INTRODUCTION

The Project Office Manual (POM) is a compilation of Department policies and procedures relating to field administration and inspection of construction contracts. The purpose of the POM is to act as a reference for the appropriate District staffs so they may perform their duties in accordance with Department policies and procedures.

Each project field office shall have a copy of the POM, and each District Office shall have copies of the POM for the District Construction staff's use.

The following sources are updated, consolidated and used in the POM:

2. Pertinent Strike-off letters.
3. District Construction Engineers Manual issued June 1, 1982 and subsequent revisions.

The POM is divided into five parts:

Part A - Pre-Construction
Part B - Project Office Administration
Part C - Construction Inspections
Part D - Project Finalization
Appendix

The five Parts are subdivided into sections in the Table of Contents.

Since the POM is revised periodically, the Districts should record each POM location so that all of the manuals will be updated. In addition, material of interest to District Construction Support Services may also be found herein.

Any questions or suggestions should be directed to the Chief – New Products and Innovations Section, Bureau of Project Delivery, 81 Lab Lane, Harrisburg PA, 17110-2543.
# Project Office Manual

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April 2017 Edition
# LIST OF CHANGES FROM APRIL 2018 CHANGE#1
## THROUGH APRIL 2019 CHANGE#2

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<td>B.1.18</td>
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<td>Partnering</td>
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<td>PA One Call Notification for Utility Line Strikes or Damage during Construction</td>
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<td>B.6.3</td>
<td>Construction Material Certification, Forms CS-4171, CS-4171B, CS-4171C, CS-4171F, CS-4171LA, and CS-4171S</td>
<td>Changes per Clearance Transmittal C-17-017 adding Form CS-4171S for manufacturers, fabricators, precasters, and producers of products containing foreign steel to certify the foreign steel content in its products and to determine compliance with the PA Steel Products Procurement Act and FHWA Buy America.</td>
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<td>B.6.5</td>
<td>Materials Accepted by Project Sampling</td>
<td>Changes per Clearance Transmittal C-19-003 to incorporate the sample size requirements documented in the Laboratory Testing Section’s Physical Lab process PP-46 document.</td>
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<td>B.6.20</td>
<td>Independent Assurance Procedures – Aggregate Sources</td>
<td>Changed AASHTO T 248 to AASHTO R 76.</td>
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<td>B.6.23</td>
<td>Verification Process for Ride Quality of Newly Constructed Pavements</td>
<td>NEW Section per Clearance Transmittal C-17-008 and Strike-Off Letter 481-18-06 to implement the IRI verification process.</td>
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<td>B.7.5</td>
<td>Minimum Quality Control Plan for Bituminous Concrete</td>
<td>Changed AASHTO T 248 to AASHTO R 76. Changed AASHTO T 2 to AASHTO R 90.</td>
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<tr>
<td>B.7.13</td>
<td>Construction Aggregates</td>
<td>Changed AASHTO T 2 to AASHTO R 90.</td>
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<tr>
<td>B.7.16</td>
<td>Minimum District Quality Assurance Plan – Aggregate Sources</td>
<td>Changed AASHTO T 248 to AASHTO R 76. Changed AASHTO T 2 to AASHTO R 90.</td>
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<tr>
<td>D.1.1</td>
<td>Semi-Final/Final Inspection &amp; Acceptance Certificate</td>
<td>Changes per Clearance Transmittal H-17-001 to address project permit closeout for DEP and U.S. Army Corps of Engineers permits.</td>
</tr>
<tr>
<td>D.2.3</td>
<td>Records Retention</td>
<td>Changes per Clearance Transmittal C-17-024 to define the retention policy for construction project records and documents that reside in PPCC.</td>
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<tr>
<td>Appendix A</td>
<td>Appendix A</td>
<td>-Added new material classes for Section 412 bituminous mix design; Section 489 ultra-thin bonded wearing course; Section 701 cement; Section 702 asphalt cements, asphalt/absorb recovery, and emulsified asphalt; and Section 711 admixtures. -Corrected Pub 408 reference for pot bearing and disc bearing. -Updated Forms -Updated QA Checklists – eliminated Sampling and Testing Operation Review (STOR) Checklists, created COR SMP Checklist entitled Project Sampling, and combined COR Checklists 601C, 601M and 601P into one COR Checklist 601 entitled Pipe Culverts.</td>
</tr>
</tbody>
</table>
Refer to the latest edition of Publication 371, Grade Crossing Manual, Chapter 4, entitled “Highway and/or Bridge Project Process” involving Railroad facilities.

The Contractor is to notify the Railroad company(ies) of the actual date on which the highway construction work will begin at or near their facilities, unless the PUC Order or Secretarial Letter directs the Department to do so.

In cases where the Department is directed, through the PUC Order or Secretarial Letter issued for the project, to notify the PUC and all parties of record of the actual date construction will begin, the PUC Order or Secretarial Letter will contain language to the effect “That Pennsylvania Department of Transportation notify all parties of record at least fourteen (14) days prior to performing any work in accordance with this Order.”

Railroad officials should be informed of pre-bid and pre-construction conferences in a timely manner. Section 4.08 of Pub 371 “Construction” describes procedures regarding attendance at Pre-Bid and Pre-Construction meetings.

Ensure compliance with the State-Railroad agreements, Railroad special provisions and standard special provisions, PUC Orders or Secretarial Letters, Form D-4279A “Railroad Crossing Data for Contractor”, Railroad specifications, Right-of-Entry permits/agreements, and contracts regarding notification of, coordination with, and cooperation with railroad officials. Section 4.06 E of Pub 371 outlines “Documentation to District Project Managers for inclusion in ECMS contract.”

**Railroad Protective Services (Flagging)**

When a Department construction project impacts railroad Right-of-Way, Railroad Protective Services may be required. Refer to the contract and the pre-construction meeting minutes for information on this item.

The Inspector-in-Charge (IIC) will have the responsibility to track the use of flaggers on a project.

- Compare the number of flaggers on the project to the number specified in the D-4279A.
- Track the time the flaggers spend on the project.
- If there are more flaggers on site than the contract stated, make sure the additional personnel were required for the project. This is information needed under Part II of the Railroad Protective Services Cost special provision.
If it is determined that the railroad required additional flaggers, contact the Assistant Construction Engineer (ACE). If necessary, the ACE should then contact the District Grade Crossing Engineer/Administrator (DGCE/A) for resolution. The additional flagger cost would not be the contractor’s responsibility in this scenario.

If the contactor requests flaggers for a certain date and time and the flaggers fail to report to the site, contact the ACE or the DGCE/A for resolution. Be sure the details of the request (date and time of request, required work date, duration, contact person, etc.) are documented and conform to the procedures outlined in the contract, Right-of-Entry permit, and/or pre-construction meeting minutes.

**Project Completion**

Upon completion of the project, the Department, through the PUC Order or Secretarial Letter, is required to notify the PUC that the work has been completed so that a final inspection can be scheduled and conducted by the PUC. This notice will be sent by the DGCE/A to the PUC.
As a method of customer service to the public and to minimize any negative impacts on the construction project, the Inspector-in-Charge is to verify that the following interested parties were notified prior to the start of work:

1. *Adjacent property owners* were to be informed of all pertinent facts about the project or invited to a meeting to discuss the same facts.

2. *Pertinent public officials* including appropriate County Maintenance Managers were to be notified by mail, telephone or through meetings.

3. "*Other interested parties*" (i.e., those parties who, in addition to the parties mentioned above, may have an interest in or may be affected by the construction activity). "Other interested parties" will vary from activity to activity depending upon the scope and ramifications of the activity. They were to be notified by mail, newspaper, meetings, "open house", flyers, or by radio/TV spots.
Construction project coordination with the Pennsylvania Turnpike Commission (PTC) is required when a PennDOT construction project, including its MPT or Detour Plan, is 1) crossing over or under the Pennsylvania Turnpike, 2) within one driving mile of a Pennsylvania Turnpike interchange or crossing, 3) located within a maintenance boundary previously agreed upon by the Department and the PTC or 4) located within the Pennsylvania Turnpike right-of-way.

Construction project coordination with the Pennsylvania Turnpike Commission (PTC) is indicated in ECMS, within the “Detail Information – Characteristics” area of the “Project Information” screen as “Turnpike: ‘Yes’ or ‘No’.”

The flowchart on the following pages has been developed to outline the PTC coordination process. The flowchart defines the project milestones at which coordination with the PTC should be ensured throughout the project life cycle. Milestones 1 through 3, Project Identification through Final Design, are detailed in Publication 10, Design Manual 1-Series. Milestone 4, PS&E – Processing/Let/Award, is detailed in Publication 51, Bid Package Preparation and Policies Manual. Milestones 5 through 7, NTP/Pre-Construction through Close Out, are detailed here in Publication 2, Project Office Manual.

Construction project coordination with the PTC should be established with the PTC Roadway Engineering Manager.

During the Notice to Proceed (NTP)/ Pre-Construction phase (Milestone 5), the PTC must be invited to the pre-construction conference and any project coordination meetings.

During Construction (Milestone 6), the maintenance and protection of traffic becomes a major concern. Detours must be coordinated with the PTC and the impact at toll plazas is to be addressed. The PTC must also be invited to any pre-pave, pre-placement, and pre-erection meetings. As the construction progresses, the PTC is to be invited to progress meetings. The PTC must be informed of any schedule changes and scope-of-work changes.

Once construction is complete (Milestone 7), the PTC must be invited to the Final Inspection and Post Construction Project Design Review/Field View.
See Flowchart on next two pages.
PennDOT / PA Turnpike Project Coordination Milestones

**PennDOT**

**Project Identification**
- B. Coordinate with District to identify any PTC projects that may be impacted.
- C. Project Manager assigned: Develop preliminary scope and schedule.
- D. Add PTC as team member in ECMs.

**Preliminary Engineering**
- A. Scoping Field View - PTC invited if potential impact identified.
- B. Consultant selected/Kick-off meeting. Invite PTC if turnpike impact.
- C. Open Plan, add PTC coordination.
- D. Appropriate Agency (including PTC) coordination begins.
- E. Environmental Documentation complete.
- F. Mitigation identified.
- G. Final Design.

**Final Design**
- A. Agency (Including PTC) coordination continues.
- B. Final Design.
- C. PS&E Processing.

**PA Turnpike**

**Project Identification**
- A. Approved Capital Plan: PTC identified.
- B. Coordinate with District Turnpike Coordinator to identify any PennDOT projects.
- C. Project Manager assigned: Develop preliminary scope and schedule.
- D. Add PTC as team member in ECMs.

**Preliminary Engineering**
- A. Consultant selected/Kick-off meeting.
- B. Field scoping meeting - Invite District Turnpike Coordinator if SR involvement
- C. Progress meetings - Invite District Turnpike Coordinator if SR involvement
- D. Public meetings - Invite District Turnpike Coordinator if SR involvement.
- E. Final Design.

**Final Design**
- A. Agency (Including PTC) coordination.
- B. Final Design.
- C. PS&E Processing.

**Commitment/Advertisement/Letting Process**
- A. Final Design.
- B. Request PennDOT approval.
- C. Submit Pre-PS&E: Update District Turnpike Coordinator of scope & schedule revisions.
- D. Obtain District approval of any of the following: - Detours, either of a SR or using a SR - Temporary Signals - Lane Restrictions, both short-term or long-term.

**PTC DOM (Design Operations Manual)**

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PennDOT / PA Turnpike Project Coordination Milestones

**PennDOT**

**NTP/Pre-Construction**

A. Pre-Construction Conference – Invite PTC if turnpike involved
B. Project Coordination Meeting (held in some districts) – Invite PTC if turnpike involved
   - If major involvement, then pre-schedule coordination meetings with contractor/ Turnpike and PennDOT

**Construction**

A. Mobilization and MPT – coordinate interaction with PTC as required
B. Project Schedule and Maintenance and Protection of Traffic – coordinate interaction with PTC as required
C. Monthly Progress Meetings – Invite PTC if turnpike involvement
D. Construction Operations Meetings (Erection/MPT/Demolition/Paving/etc) – Invite PTC if turnpike involvement
E. Scope or Schedule Changes – Inform PTC
F. Partnering – Invite PTC if turnpike involvement

**Close-Out**

A. Final Inspection – Invite PTC if turnpike involvement
B. Post Construction Project Design Review/ Field View – Invite PTC if turnpike involvement

**PA Turnpike**

**NTP/Pre-Construction**

A. Pre-Construction Conference (Pre-Job) – Invite District Turnpike Coordinator if SR involvement
B. Pre-Construction Design/Construction Coordination Meeting – Invite District Turnpike Coordinator if SR involvement

**Construction**

A. Mobilization & MPT - Coordinate with District Turnpike Coordinator if SR involvement
B. Provide schedule to District Turnpike Coordinator if SR involvement – Update if any schedule changes impact SR
C. Monthly Progress Meetings – Invite District Turnpike Coordinator if SR involvement
D. Construction Operations Meetings (Erection/MPT/Demolition/Paving/etc) – Invite District Turnpike Coordinator if SR involvement
E. Partnering – Invite District Turnpike Coordinator if SR involvement

**Close-Out**

A. Semi-Final & Final Inspection – Invite District Turnpike Coordinator if SR involvement
B. Final Acceptance Letter – Copy District Turnpike Coordinator if SR involvement
C. Post Construction/Design Conference – Invite District Turnpike Coordinator if SR involvement

**PTC COM (Construction Operations Manual)**

April 2017 Edition
1. The pre-bid conferences should be viewed as an opportunity to discuss project issues between the Department and the contractors. Important issues may include the project schedule, specifications, construction sequencing, and constructability. The Department representatives should be prepared to answer questions that may arise at the pre-bid conference, and should ensure that personnel critical to the success of the project are in attendance.

2. Meetings for Federal Oversight projects should be scheduled in consultation with the FHWA.

3. It must be made clear to the prospective bidders, by visual display or by announcement made at the beginning of meeting, that any issue raised, comments made, or opinion expressed during this meeting will not be binding to the contract unless covered by an addendum.

4. All attendees at the pre-bid conferences are required to sign the Register and include: attendee name, company name, title, email address, and a telephone number.

5. Chairperson should respond directly or direct other Department representative to respond to the issues. Any concern requiring consultant’s review or designer’s review must be noted for follow-up action and addressed in the form of an addendum, if required. Comments or input from other attendees should be directed to the Chairperson only.

6. Confidential cost figures, estimates, or Department internal policy matters must not be discussed or commented upon.

7. It is strongly recommended to record the pre-bid conference.

8. Minutes of the pre-bid conference should be kept in the project files and attached to the project development checklist in ECMS. Minutes must be prefaced with a statement that makes it evident that the contents may not be considered a part of the proposal or the subsequent contract. The prefacing statement is to be as follows: "The following minutes of the Pre-Bid Conference held on ______ (date) ______, for project ______ (project identification) ______, are furnished for informational purposes only, and do not constitute a part of the contractual obligations of the Department or the contractor."

9. Refer to Publication 51, Chapter 14 for further information regarding pre-bid conferences.
The contractor, according to Section 105.13, Publication 408, is only responsible for maintaining their performed work, unless otherwise specified in the contract documents.

Review this matter at the pre-bid conference and if unusual amounts of maintenance are required or anticipated on the existing roadway, it may be necessary to note the condition in the bidding proposal.
SHOP INSPECTION

At or before the project's pre-construction conference, the District Engineer will obtain from the prime contractor, in writing, the name and location of the manufacturer of the following listed structural items that require plant inspection. The information should be promptly forwarded to the Bureau of Project Delivery, Structural Materials Section on Form CS-430 (see Section B.7.18 for submittal process) in order to assign shop/plant inspection:

**Precast Concrete**
- Box Culvert Sections
- Concrete Barrier
- Endwalls
- Inlets (Boxes-Risers-Tops)
- Junction Boxes
- Manholes
- Noise Barrier (Panels-Posts)
- Prestressed Concrete Beams
- Special Design Reinforced Concrete Pipe
- Precast Concrete Retained Earth Panels
- Total Precast
- NEXT Beam
- Other (upon request by the District)

**Fabricated Structural Steel and Aluminum**
- Aluminum Light Poles
- Bridge Beams, Girders and Stringers
- Bearings (High Load Multi-Rotational, Pot, Steel)
- Dams (Armored Preformed Neoprene Compression, Expansion, Modular, Strip Seal and Tooth)
- Drainage Items (Curb Drains, Downspouting Grills and Scuppers)
- Poles (High Mast, Light, Strain, Traffic Signal Support)
- Sign Structures
- Steel Grid Deck Flooring
- Welded Steel Sound Barrier Posts
- Bridge Railing (HT Elliptical, PA, Type 10M)
- Structure Mounted Guiderail (upon request by the District only)
- Other (upon request by the District)

The Department contracts with consultant inspection agencies to perform plant inspections at precast/prestressed plants, and steel and aluminum fabricators. Other structural products,
including Fiber Reinforced Polymer and Timber decking should also be inspected during manufacturing.

Acceptable structural products which receive plant inspection will be stamped either by the Department's Structural Materials field staff or by the current consultant inspection agency. Examples of the inspection stamps are illustrated on the following pages. The inspection stamp indicates that the items were produced in accordance with specifications, and all material certifications are on file with the fabricator. The fabricator will send a Form CS-4171 with each shipment and will identify the quantity of material being certified.

If these materials arrive on a project without an inspection stamp, or if the items are stamped and arrive at the project site in an unacceptable condition, notify the Structural Materials Section of the Bureau of Project Delivery at (717) 783-6710 or email a copy of a completed Form TR-800, Structural Materials Quality Comment Sheet, to ra-pdstructmatls@pa.gov.
EXAMPLES OF INSPECTION STAMPS – 2015-2019
(Fabricated Structural Steel, Aluminum, Timber and FRP)

HRV Conformance Verification Associates
Agreement: E03236

KTA Tator
Agreement: E03237

Pennoni Associates
Agreement: E03238

TRC Solutions
Agreement: E03239
EXAMPLES OF INSPECTION STAMPS – 2016-2020
(PreCast/PreStressed Concrete)

Pennoni Associates
Agreement: E02113

TRC Solutions
Agreement: E02112

EXAMPLES OF INSPECTION STAMPS - Structural Materials Unit
(PreCast/PreStressed Concrete or Fabricated Structural Steel, Aluminum, Timber and FRP)

Pennsylvania Department of Transportation
District 80 - Structural Materials
Inspected

April 2017 Edition
BOPD Process Control Procedures for Wage Rate Approval process has been implemented that requires all wage rate approval/resumes to be reviewed and approved by PennDOT’s Central Office and the District in ECMS prior to an inspector being assigned to a project. The new resume format is available in ECMS. All consultant construction inspector qualifications can be viewed (Proper Security Clearance required) in ECMS Wage Rate tab on the original Engineering Agreement header page. The Project Manager may request a copy of the assigned inspection staff wage rate approval and resumes through the District’s Construction Unit.
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Inspector’s Field Office and Inspection Facilities
Publication 408, Section 609
Policy and Procedure Guidelines

In order to properly utilize and obtain the maximum benefit from the subject specification, the following policy and procedural guidelines should be adhered to:

- Project Designers (District or Consultant) must coordinate with the Construction Unit’s Project Management team to determine what office and laboratory facilities are needed, based on the type and size of project as well as the technological experience and comfort level of the personnel who will manage and staff the project. The appropriate item number(s) should be included in the proposal/contract. If customization of the basic facility is necessary, a project-specific special provision should be developed to modify the criteria specified in Table A. Existing standard item numbers for the following remain applicable:
  - Inspector’s Field Office and Inspection Facilities, Type A
  - Inspector’s Field Office and Inspection Facilities, Type B
  - Inspector’s Field Office and Inspection Facilities, Type C
  - Proportioning Plant Office
  - Field Laboratory

To eliminate the need for the modified standard or non-standard version of these items to be used when more than one field office of the same type is needed, an additional iteration of these standard items has been added to the Master Items List.

- Project Designers (District or Consultant) must coordinate with the Construction Unit’s Project Management team to determine what communications, specialized equipment, internet service, and miscellaneous items are needed, based on the type and size of project as well as the technological experience and comfort level of the personnel who will manage and staff the project. Indicate the quantity of each piece of equipment to be furnished on the Equipment Package table associated with the Table A Appendix. The “Equipment Package” table is made up of four sub-tables labeled Communications Equipment, Specialized Equipment, Internet Service, and Miscellaneous Items. Each sub-table lists the specific equipment pieces that are currently approved for use. Fill in the empty fields under each column to specify which of the listed pieces, if any, are to be provided and, if so, in what quantity.

- Use Form CS-101, Inspector’s Field Office and Inspection Facilities Project Development Checklist, to streamline the coordination effort between the Design Unit and Construction Unit, and to ensure that the Assistant District Executive who is responsible for managing the overall cost of the project is in concurrence with the planned size and makeup of the project.
office or laboratory facility and equipment package to be included in a given proposal/contract. Form CS-101 has been designed to coordinate with Publication 408, Section 609 and is used by project designers to obtain input from the District Construction Unit as to which facilities (i.e., field office, proportioning plant office, and/or field laboratory) should be included in the proposal/contract, as well as the quantity of each type of communications, electronic, specialized equipment, internet service, and miscellaneous items that will be needed. Upon completion, Form CS-101 is to be routed through the Assistant District Executive for Construction or the Assistant District Executive for Maintenance, as appropriate, for review. If in agreement, the ADE-C or ADE-M must indicate their concurrence by signing and dating the completed form in the space provided. After sign-off, the form is to be returned to the Design Unit for use in preparing the “Table A Appendix” special provision for the proposal/contract. A copy is sent to the District Construction Field Office IT Equipment Point of Contact so that they will have the information to enter into the Remedy Request for Service to request the Bureau of Infrastructure and Operations (BIO) IT equipment.

- Consideration should be given to the feasibility of obtaining necessary office and laboratory facilities, communications equipment, electronic equipment, and/or specialized equipment through other means, thereby limiting what is obtained for Department use as part of the construction contract. This consideration is of particular importance when specifying high cost, specialized equipment pieces. These should be obtained via the construction contract only when the need for the specific piece can be clearly demonstrated and the additional expense justified.

- Before specifying the number of cell phones to be provided by the construction contractor, attempt to determine the number of Department employees assigned to the project, who have already been assigned a cell phone. Similarly, an attempt should be made to determine whether Consultant inspection or construction management personnel assigned to the project have company-furnished cell phones. As for cell phone usage, the standard specification for Cell Phones, Section 609.2(c), specifies that the Contractor is to arrange for a service plan that provides 400 peak minutes of unrestricted use per month per device. This limit was set to assist contractors with estimating (and bidding) the costs associated with furnishing cell phones. Project inspection personnel who receive phones through the construction contract will be held to the same usage standard as those who have Department-furnished phones. Cell phone usage is to be strictly monitored on a month by month basis. Contractors have been instructed to report abuse of cell phones to the District or Central Office for corrective action. Furthermore, to ensure a fair allocation of the potential risk involved, cell phone usage in excess of 400 minutes per month per device will be reimbursed, via the work order process, based on invoices submitted by the Contractor.

The Bureau of Project Delivery (BOPD) revised Form CS-101, Inspector’s Field Office and Inspection Facilities Project Development Checklist, when BIO agreed to acquire and provide IT equipment for highway and bridge construction projects. BIO has agreed to acquire and provide
laptop computers and low capacity MFDs. The agreement also includes the following services: delivery, installation, maintenance, and de-installation. Each District has identified a Point of Contact who is responsible for entering the required information to obtain the necessary IT equipment for each construction project. Complete Department Form CS-101A, Construction Field Site IT Equipment Request, and submit to the BIO District “XX” IT using Remedy Request for Service (RFS) to manage the IT equipment for the Construction Field Office.
The District will notify the Prime Contractor of the date and time of the Pre-construction conference. The District will request that the Prime Contractor notify all Subcontractors that are known at the time of the Pre-construction conference of the date and time of the meeting and encourage them to attend the Pre-construction conference. The District will invite the Pennsylvania Turnpike Commission (PTC) to the Pre-construction conference if coordination is required, as defined in POM Section A.1.3. Also, the District will ensure that all in attendance receive minutes of the conference.

The following items should be discussed, as appropriate, at the Pre-construction Conference. Many of these items will require the contractor to submit forms, documents, etc., on the day of the Conference. These documents can instead be submitted electronically via PPCC. Also, minutes are to be prepared and distributed.

1. **Execution of Contract** - All Award Letter conditions must be reviewed and discussed.

2. **Addenda** - Discuss all addenda to assure that all parties agree on the changes made to the bid proposal.

3. **Insurance** - In accordance with Publication 408, Sections 103.05 and 107.14, all Contractors must furnish the Department insurance certificates proving adequate property damage and public liability insurance coverage.

   The Contract Management Section of the Bureau of Project Delivery will receive from the Contractor the initial insurance certificates at the time of award and execution of the contract. The appropriate insurance coverage will meet the requirements of Publication 408 and/or the Special Provisions of the bid proposal. All Contractors must furnish renewal certificates, as needed, to demonstrate continuous insurance coverage for the life of the project.

4. **Contractor Project Staffing** - The Contractor is to provide a list of its project superintendent, project engineer, foremen, and surveyor at the Pre-construction Conference.

5. **Decision Making Hierarchy** - Issue Escalation Matrix (Form CS-8) is shown on page A.3.1-13. Prior to the Pre-construction Conference, the District shall prepare a Chain-of-Command list for their Inspection Staff. The District may also include other individuals that may assist in resolving construction related issues in the District Contact List section of Form CS-8. The Contractor is also to provide a Chain-of-Command list for the project. These lists shall include each individual's title, name, and contact information. Discuss and complete all applicable sections of Form CS-8 with the Contractor at the Pre-
construction Conference. The completed form shall be distributed to all attendees by the project's Assistant Construction Engineer or their staff.

If the Contractor is unable to provide enough information to complete Form CS-8 satisfactorily, the ACE may suspend the Notice to Proceed date until the necessary information is provided.

6. **Equal Opportunity; Disadvantaged, Small, and Diverse Business Enterprises** - The Assistant District Executive for Construction and their staff are responsible for construction related Equal Employment Opportunity (EEO) provisions. The District Representative shall discuss EEO/Disadvantaged Business Enterprise (DBE)/Small Business Enterprise (SBE)/ Diverse Business (DB) provisions, including Form submission requirements.

   a. The Minority Participation and Commitment must be thoroughly reviewed to ensure the following:
      1. The DBEs/DBs listed on the Minority Commitment are being used;
      2. The items of work on the Minority Participation and Commitment Detail screen are a reflection of the work to be performed by the DBEs/DBs; and
      3. The actual amount awarded to the DBE/DB is equal to or greater than the amount shown on the Minority Participation and Commitment screen in ECMS.

   b. The Minority Participation and Commitment must be reviewed for conditional approvals and the potential impact to meeting the DBE/DB goal.

