845                                   | 36 INCH RCPES CLASS III                   | EA        |               |   |                                 |
| 601.6855                                   | 48 INCH RCPES CLASS III                   | EA        |               |   |                                 |
| 601.7005                                   | 12 INCH CPEPES                            | EA        | 710.03        | Corrugated Polyethylene Pipe (CPEP)                 | Approved Products List          |
| 601.7010                                   | 15 INCH CPEPES                            | EA        |               |   |                                 |
| 601.7015                                   | 18 INCH CPEPES                            | EA        |               |   |                                 |
| 601.7020                                   | 24 INCH CPEPES                            | EA        |               |   |                                 |
| 601.7025                                   | 30 INCH CPEPES                            | EA        |               |   |                                 |
| 601.7030                                   | 36 INCH CPEPES                            | EA        |               |   |                                 |
| 601.7105                                   | 12 INCH CPPPES                            | EA        | 710.06        | Corrugated Polypropylene Pipe (CPPP)                | Approved Products List          |
| 601.7110                                   | 15 INCH CPPPES                            | EA        |               |   |                                 |
| 601.7115                                   | 18 INCH CPPPES                            | EA        |               |   |                                 |
| 601.7120                                   | 24 INCH CPPPES                            | EA        |               |   |                                 |
| 601.7125                                   | 30 INCH CPPPES                            | EA        |               |   |                                 |
| 601.7130                                   | 36 INCH CPPPES                            | EA        |               |   |                                 |
| 601.8036                                   | 35 INCH X 24 INCH CSPAES 2.01 (68 X 12)   | EA        | 711.01        | Corrugated Steel Pipe, Pipe Arches, and Underdrains | Buy America Declaration         |
| 602.1500                                   | CEMENT MASONRY                            | CY        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                       | Approved Products List          |
| 602.2000                                   | DRY MASONRY                               | CY        |               |   |                                 |
| 602.3500                                   | REBUILT STONE MASONRY                     | CY        |               |   |                                 |
| 602.4000                                   | REPAIRING STONE MASONRY                   | SY        |               |   |                                 |
| 604.1000                                   | CONCRETE CATCH BASIN WITH CAST IRON GRATE | EA        | 713.01(a)     | Reinforcing Steel                                   | Buy America Declaration         |
| 604.1100                                   | CONCRETE MANHOLE WITH CAST IRON COVER     | EA        | 713.01(b)     | Low-Alloy Reinforcing Steel                         | Buy America Declaration         |
|  |   |           | 713.01(c)     | Epoxy-Coated Reinforcing Steel                      | Buy America Declaration         |
|  |   |           | 713.01(d)     | Dual-Coated Reinforcing Steel                       | Buy America Declaration         |
|  |   |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel             | Buy America Declaration         |
|  |   |           | 713.01(f)     | Low-Carbon, Chromium, Steel Bars                    | Buy America Declaration         |
|  |   |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel             | Buy America Declaration         |
|  |   |           | 713.01(h)     | Solid Stainless Reinforcing Steel                   | Buy America Declaration         |
|  |   |           | 715.01(b)     | Gray Iron Castings                                  | Buy America Declaration         |
|  |   |           | 715.01(c)     | Ductile Iron Castings                               | Buy America Declaration         |



| PAY ITEM AND CERTIFICATION QUICK REFERENCE |  |           |               |   |                                 |
|--|--|-----------|---------------|---|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION   | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                                | Material Acceptance Requirement |
| 604.1800                                   | PRECAST REINFORCED CONCRETE DI WITH CAST IRON GRATE          | EA        | 705.04        | Precast Drop Inlets, Catch Basins, and Manholes     | Approved Products List          |
| 604.2000                                   | PRECAST REINFORCED CONCRETE CATCH BASIN WITH CAST IRON GRATE | EA        | 713.01(a)     | Reinforcing Steel                                   | Buy America Declaration         |
| 604.2100                                   | PRECAST REINFORCED CONCRETE MANHOLE WITH CAST IRON COVER     | EA        | 713.01(b)     | Low-Alloy Reinforcing Steel                         | Buy America Declaration         |
| 604.2200                                   | SANITARY SEWER MANHOLE                                       | EA        | 713.01(c)     | Epoxy-Coated Reinforcing Steel                      | Buy America Declaration         |
|  |  |           | 713.01(d)     | Dual-Coated Reinforcing Steel                       | Buy America Declaration         |
|  |  |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel             | Buy America Declaration         |
|  |  |           | 713.01(f)     | Low-Carbon, Chromium, Steel Bars                    | Buy America Declaration         |
|  |  |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel             | Buy America Declaration         |
|  |  |           | 713.01(h)     | Solid Stainless Reinforcing Steel                   | Buy America Declaration         |
|  |  |           | 715.01(b)     | Gray Iron Castings                                  | Buy America Declaration         |
|  |  |           | 715.01(c)     | Ductile Iron Castings                               | Buy America Declaration         |
| 604.2500                                   | PRECAST REINFORCED CONCRETE PIPE DI WITH CAST IRON GRATE     | EA        | 710.01        | Reinforced Concrete Pipe                            | Buy America Declaration         |
| 604.2600                                   | PRECAST REINFORCED CONCRETE PIPE DI WITH CONCRETE COVER      | EA        | 715.01(b)     | Gray Iron Castings                                  | Buy America Declaration         |
|  |  |           | 715.01(c)     | Ductile Iron Castings                               | Buy America Declaration         |
| 604.3000                                   | PRECAST REINFORCED CONCRETE CURB DI WITH CAST IRON GRATE     | EA        | 705.04        | Precast Drop Inlets, Catch Basins, and Manholes     | Approved Products List          |
| 604.4000                                   | CHANGING ELEVATION OF DROP INLETS, CATCH BASINS, OR MANHOLES | EA        | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                       | Approved Products List          |
| 604.4120                                   | REHAB. DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS I       | EA        |               |   |                                 |
| 604.4150                                   | REHAB. DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS II      | EA        |               |   |                                 |
| 604.4180                                   | REHAB. DROP INLETS, CATCH BASINS, OR MANHOLES, CLASS III     | EA        |               |   |                                 |
| 604.4200                                   | CHANGING ELEVATION OF SEWER MANHOLES                         | EA        |               |   |                                 |
| 604.4500                                   | CAST IRON GRATE WITH FRAME, TYPE A                           | EA        | 715.01(b)     | Gray Iron Castings                                  | Type D Certification            |
| 604.4600                                   | CAST IRON GRATE WITH FRAME, TYPE B                           | EA        | 715.01(c)     | Ductile Iron Castings                               | Type D Certification            |
| 604.4700                                   | CAST IRON GRATE WITH FRAME, TYPE D                           | EA        |               |   |                                 |
| 604.4800                                   | CAST IRON GRATE WITH FRAME, TYPE E                           | EA        |               |   |                                 |
| 604.4900                                   | CAST IRON GRATE, TYPE C                                      | EA        |               |   |                                 |
| 604.5500                                   | CAST IRON COVER WITH FRAME                                   | EA        |               |   |                                 |
| 604.5600                                   | CAST IRON COVER WITH FRAME, SEWER                            | EA        |               |   |                                 |
| 604.6000                                   | CAP DROP INLET   | EA        | 714.02        | Structural Steel                                    | Buy America Declaration         |
| 605.1000                                   | UNDERDRAIN PIPE, 6 INCHES                                    | LF        | 710.03        | Corrugated Polyethylene Pipe (CPEP)                 | Approved Products List          |
| 605.1100                                   | UNDERDRAIN PIPE, 8 INCHES                                    | LF        | 711.01        | Corrugated Steel Pipe, Pipe Arches, and Underdrains | Buy America Declaration         |
| 605.1300                                   | UNDERDRAIN PIPE, 12 INCHES                                   | LF        | 720.05        | Geotextile for Underdrain Trench Lining             | Approved Products List          |
| 605.2000                                   | UNDERDRAIN CARRIER PIPE, 6 INCHES                            | LF        |               |   |                                 |
| 605.2100                                   | UNDERDRAIN CARRIER PIPE, 8 INCHES                            | LF        |               |   |                                 |
| 605.2300                                   | UNDERDRAIN CARRIER PIPE, 12 INCHES                           | LF        |               |   |                                 |
| 605.9500                                   | UNDERDRAIN FLUSHING BASIN                                    | EA        | 715.01(b)     | Gray Iron Castings                                  | Buy America Declaration         |
| 616.3500                                   | TREATED TIMBER CURB  | LF        | 726.01        | Timber Preservative                                 | Type D Certification            |
| 618.1000                                   | PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH                    | SY        | 726.10        | Water Repellent, Silane                             | Approved Products List          |
| 618.1100                                   | PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH                    | SY        |               |   |                                 |
| 618.1200                                   | REINFORCED PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH         | SY        | 713.01(a)     | Reinforcing Steel                                   | Buy America Declaration         |
| 618.1300                                   | REINFORCED PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH         | SY        | 713.03        | Welded Wire Reinforcement                           | Buy America Declaration         |
|  |  |           | 726.10        | Water Repellent, Silane                             | Approved Products List          |
| 618.1500                                   | BITUMINOUS CONCRETE SIDEWALK                                 | TON       | 702.02        | Emulsified Asphalt                                  | Approved Products List          |
| 618.3000                                   | DETECTABLE WARNING SURFACE                                   | SF        | 751.03        | Detectable Warning Surface                          | Approved Products List          |
| 618.4005                                   | STAMPED CONCRETE APRON, 5 INCH.                              | SY        | 726.10        | Water Repellent, Silane                             | Approved Products List          |
| 618.4108                                   | STAMPED CONCRETE APRON, 8 INCH                               | SY        |               |   |                                 |
| 619.1500                                   | WOOD MARKER POSTS  | EA        | 728.01(a)     | Wood Posts  | Type D Certification            |
| 619.1700                                   | YIELDING MARKER POSTS  | EA        | 751.01(a)     | Steel Posts and Anchors                             | Type D Certification            |
| 620.1100                                   | CHAIN-LINK FENCE, 4 FEET                                     | LF        | 727.02        | Chain-Link Fence                                    | Approved Products List          |
| 620.1200                                   | CHAIN-LINK FENCE, 6 FEET                                     | LF        |               |   |                                 |
| 620.1300                                   | CHAIN-LINK FENCE, 8 FEET                                     | LF        |               |   |                                 |
| 620.1500                                   | GATE FOR CHAIN-LINK FENCE, 4 FEET                            | LF        | 727.02(c)     | Gate Components                                     | Approved Products List          |
| 620.1600                                   | GATE FOR CHAIN-LINK FENCE, 6 FEET                            | LF        |               |   |                                 |
| 620.1700                                   | GATE FOR CHAIN-LINK FENCE, 8 FEET                            | LF        |               |   |                                 |
| 620.2000                                   | BRACING ASSEMBLY FOR CHAIN-LINK FENCE, 4 FEET                | EA        | 727.02(c)(2)  | Brace Rod   | Approved Products List          |
| 620.2100                                   | BRACING ASSEMBLY FOR CHAIN-LINK FENCE, 6 FEET                | EA        | 727.02(d)     | Miscellaneous Hardware and Fittings                 | Approved Products List          |
| 620.2200                                   | BRACING ASSEMBLY FOR CHAIN-LINK FENCE, 8 FEET                | EA        |               |   |                                 |
| 620.2500                                   | WOVEN WIRE FENCE WITH STEEL POSTS                            | LF        | 727.01        | Woven Wire Fence                                    | Buy America Declaration         |
| 620.2600                                   | WOVEN WIRE FENCE WITH WOOD POSTS                             | LF        |               |   |                                 |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |   |           |               |   |                                 |  |
|--|---|-----------|---------------|---|---------------------------------|--|
| ITEM NUMBER                                | ITEM DESCRIPTION  | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                                    | Material Acceptance Requirement |  |
| 620.3000                                   | DRIVE GATE FOR WOVEN WIRE FENCE                           | EA        | 727.01(e)     | Gates   | Buy America Declaration         |  |
| 620.4000                                   | STEEL BRACE FOR WOVEN WIRE FENCE                          | EA        | 727.01(d)     | Steel Posts and Braces                                  | Buy America Declaration         |  |
| 620.4500                                   | PLANK RAIL FENCE  | LF        | 727.06        | Plank Rail Fence  | Type D Certification            |  |
| 620.7500                                   | SNOW BARRIER FENCE  | LF        | 727.05        | Snow Barrier Fence                                      | Approved Products List          |  |
| 621.0210                                   | REMOVE AND RESET GUARDRAIL                                | LF        | 728.03        | Hardware  | Type D Certification            |  |
| 621.0220                                   | ADJUST HEIGHT OF GUARDRAIL                                | LF        |               |   |                                 |  |
| 621.0300                                   | REPLACE GUARDRAIL BEAM UNIT, W-BEAM                       | EA        | 728.02(b)     | W-Beam and Thrie Beam                                   | Type D Certification            |  |
|  |   |           | 728.03(a)     | Cable, W-Beam, and Thrie Beam Guardrail Hardware        | Type D Certification            |  |
| 621.0360                                   | REPLACE GUARDRAIL POST ASSEMBLY, W-BEAM WITH 6 FOOT POSTS | EA        | 728.01(a)     | Wood Posts  | Type D Certification            |  |
| 621.0380                                   | REPLACE GUARDRAIL POST ASSEMBLY, W-BEAM WITH 8 FOOT POSTS | EA        | 728.01(b)     | Steel Posts and End Post Caps                           | Type D Certification            |  |
|  |   |           | 728.03(a)     | Cable, W-Beam, and Thrie Beam Guardrail Hardware        | Type D Certification            |  |
| 621.0400                                   | REPLACE GUARDRAIL BEAM UNIT, BOX BEAM                     | EA        | 728.02(c)     | Box Beam  | Type D Certification            |  |
|  |   |           | 728.03(b)     | Box Beam Guardrail Hardware                             | Type D Certification            |  |
| 621.0450                                   | REPLACE GUARDRAIL POST ASSEMBLY, BOX BEAM                 | EA        | 728.01(b)     | Steel Posts and End Post Caps                           | Type D Certification            |  |
|  |   |           | 728.03(b)(2)  | Post-Bracket-Beam Connectors                            | Type D Certification            |  |
| 621.0500                                   | REPLACE GUARDRAIL BEAM UNIT, THRIE BEAM                   | EA        | 728.02(b)     | W-Beam and Thrie Beam                                   | Type D Certification            |  |
|  |   |           | 728.03(a)     | Cable, W-Beam, and Thrie Beam Guardrail Hardware        | Type D Certification            |  |
| 621.0550                                   | REPLACE GUARDRAIL POST ASSEMBLY, THRIE BEAM               | EA        | 728.01(b)     | Steel Posts and End Post Caps                           | Type D Certification            |  |
|  |   |           | 728.03(a)     | Cable, W-Beam, and Thrie Beam Guardrail Hardware        | Type D Certification            |  |
| 621.1060                                   | STEEL BEAM GUARDRAIL                                      | LF        | 728.01(a)     | Wood Posts  | Type D Certification            |  |
| 621.1080                                   | STEEL BEAM GUARDRAIL WITH 8 FOOT POSTS                    | LF        | 728.01(b)     | Steel Posts and End Post Caps                           | Type D Certification            |  |
| 621.1160                                   | STEEL BEAM GUARDRAIL, NESTED                              | LF        | 728.02(b)(1)  | Standard Beam   | Type D Certification            |  |
| 621.1180                                   | STEEL BEAM GUARDRAIL WITH 8 FOOT POSTS, NESTED            | LF        | 728.03(a)     | Cable, W-Beam, and Thrie Beam Guardrail Hardware        | Type D Certification            |  |
|  |   |           | 728.04(a)     | Composite Offset Blocks                                 | Approved Products List          |  |
|  |   |           | 728.04(b)     | Wood Offset Blocks                                      | Type D Certification            |  |
| 621.1260                                   | HD STEEL BEAM GUARDRAIL                                   | LF        | 728.01(a)     | Wood Posts  | Type D Certification            |  |
| 621.1280                                   | HD STEEL BEAM GUARDRAIL WITH 8 FOOT POSTS                 | LF        | 728.01(b)     | Steel Posts and End Post Caps                           | Type D Certification            |  |
| 621.1360                                   | HD STEEL BEAM GUARDRAIL, NESTED                           | LF        | 728.02(b)(2)  | Heavy Duty Beam   | Type D Certification            |  |
| 621.1380                                   | HD STEEL BEAM GUARDRAIL WITH 8 FOOT POSTS, NESTED         | LF        | 728.03(a)     | Cable, W-Beam, and Thrie Beam Guardrail Hardware        | Type D Certification            |  |
|  |   |           | 728.04(a)     | Composite Offset Blocks                                 | Approved Products List          |  |
|  |   |           | 728.04(b)     | Wood Offset Blocks                                      | Type D Certification            |  |
| 621.1500                                   | STEEL BEAM GUARDRAIL OFFSET BLOCK                         | EA        | 728.04(a)     | Composite Offset Blocks                                 | Approved Products List          |  |
|  |   |           | 728.04(b)     | Wood Offset Blocks                                      | Type D Certification            |  |
| 621.1510                                   | TERMINAL CONNECTOR FOR STEEL BEAM GUARDRAIL               | EA        | 728.02(b)     | W-Beam and Thrie Beam                                   | Type D Certification            |  |
| 621.1520                                   | ANCHOR FOR STEEL BEAM GUARDRAIL                           | EA        | 728.05        | Concrete Anchors  | Buy America Declaration         |  |
| 621.1530                                   | ANCHOR FOR STEEL BEAM GUARDRAIL, MGS                      | EA        |               |   |                                 |  |
| 621.1540                                   | ANCHOR FOR STEEL BEAM TO BOX BEAM TRANSITION              | EA        |               |   |                                 |  |
| 621.1550                                   | GUARDRAIL TRANSITION, STEEL BEAM TO BOX BEAM              | LF        | N/A           | No Specified Material                                   | Buy America Declaration         |  |
| 621.1560                                   | TRAFFIC BARRIER DELINEATOR                                | EA        | 750.04        | Retroreflective Sheeting                                | Approved Products List          |  |
| 621.2200                                   | THRIE BEAM GUARDRAIL                                      | LF        | 728.01(b)     | Steel Posts and End Post Caps                           | Type D Certification            |  |
|  |   |           | 728.02(b)(1)  | W-Beam and Thrie Beam                                   | Type D Certification            |  |
|  |   |           | 728.02(e)     | End Sections  | Type D Certification            |  |
|  |   |           | 728.03(a)     | Cable, W-Beam, and Thrie Beam Guardrail Hardware        | Type D Certification            |  |
|  |   |           | 728.04(a)     | Composite Offset Blocks                                 | Type D Certification            |  |
|  |   |           | 728.04(b)     | Wood Offset Blocks                                      | Type D Certification            |  |
| 621.2300                                   | BOX BEAM GUARDRAIL  | LF        | 780.01(b)     | Steel Posts and End Post Caps                           | Type D Certification            |  |
|  |   |           | 728.02(c)     | Box Beam  | Type D Certification            |  |
|  |   |           | 728.03(b)     | Box Beam Guardrail Hardware                             | Type D Certification            |  |
| 621.2600                                   | STEEL BACKED TIMBER RAIL                                  | LF        | 728.01(a)     | Wood Posts  | Type D Certification            |  |
|  |   |           | 728.02(d)     | Steel-Backed Timber Beam                                | Type D Certification            |  |
|  |   |           | 728.03(c)     | Steel-Backed Timber Guardrail Hardware                  | Type D Certification            |  |
| 621.3020                                   | MTS, MGS, TANGENT, TL-2                                   | EA        | 728.06(a)(2)a | Manufactured Terminal Sections, W-Beam, Tangent, TL-2   | Approved Products List          |  |
| 621.3030                                   | MTS, MGS, TANGENT, TL-3                                   | EA        | 728.06(a)(2)b | Manufactured Terminal Sections, W-Beam, Tangent, TL-3   | Approved Products List          |  |
| 621.3120                                   | MTS, MGS, FLARED, TL-2                                    | EA        | 728.06(a)(1)a | Manufactured Terminal Sections, W-Beam, Flared, TL-2    | Approved Products List          |  |
| 621.3130                                   | MTS, MGS, FLARED, TL-3                                    | EA        | 728.06(a)(1)b | Manufactured Terminal Sections, W-Beam, Flared, TL-3    | Approved Products List          |  |
| 621.4020                                   | MTS, BOX BEAM, TANGENT, TL-2                              | EA        | 728.06(b)(2)a | Manufactured Terminal Sections, Box Beam, Tangent, TL-2 | Approved Products List          |  |
| 621.4030                                   | MTS, BOX BEAM, TANGENT, TL-3                              | EA        | 728.06(b)(2)b | Manufactured Terminal Sections, Box Beam, Tangent, TL-3 | Approved Products List          |  |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE   |  |           |               |  |                                 |
|--|--|-----------|---------------|--|---------------------------------|
| ITEM NUMBER                                  | ITEM DESCRIPTION   | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                                   | Material Acceptance Requirement |
| 621.4120                                     | MTS, BOX BEAM, FLARED, TL-2  | EA        | 728.06(b)(1)a | Manufactured Terminal Sections, Box Beam, Flared, TL-2 | Approved Products List          |
| 621.4130                                     | MTS, BOX BEAM, FLARED, TL-3  | EA        | 728.06(b)(1)b | Manufactured Terminal Sections, Box Beam, Flared, TL-3 | Approved Products List          |
| 621.6021                                     | BOX BEAM GUARDRAIL END ASSEMBLY, TYPE IIA  | EA        | 780.01(b)     | Steel Posts and End Post Caps                          | Type D Certification            |
|  |  |           | 728.02(c)     | Box Beam   | Type D Certification            |
|  |  |           | 728.03(b)     | Box Beam Guardrail Hardware                            | Type D Certification            |
| 621.7020                                     | ENERGY ABSORPTION ATTENUATOR, TEMPORARY, TL-2  | EA        | 728.07(a)(1)  | Energy Absorption Attenuators, Type I, TL-2            | Approved Products List          |
| 621.7030                                     | ENERGY ABSORPTION ATTENUATOR, TEMPORARY, TL-3  | EA        | 728.07(a)(2)  | Energy Absorption Attenuators, Type I, TL-3            | Approved Products List          |
| 621.7120                                     | ENERGY ABSORPTION ATTENUATOR, PERMANENT, TL-2  | EA        | 728.07(b)(1)  | Energy Absorption Attenuators, Type II, TL-2           | Approved Products List          |
| 621.7130                                     | ENERGY ABSORPTION ATTENUATOR, PERMANENT, TL-2  | EA        | 728.07(b)(2)  | Energy Absorption Attenuators, Type II, TL-3           | Approved Products List          |
| 621.8010<br>621.8020                         | GUARDRAIL APPROACH SECTION, TYPE I<br>GUARDRAIL APPROACH SECTION, TYPE II  | EA        | 728.01(a)     | Wood Posts   | Type D Certification            |
|  |  |           | 728.01(b)     | Steel Posts and End Post Caps                          | Type D Certification            |
|  |  |           | 728.02(c)     | Box Beam   | Type D Certification            |
|  |  |           | 728.03(b)     | Box Beam Guardrail Hardware                            | Type D Certification            |
| 621.8030<br>621.8040                         | GUARDRAIL APPROACH SECTION, HD STEEL BEAM<br>GUARDRAIL APPROACH SECTION, HD STEEL BEAM WITH 8 FOOT POSTS   | EA        | 728.01(a)     | Wood Posts   | Type D Certification            |
|  |  |           | 728.01(b)     | Steel Posts and End Post Caps                          | Type D Certification            |
|  |  |           | 728.02(b)(2)  | Heavy Duty Beam  | Type D Certification            |
|  |  |           | 728.03(a)     | Cable, W-Beam, and Thrie Beam Guardrail Hardware       | Type D Certification            |
|  |  |           | 728.04(a)     | Composite Offset Blocks                                | Approved Products List          |
|  |  |           | 728.04(b)     | Wood Offset Blocks                                     | Type D Certification            |
| 621.8120<br>621.8130<br>621.8140<br>621.8230 | GUARDRAIL APPROACH SECTION, 2 RAIL BOX BEAM<br>GUARDRAIL APPROACH SECTION, 3 RAIL BOX BEAM<br>GUARDRAIL APPROACH SECTION, 4 RAIL BOX BEAM<br>GUARDRAIL APPROACH SECTION, 3 RAIL BOX BEAM, CURBLESS | EA        | 780.01(b)     | Steel Posts and End Post Caps                          | Type D Certification            |
|  |  |           | 728.02(c)     | Box Beam   | Type D Certification            |
|  |  |           | 728.03(b)     | Box Beam Guardrail Hardware                            | Type D Certification            |
|  |  |           |               |  |                                 |
| 621.8231<br>621.8232                         | GUARDRAIL APPROACH SECTION TO 3 RAIL ALUMINUM<br>GUARDRAIL APPROACH SECTION TO 3 RAIL ALUMINUM, PEDESTRIAN   | EA        | 726.06        | Galvanizing  | Type D Certification            |
|  |  |           | 728.01(a)     | Wood Posts   | Type D Certification            |
|  |  |           | 728.01(b)     | Steel Posts and End Post Caps                          | Type D Certification            |
|  |  |           | 728.02(b)     | W-Beam and Thrie Beam                                  | Type D Certification            |
|  |  |           | 728.03(a)     | Cable, W-Beam, and Thrie Beam Guardrail Hardware       | Type D Certification            |
|  |  |           | 728.04(a)     | Composite Offset Blocks                                | Approved Products List          |
| 621.8320<br>621.8330                         | GUARDRAIL APPROACH SECTION TO CONCRETE BRIDGE RAIL, TL-2<br>GUARDRAIL APPROACH SECTION TO CONCRETE BRIDGE RAIL, TL-3   | EA        | 728.01(a)     | Wood Posts   | Type D Certification            |
|  |  |           | 728.01(b)     | Steel Posts and End Post Caps                          | Type D Certification            |
|  |  |           | 728.02(b)(1)  | W-Beam and Thrie Beam                                  | Type D Certification            |
|  |  |           | 728.03(a)     | Cable, W-Beam, and Thrie Beam Guardrail Hardware       | Type D Certification            |
| 625.10                                       | SLEEVES FOR UTILITIES  | LF        | 702.04        | Emulsified Asphalt                                     | Approved Products List          |
|  |  |           | 707.01(e)(1)  | Mortar, Type IV, Pre-Packaged                          | Approved Products List          |
|  |  |           | 707.11        | Asphaltic Plug Joints for Bridges                      | Approved Products List          |
|  |  |           | 710.01        | Reinforced Concrete Pipe                               | Buy America Declaration         |
|  |  |           | 711.01        | Corrugated Steel Pipe, Pipe Arches, and Underdrains    | Buy America Declaration         |
| 625.3000                                     | SLEEVES FOR UTILITIES, STEEL   | LF        | 711.01        | Corrugated Steel Pipe, Pipe Arches, and Underdrains    | Buy America Declaration         |
| 625.3002                                     | SLEEVES FOR UTILITIES, STEEL, 2 INCH   | LF        | 752.06(c)     | PVC Coated Rigid Metal Conduit (RMC)                   | Buy America Declaration         |
| 625.3004                                     | SLEEVES FOR UTILITIES, STEEL, 4 INCH   | LF        |               |  |                                 |
| 625.3006                                     | SLEEVES FOR UTILITIES, STEEL, 6 INCH   | LF        |               |  |                                 |
| 625.3008                                     | SLEEVES FOR UTILITIES, STEEL, 8 INCH   | LF        |               |  |                                 |
| 625.3010                                     | SLEEVES FOR UTILITIES, STEEL, 10 INCH  | LF        |               |  |                                 |
| 625.3012                                     | SLEEVES FOR UTILITIES, STEEL, 12 INCH  | LF        |               |  |                                 |
| 625.3014                                     | SLEEVES FOR UTILITIES, STEEL, 14 INCH  | LF        |               |  |                                 |
| 625.3016                                     | SLEEVES FOR UTILITIES, STEEL, 16 INCH  | LF        |               |  |                                 |
| 625.3018                                     | SLEEVES FOR UTILITIES, STEEL, 18 INCH  | LF        |               |  |                                 |
| 625.3020                                     | SLEEVES FOR UTILITIES, STEEL, 20 INCH  | LF        |               |  |                                 |
| 625.3022                                     | SLEEVES FOR UTILITIES, STEEL, 22 INCH  | LF        |               |  |                                 |
| 625.3024                                     | SLEEVES FOR UTILITIES, STEEL, 24 INCH  | LF        |               |  |                                 |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |   |           |               |   |  |
|--|---|-----------|---------------|---|--|
| ITEM NUMBER                                | ITEM DESCRIPTION  | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                    | Material Acceptance Requirement                  |
| 625.4000                                   | CONCRETE ENCASED CONDUIT                                      | LF        | 752.06(c)     | PVC Coated Rigid Metal Conduit (RMC)    | Buy America Declaration                          |
| 625.4004                                   | CONCRETE ENCASED CONDUIT, 1 TO 4 CONDUITS                     | LF        |               |   |  |
| 625.4008                                   | CONCRETE ENCASED CONDUIT, 5 TO 8 CONDUITS                     | LF        |               |   |  |
| 625.4012                                   | CONCRETE ENCASED CONDUIT, 9 TO 12 CONDUITS                    | LF        |               |   |  |
| 625.5000                                   | DIRECT BURIAL CONDUIT   | LF        |               |   |  |
| 625.5004                                   | DIRECT BURIAL CONDUIT, 1 TO 4 CONDUITS                        | LF        |               |   |  |
| 625.5008                                   | DIRECT BURIAL CONDUIT, 5 TO 8 CONDUITS                        | LF        |               |   |  |
| 625.5012                                   | DIRECT BURIAL CONDUIT, 9 TO 12 CONDUITS                       | LF        |               |   |  |
| 625.6000                                   | WIRED CONDUIT   | LF        |               |   |  |
| 625.6002                                   | WIRED CONDUIT, 2 INCH   | LF        |               |   |  |
| 625.6004                                   | WIRED CONDUIT, 4 INCH   | LF        |               |   |  |
| 625.6006                                   | WIRED CONDUIT, 6 INCH   | LF        |               |   |  |
| 628.2800                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED                         | LF        | 740.05        | Ductile Iron Pipe, Cement Lined         | Buy America Declaration                          |
| 628.2806                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, 6 INCH                 | LF        |               |   |  |
| 628.2808                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, 8 INCH                 | LF        |               |   |  |
| 628.2810                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, 10 INCH                | LF        |               |   |  |
| 628.2812                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, 12 INCH                | LF        |               |   |  |
| 628.2815                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, 15 INCH                | LF        |               |   |  |
| 628.2818                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, 18 INCH                | LF        |               |   |  |
| 628.2824                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, 24 INCH                | LF        |               |   |  |
| 628.2900                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, ALL-INCLUSIVE          | LF        |               |   |  |
| 628.2906                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 6 INCH  | LF        |               |   |  |
| 628.2908                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 8 INCH  | LF        |               |   |  |
| 628.2910                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 10 INCH | LF        |               |   |  |
| 628.2912                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 12 INCH | LF        |               |   |  |
| 628.2915                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 15 INCH | LF        |               |   |  |
| 628.2918                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 18 INCH | LF        |               |   |  |
| 628.2924                                   | DUCTILE IRON SEWER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 24 INCH | LF        |               |   |  |
| 629.1300                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED                         | LF        |               |   |  |
| 629.1303                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, 3 INCH                 | LF        |               |   |  |
| 629.1304                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, 4 INCH                 | LF        |               |   |  |
| 629.1306                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, 6 INCH                 | LF        |               |   |  |
| 629.1308                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, 8 INCH                 | LF        |               |   |  |
| 629.1310                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, 10 INCH                | LF        |               |   |  |
| 629.1312                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, 12 INCH                | LF        |               |   |  |
| 629.1400                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, ALL-INCLUSIVE          | LF        |               |   |  |
| 629.1403                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 3 INCH  | LF        |               |   |  |
| 629.1404                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 4 INCH  | LF        |               |   |  |
| 629.1406                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 6 INCH  | LF        |               |   |  |
| 629.1408                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 8 INCH  | LF        |               |   |  |
| 629.1410                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 10 INCH | LF        |               |   |  |
| 629.1412                                   | DUCTILE IRON WATER PIPE, CEMENT-LINED, ALL-INCLUSIVE, 12 INCH | LF        |               |   |  |
| 646.2010                                   | 4 INCH WHITE LINE, WATERBORNE PAINT                           | LF        | 708.07(c)     | Waterborne Paint                        | Approved Non-Durable Pavement Marking Batch List |
| 646.2111                                   | 4 INCH YELLOW LINE, WATERBORNE PAINT                          | LF        | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
| 646.2141                                   | 6 INCH WHITE LINE, WATERBORNE PAINT                           | LF        |               |   |  |
| 646.2151                                   | 6 INCH YELLOW LINE, WATERBORNE PAINT                          | LF        |               |   |  |
| 646.2210                                   | 8 INCH WHITE LINE, WATERBORNE PAINT                           | LF        |               |   |  |
| 646.2310                                   | 8 INCH YELLOW LINE, WATERBORNE PAINT                          | LF        |               |   |  |
| 646.2410                                   | 12 INCH WHITE LINE, WATERBORNE PAINT                          | LF        |               |   |  |
| 646.2510                                   | 12 INCH YELLOW LINE, WATERBORNE PAINT                         | LF        |               |   |  |
| 646.2610                                   | 24 INCH STOP BAR, WATERBORNE PAINT                            | LF        |               |   |  |
| 646.3010                                   | LETTER OR SYMBOL, WATERBORNE PAINT                            | EA        |               |   |  |
| 646.3110                                   | CROSSWALK MARKING, WATERBORNE PAINT                           | LF        |               |   |  |
| 646.3210                                   | RAILROAD CROSSING SYMBOL, WATERBORNE PAINT                    | EA        |               |   |  |
| 646.4020                                   | DURABLE 4 INCH WHITE LINE, THERMOPLASTIC                      | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List                           |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |   |           |               |   |                                 |
|--|---|-----------|---------------|---|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION  | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                    | Material Acceptance Requirement |
| 646.4030                                   | DURABLE 4 INCH WHITE LINE, EPOXY PAINT  | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4040<br>646.4060                       | DURABLE 4 INCH WHITE LINE, POLYUREA<br>DURABLE 4 INCH WHITE LINE, RECESSED POLYUREA   | LF        | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4071                                   | DURABLE 4 INCH WHITE LINE, RECESSED TYPE A TAPE                                       | LF        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List          |
| 646.4072                                   | DURABLE 4 INCH WHITE LINE, RECESSED TYPE B TAPE                                       | LF        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List          |
| 646.4080                                   | DURABLE 4 INCH WHITE LINE, RECESSED THERMOPLASTIC                                     | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4090                                   | DURABLE 4 INCH WHITE LINE, RECESSED EPOXY PAINT                                       | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4120                                   | DURABLE 4 INCH YELLOW LINE, THERMOPLASTIC   | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4130                                   | DURABLE 4 INCH YELLOW LINE, EPOXY PAINT   | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4140<br>646.4160                       | DURABLE 4 INCH YELLOW LINE, POLYUREA<br>DURABLE 4 INCH YELLOW LINE, RECESSED POLYUREA | LF        | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4171                                   | DURABLE 4 INCH YELLOW LINE, RECESSED TYPE A TAPE                                      | LF        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List          |
| 646.4172                                   | DURABLE 4 INCH YELLOW LINE, RECESSED TYPE B TAPE                                      | LF        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List          |
| 646.4180                                   | DURABLE 4 INCH YELLOW LINE, RECESSED THERMOPLASTIC                                    | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4190                                   | DURABLE 4 INCH YELLOW LINE, RECESSED EPOXY PAINT                                      | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4220                                   | DURABLE 6 INCH WHITE LINE, THERMOPLASTIC  | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4230                                   | DURABLE 6 INCH WHITE LINE, EPOXY PAINT  | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4240<br>646.4260                       | DURABLE 6 INCH WHITE LINE, POLYUREA<br>DURABLE 6 INCH WHITE LINE, RECESSED POLYUREA   | LF        | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4271                                   | DURABLE 6 INCH WHITE LINE, RECESSED TYPE A TAPE                                       | LF        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List          |
| 646.4272                                   | DURABLE 6 INCH WHITE LINE, RECESSED TYPE B TAPE                                       | LF        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List          |
| 646.4280                                   | DURABLE 6 INCH WHITE LINE, RECESSED THERMOPLASTIC                                     | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4290                                   | DURABLE 6 INCH WHITE LINE, RECESSED EPOXY PAINT                                       | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4320                                   | DURABLE 6 INCH YELLOW LINE, THERMOPLASTIC   | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |   |           |               |   |                                 |
|--|---|-----------|---------------|---|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION  | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                    | Material Acceptance Requirement |
| 646.4330                                   | DURABLE 6 INCH YELLOW LINE, EPOXY PAINT   | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4340<br>646.4360                       | DURABLE 6 INCH YELLOW LINE, POLYUREA<br>DURABLE 6 INCH YELLOW LINE, RECESSED POLYUREA | LF        | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4371                                   | DURABLE 6 INCH YELLOW LINE, RECESSED TYPE A TAPE                                      | LF        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List          |
| 646.4372                                   | DURABLE 6 INCH YELLOW LINE, RECESSED TYPE B TAPE                                      | LF        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List          |
| 646.4380                                   | DURABLE 6 INCH YELLOW LINE, RECESSED THERMOPLASTIC                                    | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4390                                   | DURABLE 6 INCH YELLOW LINE, RECESSED EPOXY PAINT                                      | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4420                                   | DURABLE 8 INCH WHITE LINE, THERMOPLASTIC  | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4430                                   | DURABLE 8 INCH WHITE LINE, EPOXY PAINT  | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4440<br>646.4460                       | DURABLE 8 INCH WHITE LINE, POLYUREA<br>DURABLE 8 INCH WHITE LINE, RECESSED POLYUREA   | LF        | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4471                                   | DURABLE 8 INCH WHITE LINE, RECESSED TYPE A TAPE                                       | LF        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List          |
| 646.4472                                   | DURABLE 8 INCH WHITE LINE, RECESSED TYPE B TAPE                                       | LF        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List          |
| 646.4480                                   | DURABLE 8 INCH WHITE LINE, RECESSED THERMOPLASTIC                                     | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4490                                   | DURABLE 8 INCH WHITE LINE, RECESSED EPOXY PAINT                                       | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4520                                   | DURABLE 8 INCH YELLOW LINE, THERMOPLASTIC   | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4530                                   | DURABLE 8 INCH YELLOW LINE, EPOXY PAINT   | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4540<br>646.4560                       | DURABLE 8 INCH YELLOW LINE, POLYUREA<br>DURABLE 8 INCH YELLOW LINE, RECESSED POLYUREA | LF        | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4571                                   | DURABLE 8 INCH YELLOW LINE, RECESSED TYPE A TAPE                                      | LF        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List          |
| 646.4572                                   | DURABLE 8 INCH YELLOW LINE, RECESSED TYPE B TAPE                                      | LF        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List          |
| 646.4580                                   | DURABLE 8 INCH YELLOW LINE, RECESSED THERMOPLASTIC                                    | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4590                                   | DURABLE 8 INCH YELLOW LINE, RECESSED EPOXY PAINT                                      | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4620                                   | DURABLE 12 INCH WHITE LINE, THERMOPLASTIC   | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |   |           |               |   |                                 |
|--|---|-----------|---------------|---|---------------------------------|
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| 646.4630                                   | DURABLE 12 INCH WHITE LINE, EPOXY PAINT   | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4640<br>646.4660                       | DURABLE 12 INCH WHITE LINE, POLYUREA<br>DURABLE 12 INCH WHITE LINE, RECESSED POLYUREA   | LF        | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4671                                   | DURABLE 12 INCH WHITE LINE, RECESSED TYPE A TAPE  | LF        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List          |
| 646.4672                                   | DURABLE 12 INCH WHITE LINE, RECESSED TYPE B TAPE  | LF        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List          |
| 646.4680                                   | DURABLE 12 INCH WHITE LINE, RECESSED THERMOPLASTIC                                      | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4690                                   | DURABLE 12 INCH WHITE LINE, RECESSED EPOXY PAINT  | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4720                                   | DURABLE 12 INCH YELLOW LINE, THERMOPLASTIC  | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4730                                   | DURABLE 12 INCH YELLOW LINE, EPOXY PAINT  | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4740<br>646.4760                       | DURABLE 12 INCH YELLOW LINE, POLYUREA<br>DURABLE 12 INCH YELLOW LINE, RECESSED POLYUREA | LF        | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4771                                   | DURABLE 12 INCH YELLOW LINE, RECESSED TYPE A TAPE                                       | LF        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List          |
| 646.4772                                   | DURABLE 12 INCH YELLOW LINE, RECESSED TYPE B TAPE                                       | LF        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List          |
| 646.4780                                   | DURABLE 12 INCH YELLOW LINE, RECESSED THERMOPLASTIC                                     | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4790                                   | DURABLE 12 INCH YELLOW LINE, RECESSED EPOXY PAINT                                       | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4820                                   | DURABLE 24 INCH STOP BAR, THERMOPLASTIC   | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4830                                   | DURABLE 24 INCH STOP BAR, EPOXY PAINT   | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4840<br>646.4860                       | DURABLE 24 INCH STOP BAR, POLYUREA<br>DURABLE 24 INCH STOP BAR, RECESSED POLYUREA       | LF        | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4871                                   | DURABLE 24 INCH STOP BAR, RECESSED TYPE A TAPE  | LF        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List          |
| 646.4872                                   | DURABLE 24 INCH STOP BAR, RECESSED TYPE B TAPE  | LF        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List          |
| 646.4880                                   | DURABLE 24 INCH STOP BAR, RECESSED THERMOPLASTIC  | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4890                                   | DURABLE 24 INCH STOP BAR, RECESSED EPOXY PAINT  | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |
| 646.4920                                   | DURABLE LETTER OR SYMBOL, THERMOPLASTIC   | EA        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List          |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List          |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List          |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List          |