      NOTE: Conditional approvals will alert the Inspector-in-Charge to potential Commercially Useful Function (CUF) issues.

   c. The Contractor is to be reminded to submit a Subcontractor Request for all DBEs/DBs (including Services and Suppliers) listed on the Minority Participation and Commitment screen.

      Subcontractor Requests for DBE/DB firms listed on the Minority Participation and Commitment must be accompanied by three pages from the executed agreement:
      1. A copy of the executed signature page,
      2. A copy of the description of the scope of work, and
      3. A copy of the unit prices as they appear in the DBE’s/DB’s subcontract or agreement.

      Please note: Prior to actual performance, the Prime Contractor must provide the Inspector-in-Charge a copy of the complete subcontract or agreement for each DBE/DB firm participating on the project. Electronic copies of subcontracts are acceptable provided they incorporate all applicable contract provisions.

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PART A
SECTION 3
PAGE 1-3
DATE April 1, 2019

The Contractor is to be reminded to prohibit the start of work by a Subcontractor until a Subcontractor Request has been approved and a copy of the executed subcontract is available on the project for the Department's review; and until the Department has reviewed and acknowledged that the subcontract physically incorporates the provisions of the prime contract that contain statements of self-inclusion (including the wage rates). Electronic copies of subcontracts are acceptable provided they incorporate all applicable contract provisions.

e. The actual or estimated starting dates for all DBEs/SBEs/DBs must be established.

f. The type of work to be performed by the DBEs/SBEs/DBs must be established (Subcontractor, Regular Dealer, Manufacturer, Service, Broker, Consultant, etc.).

g. Manufacturers or producers of construction materials must be checked for approval as listed in either Bulletins 14, 15, 41, or 42.

h. Assure that the Contractor meets its responsibility for ensuring that all suppliers approved on the Minority Participation and Commitment screen, supply material in accordance with Department specifications.

i. The Contractor must be advised that failure to meet the DBE/DB goal by the project's completion could result in sanctions including prequalification suspension or debarment for up to three years. The Contractor must be reminded that it has a continual obligation to make a Good Faith Effort for the life of the project. (Corrective Action Plan)

j. The Bureau of Project Delivery, Prequalification Office must be contacted immediately if the DBE/SBE/DB work is imminent and a DBE/SBE/DB’s sufficient prequalification status is not established.

k. Reporting responsibilities (DBEs/SBEs/DBs payments, Good Faith Effort documentation, etc.) are to be reviewed with the Contractor. The Contractor is to be reminded to promptly enter all payments to DBEs/SBEs/DBs in ECMS.

l. Mobilization payments to DBEs/SBEs/DBs shall be discussed.

m. The Contractor must be advised that failure to meet the DBE goal by the project's completion could result in sanctions including prequalification suspension for up to three (3) years.

n. The Contractor is to be reminded to adhere to the procedure outlined in Publication 408, Appendix C, DSP4 (100% State-funded) and DSP7 (Federally-funded), for making any changes involving DBE/DB participation. Any such changes are to be coordinated with the District and the Contract Awards Unit of the Bureau of Project Delivery.
Delivery, as necessary.

7. **Subcontracting** - Discuss the actions and procedures needed to assure that Contractors insert required contract provisions into subcontracts and second tier and subsequent tier agreements as required in Publication 408, Section 108.01(e).

Any requests for Provisional Prequalification must be submitted to the Bureau of Project Delivery, Contract Management Section for approval.

Also, discuss efforts the Contractor has taken to seek out, make contact with, and consider disadvantaged, small, and diverse business enterprises as potential Subcontractors.

Districts will review Requests for Subcontractor Approval, Form CS-4339R for Non-ECMS or electronic submission in ECMS, and issue approval if applicable. Districts will review the procedures with the Contractor at the Pre-construction Conference. The Contractor is to be reminded of its responsibility to assure that:

   a. Adequate lead time is afforded the District for performing the required reviews.
   b. The District's project field staff is notified of the time and place that Subcontractors are scheduled to begin work.
   c. The subcontract requirements have been satisfied before permitting Subcontractors to begin work.
   d. Subcontractor requests for DBE/DB firms listed on the Minority Participation and Commitment must be accompanied by three pages from the executed agreement:
      i. A copy of the executed signature page,
      ii. A copy of the description of the scope of work, and
      iii. A copy of the unit prices as they appear in the DBE’s/DB’s subcontract or agreement.

   Please note: Prior to actual performance, a copy of the complete subcontract or agreement for each DBE/DB firm participating on the project must be available for review at the project.

8. **Subcontractor/Supplier Estimate Monitoring (Form CS-111)** - The following procedure should be discussed with the Contractor who should be provided with a sufficient number of forms to accommodate the Subcontractors on the project. The Contractor should be instructed to notify its Subcontractors of the availability of this monitoring procedure.

   Basically, the procedure involves four steps:

   a. Subcontractor submission of form (page 1).
   b. District verification of work items and quantities submitted by the Subcontractor.
   c. Contractor's verification of payment or explanation of non-payment.

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d. District follow-up to determine if Contractor is or is not in compliance. The Assistant District Executive for Construction is to render the final determination for these payment issues.

9. **Pre-Qualification** - Letters of Approval of Classification Codes based on Superintendents should be reviewed and discussed for compliance.

10. **Materials/Suppliers Approval** - Standard forms for Materials Source of Supply (Form CS-200, Source of Supply–Materials; and Form CS-201, Source of Supply–Traffic Control Devices) are shown on pages A.3.1-11 and A.3.1-12. Source of Supply documentation may also be submitted via functionality found in PPCC or ECMS. The forms must be submitted to the District at least two (2) days in advance of the Pre-construction meeting. In order for the forms to be used as intended, the following requirements need to be met where applicable:

   a. The Prime Contractor must submit the forms to the District for each project. The forms should be submitted by an individual responsible for and able to respond to any Department questions relating to the sources of supply.

   b. Use contract item numbers and descriptions of the materials being provided as noted in the contract.

   c. For Bulletin materials, provide ID Codes or Model Numbers as listed in the appropriate Bulletin.

   d. For Bulletin materials, include the Specific Section Number as listed in the specific Bulletin. For non-Bulletin materials, include the Pub 408 specification reference or Standard Special Provision reference.

   e. All traffic items must have the Department’s Certificate of Approval Number, or specification number included.

   f. Generally, submit the primary source of supply of each item. While not required, two sources may be provided for specific items if a back-up source is envisioned as necessary. The primary and backup source should be identified as such. However, written notification is required if the backup source is going to be used.

   g. For proposed material changes to a previously approved source of supply, only submit those new material items that were not previously approved. It is not necessary to resubmit the entire list of materials.

   h. If there are changes made to the source of supply, the most current approved source of supply form will supersede previous submittals for the material and material source.
i. For Concrete and Asphalt items include the following:
   - An item number as listed in the contract.
   - The Producers/Manufacturers name and location as listed in Bulletin 14 (Aggregate Producers), Bulletin 15 (Qualified Products List for Construction), Bulletin 41 (Producers of Bituminous Mixtures) or Bulletin 42 (Producers of Ready-Mixed Concrete).
   - Name/Description of material to be used.
   - The Mix Design Code number.
   - Discuss the requirements of Material Certifications (Form CS-4171) and the Contractor’s Quality Control Plan.

j. Fabricated structural material, which requires in-plant inspection, must be documented on Form CS-200, Source of Supply-Materials. Form CS-430, Notification of Inspection, must also be completed and submitted to the Structural Materials Section in the Bureau of Project Delivery.

11. **Inspection/Testing Procedure** - Advise the Contractor that consultant-furnished inspectors report to the Department's Inspector-in-Charge and they represent the Department in matters relating to the contract. For those projects where the consultant furnishes the Inspector-in-Charge, the consultant speaks for the Department within the scope of the Inspector-in-Charge authority.

12. **Progress Schedule** - The need for prompt submittal of a detailed progress schedule should be strongly emphasized. Any critical scheduling problems should be intensively explored.

   When the actual Notice-to-Proceed date issued to the Contractor occurs on a date other than that anticipated in the contract, ask the Contractor if it wishes to have the contract time re-evaluated as described in Publication 408, Section 108.06. Record the question and the Contractor's response in the minutes of the meeting.

   If a re-evaluation is requested, the District should accomplish it promptly.

   If the Contractor states that it intends to accomplish the work within the time described in the contract, despite the difference between the anticipated and actual notice-to-proceed date, have the Contractor submit this intent in writing and do not extend time for this reason.

   Discuss extension of contract time in accordance with Publication 408, Sections 108.06 & 108.10, to be granted on contracts which are adversely affected by labor strikes which cause a shutdown of the entire project or one or more controlling operations.

13. **Right-of-Way** - Discuss with the Contractor any special conditions agreed to during acquisition that would affect this project.

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Only the Chief Engineer or the Deputy Secretary for Highway Administration has the authority to extend the limits of work.

14. **Utilities** - An up-to-date report on utility removals and relocations should be discussed. For utilities that are to remain and possibly be a hindrance, the Contractor should be reminded of the obligation to inform the utilities before starting work and of any safety measures that might be required. All affected utilities should be invited to Pre-construction conference to discuss any conflicts with Contractor and construction schedule.

The District Utility Relocation Unit will:

- Assist in determining the status of utility relocations.
- Notify the Inspector-in-Charge of any prior work that requires inspection.
- Provide the Inspector-in-Charge with a list of utilities that have not yet started with their relocation work.
- Remind the Contractor of the following responsibilities:
  - Contact utilities at least 15 calendar days before starting operations.
  - Keep utilities notified when to schedule their utility relocation work as specified on the Utility Clearance, D-419, using specified notification times. When Contractor completes coordinated work items, notify utilities per Utility Clearance, D-419 information.
  - Be responsible for utility relocation coordination if changes are made to the construction schedule that impacts utilities.
- Remind the PennDOT Construction Project Manager/Inspector that they must notify the District Relocation Unit about any changes to the utility relocation arrangements.

15. **Grade Crossing** - Discuss any conditions stated in the PUC Order. When appropriate, review D-4279A and railroad specifications on train movements, railroad contact persons, and insurance requirements. The Contractor is to be reminded that no work should be performed at or near railroad facilities without the railroad's knowledge.

16. **Water Supplies** - Water is not to be used from fire hydrants without the owner's approval.

Request that the Contractor submit for acceptance its source of water for construction use and for drinking water.

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17. **Estimates** - Inform Contractor that estimates will be processed monthly when payable amount is less than $1,000 and semimonthly when payable amount exceeds $1,000. Final payments amounting to between -$10 and +$10 will be disregarded.

18. **Maintenance and Protection of Traffic** - Discuss working hours, ingress and egress, traffic flow, traffic control material, traffic control plan (or alternates), lateral lane restrictions, and special contract provisions.

Discuss Publication 408, Section 107.02(c) registration and licensing of out-of-state vehicles used on public highways. Provide Contractors copies of the FACT SHEETS from Pub 194, Trucker's Handbook.

Have Contractor furnish after hours phone numbers to be used for emergency contacts. Furnish to local/State Police and PennDOT County Maintenance Office.

19. **Safety** - Emphasize to Contractors that safety is of paramount importance both on and off the project and that projects are to be in compliance with OSHA regulations. The Contractor's written project safety program is required to be submitted at this Conference. The District Project Safety Officer (DPSO) or designee should discuss the contractor's proposed safety program and recommend any additional safety requirements that are required.

A US Department of Labor Poster, OSHA 3165 (Job Safety and Health: It’s the Law), the Federal Hazard Communications Regulations, the contractor's emergency phone number (after hours contact personnel), the contractor's safety officer’s name and phone number, and a listing of hazardous materials found in the workplace should be posted on the project bulletin board.

For projects on major highways, establishing an emergency response plan should be discussed.

20. **Environmental Commitments & Project Permits** - Whenever there are project-specific Permits, Plans, Construction Items, Special Provisions, Notices to Contractor, Environmental Issues and/or Mitigation Commitments included in the contract, the ACE/ACM and/or District Environmental Unit Representative are to make all parties aware of such contractual environmental commitments at the Pre-construction Conference.

- Environmental Commitments and Mitigation Tracking System (ECMTS):
  - Review each Environmental Commitment / Mitigation Item indicated on the project's ECMTS Construction Tracking Signature Sheet and have the contractor identify their designated individual responsible for maintaining the signature sheet.
• National Pollutant Discharge Elimination System (NPDES) Permits:
  o Complete the Co-Permittee Application for the NPDES Permit and submit it to the Department of Environmental Protection (DEP) or the authorized County Conservation District for acknowledgement.
  o Provide the contractor a Notice of Termination (NOT) Form for the NPDES Permit with Sections 1, 2, 4, 6, 7.a and Appendix A completed.
  o Obtain a copy of the contractor's Preparedness, Prevention and Contingency (PPC) Plan and have the contractor identify their licensed professional (Professional Engineer, Geologist, Land Surveyor or Landscape Architect) registered in the State and if applicable, their designee to be present onsite and responsible for implementing critical stages of the approved Post Construction Stormwater Management (PCSM) Plan.

• DEP State Water Obstruction and Encroachment Permits (WOEP):
  o Review the General and Special Conditions of the WOEP with the contractor. Complete the Acknowledgment of Appraisal of Permit Conditions, obtain the contractor's signature on the form, and submit the completed form to the appropriate DEP Regional Office prior to commencement of construction.
    ▪ A copy of both the Permit and signed Acknowledgment of Appraisal of Permit Conditions must be available at the project for inspection upon request.

• U.S. Army Corps of Engineers Pennsylvania State Programmatic General Permit (PASPGP)
  o Review the General Conditions of the PASPGP with the contractor.
  o If applicable, review the Special Conditions of the PASPGP with the contractor. Complete the Acknowledgment and Agreement for Compliance with Terms & Conditions of PASPGP, obtain the contractor's signature on the form, and submit the completed form to the appropriate Corps District prior to commencement of construction.

21. **Labor Compliance** - Discuss with Contractor the Labor Compliance requirements for this project and how failure to comply will affect payment of estimates.

The Prime Contractor is to be reminded to include the labor compliance requirements in
the written contract between the Prime and Subcontractor (Form FHWA 1273, Required Contract Provisions). The Prime Contractor is also to be reminded to notify the Inspector-in-Charge when Subcontractors are to begin work.

The Contractor is responsible for postings listed in B. 1. 21. Inform Contractor that random wage rate checks will be performed during the life of the project.

Additionally, a copy of POM Section B.10.1, “Contract Labor Compliance Guidelines and Responsibilities”, is to be provided to the Inspector-In-Charge, reviewed, and discussed in order to provide assurance of contract compliance.

22. **Unique Special Provisions** - Any unique Special Provision should be discussed in order to resolve any questions regarding the Contractor's interpretation of the scope of the Special Provision(s).

23. **Authorizations for Contract Work** – The Prime Contractor is to be reminded that, as specified in Publication 408, Section 110.03(a), any additional work, extra work, and/or extra work on a force account basis performed before receipt of written authorization from the Department will be at the Contractor’s risk. Such written authorization will be transmitted to the Contractor from the Inspector-in-Charge via ECMS and, at a minimum, will identify the type of work being authorized, indicate whether the Department is willing to extend the contract time if warranted, and provide a detailed scope of work. When work is initiated based on an oral authorization, the Contractor should expect that the ECMS Authorization for Contract Work will be submitted as confirmation of the oral authorization within a reasonable length of time thereafter (i.e. within 3 calendar days of the start of the work).

24. **Estimated Effective Rate for Unemployment Taxes** – The Prime Contractor is to be reminded of the requirement for a properly completed Form CS-4347EER to be submitted with the itemized statement submitted for final payment of Extra Work performed on a Force Account basis. This requirement is applicable to the Prime Contractor, as well as any Subcontractors involved in the Force Account work. The form is to be completed for the current calendar year using data reported on Pennsylvania Unemployment Compensation tax forms filed with the Department of Labor and Industry and Federal Unemployment Tax returns filed with the Internal Revenue Service for the prior calendar year. Contractors have until April 15th of each calendar year to update their Estimated Effective Rate computation. Only Federal and Pennsylvania Unemployment Tax payments are to be used to compute the Estimated Effective Rate. Unemployment Tax payments made to other states should not be included.

25. **Shop Drawing Review Procedures** – All shop/work drawings require several layers of review and approval. Following is the basic distribution list for all drawings:
Distribution list for all distributions (including ‘Returned for Corrections’):
- Fabricator
- Contractor
- District Project Engineer
- District Bridge Unit
- District Structure Control Engineer

Distribution list (for distribution of ‘Accepted’ and ‘Accepted as Noted’ drawings):
- All parties included above in the Distribution list for all distributions
- PennDOT shop inspector (sent c/o Fabricator)
- PennDOT Bridge Design & Technology Division, ATTN: Structural Materials Section, Materials & Testing Laboratory, 81 Lab Lane, Harrisburg, PA 17110
- PennDOT ACE (Assistant Construction Executive)
- PennDOT Inspector-in-Charge (name supplied at Pre-construction meeting)

26. Question and Answer Period
## Source of Supply-Materials

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Contractor Comments

* L = Local approval needed or LTS = LTS approval needed

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<th>Product Name or Material Description/Type</th>
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April 2017 Edition
# Issue Escalation Matrix

**Directions:** Use Levels 1-5 to establish a Chain-of-Command for resolving construction issues that occur on the project. The lowest member of the Chain-of-Command should be listed at Level 1, and the highest member should be listed at Level 5. For example, the Contractor matrix may include a Foreman at Level 1 and use a Project Manager, Project Superintendent, etc. to complete the proceeding levels. Likewise, the project inspection staff matrix may include a Transportation Construction Inspector (TCI) at Level 1 and use a TCI Supervisor, TCI Manager, etc. to complete the proceeding levels. If an issue discovered on the project cannot be resolved at a level, it must immediately be escalated to the next level. Starting with the day of the discovering, the level capable of resolving the issue must be notified and actively seeking a resolution no later than the timeframes listed within each step.

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<tr>
<td>10 Days*</td>
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</tbody>
</table>

* Recommended timeframes may be adjusted with Department and Contractor agreement.

## District Contact List

<table>
<thead>
<tr>
<th>Materials Unit</th>
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</tr>
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</table>
The State Procurement Code authorizes agency heads (i.e. the Secretary of Transportation) or a deputy to issue binding letters of intent before a contract for construction actually becomes effective. The Contractor receiving this letter may then rely on it to prepare to start work and incur costs to the extent authorized. No work may be performed at the construction site and no payment can be made until the contract is fully executed. The letter of intent is used to give the Contractor the opportunity to get a jump-start in performing the contract while being assured that authorized preparatory expenses will be reimbursed in the event the Secretary elects to cancel the contract prior to the Notice to Proceed date.

At times, the nature of a particular construction project is such that extensive and/or costly advance preparation by the Contractor is necessary. Such projects would include those that have a compressed construction schedule, those that require significant quantities of steel piling and/or structural steel, those that involve critical construction staging constraints for large portions of the work, and those that call for the fabrication of pre-cast and/or pre-stressed concrete products during periods when plant capacity will be limited. When a project is deemed to be a “special needs” project with regard to the level of advance preparation expected of the Contractor, a project-specific special provision is to be included in the bid proposal and a Letter of Intent from the Deputy Secretary for Highway Administration submitted to the lowest responsive and responsible bidder. The special provision and Letter of Intent are to outline the extent to which the Contractor may prepare to start work and incur costs in preparation for performance of the contract.

Utilizing the knowledge of the scope of the project and the work to be performed under the contract, the Assistant Construction Engineer/Assistant Construction Manager (ACE/ACM) having responsibility for the project is to work with the District Design Unit to prepare the project-specific special provision and a request for approval outlining the need for and benefits of utilizing a Letter of Intent on the project. Working with the ACE, the Design Unit will select from the list of allowable preparatory expenses specified in the Standard Special Provision (SSP) entitled “Section 103.02(a) – Letter of Intent”, and include those that apply to the subject project in the body of the provision. Only those expenses listed in the SSP are eligible to be included in the project-specific special provision. The information in the project-specific special provision will be included in the Letter of Intent to the Contractor, which will be prepared by in the Contract Management Section of the Bureau of Project Delivery.

The Department’s assurance of reimbursement, in the event the contract is cancelled, will apply only to those expenses incurred as authorized in the project-specific special provision and the Letter of Intent. Therefore, care should be taken to ensure that all the allowable, advance preparation the Department expects of the Contractor is addressed in these documents. Before it is finalized, the Design Unit is to submit the project-specific special provision, along with the request for approval, to the Contract Management Section, which will coordinate a review by the Office of Chief Counsel (OCC), Highway Construction and Claims Division, to ensure that the contents are in compliance with the requirements of the State Procurement Code.
The ACE/ACM should ensure that the District Design Unit links an electronic file copy of the Central Office approval to use the Letter of Intent to the Project Design Checklist in ECMS. The Contract Management Section will create an ECMS Project Condition to establish a systematic notification that a Letter of Intent is being employed on the project and must be processed.

Upon reviewing the ECMS Project Conditions, the Bureau of Project Delivery, Contract Management Section, will prepare the Letter of Intent based on the information in the project-specific special provision, insert the name and address of the lowest responsive and responsible bidder, route the letter through the Executive Offices to obtain the Deputy Secretary’s signature, date the signed Letter of Intent, and transmit it to the Contractor prior to the Notice to Proceed date.

The Contract Management Section will link an electronic file copy of the signed Letter of Intent within the Post-Award Checklist Items area of the Contract Awards screen in ECMS for viewing by authorized, interested parties.

In the event a project on which a project-specific special provision and Letter of Intent are employed is canceled by the Secretary, the Federal Highway Administration is to be advised. If the Contractor is to be reimbursed the actual cost of any authorized material purchased for the project, payment is to be made using 100% State funds and the material retained by the Department. If the material is later used on a Federal-aid project, federal participation in the cost may be sought at that time. Any reimbursement for the Contractor’s authorized, non-material-related expenses will be eligible for Federal funding at the appropriate pro rata share.
1. **Purpose**
   To establish the Department policy to ensure sharing of construction and material services between Districts.

2. **Background**
   Instances occur where Department staff reside outside their assigned District border and live adjacent to other District borders. Despite this fact, coordination does not occur across District borders to balance resources where it may make business sense. This lack of flexibility has resulted and continues to result in lost opportunities for the Department to improve areas of cost control, employee quality of life, information sharing, and knowledge transfer.

3. **Department Approach**
   - Districts should consider regionalization efforts in the following areas:
     a) Border Project – projects across District borders in close proximity to each other or projects having large travel distances for one District’s personnel and not the adjacent District’s.
     b) Regionalized Winter Reassignments – provide employees the opportunity to spend their winters in the District that is their shortest daily commute. Border Projects will be reassigned to appropriate Districts or staffed with the nearest qualified Department Field Staff. Examples of Border Projects are as follows:
       a) The entire project is managed by another District, from the Assistant District Executive for Construction (ADE-C) through Inspectors.
       b) An Inspector-in-Charge (IIC) is temporarily assigned to another District’s Assistant Construction Engineer (ACE)/Assistant Construction Manager (ACM).
       c) Field inspectors are temporarily assigned to another District’s IIC.
         Note: During the project, the home District will need to be updated on issues including Legislative Contacts.
     
   - Refer to the [Statewide GIS Map](#), which displays home residences of Department Field Staff. The map should be used when considering possible inspection candidates for sharing. Update map every January and July.
   - Districts are responsible for sharing upcoming and active project lists with adjacent Districts every January and July.
   - The management of sharing Department Inspection resources between Districts is the responsibility of the Assistant Construction Engineer (ACE)/Assistant Construction Manager (ACM).
   - A yearly Western ACE Regional Meeting and Eastern ACE Regional Meeting will be held in the first quarter of each calendar year. This meeting will help plan the upcoming construction season and allow guidelines to be presented, discussed, and refined.

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Any unmet District Winter Reassignment need will be eligible for winter reassignment. The ADE-C will convey their District’s reassignment opportunities to bordering Districts.

Respective Finals Unit Supervisors will manage Final Audits and provide guidance for CDS Coordination.

Respective District Material Engineers will manage Material Plant Inspections.

4. Benefits

- Reduces travel time and reporting mileage for Construction Staff.
- Reduces direct costs incurred for Construction Staff.
- Balances resources to match changing Contractor schedules.
- Increases value of Construction Staff by matching expertise and experience to specific project operations, such as bridge deck placements, asphalt paving, or concrete paving.
- Develops versatility of Construction Staff by familiarizing individuals with different construction practices utilized across Districts.
- Improves project dedication and buy-in. As an example, if individual lives in the area of project, there may be more vested interests in the quality of the finished project.
- Improves quality-of-life for Construction Staff through reduction of commute times.
- Improves staff morale. As example, an individual does not have to travel great distances during winter reassignment at their own expense.
- Increases utilization of Construction Staff prior to winter reassignments.
- Increases information and knowledge transfer across District borders.
- Provides opportunities for Districts to evaluate Best Practices of adjoining Districts and adopt processes/procedures as determined appropriate.

5. Department Guidelines

- Annual, statewide meetings are to be scheduled to discuss further opportunities. The Agenda for Transferring Projects Between Districts and the Handoff Agenda should be used to guide and facilitate the meetings. The following items should be discussed:
  a) Specific District Guidelines, as applicable.
  b) Lines of Communications – discuss and determine how issues/concerns are escalated during the project. The employee should have a daily discussion with their supervisor/manager in the District in which they are currently working; if their issue is not resolved, then discussions should take place with their supervisor/manager in their home District. The home District Supervisor/Manager should contract the appropriate manager to resolve any operational issues.
- When District and AFSCME employees are involved, conduct meetings with respective AFSCME Locals, Councils, and appropriate management staff. Meetings will be coordinated with the District Human Resource Officer or Labor Relations Coordinator. Utilize the AFSCME Meet & Discuss Agenda for these meetings. Upon implementation and after the initial meeting with AFSCME Locals, inform the District Labor Relations Coordinator (LRC) and the Local Union President.
- Staff Selection within the Department:
  a) Management has the right to direct the workforce across District lines.

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b) The methodology and procedures for assigning Union covered employees to projects will remain in concert with current or existing Collective Bargaining Agreement language and local agreements. Conflicting District local agreements will be resolved by referring the matter through the District LRCs to the Labor Relations Division in Central Office.

c) Construction Season – Department Staff selection must be based upon proximity to project, experience in type of work, skills, and abilities. All other factors being equal, seniority should be considered, but not required, for AFSCME covered employees.

d) Winter Reassignments – AFSCME employees, who are shared with other Districts, will be assigned from and returned to their respective home Districts in the manner consistent with the processes outlined in the Collective Bargaining Agreement and local agreements. If Winter Reassignment needs are unfilled in a District, the District should solicit surrounding Districts for available staff. If surrounding Districts needs have been fulfilled and staff is available, staff may be shared with the other District.