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|--|---|-----------|---------------|---|--|
| ITEM NUMBER                                | ITEM DESCRIPTION  | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                    | Material Acceptance Requirement                  |
| 646.4930                                   | DURABLE LETTER OR SYMBOL, EPOXY PAINT   | EA        | 708.07(b)     | Epoxy Paint                             | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.4940<br>646.4960                       | DURABLE LETTER OR SYMBOL, POLYUREA<br>DURABLE LETTER OR SYMBOL, RECESSED POLYUREA                 | EA<br>EA  | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.4971                                   | DURABLE LETTER OR SYMBOL, RECESSED TYPE A TAPE  | EA        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List                           |
| 646.4972                                   | DURABLE LETTER OR SYMBOL, RECESSED TYPE B TAPE  | EA        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List                           |
| 646.4980                                   | DURABLE LETTER OR SYMBOL, RECESSED THERMOPLASTIC  | EA        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List                           |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.4990                                   | DURABLE LETTER OR SYMBOL, RECESSED EPOXY PAINT  | EA        | 708.07(b)     | Epoxy Paint                             | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.5020                                   | DURABLE CROSSWALK MARKING, THERMOPLASTIC  | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List                           |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.5030                                   | DURABLE CROSSWALK MARKING, EPOXY PAINT  | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.5040<br>646.5060                       | DURABLE CROSSWALK MARKING, POLYUREA<br>DURABLE CROSSWALK MARKING, RECESSED POLYUREA               | LF        | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List                           |
|  |   | LF        | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.5071                                   | DURABLE CROSSWALK MARKING, RECESSED TYPE A TAPE   | LF        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List                           |
| 646.5072                                   | DURABLE CROSSWALK MARKING, RECESSED TYPE B TAPE   | LF        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List                           |
| 646.5080                                   | DURABLE CROSSWALK MARKING, RECESSED THERMOPLASTIC   | LF        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List                           |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.5090                                   | DURABLE CROSSWALK MARKING, RECESSED EPOXY PAINT   | LF        | 708.07(b)     | Epoxy Paint                             | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.5120                                   | DURABLE RAILROAD CROSSING SYMBOL, THERMOPLASTIC   | EA        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List                           |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.5130                                   | DURABLE RAILROAD CROSSING SYMBOL, EPOXY PAINT   | EA        | 708.07(b)     | Epoxy Paint                             | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.5140<br>646.5160                       | DURABLE RAILROAD CROSSING SYMBOL, POLYUREA<br>DURABLE RAILROAD CROSSING SYMBOL, RECESSED POLYUREA | EA        | 708.07(a)     | Polyurea Pavement Markings              | Approved Products List                           |
|  |   | EA        | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.5171                                   | DURABLE RAILROAD CROSSING SYMBOL, RECESSED TYPE A TAPE  | EA        | 754.02(a)     | Pavement Marking Tape, Type A           | Approved Products List                           |
| 646.5172                                   | DURABLE RAILROAD CROSSING SYMBOL, RECESSED TYPE B TAPE  | EA        | 754.02(b)     | Pavement Marking Tape, Type B           | Approved Products List                           |
| 646.5180                                   | DURABLE RAILROAD CROSSING SYMBOL, RECESSED THERMOPLASTIC  | EA        | 708.08(a)     | Thermoplastic Pavement Markings, Type A | Approved Products List                           |
|  |   |           | 708.08(b)     | Thermoplastic Pavement Markings, Type B | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.5190                                   | DURABLE RAILROAD CROSSING SYMBOL, RECESSED EPOXY PAINT  | EA        | 708.07(b)     | Epoxy Paint                             | Approved Products List                           |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.01(b)     | Optics, Type II                         | Approved Products List                           |
| 646.6000                                   | TEMPORARY 4 INCH WHITE LINE   | LF        | 708.07(c)     | Waterborne Paint                        | Approved Non-Durable Pavement Marking Batch List |
|  |   |           | 754.01(a)     | Optics, Type I                          | Approved Products List                           |
|  |   |           | 754.02(c)     | Pavement Marking Tape, Type C           | Approved Products List                           |
| 646.6012                                   | TEMPORARY 4 INCH WHITE LINE, TYPE C TAPE  | LF        | 754.02(c)     | Pavement Marking Tape, Type C           | Approved Products List                           |