- Cost savings should be estimated and tracked on a biannual basis when services are shared, and the costs saving should be reported to the Construction Quality Assurance Section Chief. The District ADE-C receiving services is to report cost savings by February 1\textsuperscript{st} and August 1\textsuperscript{st} of each year. The Inspection Cost Savings spreadsheet can be used for reporting, but other means are acceptable.
- When an Inspector-in-Charge is shared between Districts, the IIC must have two separate profiles in Engineering and Construction Management System (ECMS); one for home District and another for out-of-District projects.
- The ACE and IIC must review District Operating Procedures and Policies with employees assigned from a different District. Examples of these Operating Procedures and Policies include:
  a) Use of PSA or FID.
  b) Use of an ECMS Operator or direct entry into ECMS.
  c) Completing calculations and other required documentation in the vehicle.
  d) Material releases.
  e) Inspector-in-Charge preferences.
- A one-page orientation paper must be developed by each District to include specific operating structures, policies, procedures, and supervisor expectations.
- A welcome package must be established by each District to include a District organizational chart, documentation manual, District preferences, and relevant District contacts.
- Expense Report – Employee must have the following comment on expense report indicating the sharing opportunity to District Fiscal Unit:
  - “Employee currently works out-of-District on a project due to District sharing opportunity.”

- Travel Time – In accordance with the current Technical Services Appendix.
- Travel Expenses - In accordance with Commonwealth travel policy Mileage Shortest Trip Concept. The shortest distance is measured by either the employee’s initial point of departure and the project or the employee’s home headquarters and the project.
• Ground Travel Worksheet – In accordance with District Fiscal Policy. Employees complete only the bottom section of the Ground Travel Worksheet.
• Lunches – In accordance with the Master Agreement or Master Memorandum.
• Overtime Equalization – Overtime is equalized by project.
• Compensatory Time – In accordance with the Master Agreement or Master Memorandum or employee’s home District agreements and policies.
• Paper payrolls, expense reports, and leave requests must be submitted to and signed by the Supervisor receiving services. The payrolls, expense reports, and leave requests must then be scanned and emailed to the home District for processing in ESS. The employee’s home District Supervisor must be copied on all correspondences, as they will be performing the approvals in ESS. If direct entry into ESS is being utilized, a hardcopy must be submitted to the home District Supervisor.
• Employee Performance – Employee Performance Review Evaluations must be performed by the Supervisor receiving services, utilizing the Employee Evaluation Short Form in order to assist the employee’s home District with yearly Employee Performance Reviews.
• At completion of construction season, each employee must complete the Survey for Construction Services Across Districts form and return it to the Supervisor receiving services. The form should then be forwarded along to the corresponding ACE and both Districts’ ADE-C.
The following list of publications is the minimum required for the Project Office:

- **Publication 2** - Project Office Manual
- **Publication 19** - Field and Laboratory Test Manual
- **Publication 72M** - Standards for Roadway Construction
- **Publication 111M** - Traffic Control - Pavement Markings & Signing Standards
- **Publication 148** - Traffic Standards - Signals
- **Publication 194** - Truckers Handbook
- **Publication 212** - Official Traffic Control Devices
- **Publication 213** - Temporary Traffic Control Guidelines
- **Publication 219M** - Standards for Bridge Construction
- **Publication 408** - Specifications

All of the above-listed publications are available electronically on the PennDOT website. If a computer with internet access is available in the Project Office, it is sufficient to have the above-listed publications bookmarked on the web browser. However, if a computer with internet access is not available in the Project Office, hard copies of the above-listed publications must be provided in the Project Office.
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Purpose and Objectives of Project Field Office Records

The Department requires construction contract documentation to account for the expenditure of public funds. Department employees involved in construction activities are accountable for the approval of the payments made for all work that is performed in the contract. Proper documentation substantiates and verifies that actual field measurements, quantities and percentages of items paid under the contract have been performed in accordance with the plans, specifications and contract.

All documentation needs to be adequately identified and cross referenced to support a field audit during the course of the project, as well as a final audit after the completion of the project. The audit trail will be readily traceable yet be as simplified as possible, to eliminate duplication and extra unnecessary work.

All records are to be complete and detailed and compatible with the Department's Engineering and Construction Management System (ECMS) and the PennDOT Project Collaboration Center (PPCC).

All information and field data contained in either the Project Site Activity (PSA) reports or Field Inspector's Diary (FID) or other sources must be cross-referenced by inspector’s name and date or file name for the PSA or by userid and date for the FID. This notation indicates that the work has been inspected, and the necessary measurements or computations have been performed to make current payments or substantiate Final Quantities. An audit trail must exist from the Items/Estimate (I/E) Book or ECMS Items Quantity Report to the source document.

Certain items, at a particular stage of the work, may call for an interim payment or an approximate estimate of quantity to be paid. In such cases, notes explaining the conditions and rough data used to determine the approximation are to be made in other source documents. This kind of notation is to be countersigned and dated by the Inspector-in-Charge to signify approval or it is to be electronically approved in the PSA by the Inspector-in-Charge. Final measurements are always to be used in lieu of approximations.

It is good documentation procedure to obtain actual volumes or dimensions and record the data immediately in its proper place. The date and name of the individual making the notation is to be recorded. Recorded evidence of quantities and inspections must be available; and where judgment is necessarily exercised, an explanation needs to be made in one of the source documentation books/electronic records.

Significant differences between plan and actual quantities should be properly explained, documented and referenced where the differences have occurred.
Sketches, if necessary, are to include actual field dimensions. Any measurements in doubt or which appear to be incorrect need to be rechecked in the field and a line drawn through (never erase) the information in error. Date and sign the new entry. Retakes can be expected and indicate a logical approach to resolve doubt or error.

**Performance of Work**

The Inspector-in-Charge (IIC) will have immediate responsibility for administering the performance of work on the project. The field records that support all estimates are under the IIC’s supervision and approval. However, the presence of the inspector during the performance of any work on the project will not relieve the Contractor of the responsibility for work that is later determined by the Engineer to be defective.

**Source Documents**

Source documents contain the original recording of the field information and should always be referenced through the ECMS Items Quantity Report or I/E Book, which will contain the quantities for which the payment estimate is being approved. This reference is accomplished directly and whenever possible, field information and data will only be contained in one source document.

A source document is that written / electronic record or plan sheet upon which the field data is written and signed / typed with name and date for electronic, and it is to remain a part of the final records. All physical source documentation should be kept in a secure and fireproof location. Electronic source documentation shall be stored in either ECMS or PPCC.

Source documents consist of, but are not limited to, the following:

A. Field Inspector's Diary (FID) (Form CS-4333) or Project Site Activity (PSA)
B. Field Survey Books (Black Book) (Form D-428)
C. Concrete Inspector's Daily Record Books (Form CS-472)
D. Mobile Construction - Concrete Inspector's Diary
E. Items Quantity Book (Form CS-4346) (If Applicable)
F. Master Diary (Form CS-4334) (If Applicable)
G. Drawings (Annotated, As-Builts and Cross-Sections)
H. Plan Sheets
I. Delivery Tickets
J. Certification Slips
K. Hand and Computer-Generated Forms and Tabulations
L. Electronic attachments

If information, data, quantity measurements or computations are recorded in more than one source document, all documents will be cross referenced. Similarly, when the PSA or FID report...
is the source document and other supporting data, quantity measurements or computations are recorded in another document, the PSA inspector's name and date or file name or the FID userid and date will be entered at the point of incorporation of the data. The PSA or FID report will also indicate the source document book and page number, or file location in PPCC.

Drawings and plan sheets used as source documents or that are used as a part of the audit trail will be adequately identified and included in the PSA/FID.

If a full page in any source document is voided, it must be so marked and identified in its proper sequential position as to page and book and signed and dated.

**Project Field Office Standard Forms**

The following standard forms, with explanations and instructions for their use, are to be used on the project by the Inspector-in-Charge and field personnel for recording and documenting project data.

**Field Survey Book (Form D-428; Black Book)**

This book may be used for the recording of field information in the form of sketches, dimensions, statements or computations. It is imperative that this information be indexed when used as a source document and more than one item or multiple locations are referenced through the I/E Book.

**Items Quantity Book (Form CS-4346; I Q Book)**

This book may be used for computations or to initiate a record of information, including sketches and field dimensions. When used for this purpose, the appropriate notations and cross references by userid and date, or reference book and page number, will be included to expedite the audit trail.

**Master Diary (Form CS-4334)**

When using the Master Diary in lieu of the PSA or FID, refer to the last paragraph on page B.1.3-1. Contractor's daily working hours will be recorded in this diary.

The daily entry in the Master Diary will be signed and dated by the Inspector-in-Charge and the person preparing it.

The District Office will keep a record of distribution of these diaries by use of the imprinted numbers on the front cover.
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The Project Site Activity Report (PSA) or Field Inspector's Diary (FID) will be used as the source document, whenever possible.

The Field Inspectors will make a daily record of the elements of work they inspected and/or office duties performed while assigned to a project. The PSA/FID will include hours worked by the inspector, lunch period, travel miles, and on the job miles.

Supervisors who are assigned to more than one project will complete at least one PSA/FID daily to document their work. A separate PSA/FID does not need to be completed for each project. A supervisor, who is present on more than one project daily, shall be listed as a visitor on the projects, with the exception of the project for which they are completing the daily PSA/FID.

Regardless of whether the source document is paper or electronic, the required information is indicated on pages B.1.3-2 through B.1.3-4. Examples are on pages B.1.3-5 through B.1.3-8.

All paper source documents will be filed chronologically in binders. The permanent bound book will be kept for record retention purposes.

If electronic PSAs are being used, a hard copy print out of the PSAs is not required. The Mobile Construction PSA app has been developed to allow inspectors to begin their daily documentation in the field. The electronic PSA is then uploaded to ECMS.

Minor alterations to a source document may be performed by a Department Representative. All changes must also be initialed and dated by the Department Representative.

The Master Diary can still be used in lieu of the FIDs where four or less inspectors are assigned to a project, work in close proximity to each other, and have access to the Master Diary at all times. The Master Diary will be the sole document for recording daily events and pay quantity documentation. Each inspector will enter all data and sign and date their entry. The Inspector-in-Charge will also sign and date to show that they have reviewed and approved all data.
REQUIRED INFORMATION FOR FID/PSA REPORTS

A. INSPECTOR INFORMATION

1. Name
2. Hours Worked
3. Lunch Period
4. Travel Miles
5. On the Job Miles

B. DATE

B. WEATHER CONDITIONS

1. Must be documented twice daily; AM and PM
2. Temperature Hi and Low for the work shift

C. CONTRACTOR/SUBCONTRACTOR INFORMATION

1. Name
2. Hours Worked
3. Labor
4. Equipment
   Note: When multiple inspectors are on one operation, only one inspector must list the labor and equipment. The other inspectors can refer to the PSA/FID which lists the labor and equipment.

E. ITEM # __________________ AND FUNDING #__________________

F. ITEM DESCRIPTION

G. LOCATION

1. S.R./Sideroads/ramps
2. Plan Sta. ________ and RT. /LT. or N.B. /S.B.
3. Actual Sta. ________ and RT. /LT. or N.B. /S.B.
4. Structure No.

H. PAY QUANTITY

1. Flat Chain Measured Length = LF
2. Measured SY Length x Width Divided by 9 = SY
3. Measured CY Length x Width x Depth Divided by 27 = CY
4. Other units not listed above
I. REFERENCE TO OTHER SOURCE DOCUMENTS (IF NECESSARY)

1. Item Quantity Book No. and Page No.
2. Black Book No. and Page No.
3. Concrete Inspector's Daily Record Book No. and Page No.
5. Plan Sheet No.
6. X-Section Sheet No.
7. Other Source Documents not listed above

J. DETAILS OF CONSTRUCTION AND INSPECTION PROCEDURES

1. How the Item of Work Was Performed
2. What Materials Were Used
3. What Inspection Procedures Were Used
   a. Measurements (Partial or Final)
   b. All Types of Testing
   c. Certification
   d. Specification Sections

K. OTHER PERTINENT INFORMATION

1. Reference to any operation specific forms
   a. Daily Utility Inspection Report
   b. Form CS-6 Pipe Installation Inspection Form
   c. Other forms not listed above

2. Reference to Project Meetings
   a. E and S Preconstruction
   b. Project Control
   c. Pre-pave
   d. Pre-deck placement
   e. Demolition
   f. Erection
   g. Other meetings not listed above

L. DETAILS FOR OFFICE DOCUMENTATION

1. Explanation of the work performed
   a. As-builts
b. Calculations  
  c. Certifications  
  d. Verification of Force Account Records  
  e. Meeting Minutes  
  f. Other office work performed not listed above

2. Reference Applicable Source Documents

  a. Drawings  
  b. Item Quantity Book No. and Pages  
  c. Material Certification File Folder  
  d. Other Source Documents not listed above
### Pennsylvania Department of Transportation

**Construction Documentation System NeXtGen v. 7.0**

**PSA - Daily Project Site Activity**

- **Project:** 84698
- **District:** 08
- **County:** Monroe
- **SR:** 0078
- **See:** ITS

**PSA Date:** 1/4/2015

- **Temperature:** High 20 Low 15
- **Weather AM:** Cold
- **PM:** Snow

**Inspector / ID:** Bruce Wayne / BWAYNE

**Status / Date:** Unapproved / 1/4/2015

**L/C Code / Hours:** 9402 / 7.50

**7.50 Total**

### General Comments:

Official visitors on Project. John Smith Assistant District Executive visited the project to attend a Partnering Meeting.

### Travel miles to and from project:

- 26 miles roundtrip

### Work hours:

- 8:00 am - 4:00 pm
- Lunch 12:00 pm - 12:30 pm (0.50 hours)

### Item: 0902.0001  Type: Fund: 01

**Description:** TOPSOIL FURNISHED AND PLACED

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<th>Side Ramps</th>
<th>Ramp:</th>
<th>IDT</th>
<th>Plan Sta.:</th>
<th>to 3+03</th>
<th>RT/LT</th>
<th>NC</th>
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<td></td>
<td></td>
<td></td>
<td>1+64</td>
<td></td>
<td>RT/LT</td>
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</table>

**Tab Remarks:**

- **Actual Sta.:** 1+64 to 3+03 RT/LT
- **Quantity:** 6470.00
- **Reference:** Refer to IQ Book #001, Page 23 for a sketch, measurements and computations.

### Remarks:

- Topsoil Furnished and placed in 4" lifts.
- Topsoil leveled and unsuitable material removed.
PSA - Daily Site Activity

Project: 85100  District: 05  County: Monroe  SR: 0070  Section: ITS

PSA Date: 11/15/2014  Status: Draft
Inspector: Mike Lentz  Created By: Mike Lentz/PennDOT

Inspector Hours Worked

Start Time  Quit Time  Hours  Pay Code  Leave / Cost Code
6:00 am   4:00 pm  6:00  Normal  Project Inspection

Conditions and Work Suspended

Time  Temp  Condition  Work Suspended  Entered By  Entered Timestamp
8:00 am  36°  Sunny  None  Mike Lentz/PennDOT  11/15/2014 10:05:56 AM
3:00 pm  45°  Sunny  None  Mike Lentz/PennDOT  11/15/2014 10:19:54 AM

Comments

General Comment  Created: 11/15/2014 10:16:17 AM by Mike Lentz/PennDOT

Offical visitors on Project: John Smith, Assistant District Executive, visited the project to attend a Partnering Meeting.

Travel miles to and from project: 20 miles roundtrip

CJM: 12
Lunch: 12:00 pm-12:30 pm (2.50 hours)

Contractors

F Contractor
Start Time  Quit Time  Superintendent  Equipment Name  Equip. Qty  Labor Name  LaborQty
8:00 am   4:00 pm  Bob Jones  Skid Steer  1  Laborer  1
Truck - Single Axle Dump  1  Operator - Group 1  1
Sheepfoot Roller  1  Truck Driver (Owner)  1

Work Items

Item: 0102-0001  Type: Contract Item  Fund: 01
Description: TOPSOIL FURNISHED AND PLACED
SN/Sect: 1202/RM2  Side Road: Ramp:
Plan Location: 1+44 to 1+93
Location Remarks:

Actual Location: 1+44 to 2 + 56 RTLT
Quantity: 470000 (CY)

Date Passed:
Quick Calc Info:
Reference Info: Refer to KB Book #031, Page 29 for a sketch, measurements and computations. Reference File Folder K for certifications
Remarks: Topsoil removed and placed in 4’ compaction lift.
Topsoil leveled and unsuitable material removed. Material compacted with a sheepfoot roller.

April 2017 Edition
PROJECT SR 1026 SEC XX

LOCATION
Est. Pay Quantity Based on Truck Load Count

<table>
<thead>
<tr>
<th>Name</th>
<th>TK #</th>
<th>Type</th>
<th>Size</th>
<th># Loads</th>
<th>Volume</th>
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<tbody>
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<td>Tandem</td>
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<td>9</td>
<td>108 CY</td>
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<td>434 CY</td>
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<td>Trailer</td>
<td>16.0 CY</td>
<td>9</td>
<td>144 CY</td>
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<table>
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<tr>
<th>Item No/Type/Funding</th>
<th>Description</th>
<th>Plan</th>
<th>Actual</th>
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<tbody>
<tr>
<td>0203-0001(01)</td>
<td>CL. 1 Ex. 637+42 to 642+19 SR 1026 SB</td>
<td>638 + 00 to 641+00 SR 1026 SB</td>
<td></td>
</tr>
</tbody>
</table>

Est. Total = 1232 CY

NOTE: See I BK. #3 PG. 1 for Truck Measurements

A) CL. 1 Exc. material placed in embankment from Sta. 590+00 to 596+50 SR 1026 NB

B) Material was granular and was placed in 8 inch loose lifts by a dozer. Material was compacted by a ___ Ton Roller. Compaction for each lift was continued until there was no visible movement under the roller.

C) Also Compaction Test # ___ was conducted.

D) Item complete at these locations, pay estimated totals above.
Visitor: Joe Supervisor on site.

Contractor did not work on site due to rain.
Performed the following office work;

A) Performed calculations for class A and Class AA concrete for structure S-12345. Reference IQ Book #____, pgs. ____through______.
B) Checked rebar calculations for substructure components S-12345. Reference IQ Book ___, pgs. _____through______.

7:00 AM to 3:00 PM (7.5 hrs.)
(½ hour lunch 12:00 to 12:30pm) Travel Miles 30 OJM 0

Joe Inspector

HOURS WORKED

INSPECTORS SIGNATURE

April 2017 Edition
ITEMS AND ESTIMATE BOOK (I/E BOOK)

The Items/Estimate (I/E) sheets were developed to be a standard, statewide format for the loose-leaf manual documentation system. They illustrate the minimum documentation requirement and can be computer generated through Crystal Reports.

This book contains the current and final payment quantities which are compiled from and referenced to the following source documents:

1. Field Inspector's Diary
2. Field Survey Book (Black Book)
3. Items Quantity Book
4. Concrete Book, Material Invoices and Project Plans

The I/E Book is a loose-leaf book that can be generated in its entirety from Crystal Reports and comprised of a series of Items/Estimate and Item/Plan Station Breakdown Sheets. The I/E Book is used to record the progress and payment of a contract item. As the work progresses, the completed quantities to date are recorded by location (or station to station) and description and are referenced to the source document. Approved work orders for additional quantities and extra work are also incorporated. The I/E Book provides the payment estimate records, and, in addition, establishes a history of how quantities were generated for payments of estimates. The I/E Book also establishes the audit and links it to the source documents.

FLEXIBILITY - The three columns without headings on the I/E sheets allow each District to incorporate entry identification that the District prefers. The use of the three columns and the Item/Plan Station Breakdown Sheets will not be critical to an audit review.
### KEY FOR I/E BOOK SHEETS

1. **Item Number & Type**
   - **Contract assigned items** (Example 2201(0201)-0001). Extra Work, use existing contract item number. Non-Standard items, District's Preference
   - **E = Extra Work,**
   - **P = Penalty,**
   - **R = Rebate,**
   - **V = Value Engineering**

2. **FUND**
   - The funding assigned to this item for work in a particular location on the project. Also, corresponds to a particular funding participation breakdown on the Federal Agreement Estimate.

3. **Cost Function**
   - The cost function is taken from the contract items estimate summary printout.

4. **I/E Book #**
   - A unique number assigned to each I/E Book. Contains the last 4 digits of the contract number.

5. **Page #**
   - Numbered consecutively starting with 1. The item listed on this page corresponds to the position of the item on the contract items estimate summary Crystal Reports printout. Item #3 on the printout would be numbered 3 on the I-E Basic Sheet. Additional required continuation sheets would be numbered 3.1, 3.2, 3.3, etc. Item/Plan location breakdown sheet pages are numbered with letters (Ex. 3A, 3B, 3C, etc.).

6. **ITEM DESCRIPTION**
   - Taken from the Engineering and Construction Management System (ECMS).

7. **CONTRACT**
   - Contract number (Self explanatory).

8. **UNIT PRICE**
   - The contract unit price for this item.

9. **UNIT**
   - Unit of measure (LF, SY, CY, Each, LS, etc.)

*April 2017 Edition*
10. ORIGINAL QTY
   The total plan (Original) quantity for this item of work in the funding listed.

11. FINAL QTY
   The total final (Actual) quantity for this item of work in the funding listed.

12. S.R. (& SECTION)
   Self explanatory.

13. WORK ORD
   The work order number on which quantities of work are adjusted.

14. DATE (APPROVED)
   Date on which the particular work order was approved.

15. + OR -
   The quantity amount which was added (+) or deducted (-) on the particular work order.

16. NEW QTY
   The new accumulated total approved quantities (Plan + or -).

17. DATE
   The date on which the work was performed.

18. OFF. #
   The userid and date on which the work performed was reported.

19. REF. BK. # / PG. #
   The book and page number where the measurement, sketch, and computation can be located (F.S.B., Items Quantity Book, Plans, etc.).

20. LOCATION / REMARKS
   The actual location where the work was performed. This column could also be used for remarks.

21. PG # (Optional)
   The corresponding Item / Plan station breakdown sheet page and line number where the work quantity is to be totaled by location.

22. L # (Optional)

23. EST QUANT
   To be used to post an estimate quantity from an FID/PSA Report.
<p>| | | | |</p>
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<thead>
<tr>
<th></th>
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<td></td>
</tr>
<tr>
<td>27.</td>
<td>STA. / STA.</td>
<td>Location of work to be performed. Plan stations taken from tabulation sheet.</td>
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<tr>
<td>28.</td>
<td>REMARKS</td>
<td>Used only if noted in remarks column on tabulation sheet.</td>
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<td>29.</td>
<td>ORIG QTY</td>
<td>The plan quantity for this item of work at the particular location specified.</td>
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<tr>
<td>30.</td>
<td>PLACED QTY</td>
<td>Actual quantity of work performed at the particular location specified.</td>
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<tr>
<td>31.</td>
<td>FINAL QTY</td>
<td>To be completed by the finals unit during final audit.</td>
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**CLEARING AND GRUBBING**

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Required Continuation

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</tbody>
</table>
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The General File System for Projects is a guide that can be followed on projects using ECMS/CDS with a few exceptions. NOTE: These examples are used for physical file folder setups on projects. Many projects now use PPCC, which contains a customizable, electronic filing system.

For all filing systems, Certificates of Compliance (CS-4171s) should be filed in the appropriate material file folder.

**EXAMPLE #1**

A. Contract  
B. Accident and First Aid  
C. Approvals, Laboratory*  
D. Inspection Charge  
E. Batcher Mixer Slips  
F. Bridge Stake Out  
G. Correspondence  
H. Earthwork Computations  
I. Embankment Compaction  
J. Estimates  
K. Final Department*  
L. Gradation, Coarse  
M. Gradation, Fine  
N. Grade Sheets  
O. Hourly Payroll*  
P. Invoices  
Q. Miscellaneous  
R. Public Utility  
S. Releases, Consent to Enter  
T. Roadside Development  
U. Sample Identification  
V.  
W. Work Orders  

* May be broken into sub-letters.  
(C-1, K-1, K–2)
EXAMPLE #2

Folder A

(1) Contract Proposal
(2) Minutes of Pre-Bid Conference
(3) Minutes of Pre-Construction Conference; Notice to Proceed; Approved Subcontractors (Form CS-4339R)
(4) Current Estimates
(5) FHWA. Inspection Reports
(6) Drinking Water Approval
(7) Project Correspondence
(8) Personal Correspondence

Folder B

(1) Driveway Releases; Consent to Enter (Forms RW-397, RW-397A)
(2) Borrow Pits; Agreements; Waste Pits (Form CS-4345)

Folder C  Materials Accepted by Laboratory Testing Section Approval

(1) Aggregate Laboratory Test (Form TR-4126A)
(2) Miscellaneous
(3) Copper Flashing
(4) Reinforcement Mesh Record
(5) Paint (Graphic Lube)
(6) Rubberized Joint Sealer

Folder D

(1) Tile Drain
(2) Cement Concrete Pipe
(3) Corrugated Metal Pipe
(4) Steel Shipment
(5) Guide Rail
(6) Neoprene Pads
(7) Prestressed Beam Shipment
(8) Other Materials Accepted by Affidavit or Certification
Folder E

(1) Cement Contracts
(2) AE Admixture
(3) Prestressed Beam Defect Sketch
(4) Compressive or Flexural Strength of Portland Cement Concrete (Form CS-458A)
(5) Concrete Mix Designs (Form TR-4221A)

Folder F

(A) Soil

(1) Subgrade
(2) Subbase Depth Check
(3) Subbase
(4) Random Observation

(B) Portland Cement Concrete

(1) Structures

(a) Class AAA
(b) Class AA
(c) Class A
(d) Class C
(e) Aggregate Gradation
(f) Summary - Transit Truck Mixers (Form CS-4337A)

(2) Pavement

(a) High Early Strength
(b) Paving
(c) Aggregate Gradation

(C) Bituminous Concrete

(1) Binder Course
(2) Wearing Course
(3) Chemically Treated Base Course or Shoulders, Soil-Cement, Soil-Bituminous, etc.

Folder G  Pile Driving

(1) Pile Book
(2) Shipment Certification
Folder H  Grade Sheets

Folder J  Bridge Stake Out

Folder K  Earthwork Computations (Form D-412A)

Folder L  Embankment Compaction

  (1) Method for Calculation of Moisture Density Relationship (Form TR-4247)
  (2) Nuclear Method Compaction Density Report (Form TR-4276A)

Folder M  Utilities

  (1) Daily Utility Inspection Report
  (2) Plan and Profile

Folder N  Miscellaneous Reports

Folder P  Work Orders (Form CS-442A)

Folder Q  Foreman's or Inspector's Daily Report for Roadside Development

NOTE: Folder R through Folder X contain Duplicate Copy of Forms submitted to office.