| PAY ITEM AND CERTIFICATION QUICK REFERENCE |  |           |               |                               |  |
|--|--|-----------|---------------|-------------------------------|--|
| ITEM NUMBER                                | ITEM DESCRIPTION                         | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION          | Material Acceptance Requirement                  |
| 646.6020                                   | TEMPORARY 4 INCH WHITE LINE, PAINT       | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
| 646.6100                                   | TEMPORARY 4 INCH YELLOW LINE             | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
|  |  |           | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6112                                   | TEMPORARY 4 IN YELLOW LINE, TYPE C TAPE  | LF        | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6120                                   | TEMPORARY 4 INCH YELLOW LINE, PAINT      | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
| 646.6200                                   | TEMPORARY 6 INCH WHITE LINE              | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
|  |  |           | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6212                                   | TEMPORARY 6 INCH WHITE LINE, TYPE C TAPE | LF        | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6220                                   | TEMPORARY 6 INCH WHITE LINE, PAINT       | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
| 646.6300                                   | TEMPORARY 6 INCH YELLOW LINE             | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
|  |  |           | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.631                                    | TEMPORARY 6 IN YELLOW LINE, TYPE C TAPE  | LF        | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6320                                   | TEMPORARY 6 INCH YELLOW LINE, PAINT      | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
| 646.6400                                   | TEMPORARY 8 INCH WHITE LINE              | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
|  |  |           | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6412                                   | TEMPORARY 8 INCH WHITE LINE, TYPE C TAPE | LF        | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6420                                   | TEMPORARY 8 INCH WHITE LINE, PAINT       | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
| 646.6500                                   | TEMPORARY 8 INCH YELLOW LINE             | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
|  |  |           | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6512                                   | TEMPORARY 8 IN YELLOW LINE, TYPE C TAPE  | LF        | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6520                                   | TEMPORARY 8 INCH YELLOW LINE, PAINT      | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
| 646.6600                                   | TEMPORARY 12 INCH WHITE LINE             | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
|  |  |           | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6612                                   | TEMPORARY 12 IN WHITE LINE, TYPE C TAPE  | LF        | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6620                                   | TEMPORARY 12 INCH WHITE LINE, PAINT      | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
| 646.6700                                   | TEMPORARY 12 INCH YELLOW LINE            | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
|  |  |           | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6712                                   | TEMPORARY 12 IN YELLOW LINE, TYPE C TAPE | LF        | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6720                                   | TEMPORARY 12 INCH YELLOW LINE, PAINT     | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
| 646.6800                                   | TEMPORARY 24 INCH STOP BAR               | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
|  |  |           | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6812                                   | TEMPORARY 24 INCH STOP BAR, TYPE C TAPE  | LF        | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6820                                   | TEMPORARY 24 INCH STOP BAR, PAINT        | LF        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
| 646.6900                                   | TEMPORARY LETTER OR SYMBOL               | EA        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |
|  |  |           | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6912                                   | TEMPORARY LETTER OR SYMBOL, TYPE C TAPE  | EA        | 754.02(c)     | Pavement Marking Tape, Type C | Approved Products List                           |
| 646.6920                                   | TEMPORARY LETTER OR SYMBOL, PAINT        | EA        | 708.07(c)     | Waterborne Paint              | Approved Non-Durable Pavement Marking Batch List |
|  |  |           | 754.01(a)     | Optics, Type I                | Approved Products List                           |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |   |           |               |   |  |
|--|---|-----------|---------------|---|--|
| ITEM NUMBER                                | ITEM DESCRIPTION                          | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                                | Material Acceptance Requirement                  |
| 646.7000                                   | TEMPORARY CROSSWALK MARKING               | LF        | 708.07(c)     | Waterborne Paint                                    | Approved Non-Durable Pavement Marking Batch List |
|  |   |           | 754.01(a)     | Optics, Type I                                      | Approved Products List                           |
|  |   |           | 754.02(c)     | Pavement Marking Tape, Type C                       | Approved Products List                           |
| 646.7012                                   | TEMPORARY CROSSWALK MARKING, TYPE C TAPE  | LF        | 754.02(c)     | Pavement Marking Tape, Type C                       | Approved Products List                           |
| 646.7020                                   | TEMPORARY CROSSWALK MARKING, PAINT        | LF        | 708.07(c)     | Waterborne Paint                                    | Approved Non-Durable Pavement Marking Batch List |
|  |   |           | 754.01(a)     | Optics, Type I                                      | Approved Products List                           |
| 646.7100                                   | TEMPORARY RAILROAD CROSSING SYMBOL        | EA        | 708.07(c)     | Waterborne Paint                                    | Approved Non-Durable Pavement Marking Batch List |
|  |   |           | 754.01(a)     | Optics, Type I                                      | Approved Products List                           |
|  |   |           | 754.02(c)     | Pavement Marking Tape, Type C                       | Approved Products List                           |
| 646.7112                                   | TEMPORARY RR XING SYMBOL, TYPE C TAPE     | EA        | 754.02(c)     | Pavement Marking Tape, Type C                       | Approved Products List                           |
| 646.7120                                   | TEMPORARY RAILROAD CROSSING SYMBOL, PAINT | EA        | 708.07(c)     | Waterborne Paint                                    | Approved Non-Durable Pavement Marking Batch List |
|  |   |           | 754.01(a)     | Optics, Type I                                      | Approved Products List                           |
| 646.7600                                   | LINE STRIPING TARGETS                     | EA        | 708.09(a)     | Line Striping Targets                               | Approved Products List                           |
| 646.8100                                   | PAINTED CURB                              | LF        | 708.07(c)     | Waterborne Paint                                    | Approved Non-Durable Pavement Marking Batch List |
| 646.8200                                   | PAINTED ISLAND                            | SF        | 754.01(a)     | Optics, Type I                                      | Approved Products List                           |
| 646.8600                                   | PAVEMENT MARKING MASK                     | SF        | 708.09(b)     | Pavement Marking Mask                               | Approved Products List                           |
| 649.1100                                   | GEOTEXTILE FOR ROADBED SEPARATOR          | SY        | 720.02        | Geotextile for Roadbed Separator                    | Approved Products List                           |
| 649.2100                                   | GEOTEXTILE UNDER RAILROAD BALLAST         | SY        | 720.03        | Geotextile Under Railroad Ballast                   | Approved Products List                           |
| 649.3100                                   | GEOTEXTILE UNDER STONE FILL               | SY        | 720.04        | Geotextile Under Stone Fill                         | Approved Products List                           |
| 649.4100                                   | GEOTEXTILE FOR UNDERDRAIN TRENCH LINING   | SY        | 720.05        | Geotextile for Underdrain Trench Lining             | Approved Products List                           |
| 651.3500                                   | TOPSOIL                                   | CY        | 755.02(a)     | Manufactured Topsoil                                | Type D Certification                             |
| 653.1100                                   | HYDRAULIC MULCH                           | GAL       | 755.10(d)     | Fiber Mulch   | Approved Products List                           |
|  |   |           | 755.10(e)     | Hydraulic Matrix                                    | Approved Products List                           |
| 653.2000                                   | ROLLED EROSION CONTROL PRODUCT, TYPE I    | SY        | 755.11(a)     | Rolled Erosion Control Product, Type I              | Approved Products List                           |
| 653.2100                                   | ROLLED EROSION CONTROL PRODUCT, TYPE II   | SY        | 755.11(b)     | Rolled Erosion Control Product, Type II             | Approved Products List                           |
| 653.2500                                   | CHECK DAM, TYPE I                         | CY        | 720.04        | Geotextile Under Stone Fill                         | Approved Products List                           |
| 653.3000                                   | CHECK DAM, TYPE III                       | EA        | 653.30        | Check Dam, Type III                                 | Approved Products List                           |
| 653.4000                                   | INLET PROTECTION DEVICE, TYPE I           | EA        | 720.07        | Geotextile for Silt Fence                           | Approved Products List                           |
| 653.4100                                   | INLET PROTECTION DEVICE, TYPE II          | EA        | 653.09(b)(2)  | Inlet Protection Device, Type II                    | Approved Products List                           |
| 653.4200                                   | INLET PROTECTION DEVICE, TYPE III         | CY        | 720.04        | Geotextile Under Stone Fill                         | Approved Products List                           |
| 653.4500                                   | FILTER BAG                                | EA        | 653.09(c)     | Filter Bag  | Approved Products List                           |
| 653.4750                                   | SILT FENCE, TYPE I                        | LF        | 720.07        | Geotextile for Silt Fence                           | Approved Products List                           |
| 653.4760                                   | SILT FENCE, TYPE II                       | LF        |               |   |  |
| 654.0010                                   | DRY SWALE                                 | LF        | 720.05        | Geotextile for Underdrain Trench Lining             | Approved Products List                           |
| 654.0015                                   | DRY SWALE WITH UNDERDRAIN                 | LF        | 711.01        | Corrugated Steel Pipe, Pipe Arches, and Underdrains | Buy America Declaration                          |
|  |   |           | 715.01(b)     | Gray Iron Castings                                  | Buy America Declaration                          |
|  |   |           | 720.05        | Geotextile for Underdrain Trench Lining             | Approved Products List                           |
| 654.0020                                   | GRAVEL WETLAND                            | SY        | 711.01        | Corrugated Steel Pipe, Pipe Arches, and Underdrains | Buy America Declaration                          |
|  |   |           | 715.01(b)     | Gray Iron Castings                                  | Buy America Declaration                          |
|  |   |           | 720.02        | Geotextile for Roadbed Separator                    | Approved Products List                           |
| 654.0030                                   | SURFACE SAND FILTER                       | SY        | 720.02        | Geotextile for Roadbed Separator                    | Approved Products List                           |
|  |   |           | 720.05        | Geotextile for Underdrain Trench Lining             | Approved Products List                           |
| 654.0050                                   | MEDIA FILTER DRAIN                        | LF        | 654.01        | Media Filter Drain Soil                             | Type D Certification                             |
|  |   |           | 720.02        | Geotextile for Roadbed Separator                    | Approved Products List                           |
|  |   |           | 720.05        | Geotextile for Underdrain Trench Lining             | Approved Products List                           |
| 654.0060                                   | BIORETENTION AREA                         | SY        | 720.02        | Geotextile for Roadbed Separator                    | Approved Products List                           |
| 654.0070                                   | STONE DIAPHRAGM                           | LF        | 720.05        | Geotextile for Underdrain Trench Lining             | Approved Products List                           |
| 662.0110                                   | REMOVE AND REPLACE BRIDGE TIES            | EA        | 709.04(a)(3)  | Anti-Splitting Devices                              | Buy America Declaration                          |
|  |   |           | 709.04(b)     | Bridge Ties   | Type D Certification                             |
|  |   |           | 709.04(e)     | Tie Plugging Material                               | Type D Certification                             |
| 662.0120                                   | REMOVE AND REPLACE CROSS TIES             | EA        | 709.04(a)(3)  | Anti-Splitting Devices                              | Buy America Declaration                          |
|  |   |           | 709.04(c)(1)  | Cross Ties, Type A                                  | Type D Certification                             |
|  |   |           | 709.04(c)(2)  | Cross Ties, Type B                                  | Type D Certification                             |
|  |   |           | 709.04(e)     | Tie Plugging Material                               | Type D Certification                             |
| 662.0130                                   | REMOVE AND REPLACE SWITCH TIES            | LF        | 709.04(a)(3)  | Anti-Splitting Devices                              | Buy America Declaration                          |
|  |   |           | 709.04(d)     | Switch Ties   | Type D Certification                             |
|  |   |           | 709.04(e)     | Tie Plugging Material                               | Type D Certification                             |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |   |   |                      |   |                                 |
|--|---|---|----------------------|---|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION  | ITEM UNIT   | MATERIAL CODE        | MATERIAL DESCRIPTION                                      | Material Acceptance Requirement |
| 662.0200                                   | REMOVE AND REPLACE JOINTED RAIL   | LF  | 715.06(a)(2)         | New Rail, Standard Strength                               | Type D Certification            |
|  |   |   | 715.06(a)(3)         | New Rail, High Strength                                   | Type D Certification            |
|  |   |   | 715.06(b)            | Relay Rail  | Type D Certification            |
|  |   |   | 715.08(a)(1)a.       | New Tie Plates, Type A                                    | Type D Certification            |
|  |   |   | 715.08(a)(1)b.       | New Tie Plates, Type B                                    | Type D Certification            |
|  |   |   | 715.08(a)(2)         | Relay Tie Plates  | Type D Certification            |
|  |   |   | 715.08(c)            | Track Spikes  | Type D Certification            |
|  |   |   | 715.08(d)            | Rail Anchors  | Type D Certification            |
|  |   |   | 715.08(f)            | Joint Bar Assemblies                                      | Type D Certification            |
| 715.08(g)                                  | Compromise Joint Bar Assemblies   | Type D Certification                                      |                      |   |                                 |
| 662.0350<br>662.0360                       | BALLASTED TRACK CONSTRUCTION WITH JOINTED RAIL<br>BALLASTED TRACK CONSTRUCTION WITH CWR | LF  | 709.04(a)(3)         | Anti-Splitting Devices                                    | Buy America Declaration         |
|  |   | LF  | 709.04(b)            | Bridge Ties   | Type D Certification            |
|  |   |   | 709.04(c)(1)         | Cross Ties, Type A  | Type D Certification            |
|  |   |   | 709.04(c)(2)         | Cross Ties, Type B  | Type D Certification            |
|  |   |   | 709.04(e)            | Tie Plugging Material                                     | Type D Certification            |
|  |   |   | 715.06(a)(2)         | New Rail, Standard Strength                               | Type D Certification            |
|  |   |   | 715.06(a)(3)         | New Rail, High Strength                                   | Type D Certification            |
|  |   |   | 715.06(b)            | Relay Rail  | Type D Certification            |
|  |   |   | 715.08(a)(1)a.       | New Tie Plates, Type A                                    | Type D Certification            |
|  |   |   | 715.08(a)(1)b.       | New Tie Plates, Type B                                    | Type D Certification            |
|  |   |   | 715.08(a)(2)         | Relay Tie Plates  | Type D Certification            |
|  |   |   | 715.08(b)            | Shim Plates   | Type D Certification            |
|  |   |   | 715.08(c)            | Track Spikes  | Type D Certification            |
|  |   |   | 715.08(d)            | Rail Anchors  | Type D Certification            |
|  |   |   | 715.08(e)            | Spring Clips with Associated Tie Plates, and Screw Plates | Type D Certification            |
|  |   |   | 715.08(f)            | Joint Bar Assemblies                                      | Type D Certification            |
|  |   |   | 715.08(g)            | Compromise Joint Bar Assemblies                           | Type D Certification            |
|  | 715.08(h)   | Insulated Joints  | Type D Certification |   |                                 |
|  | 715.08(i)   | Bridge Tie Connection Hardware                            | Type D Certification |   |                                 |
|  | 715.08(j)   | Other Bridge Tie Accessories                              | Type D Certification |   |                                 |
| 662.0400                                   | REMOVE JOINTED RAIL AND INSTALL CWR   | LF  | 715.06(a)(2)         | New Rail, Standard Strength                               | Type D Certification            |
|  |   |   | 715.06(a)(3)         | New Rail, High Strength                                   | Type D Certification            |
|  |   |   | 715.06(b)            | Relay Rail  | Type D Certification            |
|  |   |   | 715.08(a)(1)a.       | New Tie Plates, Type A                                    | Type D Certification            |
|  |   |   | 715.08(a)(1)b.       | New Tie Plates, Type B                                    | Type D Certification            |
|  |   |   | 715.08(a)(2)         | Relay Tie Plates  | Type D Certification            |
|  |   |   | 715.08(b)            | Shim Plates   | Type D Certification            |
|  |   |   | 715.08(c)            | Track Spikes  | Type D Certification            |
|  |   |   | 715.08(d)            | Rail Anchors  | Type D Certification            |
|  | 715.08(e)   | Spring Clips with Associated Tie Plates, and Screw Plates | Type D Certification |   |                                 |
|  | 715.08(h)   | Insulated Joints  | Type D Certification |   |                                 |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |  |           |                |  |                                 |
|--|--|-----------|----------------|--|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION   | ITEM UNIT | MATERIAL CODE  | MATERIAL DESCRIPTION   | Material Acceptance Requirement |
| 663.0100                                   | RECONSTRUCT RAILROAD-HIGHWAY GRADE CROSSING                | LS        | 709.04(c)(1)   | Cross Ties, Type A   | Type D Certification            |
| 663.0200                                   | PRECAST CONCRETE PANEL GRADE CROSSING SYSTEM               | LS        | 709.04(c)(2)   | Cross Ties, Type B   | Type D Certification            |
|  |  |           | 710.03(a)(1)   | Corrugated Polyethylene Pipe, Unlined, Small Diameter          | Approved Products List          |
|  |  |           | 710.03(a)(2)   | Corrugated Polyethylene Pipe, Unlined, Large Diameter          | Approved Products List          |
|  |  |           | 710.03(b)(1)   | Corrugated Polyethylene Pipe, Smooth Lined, Small Diameter     | Approved Products List          |
|  |  |           | 710.03(b)(2)   | Corrugated Polyethylene Pipe, Smooth Lined, Large Diameter     | Approved Products List          |
|  |  |           | 710.03(c)      | Corrugated Polyethylene Pipe, Perforated                       | Approved Products List          |
|  |  |           | 715.06(a)(2)   | New Rail, Standard Strength                                    | Type D Certification            |
|  |  |           | 715.06(a)(3)   | New Rail, High Strength  | Type D Certification            |
|  |  |           | 715.06(b)      | Relay Rail   | Type D Certification            |
|  |  |           | 715.08(a)(1)a. | New Tie Plates, Type A   | Type D Certification            |
|  |  |           | 715.08(a)(1)b. | New Tie Plates, Type B   | Type D Certification            |
|  |  |           | 715.08(a)(2)   | Relay Tie Plates   | Type D Certification            |
|  |  |           | 715.08(b)      | Shim Plates  | Type D Certification            |
|  |  |           | 715.08(c)      | Track Spikes   | Type D Certification            |
|  |  |           | 715.08(d)      | Rail Anchors   | Type D Certification            |
|  |  |           | 715.08(e)      | Spring Clips with Associated Tie Plates, and Screw Plates      | Type D Certification            |
|  |  |           | 715.08(f)      | Joint Bar Assemblies   | Type D Certification            |
|  |  |           | 715.08(g)      | Compromise Joint Bar Assemblies                                | Type D Certification            |
|  |  |           | 715.08(h)      | Insulated Joints   | Type D Certification            |
|  |  |           | 715.08(i)      | Bridge Tie Connection Hardware                                 | Type D Certification            |
|  |  |           | 715.08(j)      | Other Bridge Tie Accessories                                   | Type D Certification            |
|  |  |           | 720.03         | Geotextile Under Railroad Ballast                              | Approved Products List          |
|  |  |           | 781.01         | Precast Concrete Grade Crossing Systems                        | Approved Products List          |
| 663.0250                                   | PRECAST CONCRETE PANEL GRADE CROSSING SURFACE REPAIR       | EA        | 781.01         | Precast Concrete Grade Crossing Systems                        | Approved Products List          |
| 675.2000                                   | TRAFFIC SIGN, FLAT SHEET ALUMINUM                          | SF        | 750.04         | Retroreflective Sheeting                                       | Approved Products List          |
| 675.2100                                   | TRAFFIC SIGN, EXTRUDED ALUMINUM                            | SF        |                |  |                                 |
| 675.3100                                   | W-SHAPE STEEL SIGN POST                                    | LB        | 750.01(a)      | Steel Posts and Anchors  | Type D Certification            |
| 675.3300                                   | TUBULAR STEEL SIGN POST                                    | LB        |                |  |                                 |
| 675.3410                                   | SQUARE TUBE SIGN POST AND ANCHOR                           | LF        |                |  |                                 |
| 675.3500                                   | SOIL BEARING SLIP BASE                                     | EA        | 675.05         | Slip Bases   | Approved Products List          |
| 675.4100                                   | FOUNDATION FOR W-SHAPE STEEL POST, 24 INCH DIAMETER        | EA        | 713.01         | Bar Reinforcement  | Type D Certification            |
| 675.4200                                   | FOUNDATION FOR W-SHAPE STEEL POST, 30 INCH DIAMETER        | EA        | 750.01(a)      | Steel Posts and Anchors  | Type D Certification            |
| 675.4300                                   | FOUNDATION FOR TUBULAR STEEL POST                          | EA        |                |  |                                 |
| 675.6000                                   | RESETTING SIGNS  | EA        | 750.05         | Assembly Hardware  | Buy America Declaration         |
| 675.6100                                   | SETTING SALVAGED POSTS                                     | EA        |                |  |                                 |
| 676.1000                                   | DELINEATOR WITH STEEL POST                                 | EA        | 750.04         | Retroreflective Sheeting                                       | Approved Products List          |
|  |  |           | 751.01         | Delineator Posts   | Buy America Declaration         |
|  |  |           | 751.06         | Assembly Hardware  | Buy America Declaration         |
| 676.1500                                   | REMOVE AND REPLACE DELINEATOR                              | EA        | 750.04         | Retroreflective Sheeting                                       | Approved Products List          |
|  |  |           | 751.06         | Assembly Hardware  | Buy America Declaration         |
| 676.2000                                   | DELINEATOR WITH FLEXIBLE POST                              | EA        | 751.02         | Flexible Delineators   | Approved Products List          |
| 677.1200                                   | OVERHEAD TRAFFIC SIGN SUPPORT, CANTILEVER                  | EA        | 713.01(a)      | Reinforcing Steel  | Type D Certification            |
| 677.1300                                   | OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT               | EA        | 713.01(b)      | Low-Alloy Reinforcing Steel                                    | Type D Certification            |
| 677.2200                                   | OVERHEAD TRAFFIC SIGN SUPPORT, CANTILEVER WITH LIGHTING    | EA        | 713.01(c)      | Epoxy -Coated Reinforcing Steel                                | Type D Certification            |
| 677.2300                                   | OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT WITH LIGHTING | EA        | 713.01(d)      | Dual-Coated Reinforcing Steel                                  | Type D Certification            |
|  |  |           | 713.01(e)      | Continuous Galvanized Reinforcing Steel                        | Type D Certification            |
|  |  |           | 713.01(f)      | Low-Carbon, Chromium, Steel                                    | Type D Certification            |
|  |  |           | 713.01(g)      | Hot-Dipped Galvanized Reinforcing Steel                        | Type D Certification            |
|  |  |           | 713.01(h)      | Solid Stainless Reinforcing Steel                              | Type D Certification            |
|  |  |           | 714.04         | Carbon Steel Bolts, Nuts, and Washers                          | Type D Certification            |
|  |  |           | 714.05         | High-Strength Structural Bolts and Assemblies, 120 KSI         | Type D Certification            |
|  |  |           | 714.09         | Anchor Bolts for Traffic Signals, Lighting, and Overhead Signs | Type D Certification            |
|  |  |           | 714.11         | Steel Tubing   | Type D Certification            |
|  |  |           | 752.15         | Grounding Electrodes   | Buy America Declaration         |

| PAY ITEM AND CERTIFICATION QUICK REFERENCE |                            |           |               |  |                                 |
|--|----------------------------|-----------|---------------|--|---------------------------------|
| ITEM NUMBER                                | ITEM DESCRIPTION           | ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION   | Material Acceptance Requirement |
| 678.2010                                   | MAST ARM POLE FOUNDATION   | EA        | 713.01(a)     | Reinforcing Steel  | Type D Certification            |
|  |                            |           | 713.01(b)     | Low-Alloy Reinforcing Steel                                    | Type D Certification            |
|  |                            |           | 713.01(c)     | Epoxy -Coated Reinforcing Steel                                | Type D Certification            |
|  |                            |           | 713.01(d)     | Dual-Coated Reinforcing Steel                                  | Type D Certification            |
|  |                            |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel                        | Type D Certification            |
|  |                            |           | 713.01(f)     | Low-Carbon, Chromium, Steel                                    | Type D Certification            |
|  |                            |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel                        | Type D Certification            |
|  |                            |           | 713.01(h)     | Solid Stainless Reinforcing Steel                              | Type D Certification            |
|  |                            |           | 714.09        | Anchor Bolts for Traffic Signals, Lighting, and Overhead Signs | Type D Certification            |
|  |                            |           | 730.01        | Steel Piling   | Buy America Declaration         |
| 678.2015                                   | PEDESTAL POST ASSEMBLY     | EA        | 713.01(a)     | Reinforcing Steel  | Type D Certification            |
|  |                            |           | 713.01(b)     | Low-Alloy Reinforcing Steel                                    | Type D Certification            |
|  |                            |           | 713.01(c)     | Epoxy -Coated Reinforcing Steel                                | Type D Certification            |
|  |                            |           | 713.01(d)     | Dual-Coated Reinforcing Steel                                  | Type D Certification            |
|  |                            |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel                        | Type D Certification            |
|  |                            |           | 713.01(f)     | Low-Carbon, Chromium, Steel                                    | Type D Certification            |
|  |                            |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel                        | Type D Certification            |
|  |                            |           | 713.01(h)     | Solid Stainless Reinforcing Steel                              | Type D Certification            |
|  |                            |           | 714.09        | Anchor Bolts for Traffic Signals, Lighting, and Overhead Signs | Type D Certification            |
|  |                            |           | 752.01        | Pedestal Posts and Bases                                       | Type D Certification            |
| 678.2020                                   | PEDESTRIAN SIGNAL ASSEMBLY | EA        | 713.01(a)     | Reinforcing Steel  | Type D Certification            |
|  |                            |           | 713.01(b)     | Low-Alloy Reinforcing Steel                                    | Type D Certification            |
|  |                            |           | 713.01(c)     | Epoxy -Coated Reinforcing Steel                                | Type D Certification            |
|  |                            |           | 713.01(d)     | Dual-Coated Reinforcing Steel                                  | Type D Certification            |
|  |                            |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel                        | Type D Certification            |
|  |                            |           | 713.01(f)     | Low-Carbon, Chromium, Steel                                    | Type D Certification            |
|  |                            |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel                        | Type D Certification            |
|  |                            |           | 713.01(h)     | Solid Stainless Reinforcing Steel                              | Type D Certification            |
|  |                            |           | 714.09        | Anchor Bolts for Traffic Signals, Lighting, and Overhead Signs | Type D Certification            |
|  |                            |           | 752.10        | Accessible Pedestrian Signals                                  | Type D Certification            |
| 679.4600                                   | STREET LIGHT ASSEMBLY      | EA        | 713.01(a)     | Reinforcing Steel  | Type D Certification            |
|  |                            |           | 713.01(b)     | Low-Alloy Reinforcing Steel                                    | Type D Certification            |
|  |                            |           | 713.01(c)     | Epoxy -Coated Reinforcing Steel                                | Type D Certification            |
|  |                            |           | 713.01(d)     | Dual-Coated Reinforcing Steel                                  | Type D Certification            |
|  |                            |           | 713.01(e)     | Continuous Galvanized Reinforcing Steel                        | Type D Certification            |
|  |                            |           | 713.01(f)     | Low-Carbon, Chromium, Steel                                    | Type D Certification            |
|  |                            |           | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel                        | Type D Certification            |
|  |                            |           | 713.01(h)     | Solid Stainless Reinforcing Steel                              | Type D Certification            |
|  |                            |           | 714.09        | Anchor Bolts for Traffic Signals, Lighting, and Overhead Signs | Type D Certification            |
|  |                            |           | 752.11        | Grounding Electrodes   | Buy America Declaration         |
| 679.4700                                   | BRACKET ARM                | EA        | 753.04(a)     | Bracket Arms, Aluminum   | Type D Certification            |
|  |                            |           | 753.04(b)     | Bracket Arms, Steel  | Type D Certification            |
| 679.5000                                   | LUMINAIRE                  | EA        | 753.05        | Luminaires   | Approved Products List          |
| 680.2000                                   | TRAVEL INFORMATION SIGN    | SF        | 750.01        | Sign Posts   | Buy America Declaration         |
| 680.2500                                   | BUSINESS DIRECTIONAL SIGN  | SF        | 750.04        | Retroreflective Sheeting                                       | Approved Products List          |
| 681.2010                                   | BICYCLE RACK               | EA        | 750.12        | Assembly Hardware  | Buy America Declaration         |
|  |                            |           | 715.05        | Bicycle Rack Systems   | Approved Products List          |

## APPENDIX B: Frequency Charts

TABLE 1: MATERIAL SAMPLING & TESTING FREQUENCY CHART, QUALITY ASSURANCE PLAN LEVELS 1 & 2

| PAY ITEM NUMBER | PAY ITEM DESCRIPTION                          | MATERIAL CODE | MATERIAL DESCRIPTION                      | MATERIAL PROPERTY  | MINOR QUANTITY THRESHOLD  | MINIMUM ACCEPTANCE SAMPLING FREQUENCY (PER PROJECT)   | ACCEPTANCE SAMPLING LOCATION   | SAMPLE SIZE <sup>2</sup>                                   | PROCEDURES <sup>1</sup>    |  |
|-----------------|---|---------------|---|--|---|---|--|--|----------------------------|--|
|                 |   |               |   |  |   |   |  |  | SAMPLING METHOD            | TESTING METHOD                                     |
| 203.3000        | EARTH BORROW                                  | 703.02        | Earth Borrow                              | Moisture-Density<br>Moisture<br>Density                    | N/A<br><300 CY<br><300 CY                                       | 1/Soil Type<br>1/2,000 CY<br>1/2,000 CY   | In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place  | 50<br>2<br>N/A   | R 90<br>N/A<br>N/A         | T 99<br>T 255 or T 310<br>T 310                    |
| 203.3100        | SAND BORROW                                   | 703.03        | Sand Borrow and Cushion                   | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY<br>N/A<br><300 CY<br><300 CY                            | 1/3,000 CY<br>1/10,000 CY/Source<br>1/2,000 CY<br>1/2,000 CY  | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | 22<br>50<br>20<br>N/A                                      | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
| 203.3200        | GRANULAR BORROW                               | 703.04        | Granular Borrow                           | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY<br>N/A<br><300 CY<br><300 CY                            | 1/3,000 CY<br>1/10,000 CY/Source<br>1/2,000 CY<br>1/2,000 CY  | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | 22<br>50<br>2<br>N/A                                       | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
| 203.3500        | GRAVEL FILTER FOR SLOPE STABILIZATION         | 704.07        | Gravel Filter for Slope Stabilization     | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY<br>N/A<br><300 CY<br><300 CY                            | 1/5,000 CY<br>1/10,000 CY/Source<br>1/5,000 CY<br>1/5,000 CY  | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>50<br>20<br>N/A                              | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
| 204.3000        | GRANULAR BACKFILL FOR STRUCTURES              | 704.08        | Granular Backfill for Structures          | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY<br>N/A<br><300 CY<br><300 CY                            | 1/3,000 CY<br>1/10,000 CY/Source<br>1/500 CY<br>1/500 CY  | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>30<br>N/A                             | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
|                 |   | 704.05(b)     | Crushed Gravel for Subbase, Fine Graded   | Gradation  | <300 CY   | 1/3,000 CY  | In-Place, Berm/Window, or Stockpile  | See Note 2   | R 90                       | T 27, T 11   |
| 217.1000        | REINFORCED SOIL SLOPE                         | 703.04        | Granular Borrow                           | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY<br>N/A<br><300 CY<br><300 CY                            | 1/3,000 CY<br>1/10,000 CY/Source<br>1/2,000 CY<br>1/2,000 CY  | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | 22<br>50<br>2<br>N/A                                       | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
| 219.1000        | SLOPE STABILIZATION NAIL                      | 707.01(d)     | Mortar, Type III                          | Compressive Strength                                       | N/A   | 1/150 LF  | On-Project   | 3 Cubes  | R 64                       | ASTM C109  |
| 219.2000        | SLOPE STABILIZATION SYSTEM, SHOTCRETE FACING  | 760.02        | Shotcrete                                 | Compressive Strength<br>Encapsulation<br>Boiled Absorption | N/A   | 1/3,000 SF  | On-Project   | 1 Production Test Panel (3 Cores/Panel)                    | ASTM C1140                 | T 22 or ASTM C39<br>Visual Inspection<br>ASTM C642 |
| 221.1000        | ROCK SLOPE STABILIZATION DOWEL                | 707.01(d)     | Mortar, Type III                          | Compressive Strength                                       | N/A   | 1/150 LF  | On-Project   | 3 Cubes  | R 64                       | ASTM C109  |
| 221.2000        | ROCK SLOPE STABILIZATION ANCHOR               |               |   |  |   |   |  |  |                            |  |
| 221.5000        | ROCK SLOPE STABILIZATION NAIL                 |               |   |  |   |   |  |  |                            |  |
| 221.5000        | ROCK SLOPE STABILIZATION SHOTCRETE            | 760.02        | Shotcrete                                 | Compressive Strength<br>Encapsulation<br>Boiled Absorption | N/A   | 1/50 CY   | On-Project   | 1 Production Test Panel (3 Cores/Panel)                    | ASTM C1140                 | T 22 or ASTM C39<br>Visual Inspection<br>ASTM C642 |
| 225.0300        | RETAINING WALL, CAST-IN-PLACE CONCRETE        | 501           | Performance Based Concrete, Class PCS     | Air Temperature<br>Compressive Strength                    | <10 CY  | 1/50 CY (See note 3)  | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100  | ASTM C231<br>ASTM C1064<br>T 22                    |
| 225.0400        | RETAINING WALL, PRECAST CONCRETE              |               |   |  |   |   |  |  |                            |  |
| 225.0500        | RETAINING WALL, CONCRETE                      |               |   |  |   |   |  |  |                            |  |
|                 |   | 704.08        | Granular Backfill for Structures          | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY<br>N/A<br><300 CY<br><300 CY                            | 1/3,000 CY<br>1/10,000 CY/Source<br>1/500 CY<br>1/500 CY  | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>30<br>N/A                             | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
|                 |   | 704.16        | Drainage Aggregate                        | Gradation  | <600 CY   | 1/3,000 CY  | In-Place, Berm/Window, or Stockpile  | 55   | R 90                       | T 27   |
|                 |   | 713.01(d)     | Dual-Coated Reinforcing Steel             | Ultimate Tensile Stress                                    | N/A   | 1/Grade/Type <sup>13</sup>  | Stockpile On-Project   | 6 ft   | N/A                        | T 244  |
|                 |   | 713.01(e)     | Continuous Galvanized Reinforcing Steel   | Yield Tensile Stress                                       | N/A   | 1/Grade/Type <sup>13</sup>  | Stockpile On-Project   | 6 ft   | N/A                        | T 244  |
|                 |   | 713.01(f)     | Low-Carbon, Chromium, Steel Bars          | Elongation   | N/A   | 1/Grade/Type <sup>13</sup>  | Stockpile On-Project   | 6 ft   | N/A                        | T 244  |
|                 |   | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel   | Elongation   | N/A   | 1/Grade/Type <sup>13</sup>  | Stockpile On-Project   | 6 ft   | N/A                        | T 244  |
|                 |   | 713.02        | Mechanical Splices for Bar Reinforcement  | Ultimate Tensile Stress                                    | N/A   | 3/size  | Stockpile On-Project   | Connector length plus 12 inches of bar on each end.        | N/A                        | T 244  |
| 227.0100        | RETAINING WALL, MECHANICALLY STABILIZED EARTH | 704.16        | Drainage Aggregate                        | Gradation  | <600 CY   | 1/3,000 CY  | In-Place, Berm/Window, or Stockpile  | 55   | R 90                       | T 27   |
|                 |   | 704.18        | Select Backfill for MSE Structures        | Gradation<br>Moisture-Density<br>Moisture<br>Density       | N/A<br>N/A<br><300 CY<br><300 CY                                | 1/3,000 CY<br>1/10,000 CY<br>1/500 CY<br>1/500 CY   | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>30<br>N/A                             | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
|                 |   | 713.01(d)     | Dual-Coated Reinforcing Steel             | Ultimate Tensile Stress                                    | N/A   | 1/Grade/Type <sup>13</sup>  | Stockpile On-Project   | 6 ft   | N/A                        | T 244  |
|                 |   | 713.01(e)     | Continuous Galvanized Reinforcing Steel   | Yield Tensile Stress                                       | N/A   | 1/Grade/Type <sup>13</sup>  | Stockpile On-Project   | 6 ft   | N/A                        | T 244  |
|                 |   | 713.01(f)     | Low-Carbon, Chromium, Steel Bars          | Elongation   | N/A   | 1/Grade/Type <sup>13</sup>  | Stockpile On-Project   | 6 ft   | N/A                        | T 244  |
|                 |   | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel   | Elongation   | N/A   | 1/Grade/Type <sup>13</sup>  | Stockpile On-Project   | 6 ft   | N/A                        | T 244  |
|                 |   | 713.02        | Mechanical Splices for Bar Reinforcement  | Ultimate Tensile Stress                                    | N/A   | 3/size  | Stockpile On-Project   | Connector length plus 12 inches of bar on each end.        | N/A                        | T 244  |
| 301.1500        | SUBBASE OF GRAVEL                             | 704.04        | Gravel for Subbase                        | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY<br>N/A<br><300 CY<br><300 CY                            | 1/3,000 CY<br>1/10,000 CY/Source <sup>10</sup><br>1/2,000 CY<br>1/2,000 CY                                  | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>N/A<br>N/A                            | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 180<br>T 310<br>T 310              |
| 301.2500        | SUBBASE OF CRUSHED GRAVEL, COARSE GRADED      | 704.05(c)     | Crushed Gravel for Subbase, Coarse Graded | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY<br>N/A<br><300 CY<br><300 CY                            | 1/3,000 CY<br>1/10,000 CY/Source <sup>10</sup><br>1/1,000 CY<br>1/1,000 CY                                  | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>N/A<br>N/A                            | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 180<br>T 310<br>T 310              |
| 301.2600        | SUBBASE OF CRUSHED GRAVEL, FINE GRADED        | 704.05(b)     | Crushed Gravel for Subbase, Fine Graded   | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY/650 TONS<br>N/A<br><300 CY/650 TONS<br><300 CY/650 TONS | 1/3,000 CY/6,500 TONS<br>1/10,000 CY/Source <sup>10</sup><br>1/1,000 CY/2,150 TONS<br>1/1,000 CY/2,150 TONS | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>N/A<br>N/A                            | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 180<br>T 310<br>T 310              |
| 301.3500        | SUBBASE OF DENSE GRADED CRUSHED STONE         | 704.06        | Dense Graded Crushed Stone for Subbase    | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY<br>N/A<br><300 CY<br><300 CY                            | 1/3,000 CY<br>1/10,000 CY/Source <sup>10</sup><br>1/1,000 CY<br>1/1,000 CY                                  | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>N/A<br>N/A                            | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 180<br>T 310<br>T 310              |
| 301.4000        | SUBBASE, RAP                                  | 301.02        | RAP                                       | Gradation  | <500 TONS   | 1/2,000 TONS  | In-Place, Berm/Window, or Stockpile  | See Note 2   | R 90                       | T 27, T 11   |
|                 |   | 704.05(b)     | Crushed Gravel for Subbase, Fine Graded   | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <500 TONS<br>N/A<br><500 TONS<br><500 TONS                      | 1/2,000 TONS<br>1/10,000 CY/Source <sup>10</sup><br>1/2,000 TONS<br>1/2,000 TONS                            | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>N/A<br>N/A                            | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 180<br>T 310<br>T 310              |
| 310.0100        | FULL DEPTH RECLAMATION                        | 310.04(c)     | Full Depth Reclamation                    | Moisture-Density<br>Moisture<br>Density                    | N/A   | 1/Project <sup>17</sup>   | In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place  | 250<br>N/A<br>N/A  | R 90<br>N/A<br>N/A         | T 180<br>T 310<br>T 310                            |
| 311.0100        | FULL DEPTH RECLAMATION, CALCIUM CHLORIDE      | 311.04(d)     | Full Depth Reclamation, Calcium Chloride  | Moisture-Density<br>Moisture<br>Density                    | N/A   | 1/Project <sup>17</sup>   | In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place  | 250<br>N/A<br>N/A  | R 90<br>N/A<br>N/A         | T 180<br>T 310<br>T 310                            |
| 312.0100        | FULL DEPTH RECLAMATION, EMULSION              | 312.01(f)     | Full Depth Reclamation, Emulsion          | Moisture-Density<br>Moisture<br>Density                    | N/A   | 1/Project <sup>17</sup>   | In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place  | 250<br>N/A<br>N/A  | R 90<br>N/A<br>N/A         | T 180<br>T 310<br>T 310                            |

TABLE 1: MATERIAL SAMPLING & TESTING FREQUENCY CHART, QUALITY ASSURANCE PLAN LEVELS 1 & 2

| PAY ITEM NUMBER | PAY ITEM DESCRIPTION                                       | MATERIAL CODE  | MATERIAL DESCRIPTION   | MATERIAL PROPERTY  | MINOR QUANTITY THRESHOLD             | MINIMUM ACCEPTANCE SAMPLING FREQUENCY (PER PROJECT)                    | ACCEPTANCE SAMPLING LOCATION   | SAMPLE SIZE <sup>2</sup>                                   | PROCEDURES <sup>1</sup>    |  |
|-----------------|--|--|--|--|--------------------------------------|--|--|--|----------------------------|--|
|                 |  |  |  |  |                                      |  |  |  | SAMPLING METHOD            | TESTING METHOD                                 |
| 312.5100        | EMULSIFIED ASPHALT FOR FDR, EMULSION                       | 702.02(a)(3)<br>702.02(a)(4)<br>702.02(a)(5)<br>702.02(a)(6)<br>702.02(a)(7)<br>702.02(b)(3)<br>702.02(b)(4)<br>702.02(b)(5) | Anionic Emulsified Asphalt, MS-2h<br>Anionic Emulsified Asphalt, HFMS-2<br>Anionic Emulsified Asphalt, HFMS-2h<br>Anionic Emulsified Asphalt, HFMS-2s<br>Anionic Emulsified Asphalt, SS-1h<br>Cationic Emulsified Asphalt, CMS-2h<br>Cationic Emulsified Asphalt, CSS-1<br>Cationic Emulsified Asphalt, CSS-1h     | Penetration @ 25°C<br>Residue  | <50 CWT                              | 1/10,000 CWT   | Truck On-Project   | 1 Quart  | R 66                       | T 49<br>T 59                                   |
| 401.1000        | AGGREGATE SURFACE COURSE                                   | 704.12(a)  | Aggregate Surface Course   | Gradation<br>Moisture-Density<br>Moisture<br>Density                                       | <300 CY<br>N/A<br><300 CY<br><300 CY | 1/5,000 CY<br>1/10,000 CY/Source<br>1/5,000 CY<br>1/5,000 CY           | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | 100<br>50<br>20<br>N/A                                     | R 90<br>R 90<br>N/A<br>N/A | T 27, T 11<br>T 180<br>T 255 or T 310<br>T 310 |
| 401.1500        | AGGREGATE SURFACE COURSE, PATHS AND TRAILS                 | 704.12(b)  | Aggregate Surface Course, Paths and Trails   | Gradation  | <300 CY                              | 1/5,000 CY   | In-Place, Berm/Window, or Stockpile  | 100  | R 90                       | T 27, T 11                                     |
| 402.1200        | AGGREGATE SHOULDERS  | 704.12(c)  | Aggregate Shoulders  | Gradation  | <300 CY                              | 1/5,000 CY   | In-Place, Berm/Window, or Stockpile  | 100  | R 90                       | T 27, T 11                                     |
| 402.1300        | AGGREGATE SHOULDERS, RAP                                   | 704.12(d)  | Aggregate Shoulders, RAP   | Gradation  | <300 CY                              | 1/5,000 CY   | In-Place, Berm/Window, or Stockpile  | 100  | R 90                       | T 27, T 11                                     |
| 404.1100        | TACK COAT, EMULSIFIED ASPHALT                              | 702.02(a)(1)<br>702.02(a)(2)<br>702.02(b)(1)<br>702.02(b)(2)   | Anionic Emulsified Asphalt, RS-1<br>Anionic Emulsified Asphalt, RS-1h<br>Cationic Emulsified Asphalt, CRS-1<br>Cationic Emulsified Asphalt, CRS-1h   | Penetration @ 25°C<br>Residue  | <50 CWT                              | 1/300 CWT  | Truck On-Project   | 1 Quart  | R 66                       | T 49<br>T 59                                   |
| 404.1200        | TACK COAT, POLYMER-MODIFIED EMULSIFIED ASPHALT             | 702.02(c)(1)   | Polymer-Modified Emulsified Asphalt, CRS-1P  | Penetration @ 25°C<br>Residue  | <50 CWT                              | 1/1,500 CWT  | Truck On-Project   | 1 Quart  | R 66                       | T 49<br>T 59                                   |
| 404.3100        | FOG SEAL, EMULSIFIED ASPHALT                               | 702.02(b)(5)   | Cationic Emulsified Asphalt, CSS-1h  | Penetration @ 25°C<br>Residue  | <50 CWT                              | 1/Project  | Truck On-Project   | 1 Quart  | R 66                       | T 49<br>T 59                                   |
| 404.5100        | SEAL COAT, EMULSIFIED ASPHALT                              | 702.02(a)(7)<br>702.02(a)(8)<br>702.02(b)(4)<br>702.02(b)(5)   | Anionic Emulsified Asphalt, SS-1<br>Anionic Emulsified Asphalt, SS-1h<br>Cationic Emulsified Asphalt, CSS-1<br>Cationic Emulsified Asphalt, CSS-1h   | Penetration @ 25°C<br>Residue  | <50 CWT                              | 1/Project  | Truck On-Project   | 1 Quart  | R 66                       | T 49<br>T 59                                   |
| 406.0110        | BITUMINOUS CONCRETE PAVEMENT, TYPE IS, QA TIER I           | 702.01   | Performance-Graded Asphalt Binder  | Effect of Heat and Air   | <200 TONS                            | 1/HMA QA Lot <sup>11</sup>   | In-Line @ Plant  | 2 Quarts   | R 66                       | T 240  |
| 406.0210        | BITUMINOUS CONCRETE PAVEMENT, TYPE IIS, QA TIER I          |  |  | Flexural Creep   |                                      |  |  |  |                            | T 313  |
| 406.0310        | BITUMINOUS CONCRETE PAVEMENT, TYPE IIIS, QA TIER I         |  |  | Rheological Properties (Original, RTFO, & PAV)   |                                      |  |  |  |                            | T 315  |
| 406.0410        | BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER I          |  |  | Slip AC Content  |                                      |  |  |  |                            | Truck Slip Calculation                         |
| 406.0120        | BITUMINOUS CONCRETE PAVEMENT, TYPE IS, QA TIER II          | 702.01   | Performance-Graded Asphalt Binder  | Gradation  | <200 TONS                            | 1/500 TONS (Stratified random sampling, see specification for details) | Truck @ Plant/On-Project   | 25   | R 97 <sup>9</sup>          | T 308, T 30                                    |
| 406.0220        | BITUMINOUS CONCRETE PAVEMENT, TYPE IIS, QA TIER II         |  |  | Air Voids, VMA   |                                      |  |  |  |                            | R 35, T 166, T 209, T 269, T 312               |
| 406.0320        | BITUMINOUS CONCRETE PAVEMENT, TYPE IIIS, QA TIER II        |  |  | Mixing Temperature   |                                      |  |  |  |                            | N/A  |
| 406.0420        | BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER II         |  |  | Slip AC Content  |                                      |  |  |  |                            | Truck Slip Calculation                         |
| 406.0130        | BITUMINOUS CONCRETE PAVEMENT, TYPE IS, QA TIER III         | 702.01   | Performance-Graded Asphalt Binder  | Gradation  | <200 TONS                            | 1/HMA QA Lot <sup>11</sup>   | In-Line @ Plant  | 2 Quarts   | R 66                       | T 240  |
| 406.0230        | BITUMINOUS CONCRETE PAVEMENT, TYPE IIS, QA TIER III        |  |  | Flexural Creep   |                                      |  |  |  |                            | T 313  |
| 406.0330        | BITUMINOUS CONCRETE PAVEMENT, TYPE IIIS, QA TIER III       |  |  | Rheological Properties (Original, RTFO, & PAV)   |                                      |  |  |  |                            | T 315  |
| 406.0430        | BITUMINOUS CONCRETE PAVEMENT, TYPE IVS, QA TIER III        |  |  | Slip AC Content  |                                      |  |  |  |                            | Truck Slip Calculation                         |
| 406.9200        | PAY ADJUSTMENT, BCP, MAT DENSITY (N.A.B.I.)                | 406.11   | Mat Density Pay Adjustment   | Density-Mat  | N/A                                  | See specification for details.   | In-Place   | 6" ID Core   | R 67                       | T 166  |
| 406.9300        | PAY ADJUSTMENT, BCP, LONGITUDINAL JOINT DENSITY (N.A.B.I.) | 406.12   | Longitudinal Joint Density Pay Adjustment  | Density-Joint  | N/A                                  | See specification for details.   | In-Place   | 6" ID Core   | R 67                       | T 166  |
| 406.6400        | PAY ADJUSTMENT, BCP, PAVEMENT ROUGHNESS (N.A.B.I.)         | 406.13   | Pavement Roughness Pay Adjustment  | Surface Tolerance  | N/A                                  | See specification for details.   | In-Place   | N/A  | N/A                        | M 328 or Straight Edge                         |
| 407.0100        | BONDED WEARING COURSE, TYPE A                              | 702.01   | Performance-Graded Asphalt Binder  | Effect of Heat and Air   | <200 TONS                            | 1/3,000 TONS <sup>11</sup>   | In-Line @ Plant  | 2 Quarts   | R 66                       | T 240  |
| 407.0200        | BONDED WEARING COURSE, TYPE B                              |  |  | Flexural Creep   |                                      |  |  |  |                            | T 313  |
| 407.0300        | BONDED WEARING COURSE, TYPE C                              |  |  | Rheological Properties (Original, RTFO, & PAV)   |                                      |  |  |  |                            | T 315  |
| 414.5300        | EMULSIFIED ASPHALT FOR CIR                                 | 702.02(a)(3)<br>702.02(a)(4)<br>702.02(a)(5)<br>702.02(a)(6)<br>702.02(b)(4)<br>702.02(b)(5)                                 | Anionic Emulsified Asphalt, MS-2h<br>Anionic Emulsified Asphalt, HFMS-2<br>Anionic Emulsified Asphalt, HFMS-2h<br>Anionic Emulsified Asphalt, HFMS-2s<br>Cationic Emulsified Asphalt, CSS-1<br>Cationic Emulsified Asphalt, CSS-1h   | Penetration @ 25°C<br>Residue  | <40 CWT                              | 1/3,000 CWT  | Truck On-Project   | 1 Quart  | R 66                       | T 49<br>T 59                                   |
| 414.5400        | FOAMED ASPHALT FOR CIR                                     | 702.01(a)  | Performance-Graded Asphalt Binder, 58S-28  | Effect of Heat and Air<br>Flexural Creep<br>Rheological Properties (Original, RTFO, & PAV) | N/A                                  | 1/1,500 CWT  | In-Line @ Plant  | 2 Quarts   | R 66                       | T 240<br>T 313<br>T 315                        |
| 415.5300        | EMULSIFIED ASPHALT FOR CCPR                                | 702.02(a)(3)<br>702.02(a)(4)<br>702.02(a)(5)<br>702.02(a)(6)<br>702.02(b)(4)<br>702.02(b)(5)                                 | Anionic Emulsified Asphalt, MS-2h<br>Anionic Emulsified Asphalt, HFMS-2<br>Anionic Emulsified Asphalt, HFMS-2h<br>Anionic Emulsified Asphalt, HFMS-2s<br>Cationic Emulsified Asphalt, CSS-1<br>Cationic Emulsified Asphalt, CSS-1h   | Penetration @ 25°C<br>Residue  | <40 CWT                              | 1/5,000 CWT  | Truck On-Project   | 1 Quart  | R 66                       | T 49<br>T 59                                   |
| 415.5400        | FOAMED ASPHALT FOR CCPR                                    | 702.01(a)  | Performance-Graded Asphalt Binder, 58S-28  | Effect of Heat and Air<br>Flexural Creep<br>Rheological Properties (Original, RTFO, & PAV) | N/A                                  | 1/2,500 CWT  | In-Line @ Plant  | 2 Quarts   | R 66                       | T 240<br>T 313<br>T 315                        |
| 501.3700        | PERFORMANCE-BASED CONCRETE, CLASS PCD                      | 501  | Performance-Based Structural Concrete  | Air  | <10 CY                               | 1/50 CY (See note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172                  | ASTM C231                                      |
| 501.3800        | PERFORMANCE-BASED CONCRETE, CLASS PCS                      |  |  | Temperature  |                                      |  |  |  | N/A                        | ASTM C1064                                     |
| 501.3900        | PERFORMANCE-BASED CONCRETE, CLASS SCC                      |  |  | Compressive Strength   |                                      |  |  |  | R 100                      | T 22   |
| 503.1000        | DRILLED SHAFT IN EARTH                                     | 707.01(e)(1)   | Mortar, Type IV, Pre-Packaged  | Compressive Strength   | N/A                                  | 1/Placement  | On-Project   | 3 Cubes  | R 64                       | ASTM C109                                      |
| 503.1500        | DRILLED SHAFT IN ROCK                                      | 707.01(e)(2)<br>713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h)         | Mortar, Type IV, Ready Mixed<br>Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation                              | N/A                                  | 1/Grade/Type <sup>13</sup>   | Stockpile On-Project   | 6 FT   | N/A                        | T 244  |



TABLE 1: MATERIAL SAMPLING & TESTING FREQUENCY CHART, QUALITY ASSURANCE PLAN LEVELS 1 & 2

| PAY ITEM NUMBER | PAY ITEM DESCRIPTION  | MATERIAL CODE  | MATERIAL DESCRIPTION  | MATERIAL PROPERTY   | MINOR QUANTITY THRESHOLD | MINIMUM ACCEPTANCE SAMPLING FREQUENCY (PER PROJECT)   | ACCEPTANCE SAMPLING LOCATION   | SAMPLE SIZE <sup>2</sup>                                   | PROCEDURES <sup>1</sup>                |   |
|-----------------|---|--|---|---|--------------------------|---|--|--|--|---|
|                 |   |  |   |   |                          |   |  |  | SAMPLING METHOD                        | TESTING METHOD  |
| 506.5000        | STRUCTURAL STEEL, ROLLED BEAM                               | 707.01(e)(1)   | Mortar, Type IV, Pre-Packaged   | Compressive Strength  | N/A                      | 1/Placement   | On-Project   | 3 Cubes  | R 64                                   | ASTM C109   |
| 506.5500        | STRUCTURAL STEEL, PLATE GIRDER                              | 707.01(e)(2)   | Mortar, Type IV, Ready Mixed  | Compressive Strength  | N/A                      | 1/Placement   | On-Project   | 3 Cubes  | R 64                                   | ASTM C109   |
| 506.5600        | STRUCTURAL STEEL, CURVED PLATE GIRDER                       | 714.04   | Carbon Steel Bolts, Nuts, and Washers   | Ultimate Tensile Stress   | N/A                      | 1/each combination of bolt lot, nut lot, washer lot, and DTI lot (1 per each combination Tension Control Assembly Bolt production lot if used) <sup>14</sup>              | Original Manufacturer Shipping Container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 506.5700        | STRUCTURAL STEEL, TRUSS                                     | 714.05   | High-Strength Structural Bolts and Assemblies, 120 KSI  | Ultimate Tensile Stress, Wedge  | N/A                      | 1/each combination of bolt lot, nut lot, washer lot, and DTI lot (1 per each combination Tension Control Assembly Bolt production lot if used) <sup>14</sup>              | Original Manufacturer Shipping Container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 506.6000        | STRUCTURAL STEEL  | 714.06   | High-Strength Structural Bolts and Assemblies, 150 KSI  | Rockwell Hardness   | N/A                      | 1/each combination of bolt lot, nut lot, washer lot, and DTI lot (1 per each combination Tension Control Assembly Bolt production lot if used) <sup>14</sup>              | Original Manufacturer Shipping Container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 506.7500        | STRUCTURAL STEEL  | 714.13   | Tension Control Assemblies  | Rockwell Hardness   | N/A                      | 1/each combination of bolt lot, nut lot, washer lot, and DTI lot (1 per each combination Tension Control Assembly Bolt production lot if used) <sup>14</sup>              | Original Manufacturer Shipping Container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 506.8500        | RIVET REPLACEMENT   | 714.05   | High-Strength Structural Bolts and Assemblies, 120 KSI  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge<br>Rockwell Hardness  | N/A                      | 1/each combination of bolt lot, nut lot, washer lot, and DTI lot (1 per each combination Tension Control Assembly Bolt production lot if used) <sup>14</sup>              | Original Manufacturer Shipping Container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 507.1100        | REINFORCING STEEL, LEVEL I                                  | 713.01(a)<br>713.01(b)<br>713.01(c)  | Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel  | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation   | N/A                      | 1/Grade/Type <sup>13</sup>  | Stockpile On-Project   | 6 FT   | N/A                                    | T 244   |
| 507.1200        | REINFORCING STEEL, LEVEL II                                 | 713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)   | Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel   | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation   | N/A                      | 1/Grade/Type <sup>13</sup>  | Stockpile On-Project   | 6 FT   | N/A                                    | T 244   |
| 507.1300        | REINFORCING STEEL, LEVEL III                                | 713.01(h)  | Solid Stainless Reinforcing Steel   | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation   | N/A                      | 1/Grade/Type <sup>13</sup>  | Stockpile On-Project   | 6 FT   | N/A                                    | T 244   |
| 507.1600        | DRILLING AND GROUTING DOWELS                                | 707.01(e)(1)<br>707.01(e)(2)<br>713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed<br>Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Compressive Strength<br>Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation                                     | N/A                      | 1/Placement<br>1/Grade/Type <sup>13</sup>   | On-Project<br>Stockpile On-Project   | 3 Cubes<br>6 FT  | R 64<br>N/A                            | ASTM C109<br>T 244  |
| 507.1900        | MECHANICAL BAR CONNECTOR                                    | 713.02   | Mechanical Splices for Bar Reinforcement  | Ultimate Tensile Stress   | N/A                      | 3/size  | Stockpile On-Project   | Connector length plus 12 inches of bar on each end.        | N/A                                    | T 244   |
| 510.2100        | PRESTRESSED CONCRETE BOX BEAMS                              | 501  | Performance-Based Structural Concrete   | Air<br>Temperature<br>Compressive Strength<br>Spread  | <10 CY                   | 1/Project <sup>5</sup>  | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100<br>ASTM C172 | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611               |
| 510.2200        | PRESTRESSED CONCRETE VOIDED SLABS                           | 707.01(e)(1)<br>707.01(e)(2)<br>713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed<br>Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Compressive Strength<br>Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation                                     | N/A                      | 1/Placement<br>1/Grade/Type <sup>13</sup>   | On-Project<br>Stockpile On-Project   | 3 Cubes<br>6 FT  | R 64<br>N/A                            | ASTM C109<br>T 244  |
| 510.2300        | PRESTRESSED CONCRETE GIRDERS                                | 713.04(a)<br>714.04<br>714.05  | Prestressing Strand<br>Carbon Steel Bolts, Nuts, and Washers<br>High-Strength Structural Bolts and Assemblies, 120 KSI  | Tensile Strength<br>Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge<br>Rockwell Hardness<br>Rotational Capacity | N/A                      | 1/Project<br>1/each combination of bolt lot, nut lot, washer lot, and DTI lot (1 per each combination Tension Control Assembly Bolt production lot if used) <sup>14</sup> | At-Plant<br>Original manufacturer shipping container On-Project or At-Plant. | 6 FT<br>2 Assemblies <sup>15</sup>                         | N/A<br>N/A                             | T 244<br>ASTM F606<br>ASTM F3125<br>ASTM F606<br>ASTM F3125 |
| 510.2400        | GROUTING SHEAR KEYS   | 707.01(e)(1)<br>707.01(e)(2)   | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed   | Compressive Strength  | N/A                      | 1/Placement   | On-Project   | 3 Cubes  | R 64                                   | ASTM C109   |
| 510.2500        | PRESTRESSED CONCRETE SOLID SLABS                            | 501  | Performance-Based Structural Concrete   | Air<br>Temperature<br>Compressive Strength<br>Spread  | <10 CY                   | 1/Project <sup>5</sup>  | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100<br>ASTM C172 | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611               |
| 510.2600        | PRESTRESSED CONCRETE NEXT D BEAMS                           | 707.01(e)(1)<br>707.01(e)(2)<br>713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed<br>Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Compressive Strength<br>Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation                                     | N/A                      | 1/Placement<br>1/Grade/Type <sup>13</sup>   | On-Project<br>Stockpile On-Project   | 3 Cubes<br>6 FT  | R 64<br>N/A                            | ASTM C109<br>T 244  |
| 510.4000        | PRESTRESSED CONCRETE DECK PANELS                            | 713.06<br>714.04<br>714.05   | Prestressing Strand<br>Carbon Steel Bolts, Nuts, and Washers<br>High-Strength Structural Bolts and Assemblies, 120 KSI  | Tensile Strength<br>Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge<br>Rockwell Hardness<br>Rotational Capacity | N/A                      | 1/Project<br>1/each combination of bolt lot, nut lot, washer lot, and DTI lot (1 per each combination Tension Control Assembly Bolt production lot if used) <sup>14</sup> | At-Plant<br>Original manufacturer shipping container On-Project or At-Plant. | 6 FT<br>2 Assemblies <sup>15</sup>                         | N/A<br>N/A                             | T 244<br>ASTM F606<br>ASTM F3125<br>ASTM F606<br>ASTM F3125 |
| 522.2000        | STRUCTURAL LUMBER AND TIMBER, UNTREATED                     | 709.01   | Structural Lumber and Timber  | Moisture  | See Note 18              | 1/Project   | On-Project   | N/A  | N/A                                    | Moisture meter calibrated to ASTM D4444                     |
| 522.2500        | STRUCTURAL LUMBER AND TIMBER, TREATED                       | 709.01   | Structural Lumber and Timber  | Moisture  | See Note 18              | 1/Project   | On-Project   | N/A  | N/A                                    | Moisture meter calibrated to ASTM D4444                     |
| 522.4000        | STRUCTURAL GLUED LAMINATED TIMBER                           | 709.03   | Structural Glued Laminated Timber   | Moisture  | See Note 18              | 1/Project   | On-Project   | N/A  | N/A                                    | Moisture meter calibrated to ASTM D4444                     |
| 525.1210        | BRIDGE RAIL REPAIR, HDSB, TYPE III                          | 732.04(e)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 525.1310        | BRIDGE RAIL REPAIR, BOX BEAM, TYPE I                        | 732.03(d)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 525.1320        | BRIDGE RAIL REPAIR, BOX BEAM, TYPE II                       | 732.03(d)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 525.1330        | BRIDGE RAIL REPAIR, BOX BEAM, TYPE III                      | 732.03(d)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 525.3000        | BRIDGE RAILING, FASCIA MOUNTED                              | 732.02(e)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 525.3120        | BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM                  | 732.02(e)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 525.3130        | BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM                  | 732.02(e)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 525.3140        | BRIDGE RAILING, GALVANIZED 4 RAIL BOX BEAM                  | 732.02(e)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 525.3230        | BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM, CURBLESS        | 732.02(e)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 525.4030        | BRIDGE RAILING, ALUMINUM 3 RAIL                             | 732.02(e)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 525.4130        | BRIDGE RAILING, ALUMINUM 3 RAIL, PEDESTRIAN                 | 732.02(e)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |
| 525.4400        | BRIDGE RAILING, GALVANIZED HDSB/FASCIA MOUNTED/STEEL TUBING | 732.02(e)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.   | Original manufacturer shipping container On-Project or At-Plant.             | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606   |