Folder R

  (1) Bi-Weekly Comp. Time Report
  (2) Hourly Inspection Charge and Hourly Payroll

Folder S

Folder T

Folder U

  (1) Quality Assurance
  (2) Quality Control

Folder V
Folder W
(1) Contractor's and Subcontractor's Payroll Statement either computerized or manual (Forms WH-347, LLC-25)
(2) Labor Compliance Spot Check
(3) Commercially Useful Function Report (Form EO-354)

Folder X  Accident Reports

Folder Y  Trainees (Reports & Outlines)

Folder Z  Semi-Final and Final Inspection Notes

Rest Area Filing Outline
The Inspector may add more categories under each Folder if needed.

Folder A
(1) Contract Proposal
(2) Minutes of Pre-Bid Conference
(3) Minutes of Pre-Construction Conference; Notice to Proceed; Approved Subcontractor (Form CS-4339R)
(4) Current Estimates
(5) FHWA Inspection Reports
(6) Drinking Water Approval
(7) Project Correspondence
(8) Personal Correspondence
(9) Welder's Certification

Folder B
(1) Driveway Releases; Consent-to-Enter (Forms RW-397, RW-397A)
(2) Borrow-Pits; Agreements; Waste Pits (Form CS-4345)
(3) Temporary Air & Temporary Water Pollution Control
(4) Traffic Regulation & Control including Flasher Approval List

Folder C
(1) Aggregate Laboratory Test (Form TR-4126A)
(2) Miscellaneous Acceptance (Color and Texture only)
(3) Concrete; Plain & Reinforced
(4) Masonry Work
(5) Structural Steel & Miscellaneous Metal
(6) Rough Carpentry & Finish Carpentry
(7) Roofing, Insulation & Sheet-Metal Work
(8) Finish Hardware, Glass & Glazing
(9) Tile Work, Painting, Finishing & Wallboard
(10) Toilet Rooms, Compartments & Accessories, Fire Extinguishers
(11) Steel Mesh Acceptance
(12) Paint Acceptance
(13) Rubber Joint Sealer
(14) Water-Proofing & Sealing
(15) Ventilating & Plumbing
(16) Electrical
(17S) Sewage Disposal System
(18W) Water Supply System
(19) Material Correspondence
(20) Shop-Drawings, Reinforcement Steel

Folder D

(1) Tile Drain
(2) Cement Concrete Pipe
(3) Corrugated Metal Pipe
(4) Right-of-Way Fence
(5) Highway Lighting
(6) Flag Poles
(7) Other Material accepted by Affidavit or Certification

Folder F

(A) Soil

(1) Subgrade
(2) Subbase Depth Check
(3) Subbase
(4) Random Observation

(B) Portland Cement Concrete

(1) Structures

(a) Class AAA
(b) Class AA
(c) Class A
(d) Class C
(e) Aggregate Gradation
(f) Summary - Transit Truck Mixers (Form CS-4337A)
(2) Pavement

   (a) High Early Strength
   (b) Paving
   (c) Aggregate Gradation

(C) Bituminous Concrete

   (1) Binder Course
   (2) Wearing Course

Folder K  Earthwork Computations (Form D-412A)

Folder L  Embankment Compaction

   (1) Method for Calculation of Moisture Density Relationship (Form TR-4247)
   (2) Nuclear Method Compaction Density Report (Form TR-4276A)

Folder N  Miscellaneous Reports

Folder P  Work Orders

Folder Q  Foreman's or Inspector's Daily Report for Roadside Development

Folder W

   (1) Contractor's and Subcontractor's Payroll Statement either computerized or manual
       (Forms WH-347, LLC-25)
   (2) Labor Compliance Spot Check

Folder X  Accident Reports

Folder Y  Trainees (Reports & Outlines)

Folder Z  Semi-Final and Final Inspection Notes
Project Field Office computer equipment for Highway and Bridge Projects is supplied by the Department. The equipment request should be made by contacting either your District CDS Coordinator or District Representative, using the Department Form CS-101A, Construction Field Site IT Equipment Request. Construction Field Office computer equipment, hardware and software, are for exclusive use by the Department and Department representatives. Every Department employee and Department representative will use their uniquely assigned Department issued CWOPA User ID and Password to login to the Department supplied computer equipment.

Note: Contracts for Local Projects, not managed by Department staff, will include the Microcomputer System Item 0688 for the contractor to supply the computer equipment.

Use the provided fire-proof safe(s) for storage of computer generated documentation and computer equipment including, but not limited to, the construction project General Files and all Construction Field Office laptop computers during non-work hours.

Additional questions should be directed to either the District CDS Coordinator or the District Representative.
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General Notes Concerning Source Documentation

1. All items covered in a PSA or FID or other source documents are to be identified and located as follows: Item Number, Type Code (for extra work items), Funding Number, Item Description, SR and STA or SR Segment and Offset for both plan and actual stations, Right or Left, Lane or Side. If there is only one funding number for the project, it need not be listed.

2. The source document for the inspection of an operation should include the construction procedures used to complete the operation, in addition to the information recorded for payment. NOTE: Refer to standards, plans, and specifications, including supplements and/or contract special provisions, for detailed requirements on each item. Cross-referencing to other source documents is required.

3. Class 1 Excavation (Waste) - See Publication 408 for documentation.
   a. Measure areas not on cross sections; irregular areas.
   b. Take random cross sections to generally confirm that line, grade, and excavation limits reasonably conform to the plan.

4. Dimensions, sketches and computations are considered acceptable alternatives to cross sections and stripping. (NOTE: Record bottom of footing and/or invert elevations.)

5. Class 4 Excavation - When checking and recording the trench depth for reconstruction, the inspector needs to consider overlapping items such as pavement and subbase for purposes of subsequent quantity checks.

6. Random depth, yield and temperature checks can be placed on the backs of the delivery tickets, in Field Survey Books or in the PSA or Field Inspector Diaries. When checks such as depth, width, yield, temperature, etc., are recorded in places other than the PSA or FID, a note identifying their location is needed in the report.

7. Sketches are preferred; however, Plans and/or tabular listings can be used in lieu of sketches.

8. When large quantities of unsuitable material are involved, cross sections may be needed.

9. For Lump Sum and/or their Component Items, actual field measurements are to be recorded on plans or some other source documents.

10. Record calibration of testing equipment.
## Construction Documentation Required

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<th>Item Name</th>
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<th>Sketch of Item</th>
<th>Measured Length</th>
<th>Quantity Placed</th>
<th>Load Count &amp; Factor</th>
<th>Preliminary and/or Final Cross Sections</th>
<th>Rate of Slope Checks</th>
<th>Temperature Checks</th>
<th>Statement of Percent Item is Complete</th>
<th>Preliminary and/or Final Cross Sections</th>
<th>Rate of Slope Checks</th>
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### Construction Documentation Required

| Item Section | Item Name                  | Method of Payment | See General Note # | Actual Measurements and/or Computations | Sketch of Item | Measured Length | Quantity Placed | Load Coat & Factor | Preliminary and/or Final Cross Sections | Establish Basis of Payment | Rate of Slope Checks | Temperature Checks | Statement of Percent Item is Complete | D - Depth Check Results | C - Density Test Results | Yield Test Results | Number of Delivery Tickets | Beginning & Ending Numbers | Batcher Mixer Slip & Plant Ticket | Lot Determination | Test Locations | Type of Test | Types Material Used Required Testing | Catalogue Cuts Shop Drawings | Material Certifications | Equipment Calibrations |
|--------------|---------------------------|-------------------|-------------------|----------------------------------------|----------------|----------------|-----------------|-------------------|----------------------------------------|--------------------------|--------------------|-------------------|----------------------------------|------------------------|---------------------|----------------------|------------------------|--------------------------|---------------------|----------------|-------------|-----------------------------|------------------------|---------------------------|----------------------|
| 400          | Bituminous Paving Roadway | SY                | 7                 | X                                      | X             | X              | X               | X                 | D                                      | X                       | X                  | X                 | X                  | X                  | X                  | X                    | X                      | X                       | X                     | X                      | X                    | X                      | X                    |
|              | Bituminous Paving Roadway | Ton               |                   |                                        | X             | X              | X               | X                 | X                                      | C                       | X                  | X                 | X                  | X                  | X                  | X                    | X                      | X                       | X                     | X                      | X                    | X                      | X                    |
|              | Bituminous Paving Drives & Misc. | Ton   | 7                 | X                                      | X             | X              | X               | X                 | C                                      | X                       | X                  | X                 | X                  | X                  | X                  | X                    | X                      | X                       | X                     | X                      | X                    | X                      | X                    |
|              | Bituminous Paving Scratch & Leveling | Ton |                   |                                        | X             | X              | X               | X                 | X                                      | X                       | X                  | X                 | X                  | X                  | X                  | X                    | X                      | X                       | X                     | X                      | X                    | X                      | X                    |
| 460          | Tack Coat                 | gal               |                   |                                        | X             | X              | X               | X                 | X                                      | X                       | X                  | X                 | X                  | X                  | X                  | X                    | X                      | X                       | X                     | X                      | X                    | X                      | X                    |
|              | Tack Coat                 | SY                |                   |                                        | X             | X              | X               | X                 | X                                      | X                       | X                  | X                 | X                  | X                  | X                  | X                    | X                      | X                       | X                     | X                      | X                    | X                      | X                    |
| 470          | Bituminous Seal Coat      | SY                | 7                 | X                                      | X             | X              | X               | X                 | X                                      | X                       | X                  | X                 | X                  | X                  | X                  | X                    | X                      | X                       | X                     | X                      | X                    | X                      | X                    |
| 480          | Bituminous Surface Treatment | SY         | 7                 | X                                      | X             | X              | X               | X                 | X                                      | X                       | X                  | X                 | X                  | X                  | X                  | X                    | X                      | X                       | X                     | X                      | X                    | X                      | X                    |
| 491          | Milling                   | SY                | 7                 | X                                      | X             | D              |                 |                  |                          |                          |                    |                    |                    |                    |                    | D                    |                        |                          |                          |                        |                    |                    |                    |                    |
| 492          | Profile Milling           | SY                | 7                 | X                                      | X             | D              |                 |                  |                          |                          |                    |                    |                    |                    |                    |                     |                        |                          |                          |                        |                    |                    |                    |                    |                     |
| 500          | Reinforced Concrete Pavement | SY           | 7                 | X                                      | X             | X              | D               |                 |                          |                          |                    |                    |                    | D                  |                    | D                    |            |                          |                          |                        |                          |                    |                    |                    |                    |            |
| 504          | Pavement Relief Joint     | LF                | 2                 | X                                      | X             | D               |                 |                  |                          |                          |                    |                    |                    | C                  | X                  | X                    | X                      |                          |                          |                    |                    |                    |                    | X                  |
| 505          | Bridge Approach Slab      | SY                | 7                 | X                                      | X             | D               |                 |                  |                          |                          |                    |                    |                    | X                  | X                  | X                    | X                      |                          |                          |                    |                    |                    |                    | X                  |
| 506          | Reinforced Concrete Pavement | SY           | 7                 | X                                      | X             | D               |                 |                  |                          |                          |                    |                    |                    | X                  | X                  | X                    | X                      |                          |                          |                    |                    |                    |                    | X                  |
| 513          | Joint Rehabilitation      | LF                |                   |                                        | X             |                 |                  |                  |                          |                          |                    |                    |                    |                    |                    | X                    |                        |                          |                          |                    |                    |                    |                    | X                  |
| 515          | Sawing and Sealing Bituminous Overlays | LF |                   |                                        | X             |                 |                  |                  |                          |                          |                    |                    |                    |                    |                    | D                    |                        |                          |                          |                    |                    |                    |                    | X                  |
| 516          | Concrete Pavement Patching | SY           | 7                 | X                                      | X             | D               |                 |                  |                          |                          |                    |                    |                    | X                  | X                  | X                    | X                      |                          |                          |                    |                    |                    |                    | X                  |
### Construction Documentation Required

| Item Section | Item Name                      | Method of Payment | See General Note # | Actual Measurements and/or Computations | Measured Length | Quantity Placed | Load Count & Factor | Preliminary and/or Final Cross Sections | Establish Basis of Payment | Rate of Slope Checks | Temperature Checks | Statement of Percent Item is Complete | D - Depth Check Results | C - Density Test Results | Yield Test Results | Number of Delivery Tickets | Beginning & Ending Numbers | Batcher Mixer Slip & Plant Ticket | Lot Determination | Test Locations | Type of Test | Types Material Used Required Testing | Catalogue Cuts | Shop Drawings | Material Certifications | Equipment Calibrations |
|--------------|--------------------------------|-------------------|-------------------|----------------------------------------|----------------|----------------|-------------------|-----------------------------------------|----------------------------|-------------------|-------------------|--------------------------------|----------------------|----------------------|----------------|---------------------------|----------------------------|----------------------|-----------------|---------------|----------------|--------------------------------|----------------|----------------|----------------|----------------|----------------|
| 601          | Pipe Culverts                  | LF                |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    |                |                           |                            |                     |                |               |               |                                      |                |                |                |                |
|              | Cleaning Existing Pipe Culverts| LF                |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    |                |                           |                            |                     |                |               |               |                                      |                |                |                |                |
|              | Fine Aggregate for Bedding     | CY 7              | X                 | X                                      | X              |                |                   |                                        |                            |                  | X                 |                                | X                    | X                    | X               |                           |                            |                     |                |               |               |                                      |                |                |                |                |
|              | Coarse Aggregate for Backfill  | CY 7              | X                 | X                                      |                |                |                   |                                        |                            |                  |                  |                                | X                    | X                    | C               |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 604          | Combination Storm Sewer / U Drain| LF                |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    |                |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 605          | Inlets & Manhole Precast       | EA                |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    |                |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 606          | Grade Adjustment Existing Inlet| Set               |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    |                |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 607          | Rebuild Misc. Structures       | VF                |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    |                |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 608          | Mobilization                  | LS 9              |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    |                |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 609          | Inspectors Field Office       | LS 9              |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    |                |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 610          | Pipe Underdrains              | LF                |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | D                    | X                    | X               |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 610          | Pavement Base Drains          | LF                |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | D                    | X                    | X               |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 612          | Subgrade Drains               | LF                |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    | X               |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 615          | Subsurface Drain Outlets      | LF                |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    | X               |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 616          | Pipe End Sections             | EA                |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    | X               |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 619          | Impact Attenuating Devices    | EA 2              |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    |                |                           |                            |                     |                |               |               |                                      |                |                |                |                |
| 620          | Guiderail                      | LF 2              |                   |                                        |                |                |                   |                                         |                            |                  |                  |                                | X                    | X                    | (CHECK OFFSET, ALIGNMENT AND HEIGHT DOCUMENTED) | X               | X               |               |                                      |                |                |                |                |
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| Item Section     | Item Name                      | Method of Payment | See General Note # | Actual Measurements and/or Computations | Sketch of Item | Measured Length | Quantity Placed | Load Count & Factor | Preliminary and/or Final Cross Sections | Establish Basis of Payment | Rate of Slope Checks | Temperature Checks | Statement of Percent Item is Complete | D - Depth Check Results | C - Density Test Results | Yield Test Results | Number of Delivery Tickets | Beginning & Ending Numbers | Batcher Mixer Slip & Plant Ticket | Lot Determination | Test Locations | Type of Test | Catalogue Cuts | Shop Drawings | Material Certifications | Equipment Calibrations |
|------------------|--------------------------------|-------------------|-------------------|----------------------------------------|----------------|----------------|----------------|-------------------|------------------------------------------|----------------------------|--------------------|-------------------|-------------------------------|-------------------------|---------------------------|----------------------|---------------------|---------------------|---------------------|---------------------|------------------------|------------------------|
| Terminal Sections | EA                             | X                 |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| End Anchorage    | EA                             | X                 |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| End Treatment    | EA                             | X                 |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| 623              | Concrete Median Barrier (CIP)  | LF 100           |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| 624              | Concrete Median Barrier (Precast) | LF               |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| 625              | Right-of-Way Fence            | LF               |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| 626              | Gates                          | EA               |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| 630              | Plain Cement Concrete Curb     | LF 10            |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| 640              | Plain Cement Concrete Gutter   | SY 10            |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| 651              | Paved Shoulder Type 1, 1-F, 1-S, &1-SP | SY 7            |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| 654              | Paved Shoulder Type 4          | SY 7             |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| 656              | Paved Shoulder Type 6, 6-F, 6-S &6-SP | SY 7            |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| 657              | Paved Shoulder Type 7          | SY 7             |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |
| 668              | Concrete Shoulders            | CY 10            |                   |                                        |                |                |                |                  |                                          |                            |                    |                   |                               |                         |                          |                      |                                    |                      |                      |                         |                     |                     |                        |                        |

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| 850          | Rock Lining                | SY 7 X X          |                  |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
| 859          | Sedimentation Pond         | LS                | X                | X                                        |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
| 861          | Cleaning Sedimentation Stream | CY X        |                  |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
| 865          | Silt Barrier Fence        | LF                | X                |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
| 901          | Maintenance & Protection of Traffic | LS 9      | X                | X                                        |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
|              | Calcium Chloride           | Ton               | X                |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
| 903          | Temporary Bridge & Approach | LS 9         | X                | X                                        |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
| 910          | Highway Lighting Power Supply System | EA 8      | X                | X                                        |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
|              | Junction Boxes             | EA                | X                |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
|              | Poles                      | EA                | X                |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
|              | Arms                       | EA                | X                |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
|              | Luminaires                 | EA                | X                |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
|              | Pole Foundations           | EA                | X                |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
|              | Cable                      | LF                | X                |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
|              | Conduit                    | LF                | X                |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
|              | Trenches                   | LF                | X                |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
| 920          | Sign Lighting              | LS 9              | X                | X                                        |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
| 930          | Post Mounted Signs (A to F) | SY X          |                  |                                          |                |                |                |                  |                                          |                            |                  |                  |                                          |                        |                        |                     |                             |                            |                  |              |             |                                  |                 |                |                       |                   |
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| 936          | Structure Mounted Signs         | SY               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 948          | Steel Sign Structure            | LS 9             |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 951          | Traffic Signal Supports         | EA               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 952          | Controller Assembly             | EA               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 955          | Signal Heads                    | EA               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 956          | Detector                        | LF               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
|              | Detector Material               | EA               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 957          | Traffic Signal Communications   | LF               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 961          | Plastic Pavement Markers        | LF               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
|              | Plastic Pavement Markers        | EA               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 962          | Painted Traffic Markings        | LS               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
|              | Painted Traffic Markings        | LF               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 1001         | Cement Concrete Structures (all)| CY               | X                 | X                                      |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
|              | Structures                      | LS 9             | X                 | X                                      |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 1002         | Reinforcement Steel             | LB               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 1003         | Dowel Holes                     | EA               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
| 1005         | Test Piles                      | LS 9             | X                 | X                                      |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
|              | Bearing Piles                   | LF               |                   |                                        |                |                |                 |                          |                           |                     |                   |                                |                     |                      |                 |                             |                     |                |                  |                             |
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</tbody>
</table>
When contract work requires the contractor to enter private property, project personnel need to consult with the District Right-of-Way Administrator to determine if the Department has received permission from the property owner.

The following forms are used for this purpose:

Form RW-397 is used when the Department wishes to enter a property abutting a project to reconstruct a driveway or perform some other work, as a result of an acquired or potential acquisition of right-of-way. The RW-397 does not require a waiver of any right-of-way or consequential damage claim. Use RW-397 in connection with work on the property of a right-of-way claimant.

Form RW-397A is used when the Department wishes to enter a property to perform work, such as cleaning, maintaining or upgrading an existing drainage system (e.g., ditches, pipes, structures) that is NOT required for the construction, operation, or maintenance of a project. The RW-397A requires that the property owner waive any right they may have under the Eminent Domain Code; for example, the right to assert a claim for consequential damages. The RW-397A is typically used when there is no need or intent to develop a right-of-way plan. Use Form RW-397A in connection with work on property adjacent to or abutting a highway for which there is no right-of-way acquisition, either existing or anticipated.

The RW-397A is not a contract if it is properly completed and not modified. It is important to NEVER make promises to the property owner and NEVER sign the form on behalf of the Department. If it is signed by the Department, the form becomes a contract and must be approved for form and legality. The following instructions should be followed in using the Form RW-397A:

- Obtain authorization from the District Right-of-Way Administrator before using the form.

- If not already identified on right-of-way plan, enter the address of the property or other reliable identification such as county tax parcel number.

- Enter a general description of the work to be done on the property.

- If the owner/occupant insists that permission to enter be limited to a specified time period, indicate the time limitation in the blank space provided.

- The executed authorization to enter should be retained in the file of the party securing it.

When project personnel are required to obtain the property owner’s permission, the District Right-of-Way Administrator must be consulted to provide assistance in selecting the proper form.
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GUIDELINES FOR HIGHWAY AND SIGN LIGHTING AGREEMENTS WITH ELECTRIC UTILITY COMPANIES

These agreements are prepared by the electric utility companies when a typical service purchase contract is not adequate, and initiated during construction by the District Executive for supply of electricity. The costs of the provisions to supply the electricity, such as line extension and/or facility charges, are proper project construction charges. The cost of electricity used to energize the system is a proper maintenance charge.

Electrical service locations shown on the plans normally will have been confirmed with the electric utility company and line extension charges, if any, determined at the time. Charges by the electric utility company for line extension or facilities are to be paid as one-time-lump-sum project construction cost. Such charges are never to be deferred or included in the periodic billing for energy.

Lighting agreements between the local electric utility company and the Department or the local government are not to include any deferred charges related to the cost of the electric utility company for line extension or facilities.

Billing by the electric utility company shall be for metered service unless Department approved unmetered energy only rate is available.

The Department will make the one lump sum payment to the electric utility company for line extension and/or facility costs. The necessary work by the utility may be procured thru Service Purchase Contract. Payment shall be encumbered with SAP transaction FMZ1 against the project and paid by SAP workflow (formerly SAP transaction FB60), when work is completed. The amount of these charges by the electric company is based on their cost to provide the service facilities required with relation to the energy usage anticipated.

Processing of Agreements

A signed copy of the agreement for each party is to be sent to the District Office. Under certain circumstances, in order to save time, the Department, will execute electric utility company's prepared forms in the first instance before signing by the proper officials of the electric company, but this practice should be discouraged as being contrary to customary procedure. The agreement should be checked for accuracy and conformity with the Department policy by the District Office, and such objectionable terms that would require the Department to indemnify and save harmless the electric utility company shall be eliminated since this cannot be done legally without legislative authority. In addition, such agreement should provide for a definite termination date either by passage of a certain period of time or notice of intention to terminate.
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Utility Daily Inspection is to be provided on all reimbursable items and on an as-needed basis required by the District Utility Relocation Unit.

The Inspector-in-Charge assumes responsibility for the inspection of utility relocation work as required and upon commencement of the highway contractor's operations.

Usually, utility relocations will have been started prior to the award of the highway contract, and a Construction Inspector would have been assigned at the time to inspect this work. With the Inspector-in-Charge assuming this responsibility, the previously assigned Inspector normally is reassigned. At the time of reassignment, the Inspector shall provide the Inspector-in-Charge with copies of all previously prepared Utility Inspection Reports and the Utility’s approved relocation plan and estimate.

At the Pre-Construction Conference, which should be attended by all utilities involved on the project, the District Utility Relocation Unit will:

1. Inform the Inspector-in-Charge of the current status of utility relocation work which was started prior to award of contract.

2. Provide the Inspector-in-Charge with the relocation plan and estimate of all utilities not yet started with their relocation work.

3. Direct the Inspector-in-Charge to notify all affected Utility Construction Contacts, as stated on the D-419, within seven (7) days of the NTP, for the utilities to contact the Inspector-in-Charge in person, via phone, or e-mail prior to commencing relocation work.

A Construction Inspector assigned by the Inspector-in-Charge to a utility relocation is responsible for maintaining an accurate record of the work accomplished, in ECMS. The completion of this Utility Inspection shall be of sufficient detail to show the progress of work performed by the utility.

The ECMS, Project Site Activity (PSA) log will serve as the location to capture this information. Within the PSA screen, a selectable comment field will be added. If reporting on multiple utilities, the utility report text can be copied and pasted as many times as necessary. The previous day’s utility report can also be copied and pasted to eliminate the need to re-enter the utility company names and to ensure consistent utility identification from day to day. The standard comment field titled “Utility Report” will populate the following text:

- Date and Time
- Utility Name (Utility Name must be consistent with the name shown on the project plan, List of Utilities)
• Confirm presence of utility on project site (yes/no)
• Weather conditions
• Approximate start time (if known)
• Approximate end time (if known)
• Summary of work performed (if known)
• Misc. notes

This information must be reported everyday a utility is scheduled to be on the project site.

Complete a daily PSA log for each individual utility performing work on the project site.

The description of the work performed shall be specific as to location (highway stations) and as to the type of operations, e.g., trenching, laying pipe, placing poles, etc. The major items of material used shall be indicated; e.g., number of poles, length of cable or conductor, length and size of pipe or casing, etc.

Any deviation from the approved relocation plan will be brought to the immediate attention of the District Utility Relocation Unit and noted in ECMS.
Section 105.14, Publication 408, addresses the provision of both Non-Designated and Designated Areas for Borrow Excavation and Waste Areas. Section 105.14(b) applies when the Department has previously selected areas from which to obtain borrow or areas in which to deposit waste and it is specified in the project proposal. Additional information on Designated Borrow and Waste Areas may be found in Publication 10A, Design Manual 1A, Chapter 7.9.C.

Section 105.14(a), Publication 408, Non-Designated Areas, specifies that the contractor is to negotiate with the owner or owners of property obtained for all borrow and/or waste areas by using Form CS-4345, Borrow and/or Waste Agreement. These non-designated areas shall be recommended by the District Environmental Unit and approved by the County Conservation District per the Erosion and Sedimentation Control Plan.

The form includes the following:

1. Property owner of record.
2. Owner permits the use of their land.
3. Contractor agrees to do the work in a manner satisfactory to the property owner and the Department Engineer.
4. Property owner's release.

The Inspector-in-Charge (IIC) shall insure that the contractor executes this form for each borrow and/or waste area and that written notification of acceptance by the Representative is received, before any work starts in that borrow and/or waste area. Copies of applicable permits and the approved Erosion and Sedimentation Control Plan must also be submitted to the Representative before starting work. The IIC should coordinate with the District's Environmental Unit as needed for the borrow and/or waste area.

Department Design Project Manager or designee shall conduct environmental due diligence determinations for all potential excess excavated materials during Final Design for all projects prior to advertisement for construction, and document these determinations using Form D-1, Environmental Due Diligence (EDD) Phase 1 Visual Inspection Form, and if necessary Form D-2, Clean Fill Environmental Due Diligence (EDD) Phase 2. Laboratory analysis of materials will only be conducted when EDD Phase 1 and 2 investigations uncover evidence of a release.

For used asphalt/concrete pavement material from a project that is to be moved offsite, the Department Project Manager or designee shall be responsible for conducting environmental due diligence. A flowchart may be found on Page B.1.12-3 summarizing this process. Used, un-milled asphalt and concrete from highway/bridge pavement are considered clean fill, if there is no evidence of impact by a spill or release of regulated substances. Incidental staining from normal vehicular use is not considered a spill or release. The Project Manager or designee shall complete
Form D-1 to document the inspection of the pavement material for spills or releases, and provide the property owner of the receiving site with a copy of the completed form. If no spills or releases are documented, the materials are considered clean fill. If it is necessary to perform laboratory analysis of materials, then Form FP-001 from DEP’s Management of Fill Policy shall be provided to the property owner of the receiving site, if test results indicate that the materials are clean fill. This does not apply to millings, which are governed under PA DEP’s Industry-Wide No. 1: RECLAIMED ASPHALT PAVEMENT (RAP) INDUSTRY-WIDE COPRODUCT DETERMINATION for reclaimed asphalt pavement (RAP).

Pre-1988 fill consisting of a mix of soil and ash, cinders, or slag is considered Historic Fill, a type of residual waste that is ineligible for import or export from the ROW as Clean Fill. Unless waste materials are removed from the mixture, Historic Fill can only be borrowed or wasted for offsite reuse as fill through DEP’s Regulated Fill general permit, WMGR096. Due to difficulty of using this permit, Historic Fill is normally reused onsite (if uncontaminated) or landfilled. See Publication 281 for more details.

For all borrow materials entering the construction right-of-way, it will be the responsibility of the construction contractor to make the clean fill determination in accordance with DEP’s Management of Fill Policy. The contractor shall submit Form D-1, and if required Form D-2, to PennDOT in order to document the environmental due diligence determination. Used asphalt/concrete pavement materials brought onto the project will be accepted as clean fill by the Department only when the materials are obtained from another transportation project and Form D-1 is completed by the contractor. This does not apply to millings, which are governed under PA DEP’s Industry-Wide No. 1: RECLAIMED ASPHALT PAVEMENT (RAP) INDUSTRY-WIDE COPRODUCT DETERMINATION.

Unforeseen materials within Department right-of-way at the construction site determined not to be clean fill will be managed contractually in accordance with Publication 408 Section 104.08.

Forms D-1 and D-2 must be maintained for a minimum of 5 years in the project file.
ENVIRONMENTAL DUE DILIGENCE ACTIVITIES FLOW CHART

Soil, rock, stone, dredged material, used asphalt, and brick, block or concrete from Highway and bridge construction and demolition activities that is separate from other waste are considered Clean Fill materials under the PA DEP Fill Policy, unless a spill or release has occurred.

EDD PHASE 1: Conduct Visual Inspection. Is there any evidence of a spill or release to PennDOT right-of-way (ROW), or is Historic Fill present? For used highway pavement materials, Form D-1 must be completed. For all other fill materials, EDD Phase 2-Step 1 MUST also be conducted and Form D-2.

No Yes

Materials qualify as Clean Fill materials, and are unregulated. Complete Form D-1 and maintain on file for a 5-year period.

EDD PHASE 2-Step 1: Perform appropriate Step 1 activity as indicated on Form D-2, to verify materials have been affected by spills or releases of regulated substances.

No Yes

Have EDD PHASE 2-Step 1 investigations documented any evidence of a spill or release of regulated substances?

No Yes

EDD PHASE 2-Step 2: Perform sampling and analysis activities, as appropriate. Do any concentrations of regulated substances exceed concentrations listed in Tables FP-1A or FP-1B of the PA DEP Technical Guidance: Management of Fill?

No Yes

EDD PHASE 2-Step 3: Do concentrations of regulated substances in PennDOT ROW materials exceed concentrations listed in Tables GP-1A or GP-1B of the PA DEP General Permit?

No Yes

PennDOT ROW materials are solid wastes, subject to recycling, treatment or disposal requirements of the Solid Waste Management Act and applicable waste regulations (municipal, residual, hazardous).

Complete Form FP-001 and provide to property owner of receiving site and to DEP.

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Straight-line analysis charts or straight-line diagrams play a very important role in a material quality control or construction quality control program. They are a tool that can be maintained and used by a contractor, material producer, or other party responsible for material or construction quality control when there is a large amount of quality control data to review and analyze. They are also a material or construction quality control tool to ensure timely corrective actions are performed based on the plots and trends of the data as the test result data becomes available.

If straight-line analysis charts or straight-line diagrams are utilized at the plant or on the construction project, it is recommended that materials and project inspection staff review the straight-line analysis charts or straight-line diagrams maintained by material or construction quality control personnel on a regular basis and discuss them with the quality control manager of the contractor, materials producer, or other party responsible for material or construction quality control.

Material or construction quality control problems or problems with comparison of Quality Control sample test results and Acceptance or Quality Assurance sample test results can be more easily detected by diligent Quality Control sample testing, Acceptance and Quality Assurance sample testing, prompt plotting of all test results on straight-line analysis charts or straight-line diagrams, and review and analysis of straight-line charts and diagrams. The vertical scales of the analysis charts are generally chosen so that a result falling outside the limits of the graph is also outside the specification limits. A date is assigned to each vertical line. The design value for the material is assigned to the central or “heavy” center line. When large differences occur between the plotted test result data of Quality Control samples and Acceptance or Quality Assurance samples, or when plotted test result data is either at, trending towards, or exceeding action limits or specification limits, these situations demand increased review and analysis by quality control personnel to determine the probable cause(s) and corrective actions to be taken and demand increased review and analysis by Inspection staff to ensure corrective actions have corrected the issue(s). For illustrations and plotting pertinent data, contact the District Materials Engineer/Manager.

It is essential that all personnel involved frequently compare the results of the Quality Assurance samples with the Quality Control or Acceptance samples for timely evaluation of material compliance with the specifications. When the Quality Assurance samples, Acceptance samples or Quality Control samples indicate a potential material control problem, the contractor and/or material producer should follow their Quality Control Plan in increasing their frequency of quality control sampling and testing to determine if such a condition continually exists.

The reliability and value of plotting daily acceptance and/or quality control tests is directly dependent on the number of test results obtained on each project for each type of material and for each test procedure. Therefore, as a guide, a minimum of ten plot points is recommended for a
particular type of material or test procedure for the straight-line analysis charts or straight-line diagram to be reliable. However, straight-line analysis charts or straight-line diagrams can be helpful, regardless of number of plot points, when troublesome materials are being incorporated into the work.

The examples show the required central line or, target value, and both the upper and lower specification limit lines. The examples also show examples of plotted sample test result data that are recommended to be investigated during review and analysis for their cause so that appropriate corrective action can be taken.

The use of straight-line analysis charts or straight-line diagrams for construction site quality control, acceptance or quality assurance monitoring is at the discretion of the project’s Assistant Construction Engineer/Assistant Construction Manager. The use of straight-line analysis charts or straight-line diagrams at concrete plants, bituminous plants and quarries are as required in the applicable sections of this manual.
UPPER SPEC. LIMIT
CENTRAL LINE
LOWER SPEC. LIMIT

Normal Behavior.

One plot out above.
Investigate for cause of poor performance.

UPPER SPEC. LIMIT
CENTRAL LINE
LOWER SPEC. LIMIT

Two plots near upper control. Investigate for cause of poor performance.

One plot out below.
Investigate for cause of poor performance.

UPPER SPEC. LIMIT
CENTRAL LINE
LOWER SPEC. LIMIT

Two plots near lower control. Investigate for cause of poor performance.

Run of 5 above central line. Investigate for cause of sustained poor performance.

UPPER SPEC. LIMIT
CENTRAL LINE
LOWER SPEC. LIMIT

Run of 5 below central line. Investigate for cause of sustained poor performance.

Trend in either direction 5 plots. Investigate for cause of progressive change.

UPPER SPEC. LIMIT
CENTRAL LINE
LOWER SPEC. LIMIT

Erratic behavior.
Investigate.

Sudden change in level.
Investigate for cause.

Straight-Line Analysis Charts - Evidence for Investigation

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Complete the forms listed within the paragraphs below for the purpose of creating a complete record of all blasting operations for the Department and confirm all blasting operations are in conformance with Publication 408, Section 207 – Blasting for Rock Cut Slope Excavation:

1. Determine if the blaster is qualified to perform the work for the project and is licensed in the Commonwealth of Pennsylvania. Provide written approval to the Contractor within 21 days of receipt of the blaster documentation submission.

2. Ensure the qualified independent blasting consultant conducts an exterior and interior pre-blast survey on all structures, buildings or utilities no sooner than four weeks before the beginning of blasting operations. The qualified independent blasting consultant must complete the Exterior and Interior Pre-Blast Survey, Form TR-42, and submit to the Department at least five days before commencement of blasting operations. The contractor must notify the Department if the property owner fails to permit access to the property with a written letter and a Pre-blast Survey Waiver Form TR-43.

3. Review technical data sheets and material safety data sheets for all materials necessary to perform the work. Review the completed Blasting Plan, Form TR-40, for each rock excavation that requires blasting. Discuss any concerns with the Contractor prior to acceptance of the Blasting Plan. Submittal of the Blasting Plan is for quality control, conformance, and record keeping purposes. When location and/or conditions change, verify and document the contractor’s submittal of a revised Blasting Plan, Form TR-40. Notify the Contractor of acceptance of the Blasting Plan.

4. Review the Blasting Safety Plan and ensure a certificate of insurance was provided from the Contractor.

5. Ensure a Water Supply Monitoring Report, Form TR-45, was conducted at least two weeks prior to blasting operations.

6. Attend the Pre-blast Meeting scheduled at least one week prior to any explosives being brought onto the project site.

7. Review and accept the estimated ground calibration before each blast. Refer to the ground calibration example below.
GROUND CALIBRATION EXAMPLE

Initial determination of the maximum powder charge per delay uses a minimum scaled distance factor of 50 as the distance between the critical structure and shot location.

The scaled distance (SD) is found by dividing the true distance from the blast to a point of concern by the square root of the maximum charge weight per delay. The scaled distance is determined by the following equation:

\[ SD = \frac{D}{\sqrt{W}} \]

where,
\[ D = \text{the distance from the blast to the point of interest (ft.)} \]
\[ W = \text{the charge weight per delay (lbs.)} \]

The peak particle velocity (PPV) at a point of concern is a function of the scaled distance and coefficients (H) and (B) in the following equation:

\[ PPV = H(SD)^B \]

where,
\[ H = 160 \] (is a coefficient based on the type of blasting)
\[ B = -1.6 \] (is the rate of attenuation based on site conditions)

WORKING EXAMPLE:
The distance to the closest structure is 175 feet. The maximum charge weight per delay is 12.25 lbs. Therefore, the scaled distance is equal to 50.

\[ 160(50)^{-1.6} = 0.3060 \]

And a theoretical PPV of 0.3060 is estimated prior to the blast.

The initial blast was performed and the ground calibration was completed which recorded the following PPV’s:

<table>
<thead>
<tr>
<th>Initial Shot</th>
<th>Distance (ft)</th>
<th>Charge weight (lbs.)</th>
<th>Scaled distance</th>
<th>PPV (in/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seismograph-1</td>
<td>50</td>
<td>12.25</td>
<td>14</td>
<td>3.3</td>
</tr>
<tr>
<td>Seismograph-2</td>
<td>100</td>
<td>12.25</td>
<td>29</td>
<td>1.1</td>
</tr>
<tr>
<td>Seismograph-3</td>
<td>175</td>
<td>12.25</td>
<td>50</td>
<td>0.48</td>
</tr>
<tr>
<td>Seismograph-4</td>
<td>300</td>
<td>12.25</td>
<td>86</td>
<td>0.21</td>
</tr>
<tr>
<td>Seismograph-5</td>
<td>400</td>
<td>12.25</td>
<td>114</td>
<td>0.17</td>
</tr>
</tbody>
</table>

The peak particle velocity measured at each seismograph and the scaled distance between the blast and each seismograph location examined on a logarithmic-logarithmic graph is shown below. Assume the maximum PPV permitted is 1.6 inches per second therefore a working scaled distance factor of 22 can be used for this project.
8. Approve and coordinate MPT activities with the Contractor for any portion(s) of roadway that must have temporary closures or lane restrictions during blasts.

9. Specify to the qualified independent blasting consultant the approved locations of the seismographs to complete the Vibration Monitoring Report, Form TR-44.

10. Specify the second location of the airblast monitoring equipment.

11. Review and accept the borehole deviation survey(s) meeting the specified tolerances.

12. Review, examine, and evaluate the results of the blasted test sections and select the blasthole spacing that demonstrates the best presplit face quality. If no acceptable conditions are found upon examination of the test section, the contractor must revise and submit a new Blasting Plan for review and acceptance. Drilling and blasting will be suspended until the Blasting Plan is accepted.

13. Provide the Contractor written approval to proceed with full scale controlled and/or production blasting operations.

14. Ensure a Water Supply Monitoring Report, Form TR-44, is conducted between six and eight weeks after blasting has concluded.

15. Review and provide acceptance of the submitted Blasting Report, Form TR-41, before drilling of the next blast section is initiated. The Blasthole Drill Log, Form TR-39, must

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be completed during drilling operations as specified and accompany the Blasting Report. The Vibration and Airblast Monitoring Reports and data must be completed as specified and submitted with the Blasting Report.

16. Ensure the qualified independent blasting consultant conducts an exterior and interior post-blast survey on all structures, buildings or utilities for which a pre-blast survey was performed. The qualified independent blasting consultant shall complete the Exterior and Interior Post-Blast Survey, Form TR-42, and submit to the Department at least four weeks after completion of blasting operations. The contractor must notify the Department if the property owner fails to permit access to the property with a written letter and a Post-blast Survey Waiver Form, Form TR-43.

17. Review the Water Supply Monitoring Final Report submitted within 10 weeks after completion of blasting operations and follow-up on any impacts to local water supplies from blasting activities as noted by the qualified independent blasting consultant.

18. Record any follow-up investigations and actions taken as a result of complaints noted in the Post-Blast Survey.
A set of "as-built" drawings must be maintained for each construction project that has construction plans. If there are just sketches in the contract, the adjustments should be placed on straight line diagrams provided by the District.

The "as-built" drawings for projects that have drawings shall consist of a set of white prints of roadway drawings and structural drawings if structures are a part of the contract. They shall be maintained in the field office and used for the purpose of showing field construction changes. However, these will become a part of the documented project records as shown on Page B.1.7-1, Note 9. All changes to these plans may be made with a regular No. 2 pencil on printed sets or shown as mark-ups on a PDF file utilizing the current electronic devices and procedures. Periodic progress markings and changes to the quantities on the Summary Sheet shall not be recorded on the "as-built" drawings.

The "as-built" drawings are an assembly containing a print or a PDF document of each original drawing, or revised sheet. Shop drawings may also be included with the plans if they provide any relevant information. "As-builts" are maintained for the purpose of recording approved field changes which are not shown on the drawings. Such field changes are usually of minor nature, as more significant changes usually require documented revisions to the plans.

The "as-built" drawings should be clean, neat and accurately prepared. All field changes should be made at the earliest possible date and not trusted to the memory of the recorder.

The "as-built" drawings are the most current set of drawings and as such they should show the latest changes. This would include for example, changes in location of pipe, inlets, manholes, pipe underdrain and other changes made to structure drawings, such as footing elevations and reinforcement details. Pavement base drains and underdrains with outlets should be plotted even if they are constructed to plan stations.

"As-built" drawings should be done as portions of the work are completed. This will spread this workload out during the life of the project and enable the "as-builts" to be completed in a timely fashion and not create a hardship when the project work is completed.
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Section 107.14, Publication 408 requires the contractor to indemnify and save harmless the Department and its employees from all suits, actions and claims due to injuries or damages sustained by anyone or their property during the performance of work by the contractor.

Therefore, if a citizen makes a complaint to Department personnel or its representatives regarding work performance by the contractor, the citizen should be directed to the contractor's job superintendent or the person in charge on site for the contractor.

If a citizen makes a complaint directed toward the Department due to actions by Department personnel or equipment, the Inspector-in-Charge should document the complaint in the Master Diary and contact the Assistant Construction Engineer/Assistant Construction Manager and/or the District Tort Coordinator/Risk Management individual for further assistance.
Districts often receive letters from contractors styled as a “notice of intent to claim.” These letters create confusion as to proper response since they are not called “a claim.” However, a contractor might argue that such a letter constitutes actual notice of a claim situation. Notify the Office of Chief Counsel immediately anytime a “notice of intent to claim” is received. Inform FHWA of all notices of intent to file claim on Federal funded NHS projects when such notices are received.

For projects managed using the PennDOT Project Collaboration Center (PPCC) website, the contractor must submit the notice of intent to claim to the Contracting Officer through PPCC. The filing must include a completed CS-105 “Contractor Notice of Intent to Claim” Form, otherwise it will not be accepted or processed as such.

The following sample letter, drafted by our Office of Chief Counsel, should be used in response to these letters of “notice of intent to claim.” The FHWA is to be included in the cc list for any federally funded project.

Sample Letter

Date:

Dear Contractor,

This is in response to your letter of [DATE], in which you provided notice of your intent to file a claim for [DESCRIBE CLAIM, including total dollar amount]. A notice of intent to claim provides notice of the intent, at some future date, to file a claim. It does not constitute the actual filing of a claim. If you desire to pursue this claim, you must file the claim.

Please consult the Commonwealth Procurement Code, 62 Pa.C.S.§§ 101 – 2311 and Publication 408, Section 105.01(a), for the procedure and applicable time limitations for filing your claim.

The Department looks forward to working with you in a collaborative effort to resolve this issue.
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HIGHWAY CONTRACT CLAIMS

This Department-wide policy is intended to supplement the requirements of Publication 408, Section 105.01(a) and Section B.1.18 of this Publication, and applies to all notices of intent to claim and to all claims submitted by Contractors performing contract work for the Department.

The District administering the contract for a Department project is the responsible organization, and the District Executive for the responsible District serves as the Contracting Officer. The Bureau of Project Delivery, Construction and Materials Division, is responsible for monitoring this policy and for serving in an advisory capacity, along with the Office of Chief Counsel, at any claim review meetings. The Office of Chief Counsel is responsible for advising the Contracting Officer and for defending claims before the Board of Claims.

Upon receipt of a notice of intent to claim or a claim, the Contracting Officer or a delegate is to immediately notify the Chief of the Construction Quality Assurance Section in the Bureau of Project Delivery and contact the Office of Chief Counsel for advice on how to proceed. If the notice of intent to claim or the claim is related to a Federal Oversight or PennDOT Oversight NHS project, the Contracting Officer or a delegate is also to immediately notify the FHWA Transportation Engineer assigned to that District in order to ensure early involvement by FHWA. The Contracting Officer, at their discretion, may conduct a claim review meeting in order to attempt to settle and resolve a dispute or claim with the Contractor. If a claim review meeting is held, representatives from the Contractor; the Bureau of Project Delivery, Construction and Materials Division, and the Office of Chief Counsel are to attend. If the claim relates to a Federal Oversight or PennDOT Oversight NHS project, a representative of the Federal Highway Administration is also to be invited to attend.

If an agreement between the Contractor and Contracting Officer to resolve the claim has not been reached after a claim review meeting, the Contracting Officer, in consultation with the Office of Chief Counsel, is to prepare a written response denying the Contractor’s claim. If the Contracting Officer does not issue a written response within 120 days of receipt of the claim, unless the 120-day period is extended by agreement of the parties, the claim will be deemed to be denied.

All claims filed before the Board of Claims will be defended by the Office of Chief Counsel. Negotiated settlements for amounts in excess of $500,000 must first be approved by the Deputy Secretary for Highway Administration.

Project personnel are to consult with the Assistant Construction Engineer/Assistant Construction Manager responsible for the project in order to obtain guidance with regard to preparation and processing of the associated Legal category work order. On PennDOT Oversight Non-NHS projects, the Contracting Officer has final approval authority regarding the work order and the use of Federal funds to provide payment for the dispute / settlement amount. On Federal

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Oversight and PennDOT Oversight NHS projects, the FHWA Transportation Engineer will review the work order, as well as the supporting documentation, and, using ECMS, inform the Department of the decision as to whether Federal funds may be used to provide payment for the dispute / claim settlement amount.
The Project Bulletin Board Checklist identifies the required postings for both State and Federal funded projects. To assist contractors in complying with the required bulletin board postings, the following checklist and sample notice flyer can be utilized by all contractors. The sample notice flyer includes the required contractor’s notices concerning EEO policies and procedures. This sample notice is to be distributed to all prime contractors working on Federal/Federal-Aid projects and distributed at all preconstruction meetings.

The following is FHWA’s guidance on displaying notices and posters for federally funded projects:

1. Workplace notices and posters must be displayed at all times by the Prime Contractor and Subcontractors at the site of work in a prominent and accessible place where they can be easily seen by the workers.

2. Placing required workplace notices or posters inside vehicles, binders or receptacles (e.g., mailbox, literature box, etc.) does not meet the requirement to display or post in a “prominent and accessible place” that can be easily seen by workers.

3. On mobile projects with no field office, staging area or gathering area, the Prime Contractor and Subcontractors must display all notices or posters where hiring is conducted and each employee must be provided copies of all the notices or posters and sign a statement acknowledging they received and understood the content of all the notices or posters.
Project Bulletin Board Checklist

(See links to both Federal and State posters at the end of the checklist)

LOCATION:
________ Is there a field office? (yes/no)

Notices and Posters are displayed at the following location(s):
_______ Home Office
_______ Hiring Location
_______ Project Work Location(s)
        (Provide Address for applicable location, if relevant)

The following postings must be present:

SAFETY
________ *OSHA-3165 “JOB SAFETY AND HEALTH - IT'S THE LAW” (ALL PROJECTS)
________ CONTRACTOR/SUBCONTRACTOR’S EMERGENCY PHONE NUMBER (AFTER HOURS CONTACT PERSONNEL) (ALL PROJECTS)
________ CONTRACTOR/SUBCONTRACTOR’S SAFETY OFFICER’S NAME AND PHONE NUMBER (ALL PROJECTS)
________ LISTING OF HAZARDOUS MATERIALS FOUND IN THE WORKPLACE
        (HAZARDOUS SUBSTANCES, SPECIAL HAZARDOUS SUBSTANCES, ENVIRONMENTAL HAZARDS)

LABOR COMPLIANCE
________ *FHWA-1022 NOTICE FEDERAL-AID PROJECT (FEDERAL FUND)
________ *WH-1321 EMPLOYEE RIGHTS UNDER DAVIS-BACON ACT (FEDERAL FUND)
________ *USERRA APRIL 2017 THE UNIFORMED SERVICES EMPLOYMENT AND REEMPLOYMENT RIGHTS ACT (FEDERAL FUND)
________ PREDETERMINED WAGE RATES (ALL PROJECTS WITH CONTRACT WAGE RATES)
________ *UC-700 UNEMPLOYMENT COMPENSATION & CLAIM FACT SHEET (100% STATE FUND)
________ WH1088 -EMPLOYEE RIGHTS UNDER THE FAIR LABOR STANDARDS ACT (FLSA) (ALL PROJECTS WITH NO CONTRACT WAGE RATES)
________ *LLC-1 FAIR LABOR STANDARDS ACT & MINIMUM WAGE LAW
        (ALL PROJECTS WITH NO CONTRACT WAGE RATES)
________ *LLC-8 ABSTRACT OF EQUAL PAY LAW (100% STATE FUND)
________ *WH-1462 EMPLOYEE POLYGRAPH PROTECTION ACT (FEDERAL FUND)
________ *LIBC-262 PENNSYLVANIA RIGHT TO KNOW LAW (ALL PROJECTS)
________ LIBC-500 WORKERS’ COMPENSATION INSURANCE POSTING (ALL PROJECTS)
EQUAL OPPORTUNITY

[LP-744/744A] PA. HUMAN RELATIONS ACT (ALL PROJECTS)
[EEOC-P/E-1] EQUAL OPPORTUNITY IS THE LAW (ALL PROJECTS)
[WHD-1420] FAMILY & MEDICAL LEAVE ACT (COMPANIES WITH MORE THAN 50
EMPLOYEES) (FEDERAL FUND)
[PTNP 12/16] PAY TRANSPARENCY NONDISCRIMINATION PROVISION (FEDERAL FUND)

CONTRACTOR’S (PRIME and SUBCONTRACTORS over $10,000)

[ ] EEO OFFICER’S NAME AND PHONE NUMBER (COMPANY LETTERHEAD) (ALL PROJECTS)
[ ] MINORITY AND FEMALE REFERRAL NOTICE (COMPANY LETTERHEAD) (ALL PROJECTS)
[ ] COMPLAINT PROCEDURES (COMPANY LETTERHEAD) (ALL PROJECTS)
[ ] SEXUAL HARASSMENT POLICY (COMPANY LETTERHEAD) (ALL PROJECTS)
[ ] EEO POLICY STATEMENT (COMPANY LETTERHEAD) (ALL PROJECTS)
[ ] AVAILABLE TRAINING PROGRAM AND ENTRANCE REQUIREMENTS (FEDERAL FUND)
[ ] CERTIFICATION OF NONSEGREGATED FACILITIES (FEDERAL FUND)
[ ] UNION EEO COMMITMENTS AND RESPONSIBILITIES (UNION CONTRACTORS)
(FEDERAL FUNDS)
[ ] WORK ENVIRONMENT STATEMENT (COMPANY LETTERHEAD) (FEDERAL FUND)

OTHER REQUIREMENTS:
(YES/NO/NA)

[ ] THE BULLETIN BOARD IS DISPLAYED IN A PROMINENT AND ACCESSIBLE PLACE WHERE
THE WORK IS PERFORMED AND CAN BE EASILY SEEN BY WORKERS.
(INCLUDING AFTER HOURS) (ALL PROJECTS)

[ ] SUBCONTRACTORS WITH CONTRACTS OF $10,000 OR MORE ARE REQUIRED TO
ADDITIONALLY DISPLAY EEO POLICIES AND PROCEDURES.
(SEE SAMPLE NOTICE FLYER BELOW) (FEDERAL FUND)

[ ] POSTERS AND NOTICES ARE DISPLAYED IN LANGUAGES OTHER THAN ENGLISH.
(ALL PROJECTS)

[ ] BULLETIN BOARD IS PROTECTED FROM THE WEATHER.

[ ] REQUIRED NOTICES AND POSTERS ARE LEGIBLE.

[ ] MSDS/SDS SHEETS ARE READILY ACCESSIBLE FOR HAZARDOUS MATERIALS.

NOTE: Notices and posters may need to be posted in other languages in project areas with
populations or workforces with limited ability to read, speak, write, or understand English. This
is to be determined on a project-by-project basis.