TABLE 1: MATERIAL SAMPLING & TESTING FREQUENCY CHART, QUALITY ASSURANCE PLAN LEVELS 1 & 2

| PAY ITEM NUMBER  | PAY ITEM DESCRIPTION  | MATERIAL CODE                | MATERIAL DESCRIPTION  | MATERIAL PROPERTY   | MINOR QUANTITY THRESHOLD         | MINIMUM ACCEPTANCE SAMPLING FREQUENCY (PER PROJECT)   | ACCEPTANCE SAMPLING LOCATION                                     | SAMPLE SIZE <sup>2</sup>                                   | PROCEDURES <sup>1</sup>  |                |
|--|---|------------------------------|---|---|----------------------------------|---|--|--|--------------------------|----------------|
|  |   |                              |   |   |                                  |   |  |  | SAMPLING METHOD          | TESTING METHOD |
| 525.5000   | BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION  | 501                          | Performance-Based Concrete, Class PCD                         | Air   | <10 CY                           | 1/50 CY (See note 3)  | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172                | ASTM C231      |
|  |   |                              |   | Temperature   |                                  |   |  |  | N/A                      | ASTM C1064     |
|  |   |                              |   | Compressive Strength                                      |                                  |   |  |  | R 100                    | T 22           |
|  |   |                              |   | Spread  |                                  |   |  |  | ASTM C172                | ASTM C1611     |
| 713.01(a)  | Reinforcing Steel   | Ultimate Tensile Stress      | N/A   | 1/Grade/Type <sup>13</sup>                                | Stockpile On-Project             | 6 FT  | N/A  | T 244  |                          |                |
| 713.01(b)  | Low-Alloy Reinforcing Steel   | Yield Tensile Stress         |   |   |                                  |   |  |  |                          |                |
| 713.01(c)  | Epoxy-Coated Reinforcing Steel  | Elongation                   |   |   |                                  |   |  |  |                          |                |
| 713.01(d)  | Dual-Coated Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(e)  | Continuous Galvanized Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(f)  | Low-Carbon, Chromium, Steel Bars  |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(g)  | Hot-Dipped Galvanized Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(h)  | Solid Stainless Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.02   | Mechanical Splices for Bar Reinforcement  | Ultimate Tensile Stress      | N/A   | 3/size  | Stockpile On-Project             | Connector length plus 12 inches of bar on each end.   | N/A  | T 244  |                          |                |
| 525.5100   | BRIDGE RAILING, GALV. STEEL HAND RAIL/CONC. PARAPET COMB.   | 732.03(d)                    | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)        | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge | N/A                              | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project. | Original manufacturer shipping container On-Project or At-Plant. | 2 Assemblies <sup>15</sup>                                 | N/A                      | ASTM F606      |
| 525.5200<br>525.5210<br>525.5300<br>525.5400<br>525.5500   | BRIDGE RAILING, TEXAS RAIL WITH WINDOWS<br>BRIDGE RAILING, TEXAS RAIL WITHOUT WINDOWS<br>BRIDGE RAILING, CONCRETE F-SHAPE<br>BRIDGE RAILING, CONCRETE SINGLE SLOPE<br>BRIDGE RAILING, CONCRETE VERTICAL FACE  | 501                          | Performance-Based Concrete, Class PCD                         | Air   | <10 CY                           | 1/50 CY (See note 3)  | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172                | ASTM C231      |
|  |   |                              |   | Temperature   |                                  |   |  |  | N/A                      | ASTM C1064     |
|  |   |                              |   | Compressive Strength                                      |                                  |   |  |  | R 100                    | T 22           |
|  |   |                              |   | Spread  |                                  |   |  |  | ASTM C172                | ASTM C1611     |
| 713.01(a)  | Reinforcing Steel   | Ultimate Tensile Stress      | N/A   | 1/Grade/Type <sup>13</sup>                                | Stockpile On-Project             | 6 FT  | N/A  | T 244  |                          |                |
| 713.01(b)  | Low-Alloy Reinforcing Steel   | Yield Tensile Stress         |   |   |                                  |   |  |  |                          |                |
| 713.01(c)  | Epoxy-Coated Reinforcing Steel  | Elongation                   |   |   |                                  |   |  |  |                          |                |
| 713.01(d)  | Dual-Coated Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(e)  | Continuous Galvanized Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(f)  | Low-Carbon, Chromium, Steel Bars  |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(g)  | Hot-Dipped Galvanized Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(h)  | Solid Stainless Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.02   | Mechanical Splices for Bar Reinforcement  | Ultimate Tensile Stress      | N/A   | 3/size  | Stockpile On-Project             | Connector length plus 12 inches of bar on each end.   | N/A  | T 244  |                          |                |
| 531.1500<br>531.1600<br>531.1700<br>531.1800<br>531.1900   | BEARING DEVICE ASSEMBLY, HIGH LOAD MULTI-ROTATIONAL<br>BEARING DEVICE ASSEMBLY, PLAIN ELASTOMERIC PAD<br>BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD<br>BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD W/ EXT. LOAD PLATES<br>REMOVE AND REPLACE EXISTING ANCHOR BOLT | 707.01(e)(1)<br>707.01(e)(2) | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed | Compressive Strength                                      | N/A                              | 1/Placement   | On-Project   | 3 Cubes  | R 64                     | ASTM C109      |
| 540.1000<br>540.2000   | PRECAST CONCRETE STRUCTURE<br>PRECAST CONCRETE DECK PANELS  | 501                          | Performance-Based Structural Concrete                         | Air   | <10 CY                           | 1/50 CY (See note 3)  | At-Plant <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172                | ASTM C231      |
|  |   |                              |   | Temperature   |                                  |   |  |  | N/A                      | ASTM C1064     |
|  |   |                              |   | Compressive Strength                                      |                                  |   |  |  | R 100                    | T 22           |
|  |   |                              |   | Spread  |                                  |   |  |  | ASTM C172                | ASTM C1611     |
| 707.01(e)(1)<br>707.01(e)(2)   | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed   | Compressive Strength         | N/A   | 1/Placement   | At-Plant or On-Project           | 3 Cubes   | R 64   | ASTM C109  |                          |                |
| 713.01(a)  | Reinforcing Steel   | Ultimate Tensile Stress      | N/A   | 1/Grade/Type <sup>13</sup>                                | Stockpile At-Plant               | 6 FT  | N/A  | T 244  |                          |                |
| 713.01(b)  | Low-Alloy Reinforcing Steel   | Yield Tensile Stress         |   |   |                                  |   |  |  |                          |                |
| 713.01(c)  | Epoxy-Coated Reinforcing Steel  | Elongation                   |   |   |                                  |   |  |  |                          |                |
| 713.01(d)  | Dual-Coated Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(e)  | Continuous Galvanized Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(f)  | Low-Carbon, Chromium, Steel Bars  |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(g)  | Hot-Dipped Galvanized Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(h)  | Solid Stainless Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.02   | Mechanical Splices for Bar Reinforcement  | Ultimate Tensile Stress      | N/A   | 3/size  | Stockpile At-Plant or On-Project | Connector length plus 12 inches of bar on each end.   | N/A  | T 244  |                          |                |
| 541.1000<br>541.1100<br>541.1200<br>541.2000<br>541.2100<br>541.2200<br>541.2300<br>541.2400<br>541.2800 | CONCRETE, CLASS HPAA<br>CONCRETE, CLASS HPA<br>CONCRETE, CLASS HPB<br>CONCRETE, CLASS AA<br>CONCRETE, CLASS A<br>CONCRETE, CLASS B<br>CONCRETE, CLASS C<br>CONCRETE, CLASS D<br>CONCRETE, CLASS SCC   | 541                          | Structural Concrete   | Air   | <10 CY                           | 1/50 CY (See note 3)  | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172                | ASTM C231      |
|  |   |                              |   | Temperature   |                                  |   |  |  | N/A                      | ASTM C1064     |
|  |   |                              |   | Compressive Strength                                      |                                  |   |  |  | R 100                    | T 22           |
|  |   |                              |   | Spread  |                                  |   |  |  | ASTM C172                | ASTM C1611     |
| 541.2900   | CONCRETE, CLASS LW  | 541                          | Structural Concrete   | Air   | <10 CY                           | 1/50 CY (See note 3)  | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172                | ASTM C231      |
| 704.14<br>704.19   | Lightweight Coarse Aggregate for Concrete<br>Lightweight Fine Aggregate for Concrete  |                              |   | Unit Weight   | N/A                              | 1/Placement   | Stockpile at Plant   | 0.5 to 2.0 CF  | ASTM C172                | ASTM C1611     |
| 704.19   | Lightweight Fine Aggregate for Concrete   |                              |   |   |                                  |   |  |  | R 90                     | T 19           |
| 541.4500<br>541.4600   | FLOWABLE FILL<br>FLOWABLE FILL, EXCAVATABLE   | 541                          | Structural Concrete   | Air   | N/A                              | 1/50 CY (See note 3)  | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172                | ASTM C231      |
|  |   |                              |   | Temperature   |                                  |   |  |  | N/A                      | ASTM C1064     |
|  |   |                              |   | Compressive Strength                                      |                                  |   |  |  | ASTM D5971 <sup>16</sup> | ASTM D4832     |
|  |   |                              |   | Spread  |                                  |   |  |  | R 64                     | ASTM C109      |
| 541.5400   | MORTAR, TYPE IV   | 707.01(e)(1)<br>707.01(e)(2) | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed | Compressive Strength                                      | N/A                              | 1/Placement   | On-Project   | 3 Cubes  | R 64                     | ASTM C109      |
| 542.1000   | HIGH PERFORMANCE CONCRETE, RAPID SET  | 542                          | High Performance Concrete, Rapid Set                          | Air   | <10 CY                           | 1/50 CY (See note 3)  | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172                | ASTM C231      |
|  |   |                              |   | Temperature   |                                  |   |  |  | N/A                      | ASTM C1064     |
|  |   |                              |   | Compressive Strength                                      |                                  |   |  |  | R 100                    | T 22           |
|  |   |                              |   | Spread  |                                  |   |  |  | ASTM C172                | ASTM C1611     |
| 543.1000<br>544.1000   | CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE<br>PREFABRICATED BRIDGE UNIT SUPERSTRUCTURE  | 501                          | Performance-Based Structural Concrete                         | Air <sup>8</sup>  | N/A                              | 1/Project   | At-Plant <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172                | ASTM C231      |
|  |   |                              |   | Temperature <sup>8</sup>                                  |                                  |   |  |  | N/A                      | ASTM C1064     |
|  |   |                              |   | Compressive Strength <sup>8</sup>                         |                                  |   |  |  | R 100                    | T 22           |
|  |   |                              |   | Spread <sup>8</sup>                                       |                                  |   |  |  | ASTM C172                | ASTM C1611     |
| 707.01(e)(1)<br>707.01(e)(2)   | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed   | Compressive Strength         | N/A   | 1/Placement   | At-Plant or On-Project           | 3 Cubes   | R 64   | ASTM C109  |                          |                |
| 713.01(a)  | Reinforcing Steel   | Ultimate Tensile Stress      | N/A   | 1/Grade/Type <sup>13</sup>                                | Stockpile At-Plant               | 6 FT  | N/A  | T 244  |                          |                |
| 713.01(b)  | Low-Alloy Reinforcing Steel   | Yield Tensile Stress         |   |   |                                  |   |  |  |                          |                |
| 713.01(c)  | Epoxy-Coated Reinforcing Steel  | Elongation                   |   |   |                                  |   |  |  |                          |                |
| 713.01(d)  | Dual-Coated Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(e)  | Continuous Galvanized Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(f)  | Low-Carbon, Chromium, Steel Bars  |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(g)  | Hot-Dipped Galvanized Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.01(h)  | Solid Stainless Reinforcing Steel   |                              |   |   |                                  |   |  |  |                          |                |
| 713.04(a)  | Prestressing Strand   | Tensile Strength             | N/A   | 1/Project   | At-Plant                         | 6 FT  | N/A  | T 244  |                          |                |

TABLE 1: MATERIAL SAMPLING & TESTING FREQUENCY CHART, QUALITY ASSURANCE PLAN LEVELS 1 & 2

| PAY ITEM NUMBER  | PAY ITEM DESCRIPTION   | MATERIAL CODE  | MATERIAL DESCRIPTION   | MATERIAL PROPERTY   | MINOR QUANTITY THRESHOLD | MINIMUM ACCEPTANCE SAMPLING FREQUENCY (PER PROJECT)  | ACCEPTANCE SAMPLING LOCATION                                     | SAMPLE SIZE <sup>2</sup>  | PROCEDURES <sup>1</sup>           |  |
|--|--|--|--|---|--------------------------|--|--|---|-----------------------------------|--|
|  |  |  |  |   |                          |  |  |   | SAMPLING METHOD                   | TESTING METHOD                                     |
| 580.1001<br>580.1002<br>580.1003<br>580.1101<br>580.1102<br>580.1103 | REPAIR OF CONCRETE SUPERSTRUCTURE SURFACE, CLASS I<br>REPAIR OF CONCRETE SUPERSTRUCTURE SURFACE, CLASS II<br>REPAIR OF CONCRETE SUPERSTRUCTURE SURFACE, CLASS III<br>REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I<br>REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II<br>REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III | 541  | Structural Concrete  | Air<br>Temperature<br>Compressive Strength                          | <10 CY                   | 1/50 CY (See note 3)<br><br>1 per first 25 units (bags), then 1 per 100 units after.   | On-Project <sup>7</sup><br><br>On-Project.                       | 1 CF for compressive strength or wheelbarrow for all tests<br><br>3 Cubes | ASTM C172<br>N/A<br>R 100<br>R 64 | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C109       |
| 580.1201<br>580.1202<br>580.1203<br>580.1204                         | CONCRETE REPAIR MATERIAL, TYPE I<br>CONCRETE REPAIR MATERIAL, TYPE II<br>CONCRETE REPAIR MATERIAL, TYPE III<br>CONCRETE REPAIR MATERIAL, TYPE IV   | 780.01(a)<br>780.01(b)<br>780.01(c)<br>780.01(d)   | Concrete Repair Material, Type I<br>Concrete Repair Material, Type II<br>Concrete Repair Material, Type III<br>Concrete Repair Material, Type IV   | Compressive Strength  | N/A                      | 1 per first 25 units (bags), then 1 per 100 units after.   | On-Project, as close to point of deposit as possible.            | 1 CF  | ASTM C172                         | ASTM C231  |
| 604.1000<br>604.1100   | CONCRETE CATCH BASIN WITH CAST IRON GRATE<br>CONCRETE MANHOLE WITH CAST IRON COVER   | 541  | Concrete, Class B  | Air<br>Temperature<br>Compressive Strength                          | <10 CY                   | 1/50 CY (See note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests                | ASTM C172<br>N/A<br>R 100         | ASTM C231<br>ASTM C1064<br>T 22                    |
| 605.1000<br>605.1100<br>605.1300<br>605.2000<br>605.2100<br>605.2300 | UNDERDRAIN PIPE, 6 INCHES<br>UNDERDRAIN PIPE, 8 INCHES<br>UNDERDRAIN PIPE, 12 INCHES<br>UNDERDRAIN CARRIER PIPE, 6 INCHES<br>UNDERDRAIN CARRIER PIPE, 8 INCHES<br>UNDERDRAIN CARRIER PIPE, 12 INCHES   | 704.16   | Drainage Aggregate   | Gradation   | <600 CY                  | 1/3,000 CY   | In-Place, Berm/Window, or Stockpile                              | 55  | R 90                              | T 27   |
| 616.2700<br>616.2800   | CAST-IN-PLACE CONCRETE CURB, TYPE A<br>CAST-IN-PLACE CONCRETE CURB, TYPE B   | 541  | Concrete, Class B  | Air<br>Temperature<br>Compressive Strength                          | <10 CY                   | 1/75 CY <sup>4</sup>   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests                | ASTM C172<br>N/A<br>R 100         | ASTM C231<br>ASTM C1064<br>T 22                    |
| 616.3050<br>616.3150<br>616.4000<br>616.4700                         | BITUMINOUS CONCRETE CURB, TYPE A<br>BITUMINOUS CONCRETE CURB, TYPE B<br>REMOVING AND RESETTING CURB<br>BITUMINOUS CONCRETE GUTTERS AND TRAFFIC ISLANDS   | 716.02   | Bituminous Concrete Mixtures   | Slip AC Content<br>Gradation  | N/A                      | 1/Project  | Truck @ Plant or On-Project                                      | 25  | N/A<br>R 97 <sup>9</sup>          | Truck Slip Calculation<br>T 164 or T 308, T 30     |
| 618.1000<br>618.1100<br>618.1200<br>618.1300                         | PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH<br>PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH<br>REINFORCED PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH<br>REINFORCED PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH   | 541  | Concrete, Class B  | Air<br>Temperature<br>Compressive Strength                          | <10 CY                   | 1/75 CY <sup>4</sup>   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests                | ASTM C172<br>N/A<br>R 100         | ASTM C231<br>ASTM C1064<br>T 22                    |
| 618.1500   | BITUMINOUS CONCRETE SIDEWALK   | 716.02   | Bituminous Concrete Mixtures   | Slip AC Content<br>Gradation  | <200 TONS (of mix)       | 1/Project  | Truck @ Plant or On-Project <sup>9</sup>                         | 25  | N/A<br>R 97                       | Truck Slip Calculation<br>T 164 or T 308, T 30     |
| 618.4005<br>618.4108   | STAMPED CONCRETE APRON, 5 INCH.<br>STAMPED CONCRETE APRON, 8 INCH  | 541  | Concrete, Class B  | Air<br>Temperature<br>Compressive Strength                          | <10 CY                   | 1/75 CY <sup>4</sup>   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests                | ASTM C172<br>N/A<br>R 100         | ASTM C231<br>ASTM C1064<br>T 22                    |
| 654.0010<br>654.0015   | DRY SWALE<br>DRY SWALE WITH UNDERDRAIN   | 704.01<br>704.01<br>704.16   | Fine Aggregate for Concrete<br>Fine Aggregate for Concrete<br>Drainage Aggregate   | Gradation   | <300 CY<br><300 CY       | 1/5,000 CY<br>1/5,000 CY   | Stockpile On-Project<br>Stockpile On-Project                     | 22<br>22  | R 90<br>R 90                      | T 27, T 11<br>T 27, T 11                           |
| 654.0020   | GRAVEL WETLAND   | 704.02(b)<br>704.02(d)<br>704.08<br>704.16   | Coarse Aggregate for Concrete, 3/8 Inch<br>Coarse Aggregate for Concrete, 1-1/2 Inch<br>Granular Backfill for Structures<br>Drainage Aggregate   | Gradation   | <300 CY                  | 1/5,000 CY   | Stockpile On-Project   | 22  | R 90                              | T 27, T 11   |
| 654.0030<br>654.0040   | SURFACE SAND FILTER<br>UNDERGROUND SAND FILTER   | 704.01   | Fine Aggregate for Concrete  | Gradation   | <300 CY                  | 1/5,000 CY   | Stockpile On-Project   | 22  | R 90                              | T 27, T 11   |
| 654.0060   | BIORETENTION AREA  | 654.02A  | Composition of Bioretention Soil   | Gradation<br>Clay Content (Hydrometer)<br>Organics                  | N/A                      | 1/Project  | Stockpile On-Project, or Stockpile at Facility                   | 2 for all tests.  | R 90                              | T 88<br>T 88<br>T 267                              |
| 662.0010<br>662.0360<br>663.0100<br>663.0200                         | RAILROAD BALLAST<br>BALLASTED TRACK CONSTRUCTION WITH CWR<br>RECONSTRUCT RAILROAD-HIGHWAY GRADE CROSSING<br>PRECAST CONCRETE PANEL GRADE CROSSING SYSTEM   | 704.03(a)<br>704.03(b)   | Aggregate for Railroad Ballast, Type 3<br>Aggregate for Railroad Ballast, Type 4 <sup>12</sup>   | Gradation   | N/A                      | 1/Project  | In-Place, Stockpile on Project, or Stockpile at Facility         | 22  | R 90                              | T 27, T 11   |
| 675.4100<br>675.4200   | FOUNDATION FOR W-SHAPE STEEL POST, 24 INCH DIAMETER<br>FOUNDATION FOR W-SHAPE STEEL POST, 30 INCH DIAMETER   | 541  | Concrete, Class B  | Air<br>Temperature<br>Compressive Strength                          | <10 CY                   | 1/50 CY (See Note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests                | ASTM C172<br>N/A<br>R 100         | ASTM C231<br>ASTM C1064<br>T 22                    |
| 675.4300   | FOUNDATION FOR TUBULAR STEEL POST  | 713.01   | Bar Reinforcement  | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation       | <10 CY                   | 1/Grade/Source   | On-Project or At-Plant   | 6 FT  | N/A                               | T 244  |
| 677.1200<br>677.1300<br>677.2200<br>677.2300                         | OVERHEAD TRAFFIC SIGN SUPPORT, CANTILEVER<br>OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT<br>OVERHEAD TRAFFIC SIGN SUPPORT, CANTILEVER WITH LIGHTING<br>OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT WITH LIGHTING   | 541  | Concrete, Class B  | Air<br>Temperature<br>Compressive Strength                          | <10 CY                   | 1/50 CY (See Note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests                | ASTM C172<br>N/A<br>R 100         | ASTM C231<br>ASTM C1064<br>T 22                    |
|  |  | 713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation       | N/A                      | 1/Grade/Type <sup>13</sup>   | Stockpile On-Project   | 6 FT  | N/A                               | T 244  |
|  |  | 714.04<br>714.05   | Carbon Steel Bolts, Nuts, and Washers<br>High-Strength Structural Bolts and Assemblies, 120 KSI  | Ultimate Tensile Stress<br>Rockwell Hardness<br>Rotational Capacity | N/A                      | 1/each combination of bolt lot, nut lot, washer lot, and DTI lot (1 per each combination Tension Control Assembly Bolt production lot if used) <sup>14</sup> | Original manufacturer shipping container On-Project or At-Plant. | 2 Assemblies <sup>15</sup>  | N/A                               | ASTM F606<br>ASTM F3125<br>ASTM F606<br>ASTM F3125 |
|  |  | 714.09   | Anchor Bolts for Traffic Signals, Lighting, and Overhead Signs   | Ultimate Tensile Stress   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.  | Original manufacturer shipping container On-Project or At-Plant. | 1 bolt, including threads (at least 18" long)                             | N/A                               | ASTM F606  |
| 678.2010   | MAST ARM POLE FOUNDATION   | 541  | Concrete, Class HPA  | Air<br>Temperature<br>Compressive Strength                          | <10 CY                   | 1/50 CY (See Note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests                | ASTM C172<br>N/A<br>R 100         | ASTM C231<br>ASTM C1064<br>T 22                    |
|  |  | 713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation       | N/A                      | 1/Grade/Type <sup>13</sup>   | Stockpile On-Project   | 6 FT  | N/A                               | T 244  |
|  |  | 714.09   | Anchor Bolts for Traffic Signals, Lighting, and Overhead Signs   | Ultimate Tensile Stress<br>Rockwell Hardness                        | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.  | Original manufacturer shipping container On-Project or At-Plant. | 1 bolt, including threads (at least 18" long)                             | N/A                               | ASTM F606  |

TABLE 1: MATERIAL SAMPLING & TESTING FREQUENCY CHART, QUALITY ASSURANCE PLAN LEVELS 1 & 2

| PAY ITEM NUMBER      | PAY ITEM DESCRIPTION                                 | MATERIAL CODE | MATERIAL DESCRIPTION | MATERIAL PROPERTY                          | MINOR QUANTITY THRESHOLD | MINIMUM ACCEPTANCE SAMPLING FREQUENCY (PER PROJECT) | ACCEPTANCE SAMPLING LOCATION | SAMPLE SIZE <sup>2</sup>                                   | PROCEDURES <sup>1</sup>   |                                 |  |  |   |     |                            |                      |      |     |       |
|----------------------|--|---------------|----------------------|--|--------------------------|---|------------------------------|--|---------------------------|---------------------------------|--|--|---|-----|----------------------------|----------------------|------|-----|-------|
|                      |  |               |                      |  |                          |   |                              |  | SAMPLING METHOD           | TESTING METHOD                  |  |  |   |     |                            |                      |      |     |       |
| 678.2015<br>678.2020 | PEDESTAL POST ASSEMBLY<br>PEDESTRIAN SIGNAL ASSEMBLY | 541           | Concrete, Class HPA  | Air<br>Temperature<br>Compressive Strength | <10 CY                   | 1/50 CY (See Note 3)                                | On-Project <sup>7</sup>      | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100 | ASTM C231<br>ASTM C1064<br>T 22 |  |  |   |     |                            |                      |      |     |       |
| 679.4600             | STREET LIGHT ASSEMBLY                                | 541           | Concrete, Class B    | Air<br>Temperature<br>Compressive Strength | <10 CY                   | 1/50 CY (See Note 3)                                | On-Project <sup>7</sup>      | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100 | ASTM C231<br>ASTM C1064<br>T 22 |  |  |   |     |                            |                      |      |     |       |
|                      |  |               |                      |  |                          |   |                              |  |                           |                                 | 713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation | N/A | 1/Grade/Type <sup>13</sup> | Stockpile On-Project | 6 FT | N/A | T 244 |
|                      |  |               |                      |  |                          |   |                              |  |                           |                                 |  |  |   |     |                            |                      |      |     |       |

- Notes:
- Procedures are AASHTO procedures unless otherwise noted.
  - Sample size is in pounds unless otherwise noted. The sample size should be selected based on the maximum nominal aggregate size (See AASHTO T 27, Section 7.1). For example, if the material visually passes a 2", 1.5", or 1" sieve then the sample size is 220 lbs, 165 lbs, and 110 lbs respectively.
  - Total placement for day split into equal sublots not to exceed 50 CY, test yardage chosen randomly. The test yardage is used to determine which load to test with proper sample collection techniques followed. Check first load for temperature and air content. This will not be counted as the acceptance test for the first sublot. If the first load is determined to be out-of-specification then the Contractor must test each consecutive load until 3 consecutive passing loads are tested. VTrans will check 4th consecutive load to verify. Deck pours shall have no less than 3 acceptance tests, regardless of total CY placed. Acceptance tests shall be a minimum of 2 standard cured cylinder specimens in accordance with applicable test method. Acceptance tests for 541.2900 Concrete, Class LW shall be a minimum of 3 standard cured cylinder specimens in accordance with the applicable test method.
  - Temperature and air content will be checked at the beginning of the first load. This will not be counted as the acceptance test.
  - Acceptance tests are to be performed by Owner representative at the frequency indicated, per project. However, all QC tests are to be witnessed by Owner representative. Minimum of six Compressive Strength for determining detensioning, to be cured with the piece. Four specimens to determine 28 day and shipping strengths and are to be cured with the piece until it is stripped and then standard cured.
  - Acceptance tests are to be performed by Owner representative at the frequency indicated, per project. However, all QC tests are to be witnessed by Owner representative. As a minimum, the first load as well as the load that Compressive strength are fabricated from should be tested by QC.
  - Concrete sampled on-project shall be sampled from the concrete delivery truck chute. Concrete sampled at precast concrete facilities shall be sampled as close to the point of deposit as practical.
  - Aggregate shall be sampled in accordance with AASHTO R 90 stockpile vertical face method, stockpile horizontal face method, roadway in-place method, or berm/windrow method as applicable.
  - Bituminous mixtures sampled on project shall be sampled in accordance with with AASHTO R 97 hopper method.
  - For projects less than 1,250 CY of subbase material, the Agency shall be responsible for testing and projects 1,250 CY and over the Contractor is responsible for the determination of the target density. For each source, subbase materials shall be sampled and tested once for the first 1,250 CY an then once every 3,000 CY thereafter.
  - Standard HMA QA Lot is 3,000 Tons.
  - Acceptance testing for Aggregate for Railroad Ballast, Type 4 is only required when installed on mainline.
  - Type is the respective material specification (ex. 713.01(a) Reinforcing Steel).
  - Required only when incorporated into the project for main member connections as designated in the Contract or as defined in 714.01, or other connections as deemed necessary by the Resident Engineer.
  - An assembly shall consist of a bolt, washer, nut, and DTI.
  - Molds shall be cut and taped prior to filling in accordance with ACI 229, Section 8.4.
  - Acceptance testing frequencies for moisture and density testing shall only be completed on the final pass of reclamation.
  - Moisture testing not required for nonstructural or ground contact use.