Federal Posters: https://www.fhwa.dot.gov/programadmin/contracts/poster.cfm

State Posters: http://www.dli.pa.gov/Pages/Mandatory-Postings.aspx

*Denotes posters available in Spanish and other languages
PROJECT REVIEWS:
Date: _______  Reviewer’s Initials: _______
Date: _______  Reviewer’s Initials: _______
Date: _______  Reviewer’s Initials: _______
Date: _______  Reviewer’s Initials: _______
Date: _______  Reviewer’s Initials: _______
Date: _______  Reviewer’s Initials: _______
SAMPLE on Company Letterhead

<table>
<thead>
<tr>
<th>Company EEO Policy Statement</th>
<th>Work Environment Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training.</td>
<td>It is the policy of this company to ensure and maintain a working environment free of harassment, sexual harassment, intimidation, and coercion at all sites, and in all facilities at which our employees are assigned to work. This policy will be rigidly adhered to at all times. Any violation of this policy should be reported immediately to your supervisor or the company EEO Officer.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notice encouraging employees to refer minority and female applicants for employment</th>
<th>Certification of Nonsegregated Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>We encourage the help of all employees in referring minority and female applicants for employment. If you know a minority and/or female who is seeking employment, please refer them to (NAME) at (TELEPHONE #).</td>
<td>(CONTRACTOR) certifies that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy of the sexes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notice informing employees of available training program and entrance requirements</th>
<th>Notice to unions disseminating EEO commitments and responsibilities and requesting their cooperation</th>
</tr>
</thead>
<tbody>
<tr>
<td>We are participating in an On-the-Job Training Program for the Heavy-Highway Construction Industry. If you are interested in developing a skill in a craft, please contact (NAME) at (TELEPHONE #). They will explain the program to you in detail. The only requirement is that you have the desire and ability to develop a skill in the craft in which you are interested.</td>
<td>(CONTRACTOR) will continue to make the company EEO policy known to the employment entities with whom we deal and in our employment opportunity announcements that employees and applicants for employment will be hired; upgraded, promoted or advanced, demoted; transferred; recruited; laid-off or terminated; compensated; and trained without regard to their race, religion, sex, color, national origin, age or disability. We will request the cooperation of the entities with whom we deal to assist our company in meeting its EEO obligations. It is also the policy of this company to provide reasonable accommodations for qualified disabled individuals.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Complaint Procedures</th>
<th>Notice identifying company EEO Officer by name and contact information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any complaint of alleged discrimination by this company, its supervisors, or employees, or any person or organization acting on behalf of the company, should immediately be called to the attention of the company Equal Employment Opportunity Officer.</td>
<td>The Equal Employment Opportunity Officer for the (CONTRACTOR) is (NAME). They may be contacted by writing (ADDRESS) or calling (TELEPHONE #) before 5 pm. After this time she may be reached at (TELEPHONE #).</td>
</tr>
</tbody>
</table>

Additional information regarding the aforementioned policies may be obtained from the Company’s EEO Officer.

Signed by (NAME) Company Official (President, VP etc.) (TITLE)
As specified in Publication 408, Section 111, within 10 calendar days of any utility infrastructure or utility adjustment delay, the Contractor is to notify the Inspector-in-Charge that operations have been or will be delayed and that a claim for delay damages either is going to or might be filed with the Board of Claims. Confirmation of this notification, in writing, is to be sent to the District Executive within 10 calendar days of notifying the IIC. **NOTE:** This written notification to the District Executive is not the notice of intent to claim referenced in Publication 408, Section 105.01(a).

Upon notifying the Inspector-in-Charge of a utility infrastructure or utility adjustment delay, both the Contractor and the Department are to begin keeping daily records of all labor, material, equipment, and site overhead expenses for all operations affected by the delay.

Each Monday, the Contractor is to compare its records for the previous week with those kept by the Department, review them for accuracy, and report all disagreements with such records to the District Executive within 10 calendar days of each review.

On a weekly basis, the Contractor is to prepare and submit to the Inspector-in-Charge a written report that indicates the number of days behind schedule, identifies all operations that have been or are to be delayed, explains how the utility infrastructure or utility adjustment delayed each operation, and itemizes all extra costs being incurred.

Upon completion of the project, the Contractor is to submit to the Inspector-in-Charge and the District Executive copies of a report that contains an itemization of all extra costs being sought, a description of the operations that were delayed, a list of all actions taken to minimize the delay and the delay costs incurred, a graphic depiction of how operations were adversely affected, and an explanation of why the delay was unforeseen based on the contract documents and a careful pre-bid examination of the project site.

After reviewing the Contractor’s submission, the District Executive will make a determination regarding Department liability for delay damages.

If the District Executive determines that the Department is not liable for any delay damages, a written decision is to be issued. If the District Executive’s decision is disputed, the Contractor must comply with the provisions of Publication 408, Section 105.01, and submit notice of intent to claim to the Contracting Officer, in writing, within 10 days of receipt of the DE’s written decision. **NOTE:** In the event the Contractor submits notice of intent to claim or files a claim with the Board of Claims, when an agreement to settle the utility delay dispute or claim is reached with the Contractor or a settlement amount is awarded by the Board of Claims, the procedure outlined below for obtaining Utilities and Right-of-Way Section approval to use Federal funds to pay the settlement must be followed. However, FHWA concurrence regarding Federal participation on a
“Federal Oversight” or “PennDOT Oversight NHS” project need not be requested through a separate submission but rather will be obtained as part of the review and approval workflow for the resulting Legal category work order. Copies of the documentation package and the letter of concurrence from the Chief of the Highway Delivery Division to the District Executive are to be attached to the work order as support.

If the District Executive does not dispute the fact that operations were delayed and that the delay occurred through no fault of the Contractor, a review of the damages claimed will be made, a written decision issued, and payment for the delay damages made through the processing of a Contract Adjustment.

If the District intends to use Federal funds to compensate the Contractor for the delay damages, concurrence with the District Executive’s decision to do so must be obtained from the Bureau of Project Delivery before a Contract Adjustment is processed.

The Assistant District Executive for Construction, working with the District Utility Relocation Unit and the Contractor, is to prepare a documentation package for submission to the Bureau of Project Delivery. The package will be reviewed and a determination made regarding the use of Federal funds to pay for the delay damages. The documentation package must establish, to the satisfaction of the Chief of the Highway Delivery Division, that the delay was unforeseen and unforeseeable by a reasonable contractor; that losses could not have been avoided by the judicious handling of forces, equipment and plants, or by reasonable revisions to the schedule of operations; and that the impact has resulted in a documented increase in the cost of performing the contract work.

The documentation package is to include a report from the Contractor that lists the date(s) when the utility infrastructure owner was contacted, copies of the minutes from any meetings with the utility infrastructure owner, and a statement indicating that the District Utility Relocation Unit has reviewed the circumstances of the delay.

The District Utility Relocation Unit, in its review of the circumstances of the delay, must ensure that the following questions have been addressed:

- Was utility infrastructure relocated and/or adjusted prior to the advertisement for bids, or were arrangements for necessary utility relocations and/or adjustments made with the appropriate utility infrastructure owners in advance of the construction work in order to avoid causing a delay?

- In making arrangements for the relocation and/or adjustment of utility infrastructure, were the Department’s utility relocation accommodation procedures followed?

- Was the construction work delayed through no fault of the Contractor?

- Did the Department make reasonable efforts to control the situation?

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The FHWA should not participate in any delay compensation adjustments caused by conflicts with underground utilities that would have been avoided if Subsurface Utility Engineering (SUE) had been used. Was the SUE Impact Rating Form completed, and the recommended Quality Level investigation conducted, for areas where reasonable expectations of potential conflicts exist? If not, explain why.

Upon receipt of the District’s submission, the Chief of the Highway Delivery Division will forward the package to the Utilities & Right-of-Way Section for review and a determination as to whether the utilities were relocated in accordance with the Department’s Utility Relocation Accommodation policy and the FHWA Program Guide.

After reviewing the District’s submission, the Utilities & Right-of-Way Section will make a determination regarding the use of Federal funds to pay for the delay damages.

If the use of Federal funds is not approved, the Utilities & Right-of-Way Section will prepare a letter of notification from the Chief of the Highway Delivery Division to the District Executive indicating that the utility delay compensation adjustment must be paid using 100% State funds.

If the use of Federal funds is approved and the Federal Status of the affected project is “PennDOT Oversight Non-NHS”, the Utilities & Right-of-Way Section will prepare a letter of notification from the Chief of the Highway Delivery Division to the District Executive indicating that the utility delay compensation adjustment may be paid using Federal funds and instructing the District to attach a copy of the documentation package and letter to the Contract Adjustment as support.

If the use of Federal funds is approved and the Federal Status of the affected project is “Federal Oversight” or “PennDOT Oversight NHS”, the Utilities & Right-of-Way Section will prepare a cover letter from the Chief of the Highway Delivery Division to the FHWA Division Administrator requesting concurrence with the determination that use of Federal funds to pay the utility delay damages is appropriate. The documentation package prepared by the District, with the Division Chief’s cover letter attached, is to be submitted to FHWA.

After reviewing the documentation package and the letter prepared by the Utilities & Right-of-Way Section, FHWA will make a final determination regarding the use of Federal funds to pay the utility delay compensation adjustment. FHWA will submit written notification to the Chief of the Highway Delivery Division indicating whether it does or does not concur with the decision to use Federal funds to pay for the utility delay damages.

Upon receipt of FHWA’s written notification, the Utilities & Right-of-Way Section is to prepare a letter of notification from the Chief of the Highway Delivery Division to the District Executive.

If concurrence is granted by FHWA, the letter will indicate that the utility delay compensation adjustment may be paid using Federal funds and instruct the District to attach a copy of the letter,
along with a copy of the documentation package and the written notification from FHWA, to the Contract Adjustment as support.

If concurrence is not granted by FHWA, the letter will indicate that the utility delay compensation adjustment must be paid using 100% State funds.

Upon receipt of the letter of notification from the Chief of the Highway Delivery Division, the District Executive is to have the Inspector-in-Charge for the affected project, or a delegate, create a Contract Adjustment using ECMS. When creating the Contract Adjustment, select “Utility Delay Compensation Adjustment” as the adjustment type. **NOTE:** For future tracking and reporting purposes, it is essential that “Utility Delay Compensation Adjustment” be selected as the adjustment type. The funding source selected for the Contract Adjustment should comply with the determination regarding the use of Federal funds cited in the letter of notification. Furthermore, ECMS has been programmed so that the “Utility Delay Compensation Adjustment” adjustment type will require a supporting attachment. The supporting attachment should consist of an explanation of the circumstances of the utility delay and the nature of the damages being claimed, and copies of the following:

- The documentation package prepared by the District;
- The letter of notification from the Chief of the Highway Delivery Division to the District Executive; and
- The FHWA letter of concurrence to use Federal funds (“Federal Oversight” and “PennDOT Oversight NHS” projects only).
A. Description of Policy

The Limit of Work Extension Request Process provides for expanding the Limits of Work on a currently active transportation project beyond the limits stated in the original contract. Extending the limits of work on a contract is an extraordinary measure to allow an existing contractor to perform work not in the original contract, for bid efficiency. Limit of Work Extensions are only intended for unique situations where unexpected additional work is identified in close proximity to an existing active construction project that could not be reasonably bid as a standalone project or when an emergency situation develops where using an existing contract provides an expedited resolve to a threat to public health, welfare and safety. A Limit of Work Extension can only be authorized by the Deputy Secretary for Highway Administration.

B. Purpose

Publication 408, Section 104.02 *Alteration of Drawings or Work* states the following regarding Limits of Work:

§ 104.02 Alteration of Drawings or Work.

*With the exception of advance warning signs, detour signs, work zone traffic control devices and other items specified in the contract, perform no work beyond the limits of the project, except as authorized in writing by the Deputy Secretary for Highway Administration.*

C. Procedures

The following activities shall occur to complete the process:

1. The District identifies a potential need to expand the Limits of Work on a transportation project.

2. The District contacts the Special Assistant to the Deputy Secretary for Highway Administration or, in absence of the Special Assistant, the Deputy Secretary’s Office to discuss whether expanding the Limits of Work is appropriate.

3. The Special Assistant contacts the Office of Chief Counsel (OCC), Highway Construction and Claims Division, to discuss the request to determine if the OCC can support the contract addition.
4. If the contract addition is deemed supportable, the District completes the Request for Extension of Limits of Work form and e-mails the form to the Special Assistant with copies to the Office of Chief Counsel and the Executive Secretary (ES) in the Deputy Secretary’s Office. (To expedite the process, please be sure to email the form to the Special Assistant rather than the Deputy Secretary.)

5. The ES logs the request into the *Limits of Work Extension Log*.

6. The OCC reviews the submitted form and justification for contractual completeness and supportability. Once deemed complete, the OCC contacts the Special Assistant to confirm the Deputy Secretary for Highway Administration can approve and sign the extension request.

7. Once the Deputy Secretary signs the Limit of Work Extension, the ES scans and emails the signed document to the District, with a copy to the OCC. (Please Note: Only the Deputy Secretary for Highway Administration is authorized to approve Limit of Work Extensions.)

8. The ES updates the *Limit of Work Extension Log* to indicate the Extension has been approved.

9. The District updates the contract files to ensure the additional work is documented.

D. Forms

- *Limit of Work Extension Request Form*

- *Limit of Work Extension Log*
E. Milestones

The milestones for completing the *Limit of Work Extension Process* are stated in the Chart below.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Contact Special Assistant or Deputy Secretary Office</td>
<td>District</td>
</tr>
<tr>
<td>2. Provide verbal guidance to the District</td>
<td>Special Assistant or OCC</td>
</tr>
<tr>
<td>3. Submit Limit of Work Extension Request</td>
<td>District</td>
</tr>
<tr>
<td>4. Enter request into <em>Limit of Work Extension Log</em></td>
<td>Executive Secretary for Highway Administration</td>
</tr>
<tr>
<td>5. Review request for completeness and supportability</td>
<td>OCC</td>
</tr>
<tr>
<td>6. Sign the <em>Limits of Work Extension</em></td>
<td>Deputy Secretary for Highway Administration</td>
</tr>
<tr>
<td>7. Provide signed document back to District</td>
<td>Executive Secretary for Highway Administration</td>
</tr>
<tr>
<td>8. Update contract files</td>
<td>District</td>
</tr>
</tbody>
</table>
MEMO

DATE: [Insert Date]

SUBJECT: Request for Extension of Limits of Work
ECMS No. [Insert ECMS Number]
SR [Insert SR No.], Segment [Insert Segment Information]
[Insert Project Name]
[Insert Municipality], [Insert County]

TO: [Insert Deputy Secretary]
Deputy Secretary Highway Administration
Keystone Building

FROM: [Insert District Executive]
District Executive
Engineering District [Insert District]

The District is requesting your approval to extend the Limits of Work for the above referenced project, as follows:

<table>
<thead>
<tr>
<th>$ Cost in Thousands</th>
<th>Limits of Work</th>
<th>Total Length</th>
<th>Description of Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Contract</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extension Information</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Justification: [Insert Justification]
(Please provide an explanation of the situation that causes the request to extend limits of work on this contract. Provide sufficient detail that outlines the unique situation where unexpected additional work is identified that could not be reasonably bid as a standalone project or the emergency situation that would be alleviated through the extension of limits on this contract. Also, please include photos, sketches, plans or maps at the link below to provide a better understanding of the situation, if needed.)

Additional Information: [Insert Additional Information]
(Please provide information regarding the scope of the additional work and how the work fits into the bid items in the existing contract, if applicable. Also, please provide any additional information that will afford further understanding for consideration.)
[Insert Deputy Secretary]
Request for Extension of Limits of Work
SR [Insert SR No.], Section [Insert Section No.]
[Insert Project Name]
Page 2
[Current Date]

Upon approval of this request for extension of limits of work, the District will update the contract files to ensure the amendments to the contract are properly documented. Should you have any questions or require additional information on this matter, please contact [Insert Name, Title] at [Insert Telephone Number, e-mail address].

Recommended by:

________________________________________
District Executive, Engineering District [Insert District]

Approved by:

________________________________________
Deputy Secretary, Highway Administration

District [District][Supervisor Initials]/[Initials]

CC:  ADE-D
     ADE-C
     ADE-M
     District Fiscal Officer
     Special Assistant to the Deputy Secretary for Highway Administration
     Office of Chief Counsel
     Director of Project Delivery
     Director of Maintenance and Operations
     Chief Bridge Engineer (If issue involves a bridge)
     Innovation and Support Services Division Chief
     P.E., Highway Delivery Division Chief
     Asset Management Division Chief
     Director of Program Development and Management

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ESTIMATES AND PAYMENTS TO CONTRACTORS

The payment of current estimates to contractors is contained in Section 110.05, Publication 408, and indicates that such payments do not bind the Department to the acceptance of any materials furnished or work performed.

Therefore, the current estimate should contain all items of work completed by the contractor when all required certifications have been provided. For example:

1. Concrete is to be paid as soon as it is placed, and payment is not to be delayed awaiting strength test results.

2. Reinforcement bars are to be paid when placed as indicated, and payment is not to be delayed awaiting concrete placement.

However, if items placed are controversial as to quality or other characteristics at the time of placement, those items are not to appear on a current estimate until they have been determined to be acceptable.

The contractor is to be given an opportunity to review the current estimate with the Inspector-in-Charge for that estimate period. Current estimates do not have to represent the pay item to the exactness of the final estimate.

Under certain circumstances, Districts will be expected to process current estimates to provide payment for work performed before an inspector’s field office has been set up and the project computer system installed. When a contract requires that off-site work be performed before physical construction work begins on the project, the District is expected to make whatever arrangements are necessary to ensure that estimates can be processed to provide payment for this off-site work when it is completed and accepted before an inspector’s field office has been set up and the project computer system installed. For example:

1. Design work performed in connection with a Design-Build project is to be paid as the various project design phases are completed based on the payment schedule percentages established in the applicable contract special provision.

2. Structural material that is fabricated in the winter months for a project not scheduled to begin construction until the following spring is eligible for payment as stored material when it is delivered to the project site or stored at a secure facility such as the fabricator’s yard, provided the other requirements for prepayment specified in Publication 408, Section 110.06, are met.

April 2017 Edition
ROUNDING-OFF PAY QUANTITIES (Estimates and Final)

Units of Payment:
- ACRE = Acre
- BAG = Bag
- CF = Cubic Foot
- DOLLA = Dollar
- FBM = Foot Board Measure
- LS = Lump Sum
- CY = Cubic Yards
- SF = Square Feet
- SY = Square Yards
- LF = Linear Feet
- VF = Vertical Feet
- LB = Pounds
- GAL = Gallon
- MLF = Thousand Linear Feet
- MFBM = Thousand Board Feet
- EACH = Each
- TON = Ton (2,000 lb).

Computations:
Measure to 0.01 ft.

Quantities:
Calculate to 0.000.

Dollars:
Pay to 0.00.

The following exceptions apply as noted in Section 109.01, Publication 408:

- **M. Linear Feet** - measure and pay to the nearest 0.01 M. feet;
- **Vertical Foot** - pay a minimum of 1.0 foot at each site;
- **Acre** - measure and pay to the nearest 0.1 acre;
- **Ton** - measure and pay to the nearest 0.01 ton;
- **M. Feet Board of Measure** - measure and pay to the nearest 0.01 M. feet board.
Rounding of numbers shall follow generally recognized engineering and construction practice. These methods are used by the ECMS system to calculate electronic payments. For written calculations rounding to the hundredth place, use the following guidelines (barring exceptions above):

1) Truncate any decimals after the third.
2) If the third decimal is 4 or less, round down.
3) If the third decimal is 6 or greater, round up.
4) If the third decimal is a 5, preceded by an even number, round down.
5) If the third decimal is a 5, preceded by an odd number, round up.

For example:

1.48934 becomes 1.489, which rounds to 1.49.

**NOTE:** Complete all calculations prior to doing any rounding.
A. GENERAL

Section 110.06 of Publication 408 allows for certain material (i.e. end product manufactured material or fully fabricated products that are awaiting installation and/or incorporation into the finished work) to be paid for before being incorporated into the work. When requested in writing by the Contractor and approved by the Representative, up to 100% of the cost of the material may be paid, provided the quantity of material subject to the request does not exceed the original plan quantity, the material has been delivered to the project site or an approved location in the vicinity of the project, and the material will be stored for at least 30 days prior to use.

Material furnished as part of a component item of a lump sum Structure item (8xxx-xxxx series) may be eligible for prepayment as stored material even though the ECMS “Stored Materials” indicator for the associated lump sum item will state “Not Eligible for Stored Materials Prepayment”. In such cases, actual eligibility should be determined by applying the requirements of Section 110.06 to the component item’s estimated contract quantity and value. ECMS functionality that is used to process a stored material payment and then recoup that payment over time cannot be used for stored material prepayments associated with component items. Instead, the following procedure should be followed:

- Determine the allowable stored material payment amount for the component item using Form CS-110.

- Divide the prepayment amount by the component item’s unit price and round the resulting quantity value to the nearest whole number.

- Include the computed component item quantity when determining the quantity (i.e. percentage) of the associated lump sum contract item to be paid on the next estimate.

- As the stored material is incorporated into the work, discount any payable quantity of work performed under the applicable component item until the entire prepayment amount has been recouped, at which time payment for quantities of work performed under the component item may resume.

An example stored material payment computation involving a component item of a lump sum Structure is shown below.

When evaluating whether the required 30-day minimum storage period will be met, the beginning date is to be the date the material is delivered to the project or approved storage location.
location, or the date the invoice is submitted by the Contractor, whichever is the latter. Material originally determined to be ineligible for prepayment due to the minimum storage period requirement, that is then stored for more than 30 days, is eligible for prepayment on the next estimate, provided the invoice has been submitted by the Contractor.

Form CS-110 is to be completed in its entirety and kept, along with required supporting documentation, in the project file. A list of required supporting documentation is shown in the “Attachments” section of Form CS-110.

For other than fabricated structural steel that is to receive a protective coating, an individual stored material payment must exceed $1,000, but cannot exceed 90% of the contract value for the applicable contract item or component item. Fabricated structural steel that is to receive a protective coating may be approved for prepayment at up to 75% of the contract value for the applicable contract item or component item. Additionally, if the stored material prepayment request is for structural steel to be used in bridge construction, the quantity of material subject to the request cannot exceed 97% of the total estimated weight of structural steel. Finally, the cumulative amount of all stored material payments on a given project cannot exceed 25% of the current contract amount.

To illustrate the procedure for processing a stored material payment for a component item of a lump sum Structure and then recouping that payment, consider the following example:

A project includes Item 8600-0007, Retaining Wall, As-Designed, S-25499. The Component Item Schedule for Item 8600-0007 includes a component item for 727,056 pounds of Fabricated Structural Steel having a unit price of $1.20 per pound. The fabricated structural steel has been delivered to an approved storage location near the project. The Contractor has submitted an invoice for the fabricated structural steel indicating that the total weight of steel delivered does not exceed 727,056 pounds, and the material will be stored for more than 30 days from the date of the invoice. The Contractor submits the required written request for prepayment of the fabricated structural steel as stored material.

1. As shown on Form CS-110, the invoiced amount for the fabricated structural steel is $780,500, and the value of the component item is $872,467.20 (727,056 pounds x $1.20 / LB). Multiplying the component item value by .90 (90%) results in a maximum allowable stored material payment amount of $785,220.48. Since the invoiced amount is less than 90% of the value of the component item, the allowable stored material payment amount is $780,500.

2. Dividing the $780,500 allowable stored material payment amount by the component item’s unit price ($1.20 / LB) and rounding to the nearest whole number results in a quantity of 650,417 pounds.

3. When determining the quantity (i.e. percentage) of lump sum Item 8600-0007 to be paid on the next estimate, include 650,417 pounds of fabricated structural steel.
4. As construction of the retaining wall continues, the weight of any fabricated structural steel incorporated into the work is to be discounted (i.e. not included when determining the quantity of lump sum Item 8600-0007 to be paid on current estimates) until a total of 650,417 pounds of steel has been placed. When a total quantity of 650,417 pounds of fabricated structural has been incorporated into the work and discounted from estimate payment computations, the weight of the remaining steel placed is to be included in computations used to determine the quantity of lump sum Item 8600-0007 to be paid on subsequent estimates.

B. FORCE TRANSFER UNITS

Force Transfer Units, as specified in Section 705.3 of Publication 408, qualify for payment of stored material, provided the material meets the requirements of Section 705.3. This material can be prepaid at up to 90% of the invoice price.
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Form CS-111, "Subcontractor/Supplier Request for Estimate Monitoring", is to be used in monitoring payments to Subcontractors and suppliers from Contractors.

Emphasis on the importance of the procedure is to be maintained, as Central Office continues to receive numerous requests from Subcontractors to assist them in obtaining money owed them by Contractors.

This procedure should have been discussed at the Pre-construction Conference and the Contractor should have been provided with a sufficient number of forms to accommodate the Subcontractors on the project. The Contractor should be instructed/reminded to notify its subcontractors of the availability of this monitoring procedure.

The procedure involves four steps:

1. Subcontractor submission of form (page 1).
2. District Verification of work items and quantities submitted by the Subcontractor.
3. Contractor’s verification of payment or explanation of non-payment.
4. District follow-up to determine if Contractor is or is not in compliance. The Assistant District Engineer for Construction is to render the final determination for these payment issues.

If the Subcontractor intends to pursue a determination in favor of the Contractor after step 4, a copy of the payment bond will be provided to the Subcontractor upon Request.

This procedure is not expected to become the norm for all Subcontractor payments; rather it should be used as an option for the Subcontractor to pursue, on a case by case basis, when they determine there may be an injustice in the payment process. The responsibility of initiating the procedure is that of the Subcontractor’s and a separate request should be submitted for each estimate period.
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1. The responsibility for the preparation of interest payments due construction contractors remains with the District. The method of calculation of interest payments can be found in Publication 11M, Finals Unit Manual.

2. If payment for an item or items is withheld due to lack of required information from the contractor, interest charges will not accrue for the applicable item(s).

3. To hold interest payments to the absolute minimum, Districts are requested to observe the following:

   Include all possible additional and extra work items completed on estimates prior to final inspection.

   Strictly enforce the time limitations set forth in Section 110.08(c), Publication 408, regarding the contractor's acceptance/rejection of final settlement certificate computations. If the contractor does not respond to the District's notification within ten (10) days or a disagreement cannot be quickly resolved, the District should act in accordance with Publication 408.

4. Process payments in accordance with Publication 408, Section 110.09, Release of Final Payments.
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The District is responsible for notifying the contractor of overpayments and for requesting the refund. This is normally done at the time of notification of final quantities. Refund checks received shall be forwarded to the Bureau of Accounting and Finance Management, Comptroller's Office with the corresponding SAP’s Account Receivable Document # and Commitment coding information.

The Procedure utilizes the SAP Accounts Receivable System. Utilizing SAP will provide an accurate accounting of monies due to the Department and systematic follow-up.

Once an overpayment situation is definitely known, the District will proceed to process the negative estimate for approval. Upon approval of the estimate, the District will invoice the contractor for the overpayments.