TABLE 1: MATERIAL SAMPLING & TESTING FREQUENCY CHART, QUALITY ASSURANCE PLAN LEVEL 3

| PAY ITEM NUMBER | PAY ITEM DESCRIPTION                          | PAY ITEM UNIT | MATERIAL CODE | MATERIAL DESCRIPTION                      | MATERIAL PROPERTY  | MINOR QUANTITY THRESHOLD | MINIMUM ACCEPTANCE SAMPLING FREQUENCY (PER PROJECT)          | ACCEPTANCE SAMPLING LOCATION   | SAMPLE SIZE <sup>2</sup>                                   | PROCEDURES <sup>1</sup>         |  |
|-----------------|---|---------------|---------------|---|--|--------------------------|--|--|--|---------------------------------|--|
|                 |   |               |               |   |  |                          |  |  |  | SAMPLING METHOD                 | TESTING METHOD                                     |
| 203.3000        | EARTH BORROW                                  | CY            | 703.02        | Earth Borrow                              | Moisture-Density<br>Moisture<br>Density                    | <300 CY                  | 1/Soil Type<br>1/2,000 CY<br>1/2,000 CY                      | In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place  | 50<br>2<br>N/A   | R 90<br>N/A<br>N/A              | T 99<br>T 255 or T 310<br>T 310                    |
| 203.3100        | SAND BORROW                                   | CY            | 703.03        | Sand Borrow and Cushion                   | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY                  | 1/Source<br>1/Source<br>1/Source<br>1/Source                 | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | 22<br>50<br>20<br>N/A                                      | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
| 203.3200        | GRANULAR BORROW                               | CY            | 703.04        | Granular Borrow                           | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY                  | 1/Source<br>1/Source<br>1/Source<br>1/Source                 | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | 22<br>50<br>2<br>N/A                                       | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
| 203.3500        | GRAVEL FILTER FOR SLOPE STABILIZATION         | CY            | 704.07        | Gravel Filter for Slope Stabilization     | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY                  | 1/Source<br>1/Source<br>1/Source<br>1/Source                 | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>50<br>20<br>N/A                              | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
| 204.3000        | GRANULAR BACKFILL FOR STRUCTURES              | CY            | 704.08        | Granular Backfill for Structures          | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY                  | 1/Source<br>1/Source<br>1/Source<br>1/Source                 | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>30<br>N/A                             | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
| 217.1000        | REINFORCED SOIL SLOPE                         | SY            | 704.05(b)     | Crushed Gravel for Subbase, Fine Graded   | Gradation  | <300 CY                  | 1/Source   | In-Place, Berm/Window, or Stockpile  | See Note 2   | R 90                            | T 27, T 11   |
| 217.1000        | REINFORCED SOIL SLOPE                         | SY            | 703.04        | Granular Borrow                           | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY                  | 1/3,000 CY<br>1/10,000 CY/Source<br>1/2,000 CY<br>1/2,000 CY | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | 22<br>50<br>2<br>N/A                                       | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
| 219.1000        | SLOPE STABILIZATION NAIL                      | LF            | 707.01(d)     | Mortar, Type III                          | Compressive Strength                                       | N/A                      | 1/150 LF   | On-Project   | 3 Cubes  | R 64                            | ASTM C109  |
| 219.2000        | SLOPE STABILIZATION SYSTEM, SHOTCRETE FACING  | SF            | 760.02        | Shotcrete                                 | Compressive Strength<br>Encapsulation<br>Boiled Absorption | N/A                      | 1/3,000 SF   | On-Project   | 1 Production Test Panel (3 Cores/Panel)                    | ASTM C1140                      | T 22 or ASTM C39<br>Visual Inspection<br>ASTM C642 |
| 221.1000        | ROCK SLOPE STABILIZATION DOWEL                | LF            | 707.01(d)     | Mortar, Type III                          | Compressive Strength                                       | N/A                      | 1/150 LF   | On-Project   | 3 Cubes  | R 64                            | ASTM C109  |
| 221.2000        | ROCK SLOPE STABILIZATION ANCHOR               | LF            |               |   |  |                          |  |  |  |                                 |  |
| 221.5000        | ROCK SLOPE STABILIZATION NAIL                 | LF            |               |   |  |                          |  |  |  |                                 |  |
| 221.5000        | ROCK SLOPE STABILIZATION SHOTCRETE            | CY            | 760.02        | Shotcrete                                 | Compressive Strength<br>Encapsulation<br>Boiled Absorption | N/A                      | 1/50 CY  | On-Project   | 1 Production Test Panel (3 Cores/Panel)                    | ASTM C1140                      | T 22 or ASTM C39<br>Visual Inspection<br>ASTM C642 |
| 225.0300        | RETAINING WALL, CAST-IN-PLACE CONCRETE        | LS            | 501           | Performance Based Concrete, Class PCS     | Air<br>Temperature<br>Compressive Strength<br>Spread       | <10 CY                   | 1/50 CY (See note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>R 100<br>ASTM C172 | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611      |
| 225.0400        | RETAINING WALL, PRECAST CONCRETE              | LS            |               |   |  |                          |  |  |  |                                 |  |
| 225.0500        | RETAINING WALL, CONCRETE                      | LS            |               |   |  |                          |  |  |  |                                 |  |
|                 |   |               | 704.08        | Granular Backfill for Structures          | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY                  | 1/3,000 CY<br>N/A<br>1/500 CY<br>1/500 CY                    | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>30<br>N/A                             | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
|                 |   |               | 704.16        | Drainage Aggregate                        | Gradation  | <600 CY                  | 1/3,000 CY   | In-Place, Berm/Window, or Stockpile  | 55   | R 90                            | T 27   |
|                 |   |               | 713.01(d)     | Dual-Coated Reinforcing Steel             | Ultimate Tensile Stress                                    | N/A                      | 1/Grade/Type <sup>13</sup>                                   | Stockpile On-Project   | 6 ft   | N/A                             | T 244  |
|                 |   |               | 713.01(e)     | Continuous Galvanized Reinforcing Steel   | Yield Tensile Stress                                       | N/A                      | 1/Grade/Type <sup>13</sup>                                   | Stockpile On-Project   | 6 ft   | N/A                             | T 244  |
|                 |   |               | 713.01(f)     | Low-Carbon, Chromium, Steel Bars          | Elongation   | N/A                      | 1/Grade/Type <sup>13</sup>                                   | Stockpile On-Project   | 6 ft   | N/A                             | T 244  |
|                 |   |               | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel   | Elongation   | N/A                      | 1/Grade/Type <sup>13</sup>                                   | Stockpile On-Project   | 6 ft   | N/A                             | T 244  |
|                 |   |               | 713.02        | Mechanical Splices for Bar Reinforcement  | Ultimate Tensile Stress                                    | N/A                      | 3/size   | Stockpile On-Project   | Connector length plus 12 inches of bar on each end.        | N/A                             | T 244  |
| 227.0100        | RETAINING WALL, MECHANICALLY STABILIZED EARTH | LS            | 704.16        | Drainage Aggregate                        | Gradation  | <600 CY                  | 1/3,000 CY   | In-Place, Berm/Window, or Stockpile  | 55   | R 90                            | T 27   |
|                 |   |               | 704.18        | Select Backfill for MSE Structures        | Gradation<br>Moisture-Density<br>Moisture<br>Density       | N/A                      | 1/3,000 CY<br>1/10,000 CY<br>1/500 CY<br>1/500 CY            | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>30<br>N/A                             | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 99<br>T 255 or T 310<br>T 310      |
|                 |   |               | 713.01(d)     | Dual-Coated Reinforcing Steel             | Ultimate Tensile Stress                                    | N/A                      | 1/Grade/Type <sup>13</sup>                                   | Stockpile On-Project   | 6 ft   | N/A                             | T 244  |
|                 |   |               | 713.01(e)     | Continuous Galvanized Reinforcing Steel   | Yield Tensile Stress                                       | N/A                      | 1/Grade/Type <sup>13</sup>                                   | Stockpile On-Project   | 6 ft   | N/A                             | T 244  |
|                 |   |               | 713.01(f)     | Low-Carbon, Chromium, Steel Bars          | Elongation   | N/A                      | 1/Grade/Type <sup>13</sup>                                   | Stockpile On-Project   | 6 ft   | N/A                             | T 244  |
|                 |   |               | 713.01(g)     | Hot-Dipped Galvanized Reinforcing Steel   | Elongation   | N/A                      | 1/Grade/Type <sup>13</sup>                                   | Stockpile On-Project   | 6 ft   | N/A                             | T 244  |
|                 |   |               | 713.02        | Mechanical Splices for Bar Reinforcement  | Ultimate Tensile Stress                                    | N/A                      | 3/size   | Stockpile On-Project   | Connector length plus 12 inches of bar on each end.        | N/A                             | T 244  |
| 301.1500        | SUBBASE OF GRAVEL                             | CY            | 704.04        | Gravel for Subbase                        | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY                  | 1/Source<br>1/Source <sup>10</sup><br>1/Source<br>1/Source   | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>N/A<br>N/A                            | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 180<br>T 310<br>T 310              |
| 301.2500        | SUBBASE OF CRUSHED GRAVEL, COARSE GRADED      | CY            | 704.05(c)     | Crushed Gravel for Subbase, Coarse Graded | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY                  | 1/Source<br>1/Source <sup>10</sup><br>1/Source<br>1/Source   | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>N/A<br>N/A                            | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 180<br>T 310<br>T 310              |
| 301.2600        | SUBBASE OF CRUSHED GRAVEL, FINE GRADED        | CY            | 704.05(b)     | Crushed Gravel for Subbase, Fine Graded   | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY/650 TONS         | 1/Source<br>1/Source <sup>10</sup><br>1/Source<br>1/Source   | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>N/A<br>N/A                            | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 180<br>T 310<br>T 310              |
| 301.2800        | SUBBASE OF CRUSHED GRAVEL, FINE GRADED        | TON           |               |   |  |                          |  |  |  |                                 |  |
| 301.3500        | SUBBASE OF DENSE GRADED CRUSHED STONE         | CY            | 704.06        | Dense Graded Crushed Stone for Subbase    | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <300 CY                  | 1/Source<br>1/Source <sup>10</sup><br>1/Source<br>1/Source   | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>N/A<br>N/A                            | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 180<br>T 310<br>T 310              |
| 301.4000        | SUBBASE, RAP                                  | TON           | 301.02        | RAP                                       | Gradation  | <500 TONS                | 1/Source   | In-Place, Berm/Window, or Stockpile  | See Note 2   | R 90                            | T 27, T 11   |
|                 |   |               | 704.05(b)     | Crushed Gravel for Subbase, Fine Graded   | Gradation<br>Moisture-Density<br>Moisture<br>Density       | <500 TONS                | 1/Source<br>1/Source <sup>10</sup><br>1/Source<br>1/Source   | In-Place, Berm/Window, or Stockpile<br>In-Place, Berm/Window, or Stockpile<br>In-Place<br>In-Place | See Note 2<br>250<br>N/A<br>N/A                            | R 90<br>R 90<br>N/A<br>N/A      | T 27, T 11<br>T 180<br>T 310<br>T 310              |
| 310.0100        | FULL DEPTH RECLAMATION                        | SY            | 310.04(c)     | Full Depth Reclamation                    | Moisture-Density<br>Moisture<br>Density                    | N/A                      | 1/Project <sup>17</sup>                                      | In-Place, Berm/Window, or Stockpile  | 250  | R 90                            | T 180  |
|                 |   |               |               |   |  |                          |  |  |  |                                 |  |
| 311.0100        | FULL DEPTH RECLAMATION, CALCIUM CHLORIDE      | SY            | 311.04(d)     | Full Depth Reclamation, Calcium Chloride  | Moisture-Density<br>Moisture<br>Density                    | N/A                      | 1/Project <sup>17</sup>                                      | In-Place, Berm/Window, or Stockpile  | 250  | R 90                            | T 180  |
|                 |   |               |               |   |  |                          |  |  |  |                                 |  |
| 312.0100        | FULL DEPTH RECLAMATION, EMULSION              | SY            | 312.01(f)     | Full Depth Reclamation, Emulsion          | Moisture-Density<br>Moisture<br>Density                    | N/A                      | 1/Project <sup>17</sup>                                      | In-Place, Berm/Window, or Stockpile  | 250  | R 90                            | T 180  |
|                 |   |               |               |   |  |                          |  |  |  |                                 |  |

TABLE 1: MATERIAL SAMPLING & TESTING FREQUENCY CHART, QUALITY ASSURANCE PLAN LEVEL 3

Table with 11 main columns: PAY ITEM NUMBER, PAY ITEM DESCRIPTION, PAY ITEM UNIT, MATERIAL CODE, MATERIAL DESCRIPTION, MATERIAL PROPERTY, MINOR QUANTITY THRESHOLD, MINIMUM ACCEPTANCE SAMPLING FREQUENCY (PER PROJECT), ACCEPTANCE SAMPLING LOCATION, SAMPLE SIZE, and PROCEDURES (SAMPLING METHOD, TESTING METHOD). Rows include various materials like asphalt, aggregate, concrete, and steel.

TABLE 1: MATERIAL SAMPLING & TESTING FREQUENCY CHART, QUALITY ASSURANCE PLAN LEVEL 3

| PAY ITEM NUMBER  | PAY ITEM DESCRIPTION  | PAY ITEM UNIT              | MATERIAL CODE  | MATERIAL DESCRIPTION   | MATERIAL PROPERTY   | MINOR QUANTITY THRESHOLD | MINIMUM ACCEPTANCE SAMPLING FREQUENCY (PER PROJECT)  | ACCEPTANCE SAMPLING LOCATION                                     | SAMPLE SIZE <sup>2</sup>                                   | PROCEDURES <sup>1</sup>                |  |
|--|---|----------------------------|--|--|---|--------------------------|--|--|--|--|--|
|  |   |                            |  |  |   |                          |  |  |  | SAMPLING METHOD                        | TESTING METHOD                                     |
| 510.2100<br>510.2200<br>510.2300                         | PRESTRESSED CONCRETE BOX BEAMS<br>PRESTRESSED CONCRETE VOIDED SLABS<br>PRESTRESSED CONCRETE GIRDERS   | LF<br>LF<br>LF             | 501  | Performance-Based Structural Concrete  | Air<br>Temperature<br>Compressive Strength<br>Spread  | <10 CY                   | 1/Project <sup>5</sup>   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100<br>ASTM C172 | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611      |
|  |   |                            | 707.01(e)(1)<br>707.01(e)(2)   | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed  | Compressive Strength  | N/A                      | 1/Placement  | On-Project   | 3 Cubes  | R 64                                   | ASTM C109  |
|  |   |                            | 713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation   | N/A                      | 1/Grade/Type <sup>13</sup>   | Stockpile On-Project   | 6 FT   | N/A                                    | T 244  |
|  |   |                            | 713.06   | Prestressing Strand  | Tensile Strength  | N/A                      | 1/Project  | At-Plant   | 6 FT   | N/A                                    | T 244  |
|  |   |                            | 714.04<br>714.05   | Carbon Steel Bolts, Nuts, and Washers<br>High-Strength Structural Bolts and Assemblies, 120 KSI  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge<br>Rockwell Hardness<br>Rotational Capacity | N/A                      | 1/each combination of bolt lot, nut lot, washer lot, and DTI lot (1 per each combination Tension Control Assembly Bolt production lot if used) <sup>14</sup> | Original manufacturer shipping container On-Project or At-Plant. | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606<br>ASTM F3125<br>ASTM F606<br>ASTM F3125 |
| 510.2400   | GROUTING SHEAR KEYS   | LF                         | 707.01(e)(1)<br>707.01(e)(2)   | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed  | Compressive Strength  | N/A                      | 1/Placement  | On-Project   | 3 Cubes  | R 64                                   | ASTM C109  |
| 510.2500<br>510.2600<br>510.4000                         | PRESTRESSED CONCRETE SOLID SLABS<br>PRESTRESSED CONCRETE NEXT D BEAMS<br>PRESTRESSED CONCRETE DECK PANELS   | LF<br>LF<br>SF             | 501  | Performance-Based Structural Concrete  | Air<br>Temperature<br>Compressive Strength<br>Spread  | <10 CY                   | 1/Project <sup>5</sup>   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100<br>ASTM C172 | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611      |
|  |   |                            | 707.01(e)(1)<br>707.01(e)(2)   | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed  | Compressive Strength  | N/A                      | 1/Placement  | On-Project   | 3 Cubes  | R 64                                   | ASTM C109  |
|  |   |                            | 713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation   | N/A                      | 1/Grade/Type <sup>13</sup>   | Stockpile On-Project   | 6 FT   | N/A                                    | T 244  |
|  |   |                            | 713.06   | Prestressing Strand  | Tensile Strength  | N/A                      | 1/Project  | At-Plant   | 6 FT   | N/A                                    | T 244  |
|  |   |                            | 714.04<br>714.05   | Carbon Steel Bolts, Nuts, and Washers<br>High-Strength Structural Bolts and Assemblies, 120 KSI  | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge<br>Rockwell Hardness<br>Rotational Capacity | N/A                      | 1/each combination of bolt lot, nut lot, washer lot, and DTI lot (1 per each combination Tension Control Assembly Bolt production lot if used) <sup>14</sup> | Original manufacturer shipping container On-Project or At-Plant. | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606<br>ASTM F3125<br>ASTM F606<br>ASTM F3125 |
| 525.1210   | BRIDGE RAIL REPAIR, HDSB, TYPE I  | LF                         | 732.04(e)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)   | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.  | Original manufacturer shipping container On-Project or At-Plant. | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606  |
| 525.4030<br>525.4130<br>525.4400                         | BRIDGE RAILING, ALUMINUM 3 RAIL<br>BRIDGE RAILING, ALUMINUM 3 RAIL, PEDESTRIAN<br>BRIDGE RAILING, GALVANIZED HDSB/FASCIA MOUNTED/STEEL TUBING   | LF<br>LF<br>LF             | 732.02(e)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)   | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.  | Original manufacturer shipping container On-Project or At-Plant. | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606  |
| 525.5000   | BRIDGE RAILING, GALVANIZED STEEL TUBING/CONCRETE COMBINATION  | LF                         | 501  | Performance-Based Concrete, Class PCD  | Air<br>Temperature<br>Compressive Strength<br>Spread  | <10 CY                   | 1/50 CY (See note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100<br>ASTM C172 | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611      |
|  |   |                            | 713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation   | N/A                      | 1/Grade/Type <sup>13</sup>   | Stockpile On-Project   | 6 FT   | N/A                                    | T 244  |
|  |   |                            | 713.02   | Mechanical Splices for Bar Reinforcement   | Ultimate Tensile Stress   | N/A                      | 3/size   | Stockpile On-Project   | Connector length plus 12 inches of bar on each end.        | N/A                                    | T 244  |
| 525.5100   | BRIDGE RAILING, GALV. STEEL HAND RAIL/CONC. PARAPET COMB.   | LF                         | 732.03(d)  | Anchor Bolts, Nuts, and Washers (Equivalent to 714.07)   | Ultimate Tensile Stress<br>Ultimate Tensile Stress, Wedge   | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.  | Original manufacturer shipping container On-Project or At-Plant. | 2 Assemblies <sup>15</sup>                                 | N/A                                    | ASTM F606  |
| 525.5200<br>525.5210<br>525.5300<br>525.5400<br>525.5500 | BRIDGE RAILING, TEXAS RAIL WITH WINDOWS<br>BRIDGE RAILING, TEXAS RAIL WITHOUT WINDOWS<br>BRIDGE RAILING, CONCRETE F-SHAPE<br>BRIDGE RAILING, CONCRETE SINGLE SLOPE<br>BRIDGE RAILING, CONCRETE VERTICAL FACE  | LF<br>LF<br>LF<br>LF<br>LF | 501  | Performance-Based Concrete, Class PCD  | Air<br>Temperature<br>Compressive Strength<br>Spread  | <10 CY                   | 1/50 CY (See note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100<br>ASTM C172 | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611      |
|  |   |                            | 713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation   | N/A                      | 1/Grade/Type <sup>13</sup>   | Stockpile On-Project   | 6 FT   | N/A                                    | T 244  |
|  |   |                            | 713.02   | Mechanical Splices for Bar Reinforcement   | Ultimate Tensile Stress   | N/A                      | 3/size   | Stockpile On-Project   | Connector length plus 12 inches of bar on each end.        | N/A                                    | T 244  |
| 531.1500<br>531.1600<br>531.1700<br>531.1800<br>531.1900 | BEARING DEVICE ASSEMBLY, HIGH LOAD MULTI-ROTATIONAL<br>BEARING DEVICE ASSEMBLY, PLAIN ELASTOMERIC PAD<br>BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD<br>BEARING DEVICE ASSEMBLY, ELASTOMERIC PAD W/ EXT. LOAD PLATES<br>REMOVE AND REPLACE EXISTING ANCHOR BOLT | EA<br>EA<br>EA<br>EA<br>EA | 707.01(e)(1)<br>707.01(e)(2)   | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed  | Compressive Strength  | N/A                      | 1/Placement  | On-Project   | 3 Cubes  | R 64                                   | ASTM C109  |