The Bureau of Fiscal Management (BFM) will monitor each account to ensure that payment of the billing is forthcoming. In the event the contractor fails to respond to the initial billing, dunning letters will be generated by SAP and sent out by BFM at 31 and 61 days after invoicing.

If payment has not been received after 90 days, BFM will refer the overdue invoice to the Office of Chief Counsel for collection.

The Comptroller's Office will deposit the resulting revenue upon receipt. The District or Central Office personnel may access SAP to determine the status of the receivable.

District Construction and Finals personnel should direct any questions to the Contract Management Section, Bureau of Project Delivery.

District Fiscal Officers should direct any questions to the Finance Division, Bureau of Fiscal Management.
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A. GENERAL

The following is to provide guidance in the preparation and processing of work orders using the Engineering and Construction Management System (ECMS). Publication 408, Section 101.03, defines a work order as, "an order, signed by the Representative, authorizing the performance of Additional or Extra Work [at a negotiated price], or Extra Work on a Force Account basis, as specified in [Publication 408,] Sections 110.02 and 110.03."

On any construction project, accepted quantities for original contract work may vary from the approximate quantities shown in the Schedule of Prices. Additionally, changes in original contract item quantities or alterations in the work may result in a significant change in the character of the work under contract, or the District Executive may determine that work, having no quantity or price included in the contract, is necessary or desirable to successfully complete the project. When any of the above conditions are encountered, a work order must be processed to balance quantity overruns and underruns associated with original contract work or to incorporate Additional and/or Extra Work into the contract.

Work orders are also needed to process payments resulting from negotiated dispute / claim settlements or Board of Claims / Commonwealth Court awards.

Work orders are to be processed through ECMS, a web-based computer system designed to provide assistance in managing all aspects of a Project from inception through completion.

Refer to the “Additional / Extra Work Category Work Order Flowchart” beginning on Page B.3.1-33, and the “Legal Category Work Order Flowchart” beginning on Page B.3.1-37, for a visual guide to the work order preparation and processing procedure.

B. AUTHORIZATION FOR CONTRACT WORK

In situations involving Additional and/or Extra Work, as defined herein and in Publication 408, Section 110.03, written authorization to perform the work must be provided to the Contractor by the District Executive or an authorized representative such as the Inspector-in-Charge. The written authorization must be provided prior to the commencement of the work, whether or not prices for authorized Extra Work have been negotiated with the Contractor and accepted by the Representative.

The ECMS Authorization for Contract Work functions as the vehicle for submission of the required written authorization for a Contractor to perform Additional and/or Extra Work.
The authorization is routed electronically between the Contractor and the Project until all outstanding issues concerning the scope of the proposed work have been resolved and the prices to be paid for the associated items have been agreed upon and/or accepted. The Contractor must actively participate in the on-line Authorization process using ECMS.

The ECMS Authorization process is also the Contractor’s opportunity to officially notify the Department of its intention regarding a renegotiation of the unit price for a contract item that has experienced a significant change in character as a result of authorized quantity increases or decreases, as defined in Publication 408, Section 110.02(d).

ECMS has been programmed to ensure that a properly completed Authorization for Contract Work in “Accepted” status is linked to all work orders involving Additional and/or Extra Work. More than one authorization may be linked to a single work order. For all available Change Types in the Additional / Extra Work category; with the exception of “Finals Unit Audit”, “Funding Change”, “Balancing Overruns / Underruns”, “Force Account Adjustment”, and “DE Specified Change”; before a work order can be approved, ECMS performs a check to verify whether an associated authorization has been linked to it and that each item on the work order can be matched to a corresponding item on the associated authorization(s). The ECMS check requires only that the eight-digit number and Type Code of a work order item must match the number and Type Code of an item on an associated authorization. However, in situations where an Extra Work item (Type Code “E”) on an authorization is marked “Force Account” following a decision by the Department to end price negotiations with the Contractor and proceed with the work on a Force Account basis, ECMS will successfully match the authorization item to a work order item having the same eight-digit number and Type Code “A” (Actual Force Account). Item quantity is not part of the ECMS verification; therefore, a difference in quantity between a work order item and an authorization item will not register an error when the check is performed.

ECMS edits pertaining to an associated authorization are not applied to the “Finals Unit Audit”, “Funding Change”, and “Balancing Overruns / Underruns” change types because, if selected under the proper circumstances, they do not involve the incorporation of Additional or Extra Work into the contract. ECMS edits pertaining to an associated authorization are not applied to the “Force Account Adjustment” change type because, if selected under the proper circumstance, written authorization to perform the Extra Work on a Force Account basis was provided to the Contractor before the work began, an initial work order was processed based on the Contractor’s estimate of the cost, payments were made as the work progressed, and, now that the work has been completed, a follow-up work order is being processed merely to adjust the amount paid to the Contractor via progress payments to reflect the actual documented charges. Finally, ECMS edits pertaining to an associated authorization are not applied to the “DE Specified Change” change type because, if selected under the proper circumstance, all attempts by the Department to reach agreement with the Contractor on the price to be paid for Extra Work have been unsuccessful and the work is such that force account records cannot be kept by the Department. As a result, the responsible District Executive, in accordance with the provisions of Publication 408, Section 110.03(a), has provided the
Contractor with written notification containing a firm and binding price for the work to be performed, and the Contractor’s acceptance of the price is not required.

It is possible for a contract item to experience a significant change in character simply as a result of an overrun or underrun of the estimated plan quantity (e.g., when the actual length of piles, driven as indicated, exceeds the plan quantity). In such cases, when the resulting quantity increase or decrease is addressed by processing a “Balancing Overruns / Underruns” change type, as would be proper in this circumstance since the increase or decrease in quantity is not due to the incorporation of Additional Work, the fact that ECMS does not require an associated authorization could result in the “significant change in character” issue going unresolved. This oversight could put the Department at a disadvantage if the Contractor decides to revisit the issue later in the project, perhaps after all physical work is complete, and the opportunity for the Department to keep the force account records that will be needed to compare and contrast with the Contractor’s records has passed.

Therefore, an ECMS Authorization for Contract Work must be prepared, processed, and linked to all “Balancing Overruns / Underruns” change types that include one or more contract items (including previously approved Extra Work items) where the pending quantity change will result in the item of work being increased to in excess of 125% or decreased to below 75% of original contract quantity. If the “Balancing” change type includes some items where the item quantity has exceeded the +/- 25% threshold and other items that have not, only those items that have exceeded the threshold are required to be listed on the ECMS Authorization. Since ECMS functionality does not include edits to enforce the requirement for an authorization to be linked to a “Balancing Overruns / Underruns” change type, a manual check must be made during the work order review and approval process to ensure compliance with this directive.

To aid project management personnel in meeting the requirement to provide the Contractor with written authorization for Additional / Extra Work in a timely manner (i.e., prior to the start of the work), ECMS process “workflow” includes an option to initially create and submit a generalized or “conceptual” Authorization for Contract Work. The idea behind this functionality is to allow the Inspector-in-Charge to prepare an initial authorization that outlines the scope of the work to be performed, in general terms; submit it to the Contractor prior to the start of the work or as it is just beginning; and then follow up, as the work progresses, with an itemized authorization that provides more detailed information (e.g., item numbers and descriptions, unit prices, estimated quantities, etc.). To provide the Contractor with added detail about the scope of the work being authorized, the Inspector-in-Charge may insert one or more special provisions into a conceptual authorization. Utilizing the available ECMS functionality, the User is able to select from a list of the Project’s original special provisions using the “Modify” button, or, using the “New” button, select from the library of Standard Special Provisions or create a special provision specifically for authorized Extra Work.

If a conceptual authorization is submitted initially, the Project must follow up with an itemized Authorization for Contract Work. The Inspector-in-Charge may elect to skip the
conceptual authorization option and proceed directly to preparing and submitting an itemized authorization; however, the requirement for timely submission of written authorization (i.e., prior to the start of the work) remains applicable. ECMS will only allow work orders that are associated with one or more itemized Authorizations for Contract Work to be approved.

To aid project management personnel in preparing the required itemized Authorization for Contract Work, ECMS includes functionality whereby the User is able to select from a list of the Project’s original contract items using the “Modify” button, or establish one or more Extra Work items using the “New” button, and then insert the items into the authorization. Before the itemized authorization can be submitted to the Contractor, an estimated quantity must be entered for all of the listed items. Quantity estimates must be as accurate as possible and based on reasonable computations.

The Contractor, upon receiving an authorization from the Project, must log into ECMS, access the applicable document, and prepare a response. To respond to a conceptual (i.e., non-itemized) authorization, the Contractor has to either acknowledge its understanding of the “Scope of Work” statement, as well as the requirements of any attached special provision(s), by selecting “Acknowledge” or request clarification by selecting “Clarification Requested”, and then submit the authorization back to the Project. Note that, upon acknowledging its understanding of the scope of work and the requirements of any attached special provision(s), the Contractor is authorized to begin work. To respond to an itemized authorization, the items on the authorization must first be reviewed. Then, for each Additional Work item on the authorization, the Contractor must indicate that the contract unit price remains acceptable by selecting “Accepted” or, if a renegotiation of the contract unit price is applicable and justifiable based on the provisions of Publication 408, Section 110.02(d), select “Out of Scope”. For each newly established Extra Work item on the authorization, the Contractor must enter the requested unit price in the appropriate field thereby initiating the price negotiation process. When all items on the itemized authorization have been addressed, the Contractor is to submit it back to the Project.

Upon receipt, the Project is to review the Contractor’s response to the “Scope of Work” statement, the special provision(s), and, if itemized, the items on the authorization. If clarification of the “Scope” statement or any attached special provision is requested, the Project must address the request and, if necessary, make changes to the statement and/or the special provision. If any contract items are marked “Out of Scope”, further action on the part of the Project is necessary. First, the contract item must be removed from the authorization. Then, if the Project wants to proceed with the work, the removed item should be replaced with a new, Extra Work item and the process of renegotiating the contract unit price initiated. The Project must also indicate acceptance or rejection of the Contractor’s submitted price for each Extra Work item on the authorization by selecting “Accepted” or “Rejected”, or notify the Contractor of the Department’s desire to end the negotiations and proceed with the work on a Force Account basis by selecting “Force Account”. Note that, before the Contractor’s submitted price can be accepted, it must be justified using one of the acceptable methods described herein (Subsection G, Extra Work).
When the “Scope of Work” statement and any attached special provisions have been “Acknowledged” and all items are marked as either “Accepted” or “Force Account”, the itemized authorization status can be changed to “Accepted” and the Project may proceed with preparation of the associated work order(s). If, for any reason, a decision is made not to proceed with the authorized work, the authorization status should be changed to “Work Not Completed”. Authorizations in “Draft” status may be deleted entirely; but, once an authorization is submitted to the Contractor the first time, the option to delete will no longer be available.

The Districts are responsible for the preparation of all work orders. The District Executive will act as the Approval Authority for Additional / Extra Work category work orders for all project types (i.e., Federal Oversight, PennDOT Oversight NHS, PennDOT Oversight Non-NHS, and Non-Federal), and Legal category work orders for PennDOT Oversight Non-NHS and Non-Federal projects.

The District Executive may delegate the approval authority for work orders, as described above, to the Assistant District Executive for Construction, an Assistant Construction Engineer/Manager, or the Work Order Specialist at their discretion.

The Bureau of Project Delivery (BOPD) will act as the Approval Authority for Federal Oversight and PennDOT Oversight NHS project work orders in the Legal category. In addition, the BOPD is responsible for conducting a Quality Assurance Review of a designated percentage of those work orders approved at the District level. If significant errors are discovered on a Federal Oversight project work order, the BOPD is responsible for coordinating with the District on the processing of the necessary corrective work order.

C. CATEGORIZATION AND CHANGE TYPES

A system of work order categorization has been developed to ensure that, while maintaining the benefit derived from the decentralization of work order approval authority for payment, the Bureau of Project Delivery (BOPD) and FHWA are kept appraised of major contract changes involving Additional and/or Extra Work, as well as dispute/claim settlements or Board of Claims/Commonwealth Court awards.

The available work order Categories are: “Additional / Extra Work” and “Legal”. Once the work order category has been selected, all items included on the work order must relate to that category. There can be no mixing of categories within any one work order.

Upon selecting a work order Category, it is then necessary to identify a more specific purpose or "reason" for the change, within the context of the Category. Therefore, each work order Category has been further broken down into Change Types.
The Change Types within the Additional / Extra Work category are to be used to:

- Indicate that item quantities for original contract work are being increased / decreased (i.e. “balanced”) due to overruns / underruns in estimated plan quantities,
- Attribute the need for Additional and/or Extra Work to a design-related error or omission, an unforeseen field condition(s), or a directive of the Engineer,
- Process an adjustment to the contract price for an item(s) of work in accordance with the provisions of Publication 408, Sections 110.02(b), 110.02(c), or 110.02(d),
- Implement the contract changes associated with an approved Value Engineering proposal,
- Process a change in the funding source for applicable items of work,
- Adjust the amount paid to the Contractor via progress payments, based on an Estimated Force Account, to reflect the actual documented charges,
- Indicate that the District Executive has established a firm and binding price for Extra Work because attempts by the Department to negotiate a price have been unsuccessful and the work is such that force account records cannot be kept by the Department, or
- Process minor adjustments to contract item quantities as needed to “balance the books” following the District Finals Unit’s audit of project documentation.

The Change Types within the Legal category are to be used to:

- Indicate that the District was able to negotiate a settlement in order to resolve a dispute with the Contractor before a claim is filed with the Board of Claims,
- Indicate that the District and/or the Office of Chief Counsel was able to negotiate a settlement with the Contractor after a claim was filed with the Board of Claims but before a Board of Claims / Court hearing, or
- Indicate that the Board of Claims or Commonwealth Court has made an award decision in favor of the Contractor in settlement of a claim.


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Upon selecting one of the available Change Types within a particular Category, all items related to that change type are to be logically grouped together to form a work order. The purpose behind this methodology is to present, evaluate, and explain all items within the Change Type as a whole so that the human and financial resources of the BOPD and FHWA can be focused on reviewing the more extensive contract changes and Contractor claims associated with Federal Oversight projects, while minor contract changes are evaluated through a quality assurance review process.

The Change Types associated with the two work order Categories are:

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>CHANGE TYPES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional / Extra Work</td>
<td>Changes Related to Value Engineering&lt;br&gt;Design Omission(s)&lt;br&gt;Design Error(s)&lt;br&gt;Unforeseen Field Condition(s)&lt;br&gt;Field Change(s) Directed by the Engineer&lt;br&gt;Required Change(s) in Scope of Work&lt;br&gt;Differing Site Condition(s)&lt;br&gt;Suspension of Work Ordered by Engineer&lt;br&gt;Other</td>
</tr>
<tr>
<td>Additional / Extra Work (Administrative Adjustment)</td>
<td>Force Account Adjustment&lt;br&gt;DE Specified Change&lt;br&gt;Funding Change&lt;br&gt;Finals Unit Audit&lt;br&gt;Balancing Overruns / Underruns</td>
</tr>
<tr>
<td>Legal</td>
<td>Negotiated Dispute Settlement&lt;br&gt;Negotiated Claim Settlement&lt;br&gt;Board of Claims / Court Award</td>
</tr>
</tbody>
</table>

D. WORK ORDER APPROVAL AUTHORITY

All Federal Oversight and PennDOT Oversight NHS project work orders in the Legal category, regardless of the specific change type or payment amount, will be reviewed and approved by the Bureau of Project Delivery (BOPD) and then transmitted to the FHWA for
approval concurrence. PennDOT Oversight Non-NHS and Non-Federal (100% State Funded) project work orders in this category will be approved for payment by the District Executive or an authorized delegate.

For work orders in the Additional / Extra Work category only, a designation of "Major" or "Minor" will be attached to the change type based on the following parameters:

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>MAJOR</th>
<th>MINOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative Percentage Change in Quantity for an Original Contract Item or Previously Approved Extra Work Item</td>
<td>&gt; ± 15%</td>
<td>≤ ± 15%</td>
</tr>
<tr>
<td>Dollar Value of a Newly Established Individual Extra Work Item</td>
<td>&gt; $15,000</td>
<td>≤ $15,000</td>
</tr>
<tr>
<td>Net Change Based on All Items Associated with the Change Type (Additional and/or Extra Work)</td>
<td>&gt; ± $50,000</td>
<td>≤ ± $50,000</td>
</tr>
</tbody>
</table>

The District Executive will have approval authority for payment of all (Major and Minor) Additional / Extra Work category work orders for all project types (i.e., Federal Oversight, PennDOT Oversight NHS, PennDOT Oversight Non-NHS and Non-Federal). For Federal Oversight projects, following the District Executive’s approval for payment, change types designated as "Additional / Extra Work – Major" will be transmitted to the FHWA for approval concurrence. If selected for quality assurance review, Change types designated as "Additional / Extra Work - Minor" will be further evaluated by the BOPD.

E. ADJUSTMENT OF LUMP SUM ITEMS

The original contract price of a lump sum item, where quantities and unit prices for component items are designated on a Component Item Schedule submitted as specified in Publication 408, Section 103.01(a), will not be adjusted for any reason other than for changes directed by the Representative. When addition or deletion of work is required due to a change directed by the Representative, adjusted payment will be made as specified in Publication 408, Section 110.02(e). Component item unit prices provided by the Contractor are for use in making progress payments only and are not binding upon the Department in situations involving adjusted payment. Adjusted prices agreed upon with the Contractor must be justified using one of the acceptable methods described herein (Subsection G, Extra Work).
F. ADDITIONAL WORK

Publication 408, Section 101.03, defines "Additional Work" as "work of a type already provided by the contract and for which the contract has established a unit price."

The term Additional Work is generally used to describe work arising when alterations in the work are authorized, but do not result in a significant change in the character of the work as required under the original contract. When planned contract work is altered for any reason, the necessary item quantity increases and/or decreases are processed as Additional Work.

Quantity increases / decreases resulting from such alterations in original contract work should continue to be paid for as Additional Work until either party (Department or Contractor) believes and is able to demonstrate that the character of the work, as required under the original contract, has been significantly changed as provided for in Publication 408, Section 110.02(d).

When required, Additional Work is to be added to the contract through the processing of a work order. Additional Work is always paid for at the contract unit price and in the same manner as if it had been included in the original contract.

When items of work are to be completely eliminated from the contract, as specified in Publication 408, Section 104.02, adjustments to the items involved are processed as Additional Work.

In situations involving item quantity overruns, underruns, and/or eliminations, no allowance will be made for any increased costs except as provided for in Publication 408, Sections 104.02 and 110.02.

G. EXTRA WORK

Publication 408, Section 101.03, defines "Extra Work" as "work arising from changes in quantities or alterations in the work that result in a significant change in the character of the work under contract, or work, having no quantity or price included in the contract, that is determined by the District Executive to be necessary or desirable to complete the project."

The term Extra Work is generally used to describe work arising when changes or alterations to the original contract are deemed necessary or desirable, for whatever reason, but the contract does not include an item for the desired type of work. Additionally, when changes or alterations to original contract work result in the work experiencing a significant change in character, and an adjustment or renegotiation of the contract unit price is requested and can be justified, the new item of work that is established is added to the contract as Extra Work.
The term "significant change" applies only to the following circumstances:

- When the character of the work as changed or altered differs materially in kind or nature from that involved or included in the original proposed construction, or

- When an item of work is increased to in excess of 125% or decreased to below 75% of the original contract quantity. Any allowance for an increase in quantity applies only to that portion in excess of 125% of the original contract item quantity or, in case of a decrease below 75%, to the actual quantity of work performed.

When an item of work is decreased to below 75% of the original contract quantity, the actual quantity of work performed may be paid at an adjusted price; however, total compensation is not to exceed the contract item’s original value. Item value is defined as the original contract quantity multiplied by the contract unit price. The adjusted price must be agreed upon by the Contractor and accepted by the Representative.

When work, as identified in Publication 408, Sections 104.02, 104.03, and 110.02, is to be paid for as Extra Work, the following conditions should be evaluated:

- Can the Contractor and District Executive agree on a tentative price for the work, and
- Can force account records, if necessary, be kept by the Department?

If both conditions can be met, the District Executive's written authorization to perform the work is to state that the work will be paid for as Extra Work at a Negotiated Price. The ECMS Authorization for Contract Work instructs the Contractor to submit back-up data to support its asking price for the Extra Work within 10 days of receipt. If the Extra Work commences before the price is accepted by the Representative, force account records are to be kept by the Department and, in the event price negotiations are ultimately unsuccessful, used to compute payment. Once the price is accepted by the Representative, the work will be paid for only at the negotiated price, which will not be renegotiated.

If neither of the above conditions can be met, the District Executive must submit written notification to the Contractor containing a firm, binding price that has been determined to be fair and equitable for the work to be performed.

If the nature of the Extra Work is such that the Contractor and District Executive cannot agree on a tentative price therefore, but force account records can be kept by the Department, the District Executive's written authorization is to state that the Extra Work will be paid for on a Force Account basis. Force account records are to be kept as specified in Publication 408, Section 110.03(d) and as outlined in Subsection H, Extra Work on a Force Account Basis.

When required, Extra Work is to be included in the contract through the processing of a work order. When a work order for Extra Work at a Negotiated Price is processed, the item
that is established is to be assigned Item Type Code “E” or “C1”. The determination as to
which Type Code to use is to be based on whether the Extra Work is the result of a significant
change in the character of work already under contract, as defined in Publication 408, Section
110.02(d), or a decision to include work, having no quantity or price in the contract, that has
been determined to be necessary or desirable to complete the project. Item Type Code “C1”
is to be used in situations where a new item is established after an original contract item
experiences a significant change in character due to a change in quantity in excess of +/- 25%
of original contract quantity, and one of the parties to the contract (i.e., the Department or the
Contractor) requests and can justify an adjustment to the original contract item’s unit price.
When an item is established for this purpose in ECMS, the User is to select the same, 8-digit
item number as the original contract item and assign the new item Type Code “C1”. If, when
faced with the same circumstance, the Department and Contractor agree that the contract unit
price remains applicable, quantity increases and/or decreases should continue to be processed
against the original contract item.

Once established, Item XXXX-XXXX “C1” is to be treated as if it were a contract item. The
“original quantity” for this item will be the quantity established via the work order on
which the item first appears. Should subsequent quantity changes or alterations result in a
significant change in the character of the work (e.g., the “original quantity” being changed in
excess of +/- 25%), contract provisions permitting a possible price adjustment would remain
applicable. If an adjustment of the “previously adjusted” unit price is justified, the User is to
establish a new item having the same item number as the original contract item and assign the
new item Type Code “C2”, indicating that it represents the second adjustment to the original
contract unit price resulting from a significant change in the character of the work. ECMS
was designed to handle a total of nine such “price adjustment” iterations for a given contract
item over the life of a project (i.e., Item Type Codes “C1” thru “C9”).

In situations where the District’s intent is to include work, having no quantity or price in
the contract, that has been determined to be necessary or desirable to complete the project,
and negotiate a price for the Extra Work, the resulting work order item is to be assigned a
standard, modified standard, or non-standard item number, based on the nature of the work to
be performed, and Item Type Code “E”. Once established, Item XXXX-XXXX “E” is to be
treated as if it were a contract item, and, if quantity changes or alterations result in a significant
change in the character of the work (e.g., the quantity established via the work order on which
the item first appears is changed in excess of +/- 25%), contract provisions governing a
possible price adjustment would apply. If the Department and Contractor agree that the
negotiated price remains applicable, quantity increases and/or decreases should continue to be
processed against the original Extra Work item. If an adjustment in the negotiated price is
justified, the new item that is established is to be assigned the same standard, modified
standard, or non-standard item number and Item Type Code “E1”, indicating that the item
represents the first adjustment to the originally agreed upon unit price. ECMS was designed
to handle a total of nine such “price adjustment” iterations for a given Extra Work item over
the life of a project (i.e., Item Type Codes “E1” thru “E9”).
Prices for Extra Work are to be based on careful estimates. The District Executive is to negotiate with and obtain satisfactory unit or lump sum prices from the Contractor. An “Accepted” ECMS Authorization for Contract Work, indicating agreement with the price(s) to be paid for the Extra Work, is to be electronically linked to the resulting work order along with the Contractor’s detailed cost estimate and any additional, required supporting documentation. The work order cannot be approved; however, until agreed upon prices for Extra Work are fully justified.

Agreed unit or lump sum prices must be satisfactorily justified, by the District Executive, using one of the following acceptable methods:

- Comparison with average price data for the same item of work taken from the Historical Data database,
- Reference to the price paid for similar work on at least two other Allied Contracts,
- Computations of the estimated material, labor, and equipment costs associated with the work using the Force Account format, or
- An acceptable Engineering Analysis.

As an additional negotiating tool, an Adjustment Increase of up to 10% may be added to the average price obtained using Historical Data or to the average of referenced Allied Contract prices, if needed to reach an agreement with the Contractor on a price for Extra Work. The ability to apply the increase when negotiating with the Contractor is intended to enable the District to account for costs not normally included in bid prices, such as mobilization, traffic control, and/or additional engineering. The adjustment increase may not be applied when a Force Account Estimate or Engineering Analysis is used for cost justification.

The Item Price History database is a continually updated, searchable listing within ECMS of the actual prices bid for highway and bridge construction contract items. Available cost data can be segregated by region (i.e., Locale) to account for the similarity of material costs and labor rates within specific geographical areas. A map showing the area boundaries for each of the five Locales that are to be used for cost justification purposes can be found in the Appendix. When manually entering ECMS search criteria, care should be taken to ensure that the data obtained is applicable to the Locale within which the project is located. Item Price History data for a particular Locale is applicable only to projects located in one of the Districts within that Locale.

ECMS Item Price History data is not to be used to justify excavation costs. Since the exact subsurface conditions that will be encountered are virtually unknown at the time of bidding, Bidders, realizing that extreme variations in the cost of performing required excavation work can occur from one location to another on a given project, must average estimated location costs together or otherwise account for these variations in their bid prices.
As a result, bid prices for excavation are considered highly “site specific” and any Locale average price would not necessarily be representative of the cost of performing excavation work within the applicable geographical region.

Additionally, ECMS Item Price History data for items having a unit of measure of “Lump Sum” is not to be used for cost justification purposes. Items falling into this category include, but are not limited to, commonly encountered items such as Mobilization, the Inspector’s Field Office and Inspection Facilities, and Maintenance and Protection of Traffic During Construction. Because these types of items are typically paid as work progresses, in accordance with a specified or “as directed” payment schedule, bidders have been known to inflate bid prices for these items, by including unrelated costs, in order to achieve increased cash flow at the beginning of the project when the initial contract work may not be generating much revenue. As a result, average price data for these items is not considered representative of the actual cost of performing the work or providing the facilities and/or equipment required.

The agreed price for an Extra Work item may be justified by providing a reference to the average unit price paid for the same item of work on other projects within the same Locale as the subject project (Historical Data) provided the average unit price for the applicable Locale is greater than or equal to the agreed price. Further, the Locale average unit price at the time of comparison must be based on at least 6 occurrences (bids).