TABLE 1: MATERIAL SAMPLING & TESTING FREQUENCY CHART, QUALITY ASSURANCE PLAN LEVEL 3

| PAY ITEM NUMBER  | PAY ITEM DESCRIPTION   | PAY ITEM UNIT                                      | MATERIAL CODE  | MATERIAL DESCRIPTION   | MATERIAL PROPERTY  | MINOR QUANTITY THRESHOLD | MINIMUM ACCEPTANCE SAMPLING FREQUENCY (PER PROJECT)      | ACCEPTANCE SAMPLING LOCATION                          | SAMPLE SIZE <sup>2</sup>                                   | PROCEDURES <sup>1</sup>                      |   |
|--|--|--|--|--|--|--------------------------|--|---|--|--|---|
|  |  |  |  |  |  |                          |  |   |  | SAMPLING METHOD                              | TESTING METHOD                                |
| 540.1000<br>540.2000   | PRECAST CONCRETE STRUCTURE<br>PRECAST CONCRETE DECK PANELS   | LS<br>SF   | 501  | Performance-Based Structural Concrete  | Air<br>Temperature<br>Compressive Strength<br>Spread   | <10 CY                   | 1/Project <sup>5</sup>                                   | At-Plant <sup>7</sup>                                 | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100<br>ASTM C172       | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611 |
|  |  |  | 707.01(e)(1)<br>707.01(e)(2)   | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed  | Compressive Strength   | N/A                      | 1/Placement  | At-Plant or On-Project                                | 3 Cubes  | R 64   | ASTM C109                                     |
|  |  |  | 713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation  | N/A                      | 1/Grade/Type <sup>13</sup>                               | Stockpile At-Plant                                    | 6 FT   | N/A  | T 244   |
|  |  |  | 713.02   | Mechanical Splices for Bar Reinforcement   | Ultimate Tensile Stress  | N/A                      | 3/size   | Stockpile At-Plant or On-Project                      | Connector length plus 12 inches of bar on each end.        | N/A  | T 244   |
| 541.1000<br>541.1100<br>541.1200<br>541.2000<br>541.2100<br>541.2200<br>541.2300<br>541.2400<br>541.2800 | CONCRETE, CLASS HPAA<br>CONCRETE, CLASS HPA<br>CONCRETE, CLASS HPB<br>CONCRETE, CLASS AA<br>CONCRETE, CLASS A<br>CONCRETE, CLASS B<br>CONCRETE, CLASS C<br>CONCRETE, CLASS D<br>CONCRETE, CLASS SCC  | CY<br>CY<br>CY<br>CY<br>CY<br>CY<br>CY<br>CY<br>CY | 541  | Structural Concrete  | Air<br>Temperature<br>Compressive Strength<br>Spread   | <10 CY                   | 1/50 CY (See note 3)                                     | On-Project <sup>7</sup>                               | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100<br>ASTM C172       | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611 |
| 541.2900   | CONCRETE, CLASS LW   | CY   | 541  | Structural Concrete  | Air<br>Temperature<br>Compressive Strength<br>Spread   | <10 CY                   | 1/50 CY (See note 3)                                     | On-Project <sup>7</sup>                               | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100<br>ASTM C172       | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611 |
|  |  |  | 704.14<br>704.19   | Lightweight Coarse Aggregate for Concrete<br>Lightweight Fine Aggregate for Concrete   | Unit Weight  | N/A                      | 1/Placement  | Stockpile at Plant                                    | 0.5 to 2.0 CF  | R 90   | T 19  |
| 541.4500<br>541.4600   | FLOWABLE FILL<br>FLOWABLE FILL, EXCAVATABLE  | CY<br>CY   | 541  | Structural Concrete  | Air<br>Temperature<br>Compressive Strength   | N/A                      | 1/50 CY (See note 3)                                     | On-Project <sup>7</sup>                               | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>ASTM D5971 <sup>16</sup> | ASTM C231<br>ASTM C1064<br>ASTM D4832         |
| 541.5400   | MORTAR, TYPE IV  | CY   | 707.01(e)(1)<br>707.01(e)(2)   | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed  | Compressive Strength   | N/A                      | 1/Placement  | On-Project  | 3 Cubes  | R 64   | ASTM C109                                     |
| 542.1000   | HIGH PERFORMANCE CONCRETE, RAPID SET   | CY   | 542  | High Performance Concrete, Rapid Set   | Air<br>Temperature<br>Compressive Strength<br>Spread   | <10 CY                   | 1/50 CY (See note 3)                                     | On-Project <sup>7</sup>                               | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100<br>ASTM C172       | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611 |
| 543.1000<br>544.1000   | CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE<br>PREFABRICATED BRIDGE UNIT SUPERSTRUCTURE   | LS<br>LF   | 501  | Performance-Based Structural Concrete  | Air <sup>8</sup><br>Temperature <sup>8</sup><br>Compressive Strength <sup>8</sup><br>Spread <sup>8</sup> | N/A                      | 1/Project  | at-Plant <sup>7</sup>                                 | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100<br>ASTM C172       | ASTM C231<br>ASTM C1064<br>T 22<br>ASTM C1611 |
|  |  |  | 707.01(e)(1)<br>707.01(e)(2)   | Mortar, Type IV, Pre-Packaged<br>Mortar, Type IV, Ready Mixed  | Compressive Strength   | N/A                      | 1/Placement  | At-Plant or On-Project                                | 3 Cubes  | R 64   | ASTM C109                                     |
|  |  |  | 713.01(a)<br>713.01(b)<br>713.01(c)<br>713.01(d)<br>713.01(e)<br>713.01(f)<br>713.01(g)<br>713.01(h) | Reinforcing Steel<br>Low-Alloy Reinforcing Steel<br>Epoxy-Coated Reinforcing Steel<br>Dual-Coated Reinforcing Steel<br>Continuous Galvanized Reinforcing Steel<br>Low-Carbon, Chromium, Steel Bars<br>Hot-Dipped Galvanized Reinforcing Steel<br>Solid Stainless Reinforcing Steel | Ultimate Tensile Stress<br>Yield Tensile Stress<br>Elongation  | N/A                      | 1/Grade/Type <sup>13</sup>                               | Stockpile At-Plant                                    | 6 FT   | N/A  | T 244   |
|  |  |  | 713.06   | Prestressing Strand  | Tensile Strength   | N/A                      | 1/Project  | At-Plant  | 6 FT   | N/A  | T 244   |
| 580.1001<br>580.1002<br>580.1003<br>580.1101<br>580.1102<br>580.1103                                     | REPAIR OF CONCRETE SUPERSTRUCTURE SURFACE, CLASS I<br>REPAIR OF CONCRETE SUPERSTRUCTURE SURFACE, CLASS II<br>REPAIR OF CONCRETE SUPERSTRUCTURE SURFACE, CLASS III<br>REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS I<br>REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS II<br>REPAIR OF CONCRETE SUBSTRUCTURE SURFACE, CLASS III | SY<br>SY<br>CY<br>SY<br>SY<br>CY                   | 541  | Structural Concrete  | Air<br>Temperature<br>Compressive Strength   | <10 CY                   | 1/50 CY (See note 3)                                     | On-Project <sup>7</sup>                               | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100                    | ASTM C231<br>ASTM C1064<br>T 22               |
|  |  |  | 780.01(a)<br>780.01(b)<br>780.01(d)<br>780.01(c)   | Concrete Repair Material, Type I<br>Concrete Repair Material, Type II<br>Concrete Repair Material, Type IV<br>Concrete Repair Material, Type III   | Compressive Strength   | N/A                      | 1 per first 25 units (bags), then 1 per 100 units after. | On-Project  | 3 Cubes  | R 64   | ASTM C109                                     |
| 580.1201   | CONCRETE REPAIR MATERIAL, TYPE I   | CF   | 780.01(a)  | Concrete Repair Material, Type I   | Compressive Strength   | N/A                      | 1 per first 25 units (bags), then 1 per 100 units after. | On-Project, as close to point of deposit as possible. | 1 CF   | ASTM C172                                    | ASTM C231                                     |
| 580.1202   | CONCRETE REPAIR MATERIAL, TYPE II  | CF   | 780.01(b)  | Concrete Repair Material, Type II  | Compressive Strength   | N/A                      | 1 per first 25 units (bags), then 1 per 100 units after. | On-Project, as close to point of deposit as possible. | 3 Cubes  | R 64   | ASTM C109                                     |
| 580.1203   | CONCRETE REPAIR MATERIAL, TYPE III   | CF   | 780.01(c)  | Concrete Repair Material, Type III   | Compressive Strength   | N/A                      | 1 per first 25 units (bags), then 1 per 100 units after. | On-Project, as close to point of deposit as possible. | 1 CF   | ASTM C172                                    | ASTM C231                                     |
| 580.1204   | CONCRETE REPAIR MATERIAL, TYPE IV  | CY   | 780.01(d)  | Concrete Repair Material, Type IV  | Compressive Strength   | N/A                      | 1 per first 25 units (bags), then 1 per 100 units after. | On-Project, as close to point of deposit as possible. | 3 Cubes  | R 64   | ASTM C109                                     |
| 604.1000<br>604.1100   | CONCRETE CATCH BASIN WITH CAST IRON GRATE<br>CONCRETE MANHOLE WITH CAST IRON COVER   | EA<br>EA   | 541  | Concrete, Class B  | Air<br>Temperature<br>Compressive Strength   | <10 CY                   | 1/50 CY (See note 3)                                     | On-Project <sup>7</sup>                               | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100                    | ASTM C231<br>ASTM C1064<br>T 22               |
| 605.1000<br>605.1100<br>605.1300<br>605.2000<br>605.2100<br>605.2300                                     | UNDERDRAIN PIPE, 6 INCHES<br>UNDERDRAIN PIPE, 8 INCHES<br>UNDERDRAIN PIPE, 12 INCHES<br>UNDERDRAIN CARRIER PIPE, 6 INCHES<br>UNDERDRAIN CARRIER PIPE, 8 INCHES<br>UNDERDRAIN CARRIER PIPE, 12 INCHES   | LF<br>LF<br>LF<br>LF<br>LF<br>LF                   | 704.16   | Drainage Aggregate   | Gradation  | <600 CY                  | 1/3,000 CY   | Stockpile On-Project                                  | 55   | R 90   | T 27  |
| 618.1000<br>618.1100<br>618.1200<br>618.1300   | PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH<br>PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH<br>REINFORCED PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH<br>REINFORCED PORTLAND CEMENT CONCRETE SIDEWALK, 8 INCH   | SY<br>SY<br>SY<br>SY                               | 541  | Concrete, Class B  | Air<br>Temperature<br>Compressive Strength   | <10 CY                   | 1/75 CY <sup>4</sup>                                     | On-Project <sup>7</sup>                               | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100                    | ASTM C231<br>ASTM C1064<br>T 22               |
| 618.4005<br>618.4108   | STAMPED CONCRETE APRON, 5 INCH.<br>STAMPED CONCRETE APRON, 8 INCH  | SY<br>SY   | 541  | Concrete, Class B  | Air<br>Temperature<br>Compressive Strength   | <10 CY                   | 1/75 CY <sup>4</sup>                                     | On-Project <sup>7</sup>                               | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172<br>N/A<br>R 100                    | ASTM C231<br>ASTM C1064<br>T 22               |
| 654.0010<br>654.0015   | DRY SWALE<br>DRY SWALE WITH UNDERDRAIN   | LF<br>LF   | 704.01<br>704.16   | Fine Aggregate for Concrete<br>Fine Aggregate for Concrete<br>Drainage Aggregate   | Gradation  | <300 CY                  | 1/5,000 CY<br>1/5,000 CY                                 | Stockpile On-Project<br>Stockpile On-Project          | 22<br>22   | R 90<br>R 90                                 | T 27, T 11<br>T 27, T 11                      |
| 654.0020   | GRAVEL WETLAND   | SY   | 704.02(b)<br>704.02(d)<br>704.08<br>704.16   | Coarse Aggregate for Concrete, 3/8 Inch<br>Coarse Aggregate for Concrete, 1-1/2 Inch<br>Granular Backfill for Structures<br>Drainage Aggregate   | Gradation  | <300 CY                  | 1/5,000 CY   | Stockpile On-Project                                  | 22   | R 90   | T 27, T 11                                    |
| 654.0030<br>654.0040   | SURFACE SAND FILTER<br>UNDERGROUND SAND FILTER   | SY<br>EA   | 704.01   | Fine Aggregate for Concrete  | Gradation  | <300 CY                  | 1/5,000 CY   | Stockpile On-Project                                  | 22   | R 90   | T 27, T 11                                    |
| 654.0060   | BIORETENTION AREA  | SY   | 654.02A  | Composition of Bioretention Soil   | Gradation<br>Clay Content (Hydrometer)<br>Organics   | N/A                      | 1/Project  | Stockpile On-Project, or Stockpile at Facility        | 2 for all tests.   | R 90   | T 88<br>T 88<br>T 267                         |



TABLE 1: MATERIAL SAMPLING & TESTING FREQUENCY CHART, QUALITY ASSURANCE PLAN LEVEL 3

| PAY ITEM NUMBER | PAY ITEM DESCRIPTION                                       | PAY ITEM UNIT | MATERIAL CODE        | MATERIAL DESCRIPTION   | MATERIAL PROPERTY              | MINOR QUANTITY THRESHOLD | MINIMUM ACCEPTANCE SAMPLING FREQUENCY (PER PROJECT)  | ACCEPTANCE SAMPLING LOCATION                                     | SAMPLE SIZE <sup>2</sup>                                   | PROCEDURES <sup>1</sup> |                |  |
|-----------------|--|---------------|----------------------|--|--------------------------------|--------------------------|--|--|--|-------------------------|----------------|--|
|                 |  |               |                      |  |                                |                          |  |  |  | SAMPLING METHOD         | TESTING METHOD |  |
| 662.0010        | RAILROAD BALLAST   | TON           | 704.03(a)            | Aggregate for Railroad Ballast, Type 3                         | Gradation                      | N/A                      | 1/Project  | In-Place, Stockpile on Project, or Stockpile at Facility         | 22   | R 90                    | T 27, T 11     |  |
| 662.0360        | BALLASTED TRACK CONSTRUCTION WITH CWR                      | LF            | 704.03(b)            | Aggregate for Railroad Ballast, Type 4 <sup>12</sup>           |                                |                          |  |  |  |                         |                |  |
| 663.0100        | RECONSTRUCT RAILROAD-HIGHWAY GRADE CROSSING                | LS            |                      |  |                                |                          |  |  |  |                         |                |  |
| 663.0200        | PRECAST CONCRETE PANEL GRADE CROSSING SYSTEM               | LS            |                      |  |                                |                          |  |  |  |                         |                |  |
| 675.4100        | FOUNDATION FOR W-SHAPE STEEL POST, 24 INCH DIAMETER        | EA            | 541                  | Concrete, Class B  | Air                            | <10 CY                   | 1/Project  | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172               | ASTM C231      |  |
| 675.4200        | FOUNDATION FOR W-SHAPE STEEL POST, 30 INCH DIAMETER        | EA            |                      |  | Temperature                    |                          |  |  |  | N/A                     | ASTM C1064     |  |
|                 |  |               | Compressive Strength | R 100  | T 22                           |                          |  |  |  |                         |                |  |
| 675.4300        | FOUNDATION FOR TUBULAR STEEL POST                          | EA            | 541                  | Concrete, Class B  | Air                            | <10 CY                   | 1/50 CY (See Note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172               | ASTM C231      |  |
|                 |  |               | Temperature          | N/A  | ASTM C1064                     |                          |  |  |  |                         |                |  |
|                 |  |               | Compressive Strength | R 100  | T 22                           |                          |  |  |  |                         |                |  |
| 677.1200        | OVERHEAD TRAFFIC SIGN SUPPORT, CANTILEVER                  | EA            | 541                  | Concrete, Class B  | Air                            | <10 CY                   | 1/50 CY (See Note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172               | ASTM C231      |  |
| 677.1300        | OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT               | EA            |                      |  | Temperature                    |                          |  |  |  | N/A                     | ASTM C1064     |  |
| 677.2200        | OVERHEAD TRAFFIC SIGN SUPPORT, CANTILEVER WITH LIGHTING    | EA            |                      |  | Compressive Strength           |                          |  |  |  | R 100                   | T 22           |  |
| 677.2300        | OVERHEAD TRAFFIC SIGN SUPPORT, MULTI-SUPPORT WITH LIGHTING | EA            | 714.04               | Carbon Steel Bolts, Nuts, and Washers                          | Ultimate Tensile Stress        | N/A                      | 1/each combination of bolt lot, nut lot, washer lot, and DTI lot (1 per each combination Tension Control Assembly Bolt production lot if used) <sup>14</sup> | Original manufacturer shipping container On-Project or At-Plant. | 2 Assemblies <sup>15</sup>                                 | ASTM F606               | ASTM F3125     |  |
|                 |  |               | 714.05               | High-Strength Structural Bolts and Assemblies, 120 KSI         | Ultimate Tensile Stress, Wedge |                          |  |  |  | N/A                     | ASTM F606      |  |
|                 |  |               |                      |  | Rockwell Hardness              |                          |  |  |  | ASTM F3125              |                |  |
|                 |  |               | 714.09               | Anchor Bolts for Traffic Signals, Lighting, and Overhead Signs | Rotational Capacity            |                          |  |  |  |                         |                |  |
|                 |  |               |                      |  | Ultimate Tensile Stress        | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.  | Original manufacturer shipping container On-Project or At-Plant. | 1 bolt, including threads (at least 18" long)              | N/A                     | ASTM F606      |  |
| 678.2010        | MAST ARM POLE FOUNDATION                                   | EA            | 541                  | Concrete, Class HPA  | Air                            | <10 CY                   | 1/50 CY (See Note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172               | ASTM C231      |  |
|                 |  |               |                      |  | Temperature                    |                          |  |  |  | N/A                     | ASTM C1064     |  |
|                 |  |               | Compressive Strength | R 100  | T 22                           |                          |  |  |  |                         |                |  |
|                 |  |               | 714.09               | Anchor Bolts for Traffic Signals, Lighting, and Overhead Signs | Ultimate Tensile Stress        | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.  | Original manufacturer shipping container On-Project or At-Plant. | 1 bolt, including threads (at least 18" long)              | N/A                     | ASTM F606      |  |
|                 |  |               |                      |  | Rockwell Hardness              |                          |  |  |  |                         |                |  |
| 678.2015        | PEDESTAL POST ASSEMBLY                                     | EA            | 541                  | Concrete, Class HPA  | Air                            | <10 CY                   | 1/50 CY (See Note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172               | ASTM C231      |  |
| 678.2020        | PEDESTRIAN SIGNAL ASSEMBLY                                 | EA            |                      |  | Temperature                    |                          |  |  |  | N/A                     | ASTM C1064     |  |
|                 |  |               | Compressive Strength | R 100  | T 22                           |                          |  |  |  |                         |                |  |
| 679.4600        | STREET LIGHT ASSEMBLY                                      | EA            | 541                  | Concrete, Class B  | Air                            | <10 CY                   | 1/50 CY (See Note 3)   | On-Project <sup>7</sup>  | 1 CF for compressive strength or wheelbarrow for all tests | ASTM C172               | ASTM C231      |  |
|                 |  |               |                      |  | Temperature                    |                          |  |  |  | N/A                     | ASTM C1064     |  |
|                 |  |               | Compressive Strength | R 100  | T 22                           |                          |  |  |  |                         |                |  |
|                 |  |               | 714.09               | Anchor Bolts for Traffic Signals, Lighting, and Overhead Signs | Ultimate Tensile Stress        | N/A                      | 1/each combination of anchor bolt lot, nut lot, and washer lot to be incorporated into the project.  | Original manufacturer shipping container On-Project or At-Plant. | 1 bolt, including threads (at least 18" long)              | N/A                     | ASTM F606      |  |
|                 |  |               |                      |  | Rockwell Hardness              |                          |  |  |  |                         |                |  |

- Notes:
- Procedures are AASHTO procedures unless otherwise noted.
  - Sample size is in pounds unless otherwise noted. The sample size should be selected based on the maximum nominal aggregate size (See AASHTO T 27, Section 7.1). For example, if the material visually passes a 2", 1.5", or 1" sieve then the sample size is 220 lbs, 165 lbs, and 110 lbs respectively.
  - Total placement for day split into equal sublots not to exceed 50 CY, test yardage chosen randomly. The test yardage is used to determine which load to test with proper sample collection techniques followed. Check first load for temperature and air content. This will not be counted as the acceptance test for the first sublot. If the first load is determined to be out-of-specification then the Contractor must test each consecutive load until 3 consecutive passing loads are tested. VTrans will check 4th consecutive load to verify. Deck pours shall have no less than 3 acceptance tests, regardless of total CY placed. Acceptance tests shall be a minimum of 2 standard cured cylinder specimens in accordance with applicable test method. Acceptance tests for 541.2900 Concrete, Class LW shall be a minimum of 3 standard cured cylinder specimens in accordance with the applicable test method.
  - Temperature and air content will be checked at the beginning of the first load. This will not be counted as the acceptance test.
  - Acceptance tests are to be performed by Owner representative at the frequency indicated, per project. However, all QC tests are to be witnessed by Owner representative. Minimum of six Compressive Strength for determining detensioning, to be cured with the piece. Four specimens to determine 28 day and shipping strengths and are to be cured with the piece until it is stripped and then standard cured.
  - Acceptance tests are to be performed by Owner representative at the frequency indicated, per project. However, all QC tests are to be witnessed by Owner representative. As a minimum, the first load as well as the load that Compressive strength are fabricated from should be tested by QC.
  - Concrete sampled on-project, shall be sampled from the concrete delivery truck chute. Concrete sampled at precast concrete facilities shall be sampled as close to the point of deposit as practical.
  - Depends upon the mix type. For mixes with 3/4", 1/2", and 3/8" stone the sample size is 165 lbs, 55 lbs, and 22 lbs respectively.
  - Bituminous mixtures sampled on project shall be sampled from the paver hopper or the material transfer vehicle hopper in accordance with AASHTO R 97.
  - For projects less than 1,250 CY of subbase material, the Agency shall be responsible for testing and projects 1,250 CY and over the Contractor is responsible for the determination of the target density. For each source, subbase materials shall be sampled and tested once for the first 1,250 CY and then once every 3,000 CY thereafter.
  - Standard HMA QA Lot is 3,000 Tons.
  - Acceptance testing for Aggregate for Railroad Ballast, Type 4 is only required when installed on mainline.
  - Type is the respective material specification (ex. 713.01(a) Reinforcing Steel).
  - Required only when incorporated into the project for main member connections as designated in the Contract or as defined in 714.01, or other connections as deemed necessary by the Resident Engineer.
  - An assembly shall consist of a bolt, washer, nut, and DTI.
  - Molds shall be cut and taped prior to filling in accordance with ACI 229, Section 8.4.
  - Acceptance testing frequencies for moisture and density testing shall only be completed on the final pass of reclamation.

## APPENDIX C: Sample Tag

Figure C1: Sample Card - Front

|   |   |   |
|---|---|---|
| A=Acceptance<br>I=Investigative   | <b>LABORATORY NO.</b> _____ (1)   | Date Rcv'd @ Lab. _____ / (2) / _____                                 |
|   | Project Name _____ (3)  | Project No. _____ (4)   |
|   | Name of Pay Item _____ (5)  | Pay Item No. _____ (6)  |
|   | Material Name _____ (7)      Type _____ (8)   | Mat. Spec. No. _____ (9)  |
|   | Quantity Rep. _____ (10)  | Line Item No. _____ (11)  |
| TA 178A Rev.<br>5M 04/00  | Sampled by (Print Name) _____ (12)  | Date Sampled _____ / (13) / _____                                     |
|   | (14) Sample Type: A= <input type="checkbox"/> I= <input type="checkbox"/> V= <input type="checkbox"/> IA= <input type="checkbox"/> Where Sampled _____ (15) | _____ (16) Time _____ (17)  |
|   | Sample Source _____ (18)  | <small>(In-Place, Stockpile, Pit, Truck, etc.)      Tank</small>      |
|   | Material Source _____ (19)  | No. _____ (20)  |
|   | Ident. No. _____ (21)   | Comparison Sample? <input type="checkbox"/> (22) X-Ref No. _____ (23) |
| Comments _____ (24)<br><small>(size of sample represented by this card (3 rebar @ 5 ft each, 2 cans @ 1 pint each, etc.) and any other pertinent information)</small> |   |   |

Figure C2: Sample Tag - Back

**OFFICE LOCATION**

**VTRANS Highway Division**

**Construction & Materials Bureau**

**Central Laboratory**

**2178 Airport Road, Unit B**

**Berlin, VT 05641-8628**

**REPORT ON SAMPLE OF PORTLAND CEMENT (FRONT)****DESCRIPTION OF FIELDS**

All information must be legible and will be completed by the sampler unless otherwise noted.

- (1) **Laboratory No.:** Central Laboratory's internal tracking number; completed by the Central Laboratory.
- (2) **Date Rcv'd @ Lab:** Date the Central lab accepts the sample; completed by the Central Laboratory.
- (3) **Project Name:** Name of project sample represents.
- (4) **Project No.:** Number of the project the sample represents.
- (5) **Name of Pay Item:** Pay item name which the sample is attributed to.
- (6) **Pay Item No.:** Pay item number which the sample is attributed to.
- (7) **Material Name:** Material specification name the sample is attributed to.
- (8) **Type:** Type of material, only as applicable.
- (9) **Mat. Spec. No.:** Material specification number the sample is attributed to.
- (10) **Quantity Rep.:** Quantity of pay item (5)/(6) represented by the sample.
- (11) **Line Item No.:** SiteManager project line item number of the pay item for the project identified in (3)/(4).
- (12) **Sampled By:** First and last name of person that acquired the sample. Name should be printed. District personnel should include their district number. Personnel not representing VTrans should identify their organization.
- (13) **Date Sampled:** Date sample was taken (mm/dd/yy).
- (14) **Sample Type:** Type of sample (see Types of Samples above for more information).
  - a. A Acceptance
  - b. I Investigative
  - c. V Verification
  - d. IA Independent Assurance
- (15) **Where Sampled:** The specific construction location where the sample was obtained (e.g. stockpile, tank, transport, paver, roadway, etc).
- (16) **Tank:** The tank the sample was obtained from, required as applicable.
- (17) **Time:** Time of day sample was taken, recorded in military time (24 hour) or regular time (a.m./p.m.), must be clear how time is reported.
- (18) **Sample Source:** The general location where the sample was obtained (e.g. on-project, station and offset, Pike – Berlin, Barker Steel, Camp Precast, etc.).

- (19) **Material Source:** Manufacturer, producer, and/or supplier of the material. For rebar samples both the supplier and manufacturer should be specified.
- (20) **No.:** Not currently utilized.
- (21) **Ident. No.:** Any available identifying number (e.g. release number, certification number, heat number, etc.).
- (22) **Comparison Sample?:** check this box when an Independent Assurance sample is simultaneously taken with an acceptance sample.
- (23) **X-Ref No:** Sample identification number of the sample taken in conjunction with the sample represented by the report, only included as needed. Comparison sample number to be provided by technician taking the comparison sample.
- (24) **Comments:** Any special information or notes applicable to the sample (e.g. reinforcing steel grade and release number, not mix AC content, temperature, etc.).

The back of the sample card is shown for informational purposes only, no information required.

Figure C3: Sample Card Example – Bituminous Concrete Pavement


|   |  |   |
|---|--|---|
| A=Acceptance<br>I=Investigative   | <b>LABORATORY NO.</b> _____  | Date Rcv'd @ Lab. ____/____/____                            |
|   | Project Name <u>Manchester-Rutland Town</u>  | Project No. <u>NH SURF(50)</u>                              |
|  | Name of Pay Item <u>Bituminous Concrete Pavement, Type IVS, QA Tier II</u>   | Pay Item No. <u>406 . 0420</u>                              |
|   | Material Name <u>Superpave Mixtures</u> Type _____   | Mat. Spec. No. <u>716 . 02(b)</u>                           |
| TA 178A Rev.<br>5M 04/00  | Quantity Rep. <u>20.85 Tons</u>  | Line Item No. <u>0330</u>                                   |
|   | Sampled by (Print Name) <u>John Doe</u>  | Date Sampled <u>06 / 23 / 23</u>                            |
|   | Sample Type: A= <input checked="" type="checkbox"/> I= <input type="checkbox"/> V= <input type="checkbox"/> IA= <input type="checkbox"/> Where Sampled <u>Paver Hopper</u> | Time <u>14:00</u>   |
|   | (In-Place, Stockpile, Pit, Truck, etc.) _____ Tank _____   |   |
|   | Sample Source <u>Sta. 104+00 RT</u>  | (Location on Project, Plant Name, etc.) _____               |
|   | Material Source <u>Peckham - Shaftsbury</u>  | No. <u>SP16-850</u>   |
|   | (Supplier, Producer, manufacturer, etc.) _____   |   |
|   | Ident. No. _____   | Comparison Sample? <input type="checkbox"/> X-Ref No. _____ |
|   | (Release, Lot, Cert.) _____  |   |
|   | Comments _____   |   |
|   | (size of sample represented by this card (3 rebar @ 5 ft each, 2 cans @ 1 pint each, etc.) and any other pertinent information)  |   |

Figure C4: Sample Card Example – Asphalt Binder


|  |   |   |
|--|---|---|
| A=Acceptance<br>I=Investigative  | <b>LABORATORY NO.</b> _____   | Date Rcv'd @ Lab. ____/____/____                            |
|  | Project Name <u>Rutland-Killington</u>  | Project No. <u>ER NH 020-2(36)</u>                          |
|  | Name of Pay Item <u>Bituminous Concrete Pavement, Type IS, QA Tier I</u>  | Pay Item No. <u>406 . 0110</u>                              |
|  | Material Name <u>Performance-Graded Asphalt Binder</u> Type <u>58S-28</u>   | Mat. Spec. No. <u>702 . 01</u>                              |
| TA 178A Rev.<br>5M 04/00   | Quantity Rep. <u>1,000 Tons</u>   | Line Item No. <u>0105</u>                                   |
|  | Sampled by (Print Name) <u>John Doe</u>   | Date Sampled <u>06 / 23 / 23</u>                            |
|  | Sample Type: A= <input checked="" type="checkbox"/> I= <input type="checkbox"/> V= <input type="checkbox"/> IA= <input type="checkbox"/> Where Sampled <u>In-Line</u> | Time <u>15:00</u>   |
|  | (In-Place, Stockpile, Pit, Truck, etc.) _____ Tank <u>#1</u>  |   |
|  | Sample Source <u>Wilk Paving Inc., - Center Rutland, VT</u>   | (Location on Project, Plant Name, etc.) _____               |
|  | Material Source <u>Parco-Athens, NY</u>   | No. _____   |
|  | (Supplier, Producer, manufacturer, etc.) _____  |   |
|  | Ident. No. <u>Lot 12-PG 70-28 MODI</u>  | Comparison Sample? <input type="checkbox"/> X-Ref No. _____ |
|  | (Release, Lot, Cert.) _____   |   |
|  | Comments _____  |   |
|  | (size of sample represented by this card (3 rebar @ 5 ft each, 2 cans @ 1 pint each, etc.) and any other pertinent information)                                       |   |

Figure C5: Sample Card Example – Emulsified Asphalt


|   |   |   |
|---|---|---|
| A=Acceptance<br>I=Investigative   | <b>LABORATORY NO.</b> _____   | Date Rcv'd @ Lab. ____/____/____                            |
|   | Project Name <u>Charlotte</u>   | Project No. <u>FEGC 019-4(20)</u>                           |
|  | Name of Pay Item <u>Tack Coat, Emulsified Asphalt</u>   | Pay Item No. <u>404 . 1100</u>                              |
|   | Material Name <u>Anionic Emulsified Asphalt</u> Type <u>RS-1</u>  | Mat. Spec. No. <u>702 . 04(a)</u>                           |
| TA 178A Rev.<br>5M 04/00  | Quantity Rep. <u>200 CWT</u>  | Line Item No. <u>0075</u>                                   |
|   | Sampled by (Print Name) <u>John Doe</u>   | Date Sampled <u>06 / 23 / 23</u>                            |
|   | Sample Type: A= <input checked="" type="checkbox"/> I= <input type="checkbox"/> V= <input type="checkbox"/> IA= <input type="checkbox"/> Where Sampled <u>Truck</u> | Time <u>14:02</u>   |
|   | (In-Place, Stockpile, Pit, Truck, etc.) _____ Tank _____  |   |
|   | Sample Source <u>Sta. 160+00 O/S (SB Shoulder)</u>  | (Location on Project, Plant Name, etc.) _____               |
|   | Material Source <u>Mohawk Asphalt Emulsions</u>   | No. _____   |
|   | (Supplier, Producer, manufacturer, etc.) _____  |   |
|   | Ident. No. <u>Lot #36</u>   | Comparison Sample? <input type="checkbox"/> X-Ref No. _____ |
|   | (Release, Lot, Cert.) _____   |   |
|   | Comments _____  |   |
|   | (size of sample represented by this card (3 rebar @ 5 ft each, 2 cans @ 1 pint each, etc.) and any other pertinent information)                                     |   |

Figure C6: Sample Card Example – Reinforcing Bar


|   |  |
|---|--|
| A=Acceptance<br>I=Investigative   | <b>LABORATORY NO.</b> _____ Date Rcv'd @ Lab. ____/____/____   |
|   | Project Name <u>Johnson</u> Project No. <u>BF 0248(4)</u>  |
|  | Name of Pay Item <u>Reinforcing Steel, Level III</u> Pay Item No. <u>507.1300</u>  |
|   | Material Name <u>Bar Reinforcement, Solid Stainless</u> Type <u>#8</u> Mat. Spec. No. <u>713.01(h)</u>   |
| TA 17&A Rev.<br>5M 04/00  | Quantity Rep. <u>1,000 LBS</u> Line Item No. <u>0220</u>   |
|   | Sampled by (Print Name) <u>John Doe</u> Date Sampled <u>06 / 23 / 23</u>   |
|   | Sample Type: A= <input checked="" type="checkbox"/> I= <input type="checkbox"/> V= <input type="checkbox"/> IA= <input type="checkbox"/> Where Sampled <u>Stockpile</u> Time <u>9:30 AM</u><br><small>(In-Place, Stockpile, Pit, Truck, etc.) Tank</small> |
|   | Sample Source <u>On Project</u><br><small>(Location on Project, Plant Name, etc.)</small>  |
|   | Material Source <u>Nucor - Auburn, NY (MFR)/Dimension Fabricators - Schenectady, NY (Supplier)</u> No. _____<br><small>(Supplier, Producer, manufacturer, etc.)</small>  |
|   | Ident. No. <u>#8 Heat #61110216</u> Comparison Sample? <input type="checkbox"/> X-Ref No. _____<br><small>(Release, Lot, Cert.)</small>  |
|   | Comments <u>2 Bars @ 3 Feet Each</u><br><small>(size of sample represented by this card (3 rebar @ 5 ft each, 2 cans @ 1 pint each, etc.) and any other pertinent information)</small>   |

Figure C7: Sample Card Example – Bolts, Nuts, & Washers


|   |  |
|---|--|
| A=Acceptance<br>I=Investigative   | <b>LABORATORY NO.</b> _____ Date Rcv'd @ Lab. ____/____/____   |
|   | Project Name <u>Stockbridge</u> Project No. <u>STP BRF 013-4(21)</u>   |
|  | Name of Pay Item <u>Structural Steel, Truss</u> Pay Item No. <u>506.5700</u>   |
|   | Material Name <u>High-Strength Structural Bolts and Assemblies, 120 KSI</u> Type _____ Mat. Spec. No. <u>714.05</u>  |
| TA 17&A Rev.<br>5M 04/00  | Quantity Rep. <u>1,000 LBS</u> Line Item No. <u>0305</u>   |
|   | Sampled by (Print Name) <u>John Doe</u> Date Sampled <u>06 / 23 / 23</u>   |
|   | Sample Type: A= <input checked="" type="checkbox"/> I= <input type="checkbox"/> V= <input type="checkbox"/> IA= <input type="checkbox"/> Where Sampled <u>Stockpile</u> Time <u>1:30 PM</u><br><small>(In-Place, Stockpile, Pit, Truck, etc.) Tank</small>                     |
|   | Sample Source <u>High Steel Structures, Lancaster, PA</u><br><small>(Location on Project, Plant Name, etc.)</small>  |
|   | Material Source <u>House of Threads, Pottstown, PA</u> No. _____<br><small>(Supplier, Producer, manufacturer, etc.)</small>  |
|   | Ident. No. <u>7/8" x 2-1/4" Black</u> Comparison Sample? <input type="checkbox"/> X-Ref No. _____<br><small>(Release, Lot, Cert.)</small>  |
|   | Comments <u>Set of (4) bolt, nut, washer, DTI. Bolt Lot #2357858, Nut Lot #2394394, Washer Lot #226743, DTI Lot #7855469</u><br><small>(size of sample represented by this card (3 rebar @ 5 ft each, 2 cans @ 1 pint each, etc.) and any other pertinent information)</small> |

Figure C8: Sample Card Example - Paint



|   |   |
|---|---|
| A=Acceptance<br>I=Investigative   | <b>LABORATORY NO.</b> _____ Date Rcv'd @ Lab. ____/____/____  |
|   | Project Name <u>Johnson</u> Project No. <u>BF 0248(4)</u>   |
|  | Name of Pay Item <u>4 Inch White Line, Waterborne Paint</u> Pay Item No. <u>646.2010</u>  |
|   | Material Name <u>Waterborne Traffic Paint</u> Type _____ Mat. Spec. No. <u>708.07(c)</u>  |
| TA 17&A Rev.<br>5M 04/00  | Quantity Rep. <u>75,000 LF</u> Line Item No. <u>0210</u>  |
|   | Sampled by (Print Name) <u>John Doe</u> Date Sampled <u>08 / 02 / 23</u>  |
|   | Sample Type: A= <input checked="" type="checkbox"/> I= <input type="checkbox"/> V= <input type="checkbox"/> IA= <input type="checkbox"/> Where Sampled <u>Sprayer Truck on Project</u> Time <u>9:30 AM</u><br><small>(In-Place, Stockpile, Pit, Truck, etc.) Tank</small> |
|   | Sample Source <u>L &amp; D Safety Markings</u><br><small>(Location on Project, Plant Name, etc.)</small>  |
|   | Material Source <u>Ennis-Flint</u> No. _____<br><small>(Supplier, Producer, manufacturer, etc.)</small>   |
|   | Ident. No. <u>CPP1707Y1371</u> Comparison Sample? <input type="checkbox"/> X-Ref No. _____<br><small>(Release, Lot, Cert.)</small>  |
|   | Comments <u>2 cans @ 1 Pint *For addition to the ANDPMBL*</u><br><small>(size of sample represented by this card (3 rebar @ 5 ft each, 2 cans @ 1 pint each, etc.) and any other pertinent information)</small>   |

Figure C9: Sample Card Example - Aggregate

|   |  |  |
|---|--|--|
| A=Acceptance<br>I=Investigative   | <b>LABORATORY NO.</b> _____  | Date Rcv'd @ Lab. ____/____/____   |
|   | Project Name <u>Guilford</u>   | Project No. <u>IM 091-1(33)</u>  |
| <br>TA 178A Rev.<br>5M 04/00 | Name of Pay Item <u>Subbase of Crushed Gravel, Fine Graded</u>   | Pay Item No. <u>301.2600</u>   |
|   | Material Name <u>Crushed Gravel for Subbase, Fine Graded Type</u>  | Mat. Spec. No. <u>704.05(b)</u>  |
|   | Quantity Rep. <u>1,000 CY</u>  | Line Item No. <u>0105</u>  |
|   | Sampled by (Print Name) <u>John Doe</u>  | Date Sampled <u>06 / 23 / 23</u>   |
|   | Sample Type: A= <input checked="" type="checkbox"/> I= <input type="checkbox"/> V= <input type="checkbox"/> IA= <input type="checkbox"/>   | Where Sampled <u>In-Place</u> <span style="float: right;">Time <u>8:53 AM</u></span> |
|   | <small>(In-Place, Stockpile, Pit, Truck, etc.)</small>   | <small>Tank</small>  |
|   | Sample Source <u>Sta. 2+328 CL</u><br><small>(Location on Project, Plant Name, etc.)</small>   |  |
|   | Material Source <u>Cersosimo - Bemis Quarry, Vernon, VT</u> <span style="float: right;">No. _____</span><br><small>(Supplier, Producer, manufacturer, etc.)</small>                            |  |
|   | Ident. No. _____ <span style="float: right;">Comparison Sample? <input type="checkbox"/> X-Ref No. _____</span><br><small>(Release, Lot, Cert.)</small>  |  |
|   | Comments <u>1 bag, approximately 100 lbs</u><br><small>(size of sample represented by this card (3 rebar @ 5 ft each, 2 cans @ 1 pint each, etc.) and any other pertinent information)</small> |  |



## APPENDIX D: Report on Concrete Test Beams or Cylinders

Figure D1: Report on Concrete Test Beams or Cylinders - Front

**VTRANS Highway Division  
Construction & Materials Bureau  
Central Laboratory  
2178 Airport Road, Unit B  
Berlin, VT 05641-8628**

**REPORT ON CONCRETE TEST BEAMS OR CYLINDERS**

Laboratory No. \_\_\_\_\_ (1)      Line Item No. \_\_\_\_\_ (2)  
 Pay Item Name \_\_\_\_\_ (3)      Pay Item No. \_\_\_\_\_ (4)  
 Material Name \_\_\_\_\_ (5)      Class \_\_\_\_\_ (6)      Material Spec. No. \_\_\_\_\_ (7)  
 Quantity Rep \_\_\_\_\_ (8)      Date Sampled \_\_\_\_\_ (9)      Time Sampled \_\_\_\_\_ (10)  
 (11) Sample Type U  V  A  I  IA       Sample From \_\_\_\_\_ (12)  
 Material Source \_\_\_\_\_ (13)           
 Project Name \_\_\_\_\_ (14)      No. \_\_\_\_\_ (15)           
 Resident \_\_\_\_\_ (16)      Field Tested By \_\_\_\_\_ (17)  
 Mixed Design No. \_\_\_\_\_ (18)      Lab Tested By \_\_\_\_\_ (19)  
 Location Used \_\_\_\_\_ (20)      Coarse Aggregate \_\_\_\_\_ (21)           
 Fine Aggregate \_\_\_\_\_ (22)               Total Aggregate Wgt. \_\_\_\_\_ (23)  
 Cement Brand \_\_\_\_\_ (24)               Type \_\_\_\_\_ (25)      Lbs./cy \_\_\_\_\_ (26)  
 Air Entraining Admixture \_\_\_\_\_ (27)               Dosage \_\_\_\_\_ (28)  
 Admixture \_\_\_\_\_ (29)               Dosage \_\_\_\_\_ (30)  
 Admixture \_\_\_\_\_ (31)               Dosage \_\_\_\_\_ (32)

Figure D2: Report on Concrete Test Beams or Cylinders - Back

**TEST RESULTS**

Unit Weight Fresh Concrete \_\_\_\_\_ (33)      Air \_\_\_\_\_ (34)      Slump \_\_\_\_\_ (35)  
 Total Water \_\_\_\_\_ (36)      w/c Ratio \_\_\_\_\_ (37)      Temperature, Concrete \_\_\_\_\_ (38) °F      Ambient \_\_\_\_\_ (39) °F  
 gal/cy

| Specimen No. | Cyl pcf | Date Received | Date Broken | Desired Age at Break | Age at Break | Hour of Break | Cure Type S/F* | Indiv. Break psi | Avg. Break psi |
|--------------|---------|---------------|-------------|----------------------|--------------|---------------|----------------|------------------|----------------|
| (40)         | (41)    | (42)          | (43)        | (44)                 | (45)         | (46)          | (47)           | (48)             | (49)           |
|              |         |               |             |                      |              |               |                |                  |                |
|              |         |               |             |                      |              |               |                |                  |                |
|              |         |               |             |                      |              |               |                |                  |                |
|              |         |               |             |                      |              |               |                |                  |                |
|              |         |               |             |                      |              |               |                |                  |                |
|              |         |               |             |                      |              |               |                |                  |                |
|              |         |               |             |                      |              |               |                |                  |                |
|              |         |               |             |                      |              |               |                |                  |                |

\*S = Standard Cure, F = Field Cure      Comments: \_\_\_\_\_ (50)

**DESCRIPTION OF FIELDS****REPORT ON CONCRETE TEST BEAMS OR CYLINDERS (FRONT)**

All information must be legible and will be completed by the sampler unless otherwise noted.

- (1) **Laboratory No.:** Central Laboratory's internal tracking number; completed by the Central Laboratory.
- (2) **Line Item No.:** SiteManager project line item number of the pay item for the project identified in (14)/(15).
- (3) **Pay Item Name:** Pay item name which the sample is attributed to.
- (4) **Pay Item No.:** Pay item number which the sample is attributed to.
- (5) **Material Name:** Material specification name the sample is attributed to.
- (6) **Class:** Class of concrete (e.g. AA, A, B, HPC-A etc.)
- (7) **Material Spec. No.** Material specification number the sample is attributed to.
- (8) **Quantity Rep:** Quantity of pay item (3)/(4) represented by the sample.
- (9) **Date Sampled:** Date sample was taken (mm/dd/yy).
- (10) **Time Sampled:** Time of day sample was taken, recorded in military teim (24 hour) or regular time (a.m./p.m.), must be clear how time is reported.
- (11) **Sample Type:** Type of sample (see Types of Samples above for more information).
  - a. U Quality Control
  - b. A Acceptance
  - c. I Investigative
  - d. V Verification
  - e. IA Independent Assurance
- (12) **Sample From:** The specific construction location where the sample was obtained (e.g. truck, bucket, pump, etc.) (Include truck number and/or load number)
- (13) **Material Source:** Name and location of ready-mix plant.
- (14) **Project Name:** Name of project sample represents.
- (15) **No.:** Number of project sample represents.
- (16) **Resident:** First initial and last name of Resident Engineer assigned to the project (printed).
- (17) **Field Tested By:** First initial and last name of person performing field tests and molding concrete test specimens (printed).
- (18) **Mixed Design No.:** Mix design number of concrete utilized in the sample.

- (19) **Lab Tested By:** First initial and last name of technician performing laboratory testing; completed by the Central Laboratory.
- (20) **Location Used:** Specific part(s) of structure represented by test specimens (e.g. abutment, wingwall, drop inlet covers, etc.). Maximum of 40 characters.
- (21) **Coarse Aggregate:** Name and location of coarse aggregate supplier.
- (22) **Fine Aggregate:** Name and location of fine aggregate supplier.
- (23) **Total Aggregate Wgt.:** Total dry weight of coarse and fine aggregate per cubic yard in pounds.
- (24) **Cement Brand:** Name of the cement manufacturer.
- (25) **Type:** Type of Cement.
- (26) **Lbs./cy:** Pounds of cement per cubic yard.
- (27) **Air Entraining Admixture:** Brand name of air entraining admixture (e.g. Air Plus, CHRYSO Air G 100, etc.)
- (28) **Dosage:** Volume in fluid ounces per cubic yard of concrete or per cwt of cementitious material for air entraining admixtures.
- (29) **Admixture:** Brand name of other admixture(s) (e.g. WRDA Hycol, Pozzolith, fly ash, ggbfs, etc.)
- (30) **Dosage:** Volume in fluid ounces per cubic yard of concrete or per cwt of cementitious material for chemical admixtures. Weight per cubic yard for mineral admixtures.
- (31) **Admixture:** Brand name of other admixture(s) (e.g. WRDA Hycol, Pozzolith, fly ash, ggbfs, etc.)
- (32) **Dosage:** Volume in fluid ounces per cubic yard of concrete or per cwt of cementitious material for chemical admixtures. Weight per cubic yard for mineral admixtures.

#### **REPORT ON CONCRETE TEST BEAMS OR CYLINDERS (FRONT)**

- (33) **Unit Weight Fresh Concrete:** Unit weight of fresh concrete in pcf.
- (34) **Air:** Air content of fresh concrete in percent (to nearest 0.1%) (e.g. 4.5, 5.7).
- (35) **Slump:** Slump to the nearest 0.25 inch (e.g. 2.25 in.)
- (36) **Total Water gal/cy:** Total gallons of water used per cubic yard including water batched, water added on project site and free aggregate moisture.
- (37) **W/C Ratio:** Water/cementitious ratio. Total amount of water in gallons per cubic yard multiplied by 8.345 lb/gal, divided by the weight of cementitious material in lbs/cy.
- (38) **Concrete Temp.:** Concrete temperature in degrees Fahrenheit.
- (39) **Ambient:** Ambient temperature in the shade at the project site in degrees Fahrenheit.
- (40) **Specimen No.:** Unique identifier for the individual specimen.

- (41) **Cyl pcf:**
- (42) **Date Received:** Date specimen is received by the Central Laboratory. Completed by the Central Laboratory.
- (43) **Date Broken:** Date the specimen is tested. Completed by the Central Laboratory.
- (44) **Desired Age at Break:** Desire age at which specimens are to be tested.
- (45) **Age at Break:** Age in days of specimen at the time of testing. Completed by the Central Laboratory.
- (46) **Hour at Break:** Age in hours of specimen at the time of testing. Completed by the Central Laboratory.
- (47) **Cure Type S/F\*:** "S" for standard cured or "F" for field cured.
- (48) **Indiv. Break psi:** Individual psi reported for the individual specimen. Completed by the Central Laboratory.
- (49) **Avg. Break psi:** Average psi reported for all specimens included. Completed by the Central Laboratory.
- (50) **Comments:** Other information regarding test specimens. Thirty-five characters maximum (e.g. frozen specimens, etc.)

Figure D3: Report on Concrete Test Beams or Cylinders Example - Front

TA 1820 Rev. 7-15

**VTRANS Highway Division  
Construction & Materials Bureau  
Central Laboratory  
2178 Airport Road, Unit B  
Berlin, VT 05641-8628**

**REPORT ON CONCRETE TEST BEAMS OR CYLINDERS**

Laboratory No. \_\_\_\_\_ Line Item No. 0205  
 Pay Item Name Performance-Based Concrete, Class PCD Pay Item No. 501.3700  
 Material Name Concrete Class PCD Material Spec. No. 501  
 Quantity Rep CY/LF Date Sampled 04/24/24 Time Sampled 13:24  
 Sample Type U  V  A  I  IA  Sample From Truck On-Project  
 Material Source Carroll Concrete, Berlin   
 Project Name Bradford No. STP 9602(33)   
 Resident Bob Hope Field Tested By Jake Smith  
 Mixed Design No. HP23-PCD-010 Lab Tested By John Doe  
 Location Used Footing Coarse Aggregate Pike Williamstown   
 Fine Aggregate Pike Williamstown  Total Aggregate Wgt. 2732  
 Cement Brand St. Marys Cement  Type II Lbs./cy 449 lb/cy  
 Air Entraining Admixture Air Plus  Dosage 3.5 oz/cy  
 Admixture Eucon Retarder 75  Dosage 2 oz/cwt  
 Admixture Fly Ash (Clifty Creek Plant)  Dosage 50 lbs/cy

Figure D4: Report on Concrete Test Beams or Cylinders Example - Back

**TEST RESULTS**

Unit Weight Fresh Concrete 147.60 Air 5.9% Slump 6.25  
 Total Water 30.9 w/c Ratio 0.40 Temperature, Concrete 70 °F Ambient 68 °F  
 gal/cy

| Specimen No. | Cyl pcf | Date Received | Date Broken | Desired Age at Break | Age at Break | Hour of Break | Cure Type S/F* | Indiv. Break psi | Avg. Break psi |
|--------------|---------|---------------|-------------|----------------------|--------------|---------------|----------------|------------------|----------------|
| A2A-1        |         |               |             | 7                    |              |               |                |                  |                |
| A2A-2        |         |               |             | 7                    |              |               |                |                  |                |
| A2A-3        |         |               |             | 14                   |              |               |                |                  |                |
| A2A-4        |         |               |             | 14                   |              |               |                |                  |                |
| A2A-5        |         |               |             | 28                   |              |               |                |                  |                |
| A2A-6        |         |               |             | 28                   |              |               |                |                  |                |
|              |         |               |             |                      |              |               |                |                  |                |
|              |         |               |             |                      |              |               |                |                  |                |

\*S = Standard Cure, F = Field Cure      Comments: Please call XXX-XXX-XXXX with results.

Information not populated is to be completed by the Central Laboratory.

## APPENDIX E: Report on Sample of Portland Cement

Figure E1: Report on Sample of Portland Cement Card – Front

TA 182H Rev. 1000 9-19

**VERMONT AGENCY OF TRANSPORTATION  
MATERIALS AND RESEARCH DIVISION  
MONTPELIER, VERMONT 05602**

**REPORT ON SAMPLE OF PORTLAND CEMENT**

Laboratory No. \_\_\_\_\_ (1) Date Rec'd. @ lab \_\_\_\_\_ / (2) / \_\_\_\_\_

Project Name \_\_\_\_\_ (3) Project No. \_\_\_\_\_ (4)

Pay Item Name \_\_\_\_\_ (5) Pay Item No. \_\_\_\_\_ (6)

Material Name \_\_\_\_\_ (7) Type \_\_\_\_\_ (8) Material No. \_\_\_\_\_ (9)  
(Portland Cement, Fly Ash, Slag, Blended Cement, Terncem)

Quantity Represented \_\_\_\_\_ (10) Line Item No. \_\_\_\_\_ (11)

Sampled By \_\_\_\_\_ (12) Date Sampled \_\_\_\_\_ (13) Time Sampled \_\_\_\_\_ (14)

(15) Sample Type  A  I  IA  P Where Sampled \_\_\_\_\_ (16) R.E. \_\_\_\_\_ (17)  
(Site, Tanker, Bucket Loader, etc.)

Sample Source \_\_\_\_\_ (18) Location To Be Used \_\_\_\_\_ (19)  
(Concrete or Pre Cast Name & Location Sample was taken)

Material Source \_\_\_\_\_ (20) Date Ground \_\_\_\_\_ (21)  
(Cement Manufacture Name & Location)

Lot No. \_\_\_\_\_ (22) Comparison Sample No. \_\_\_\_\_ (23)

Comments \_\_\_\_\_ (24)

Figure E2: Report on Sample of Portland Cement Card - Back

**TEST DATA**

Air Content - volume water \_\_\_\_\_ mL. flow: \_\_\_\_\_ weight: \_\_\_\_\_ g.

Fineness - \_\_\_\_\_ cm<sup>2</sup>/g

Soundness, length - initial: \_\_\_\_\_ mm. final: \_\_\_\_\_ mm.

Normal Consistency - weight water: \_\_\_\_\_ g.

**28 Days**

Time of Set - mix: \_\_\_\_\_ min: \_\_\_\_\_ cube 7: \_\_\_\_\_ lbs.  
init: \_\_\_\_\_ min: \_\_\_\_\_ cube 8: \_\_\_\_\_ lbs.  
finl: \_\_\_\_\_ min: \_\_\_\_\_ cube 9: \_\_\_\_\_ lbs.

**Compressive Strength:**

**3 Days** **7 Days**

mL: \_\_\_\_\_ cube 1: \_\_\_\_\_ lbs. cube 4: \_\_\_\_\_ lbs.  
Flow: \_\_\_\_\_ cube 2: \_\_\_\_\_ lbs. cube 5: \_\_\_\_\_ lbs.  
Date: \_\_\_\_\_ cube 3: \_\_\_\_\_ lbs. cube 6: \_\_\_\_\_ lbs.  
Time: \_\_\_\_\_

Comments:



**REPORT ON SAMPLE OF PORTLAND CEMENT (FRONT)****DESCRIPTION OF FIELDS**

All information must be legible and will be completed by the sampler unless otherwise noted.

- (1) **Laboratory No:** Central Laboratory's internal tracking number; completed by the Central Laboratory.
- (2) **Date Rec'd @ Lab:** Date the Central lab accepts the sample; completed by the Central Laboratory.
- (3) **Project Name:** Name of project sample represents.
- (4) **Project No:** Number of project sample represents.
- (5) **Pay Item Name:** Pay item name which the sample is attributed to.
- (6) **Pay Item Number:** Pay item number which the sample is attributed to.
- (7) **Material Name:** Material specification name the sample is attributed to.
- (8) **Type:** Type of cement, pozzolan, or mortar (one of the following).
  - a. I/II, II, or III for Portland Cement
  - b. II/SF, II/Slag, II/Slag/SF (Tercem), or II/FA/SF for Blended Cement
  - c. FA for Fly Ash
  - d. S for Slag
  - e. IV for Mortar Type IV
- (9) **Material No:** Material specification number the sample is attributed to.
- (10) **Quantity Represented:** Quantity of pay item (5)/(6) represented by the cement, pozzolan, or mortar sample.
- (11) **Line Item No:** Line item number of the pay item for the project identified in (3)/(4).
- (12) **Sampled By:** First and last name of person that acquired the sample.
- (13) **Date Sampled:** Date sample was taken (mm/dd/yy).
- (14) **Time Sampled:** Time of day sample was taken, recorded in military time (24 hour) or regular time (a.m./p.m.), must be clear how time is reported.
- (15) **Sample Type:** Type of sample (see below).
  - a. A Acceptance
  - b. I Investigative
  - c. IA Independent Assurance
  - d. P Verification
- (16) **Where Sampled:** Location sample was taken.

- a. Cements
    - i. weigh hopper
    - ii. silo
    - iii. bucket loader
    - iv. tanker
  - b. Mortar
    - i. Mixer
    - ii. Wheelbarrow
- (17) **R.E.:** Resident Engineer of project identified in (3)/(4).
- (18) **Sample Source:** Source of sample, concrete or pre-cast company name and location (not applicable for bagged products).
- (19) **Location To Be Used:** Location where concrete or mortar is to be used; e.g., bridge abutment, footing.
- (20) **Material Source:** Manufacturer name, location, and product name.
- (21) **Date Ground:** Date of the split sample from the producer; completed by the Central Laboratory
- (22) **Lot No:** Producers unique identifier located on the mill certifications.
- (23) **Comparison Sample No:** Sample identification number of the sample taken in conjunction with the sample represented by the report, only included as needed. Comparison sample number to be provided by technician taking the comparison sample.
- (24) **Comments:** Any information relevant to the processing of the sample, age of breaks required for special provisions, desired age of breaks that vary from specification.

The back of the report is shown for informational purposes only, back is to be completed by the Central Laboratory.

Figure E3: Example Report on Sample of Portland Cement - Front

|   |   |                            |
|---|---|----------------------------|
| TA 182H Rev. 1000 9-19  | <b>VERMONT AGENCY OF TRANSPORTATION<br/>MATERIALS AND RESEARCH DIVISION<br/>MONTPELIER, VERMONT 05602</b> |                            |
| <b>REPORT ON SAMPLE OF PORTLAND CEMENT</b>  |   |                            |
| Laboratory No. _____  | Date Rec'd. @ lab   | ____ / ____ / ____         |
| Project Name <u>Westmore</u>  | Project No.   | <u>STP 0287(6)</u>         |
| Pay Item Name <u>Special Provision (Rock Dowel)</u>   | Pay Item No.  | <u>900.645</u>             |
| Material Name <u>Mortar, Type IV</u>  | Type <u>IV</u>  | Material No. <u>707.03</u> |
| <small>(Portland Cement, Fly Ash, Slag, Blended Cement, Terncem)</small>  |   |                            |
| Quantity Represented <u>126 LF</u>  | Line Item No.   | <u>0100 / 0105</u>         |
| Sampled By <u>Chris Eddy</u>  | Date Sampled <u>10 / 17 / 19</u>  | Time Sampled <u>09:30</u>  |
| Sample Type <input checked="" type="checkbox"/> A <input type="checkbox"/> I <input type="checkbox"/> IA <input type="checkbox"/> P | Where Sampled <u>Grout Plant @ Site</u>   | R.E. <u>M. Booth</u>       |
| <small>(Site, Tanker, Bucket Loader, etc.)</small>  |   |                            |
| Sample Source <u>Mixer On Site</u>  | Location To Be Used   | <u>Rock Dowels</u>         |
| <small>(Concrete or Pre-Cast Name &amp; Location Sample was taken)</small>  |   |                            |
| Material Source <u>Lehigh - Ironclad Cement Bags</u>  | Date Ground   | ____ / ____ / ____         |
| <small>(Cement Manufacture Name &amp; Location)</small>   |   |                            |
| Lot No. _____   | Comparison Sample No.   | _____                      |
| Comments <u>Performance Test Dowels - 3 Day Min. (2000 PSI) 28 Day Min (4000 PSI)</u>   |   |                            |

## APPENDIX F: Special Specification Material Acceptance Requirements

Vermont Agency of Transportation

Material Sampling Manual

Material acceptance requirements for Special Specifications can be found at the below link:

<https://vtrans.vermont.gov/materials-sampling-manual-msm>