The Historical Data average unit price for a standard item (i.e., an item on the Master Items list having a unit of measure of other than “Lump Sum”) can be obtained by utilizing the query facility built into the “Work Orders” module in ECMS. The query facility is accessed by first selecting the “Justification” link associated with the item on the ECMS “Work Order” screen. From the “Work Order Item Cost Justification” screen, after selecting Historical Data as the justification Method, use the “New” button to initiate the query. When the “Historical Data” screen opens, the average of the first, second, and third low bidder’s unit prices from projects that include the subject item will be returned in response to the request provided the query finds at least 6 bid occurrences of the item overall. Only unit prices from projects having a Let Date within 2 years of the query date and located in one of the Districts that make up the Locale where the subject project is located will be included in the average unit price determination. A field at the bottom of the screen will display the average unit price, and a separate field will display the average unit price with the 10% Allowable Adjustment Increase added.

When a Historical Data cost justification meeting the above requirements is developed, ECMS automatically captures a reference (i.e., No. of Occurrences and Average Unit Price) as support documentation.

The agreed price for an Extra Work item may also be justified by providing references to the unit price paid for similar work on at least two other contracts within the same Locale as the subject project (Allied Contracts). The similarity of Allied Contract work to the Extra Work must be demonstrated in order to validate the comparison of prices. To accomplish this,
both unit price and quantity should be considered when selecting Allied Contract references. If available cost comparison data for a particular item of work is limited to only one other contract within the same Locale, references to the first, second, and/or third low bidder's unit price for the applicable item may be considered when developing the agreed price cost justification.

Allied Contract data for a standard item (i.e., an item on the Master Items list having a unit of measure of other than “Lump Sum”) can be obtained by utilizing the query facility built into the “Work Orders” module in ECMS. The query facility is accessed by first selecting the “Justification” link associated with the item on the ECMS “Work Order” screen. From the “Work Order Item Cost Justification” screen, after selecting Allied Contracts as the justification Method, use the “New” button to initiate the query. When the “Work Order Allied Contracts” screen opens, item data (i.e., bid date, quantity, and unit price) from projects that include the subject item will be returned in response to the request. Only projects having a Let Date within 2 years of the query date and located in one of the Districts that make up the Locale where the subject project is located will be included in the query results. If at least one record is found, it may be possible to develop a cost justification based on Allied Contract references. As individual records (i.e., Allied Contracts) are selected from the list of query results, a field at the bottom of the screen displays the average unit price based on the selection. As each new record is selected, the average unit price field is updated. A separate field displays the average unit price of the selected records with the 10% Allowable Adjustment Increase added.

The agreed price for an Extra Work item may be justified using references to the prices paid for similar work on at least two projects in the same Locale, provided the average of the Allied Contract unit prices is greater than or equal to the agreed price. When only one Allied Contract reference is found, the first, second, and/or third low bidder's unit price for the item of work may be used for agreed price cost justification, provided the average of at least two of the three low bid unit prices is greater than or equal to the agreed price. When an Allied Contracts cost justification meeting the above requirements is developed, ECMS automatically captures a reference (i.e., Project No., bid date, quantity, and unit price) to each contract as support documentation. When the first, second, and/or third low bidder's unit prices from a single Allied Contract are used for agreed price cost justification the ECMS reference will include the Project No., quantity, and unit price and indicate whether the referenced data is for the first, second, or third low bidder.

The agreed price for an Extra Work item may also be justified by comparison with the estimated cost of the Extra Work as computed using the force account format (i.e., a material, labor, and equipment cost breakdown with overhead and profit markups added to each cost component). The intent behind this method of cost justification is to demonstrate, based on a Force Account Estimate of the expected cost, that the Extra Work, if it were to be performed and paid for on a Force Account basis, could cost as much as or more than the agreed upon price.
Department Form CS-4347CJ, Force Account Estimate, has been developed for use in developing the cost justification. Since the purpose is to put together merely an estimate of the total cost of the work, the form does not require that computations be as detailed as with an Actual Force Account statement; however, the following minimum criteria should be met. Material prices need not be supported by invoices; however, in cases where the material being used is specialized (i.e., not a material that is traditionally encountered in bridge and highway construction work), or represents a significant portion of the total cost of the work, a supporting quotation or invoice should be requested for verification purposes. Additionally, generalized hourly rates, appropriate for the labor classification or type of equipment being employed, may be used to estimate labor and equipment costs. The general rate used for a piece of equipment should include the operating cost, and the time charged, including standby time if applicable, and should be estimated in terms of “operating time”. For example, if it is estimated that a piece of equipment will have to be available for an entire day (i.e., 8 hours), but only operated for 3 hours (i.e., 3 hours operating time and 5 hours standby), approximately 5 hours should be charged on the form. The assumption being that the additional 2 hours of operating time charged would be mathematically equivalent to 5 hours of actual standby time. Rates for payroll taxes and insurances should be applied to the total base labor cost. References to the section (and page, if available) of the Rental Rate Blue Book where hourly equipment rates can be verified are required. In lieu of Blue Book reference information, worksheet printouts from the online version of the Rental Rate Blue Book may be provided as support for the hourly equipment rates being charged. In such cases, the equipment reference shown on Form CS-4347CJ should read “See Attached”. The total cost of any work that is to be performed by an approved subcontractor, including the applicable overhead and profit markup, may be charged on the prime contractor’s cost breakdown, but a separate Form CS-4347CJ providing a material, labor, and equipment cost breakdown of the subcontracted portion of the work is required. The prime contractor's need to subcontract any or all of the work must be clearly supported by factual data which rules out the possibility of subcontracting merely for the convenience and benefit of either or both parties. If the cost estimate includes a Service by Others, the type of service must be identified. Estimated Service by Others costs need not be supported by invoices; however, the amount charged must be supported by a quotation or computation. Finally, the Number of Units used to compute an estimated unit price should be reasonable with respect to the quantity estimate for the primary material being used, or supported by a computation wherein the validity of the number is shown to be appropriate. The mere fact that the Number of Units used in the estimate is equivalent to the quantity being established on the associated work order, alone, is not sufficient for demonstrating that the Number of Units is reasonable.

Overhead and profit markups are considered negotiable. The overhead markups applied to estimated Subcontractor and Service by Others costs may not exceed the percentages for these cost components specified in Publication 408, Section 110.03(d). Additionally, the total markup amount paid, including Subcontractor and Service by Others markup amounts, may not exceed the total amount that would be paid if the specified force account markups were applied.
The agreed price for an Extra Work item may be justified using a Force Account Estimate, provided the computed lump sum cost or unit cost is greater than or equal to the agreed price. When a Force Account Estimate is used for agreed price cost justification, attach Forms CS-4347CJ to the work order, along with the other required support documentation outlined above.

Finally, the agreed price for an Extra Work item may be justified by an Engineering Analysis. The use of this method of cost justification is to be limited to only those instances when the other acceptable methods of cost justification cannot be used due to the unusual nature or complex scope of the Extra Work to be performed. Any planned use of an Engineering Analysis for cost justification purposes must be coordinated with the Bureau of Project Delivery prior to work order approval.

When developing an Engineering Analysis, all engineering logic and assumptions being incorporated into the analysis must be clearly stated. Any price data cited must be supported by an independent source or sources (e.g., invoice, quotation, etc.). All computations must be presented in a clear and concise manner, and include the units of measure for the various numerical values used in equations, formulas, and/or expressions. Components of the other acceptable methods of cost justification cannot be interjected into the Engineering Analysis. For example, although a 6% markup on the estimated cost of subcontracted work is applicable when using the Force Account Estimate method of cost justification, it is not an acceptable “add on” when developing an Engineering Analysis.

The agreed price for an Extra Work item may be justified using an Engineering Analysis, provided the computed lump sum cost or unit cost is greater than or equal to the agreed price. When an Engineering Analysis is used for agreed price cost justification, a written statement that includes all of the pertinent information needed to address the above requirements is to be attached to the work order as support documentation.

H. EXTRA WORK ON A FORCE ACCOUNT BASIS

Publication 408, Section 110.03(a), specifies that, if the District Executive and Contractor cannot agree on a tentative price for Extra Work and the work is such that force account records can be kept by the Department, the District Executive's written authorization is to state that the Extra Work will be performed and paid for on a Force Account basis.

Records of Extra Work performed on a Force Account basis should be compared with those kept by the Contractor, at the end of each day or as directed by the Representative, to ensure accuracy and obtain concurrence. The Representative is responsible for resolving any reported disagreements with such records; however, if the Contractor fails to review the Department's records or to report any disagreements, it will be presumed that the Department's records are complete and accurate. Department Form CS-4347, Force Account Daily Sign-Off, which is to be signed by both the Contractor and a Department representative, has been signed.
developed for the purpose of documenting the comparison of force account records and the concurrence of both parties to the accuracy of those records. Completed and signed forms will also serve as source documentation for any future audit of the force account payment.

Payment for Extra Work performed on a Force Account basis is normally made upon completion of the work. If progress payments are desired, the Contractor must submit an itemized estimate of costs, in writing, within 10 working days after receipt of the District Executive's written authorization to perform the Extra Work on a Force Account basis (i.e., the ECMS Authorization for Contract Work) or within 3 working days of the start of the force account work, whichever occurs first. Processing a work order prior to the start of the work or as it is just beginning, based on the Contractor’s estimate of the cost, causes monies to be encumbered, which will allow the Contractor to be paid as work progresses, and establishes a true fiscal account for the project for budgeting and cash flow projections. An Estimated Force Account work order should not be processed if the time estimated for performance of the work is less than 10 days and/or the estimated cost is less than $50,000, provided the Contractor agrees to the deferment of payment until after the work is completed.

Statements of Estimated Force Account costs (rounded to the nearest hundred dollars) need not be as detailed as the statement described below for use in documenting an Actual Force Account payment. Estimated cost data may be presented on Form CS-4347CJ, Force Account Estimate, or on the standard, Force Account statement package of forms. If the estimate is prepared using the standard, Force Account statement package of forms, Daily Labor Breakdown and Daily Equipment Breakdown sheets are not required. Broad lump sum quotes, or estimates prepared using other forms, are unacceptable.

The equipment rental rates to be used in an Estimated Force Account are the Rental Rate Blue Book rates in effect at the time the estimate is prepared. In an Actual Force Account, whether the purpose is to adjust the Estimated Force Account amount paid via progress payments or to provide payment in full upon completion of the work, the Blue Book rates to be used are those in effect as of the first day that work was actually performed. These “first day of work” rates remain applicable throughout the performance of such work.

The amount paid to the Contractor based on an Estimated Force Account must be adjusted, upon completion of the force account work, to reflect the actual documented charges.

The Department forms to be used to submit cost data for an adjustment of an Estimated Force Account or for an Actual Force Account are:

- CS-4347AA Final Summary (Projects Let On or After August 25, 2016)
- CS-4347AA Final Summary (Projects Let Prior to August 25, 2016)
- CS-4347AS Subcontractor Summary
- CS-4347BA Material/Service By Others Breakdown
- CS-4347CA Labor Breakdown
- CS-4347D Daily Labor Breakdown
- CS-4347E Equipment Breakdown

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Electronic versions of these forms, in Microsoft Word and Excel formats, have been developed by the Bureau of Project Delivery and made available to the Engineering Districts. To ensure that Contractors have access to and are utilizing the most up to date edition of the Force Account forms, paper and/or electronic versions should be distributed at preconstruction conferences or presented to the Contractor prior to the start of any force account work.

When a work order for Extra Work on a Force Account basis is processed, the work order item that is established is to be assigned Item Type Code “A”. This Item Type Code is to be used whether the desired payment scenario is Actual (i.e., upon completion of the work) or Estimated (i.e., as work progresses). When an item is assigned this Type Code, ECMS automatically defaults the item’s unit price to $1.00 and its unit of measure to “DOLLAR”. The quantity established for the item is to be equivalent to the actual cost of the work, if complete, or, if progress payments are to be made as work is performed, the estimated cost. By defaulting the item’s unit price to $1.00, ECMS allows for the item quantity to be adjusted (i.e., increased or decreased), as necessary, to account for the expected difference between the original cost estimate and the final cost of the work once it is complete and the actual cost has been computed. Through this default process and controlled use of the “DOLLAR” unit of measure, Projects have the ability to process a work order item for force account work before it begins, make progress payments as the work is performed, and then, upon completion of the work, balance the item to reflect the actual cost.

Under no circumstances should an established Estimated Force Account item be adjusted using the “Balancing Overruns / Underruns” change type. The list of available Change Types in the Additional / Extra Work category includes “Force Account Adjustment”. This change type is to be selected when a work order is generated for the purpose of increasing or decreasing item quantity that was established based on an Estimated Force Account scenario. A complete Force Account statement, indicating the actual cost of the force account work, is to be attached to this work order as support documentation.

Statements of Actual Force Account costs, whether being used to support an adjustment to the amount paid via progress payments based on a prior estimate or to provide payment in full upon completion of the work, must include the detailed information described below presented on the standard package of forms identified above.

The Contractor is to be reimbursed for direct labor costs, at the actual base pay rate and fringe benefit rate paid for forepersons; equipment operators; and skilled, semiskilled, and common laborers directly assigned to the specific operation, for each hour that such employees are engaged in the performance of authorized force account work, including overtime, if directed by the Department. The Inspector-in-Charge should qualify the level of skill required for an employee to perform a particular operation (e.g., don't pay foreman rate for a flagger, etc.). If collective bargaining agreements or other employment contracts require
that the Contractor pay its workforce for travel time to and from the project site or for time
during which its workers were not engaged in the performance of the force account work, or
if the Contractor elects to do so, such payments are to be considered overhead and are not to
be reimbursed as direct labor.

Indirect labor costs will also be reimbursed. Reimbursement will be based on the
Contractor's method of making payment to its employees. If certified payroll records indicate
that the Contractor's method of making payment is such that fringe benefits are paid directly
to the worker, indirect labor costs will be computed as a percentage of the total direct labor
cost. However, if payroll records indicate that fringe benefits are paid into a tax-exempt
pension or retirement fund or to a trade union that provides its members with a pension or
retirement benefit, indirect labor costs will be computed as a percentage of the base pay rate
portion of the direct labor cost (i.e., the Total Base Labor cost).

In computing indirect labor costs, the estimated effective rate is to be used for
Unemployment Taxes. To ensure that Unemployment Taxes are billed at the estimated
effective rate, as opposed to the legal or statutory rate, the Contractor and all Subcontractors
involved in the force account work must complete Form CS-4347EER and include a copy of
the completed form in all Actual Force Account submissions. The information requested on
the form is not project specific, so Contractors and Subcontractors need only complete the
form once for a given calendar year, and include a copy in all Force Account submissions for
work performed that calendar year. The information on the form will have to be updated by
April 15th of each new calendar year. The information shown on each Form CS-4347EER
submitted must be for the calendar year when the force account work was performed. The
applicable calendar year will be indicated at the top of the form within the title block (i.e. “For
Calendar Year 20__”). The “Total Estimated Effective Rate” computed on Form CS-
4347EER for a given contracting firm (Prime or Sub) is to be equivalent to the
“Unemployment Taxes” rate entered on Form CS-4347CA by that contracting firm.

Be aware that a portion of the information needed by a Contractor or Subcontractor to
update its estimated effective rate for a new calendar year may not be available until the
Contractor or Subcontractor files its Federal Unemployment Tax return for the prior calendar
year, which they have until April 15th to do. Therefore, documentation packages submitted
for Force Account work performed early in a calendar year (i.e. between January 1st and April
15th) that do not include a completed Form CS-4347EER for the new calendar year should not
be rejected and returned to the Contractor. An updated Form CS-4347EER for the new
calendar year is only required in documentation packages submitted for Force Account work
performed after April 15th.

To ensure the confidentiality of the information being provided on Form CS-4347EER,
the completed form is not to be included in the package of Force Account documentation that
is scanned and linked to the applicable work order item as cost justification. Instead, after
ensuring that the “Total Estimated Effective Rate” computed on the form is equal to the
“Unemployment Taxes” rate entered on Form CS-4347CA, the completed form is to be removed from the Force Account package and placed in the project files.

The cost of material used in the force account work will be reimbursed, including applicable sales tax and transportation costs charged by the material supplier. To qualify for reimbursement as material, an item must be purchased specifically for the force account work and must become a permanent part of the final constructed product (e.g. bituminous paving material, cement concrete, aggregates, reinforcement bars, geotextile). Items purchased specifically for the force account work that do not become a permanent part of the final product are to be considered rented equipment for cost reimbursement purposes and are addressed later in this Subsection.

For any Contractor-owned equipment, an hourly rental rate will be determined using the monthly rate listed in the applicable edition of the Rental Rate Blue book for Construction Equipment (Blue Book), Volume 1. The term “owned equipment”, as used herein and in Publication 408, refers to equipment (including trucks and machinery) of the type that the Contractor is required to provide for the proper execution of the contract work, as specified in Section 108.05(c), whether that equipment is actually owned directly by the Contractor, is leased, or has been procured in some other manner. If the equipment needed for force account work is generally equivalent to that required for use in the performance of contract work, the equipment is to be treated as owned equipment for cost reimbursement purposes.

To determine the hourly rental rate for a piece of owned equipment using Volume 1 of the Blue Book:

1. Locate the specific piece of equipment in the Blue Book and obtain the monthly rate (M.R.), the estimated operating cost per hour (O.C.), and the information needed for a proper Description. Obtain the equipment adjustment factor for the model year of the piece of equipment (EQ.ADJ.FAC) and the area adjustment factor for Pennsylvania (AREA ADJ.FAC) from the Rate Adjustment Tables and the Regional Adjustment Maps, respectively, located at the beginning of each section of the Blue Book in paper format. Enter this data, along with the model year and the section, page, and edition of the applicable Blue Book supplement, in the designated columns on Form CS-4347E.

2. Determine the adjusted hourly rate (ADJ.HRLY.RT) by multiplying the monthly rate by the equipment adjustment factor and the area adjustment factor, then dividing the product by 176. Enter the adjusted hourly rate in the designated column on Form CS-4347E.

$$\text{ADJ.HRLY.RT} = \frac{\text{M.R.} \times \text{EQ.ADJ.FAC} \times \text{AREA ADJ.FAC}}{176}$$

3. Determine the total hourly rate (TOTAL HRLY.RT.) for operating time (O.T.) by adding the adjusted hourly rate and the estimated operating cost per hour. Enter the rate, on the line for O.T., in the designated column on Form CS-4347E.
TOTAL HRLY.RT. (O.T.) = ADJ.HRLY.FAC + O.C.

4. Determine the amount due for operating time by multiplying the total hourly rate for operating time by the number of hours of operating time. Enter the amount, on the line for O.T., in the designated column on Form CS-4347E.

EXAMPLE: A 4-wheel drive, articulated wheel loader, Terex SCL-515, model year 2000, 0.65 CY capacity, is located on Page 47 of the 3rd Quarter 2003 supplement to Section 9 of the Blue Book. Determine the amount due if the piece of equipment was in operation for a total of 16 hours.

M.R. = $1,405.00
O.C. = $7.95 / Hour
EQ.ADJ.FAC. = .991
AREA ADJ.FAC. = 1.040 (4%)

\[
ADJ.HRLY.RT = \frac{($1,405 \times 0.991 \times 1.040)}{176} = $8.23 / Hour
\]

TOTAL HRLY.RT. (O.T.) = $8.23 + $7.95 = $16.18 / Hour

AMOUNT (O.T.) = $16.18 / Hour × 16 Hours = $258.88

The estimated operating cost obtained from the Blue Book is intended to cover the cost of fuel, oil, tire wear, and all other operating expendables. The operating cost is to be included only when the equipment is actually in operation on the force account work.

If equipment or machinery is required to be at the site of the force account work on a standby basis, but is not actually operating, compensation is to be made at 50% of the adjusted hourly rate, exclusive of operating costs.

5. Determine the total hourly rate (TOTAL HRLY.RT.) for standby time (S.B.) by multiplying the adjusted hourly rate by 50%. Enter the rate, on the line for S.B., in the designated column on Form CS-4347E.

\[
TOTAL HRLY.RT (S.B.) = 50\% \times ADJ.HRLY.RT.
\]

6. Determine the amount due for standby time by multiplying the total hourly rate (S.B.) by the number of hours of standby time. Enter the amount, on the line for S.B., in the designated column on Form CS-4347E.
EXAMPLE: Determine the amount due if the piece of equipment in the above example was on standby for a total of 5 hours.

\[
\text{TOTAL HRLY.RT (S.B.)} = 50\% \times $8.23 / \text{Hour} = $4.12 / \text{Hour} \\
\text{AMOUNT (S.B.)} = $4.12 / \text{Hour} \times 5 \text{ Hours} = $20.60
\]

The following guidelines are to be used in the administration of standby time:

- If a piece of equipment is required to be at the site of force account work, where it is only used for periods of time throughout the day, the hours that the equipment is not performing physical work are to be paid as standby time within the daily and weekly limits established below.

- When equipment operates for less than 8 hours on a given day, payment of standby time will be limited to the number of hours that, when added to the operating time for that day, equals 8 hours regardless of the number of hours per day the Contractor works.

- When equipment operates for less than 40 hours in a 1-week period, payment of standby time will be limited to the number of hours that, when added to the operating time for that week, equals 40 hours regardless of the number of days per week the Contractor works.

- Standby time will not be paid for days on which the Contractor elects not to work.

- If the equipment will not be needed at the site of the force account work for a period of time, compare the cost of demobilization and remobilization against the cost of standby time and pay the lesser cost. Demobilization and remobilization costs are to be computed and documented on the basis of labor and equipment costs. If it is determined that it would be more economical to demobilize and remobilize in lieu of paying standby time, the Contractor may elect to keep the equipment on the job site. In this instance, pay the estimated cost of demobilization and remobilization.

- Standby time will not be paid if equipment is awaiting repair, or while repairs are being made.

- Standby time will not be paid for maintenance or servicing of equipment.

- If the Contractor is delayed pending receipt of a decision from the Department, consideration is to be given to paying standby time, paying for demobilization and remobilization, or returning the equipment to other
contract operations until the Contractor can be directed to resume the force account operation.

- For equipment borrowed from other operations on the same project, when not being used in the performance of the force account work, the equipment is to be returned to the operation from which it was borrowed and mobilization and demobilization costs paid. If the contract operations from which the equipment was borrowed have been completed and no equipment remains on the project, one of the following situations will apply:

  1) If the borrowed equipment will be needed for further use on the force account work but is presently not being used, compare the cost of standby time against the cost of demobilization and remobilization and pay the lesser.

  2) If the borrowed equipment will not be needed for further use on the force account work, it is to be considered eligible for return to the Contractor's equipment yard. This final demobilization is not to be paid for as part of the force account work since the cost is regarded as being included in the Contractor's bid price for the contract item for Mobilization.

If a piece of equipment needed for force account work is not of the type required to be provided by the Contractor for the proper execution of the contract work, or if the piece of equipment needed is “owned” but not currently available, the equipment may be obtained by rental. The Contractor must discuss the need to rent the equipment with the Representative and the Representative must approve the rental cost before the equipment is secured for the force account work.

The Contractor will be reimbursed the total, actual invoiced cost for rented equipment, plus the cost of transporting the equipment to and from the work site, provided transportation costs are not included in the rental cost. Additionally, an allowance will be made for operating costs by adding, to the rental cost, the estimated operating cost per hour, as listed in the Blue Book, for each hour the rented equipment is actually in operation on the force account work. A separate operating cost should not be paid if the equipment rental agreement indicates that operating expenses (fuel, oil, etc.) are included in the rental cost. Transportation charges for a piece of rented equipment will be paid provided:

- The rented equipment is obtained from the nearest available source,
- Return charges do not exceed delivery charges,
- Haul rates do not exceed the established rates of licensed haulers, and
- Charges are restricted to those units of equipment not readily available and not on or near the project.
If an item is purchased specifically for the force account work, but does not become a permanent part of the final product, the item will be considered rented equipment for cost reimbursement purposes. If the item's useful life is completely expended in the performance of the work, as determined by the Representative, the full cost of the item will be reimbursed. Otherwise, that portion of the item's useful life expended in the performance of the force account work is to be computed and the prorated cost reimbursed.

When required as part of a force account operation, work not considered subcontract work requiring prequalification, specialized construction analyses, or engineering services are to be regarded as Services by Others. For such services, the Contractor will be reimbursed the invoice price plus a 2% markup to cover administration and all other costs. Service by Others costs will be limited to a one-time, 2% markup only, regardless of whether the service was arranged by the Contractor or a subcontractor performing any or all of the force account work. The overhead and profit allowances specified in Publication 408, Section 110.03(d)7, are not applicable to costs for Services by Others.

Examples of Services by Others would include, but are not limited to, the following:

- Hauling services provided by an independent agency that furnishes both the hauling vehicle and operator, where the operator is an employee of and the equipment is owned or leased by the service provider.

- Sampling, testing, and analysis performed by an independent laboratory to evaluate the potential hazard associated with unexpected waste encountered during the performance of force account work.

- Securing of permits, bonds, or specialized insurance coverage beyond what is contractually required, when directed by the Representative as being specifically required for the force account work.

If any or all of the force account work is to be performed by an approved Subcontractor, the work must be considered work requiring prequalification and the Contractor's need to subcontract the work must be approved by the Representative. Payment for work performed by a Subcontractor will only be made based on a complete material, labor, and equipment cost breakdown, with applicable markups for overhead and profit added (i.e., a separate force account statement).

Final payment for Extra Work performed on a Force Account basis will not be made until the Contractor has provided the Department with an itemized statement of the cost of the work in the form of a properly completed force account statement. Statements of labor costs are to be supported by certified payroll records. Statements of material costs (including sales tax and transportation costs), rented equipment costs, and Service by Others costs are to be supported and accompanied by invoices.
If materials used in the force account work are not purchased specifically for the work but taken from the Contractor's stock or provided by entities that are divisions, affiliates, subsidiaries, or in any other way related to the Contractor or its parent company, and an invoice cannot be provided, the Contractor must furnish an affidavit certifying that the materials were obtained as described above, that the quantity claimed was actually used, and that the material and transportation costs claimed were actually incurred. Department Form CS-4347MA, Force Account Material Affidavit, has been developed for use by the Contractor in providing the required certification. Include the completed form in the work order as part of the force account statement.

I. TIME EXTENSIONS

Every time the District Executive authorizes the Contractor to perform Additional and/or Extra Work, the need for additional contract time must also be evaluated. If it is determined that additional contract time may be warranted as a result of the incorporation of Additional and/or Extra Work into the contract, the District Executive's written authorization to perform the work is to include an estimate of the number of calendar days and the number of working days required for performance of the work. When the Department is willing to extend contract time, if warranted, informing the Contractor of that fact is necessary in order to preclude the possibility of a future Constructive Acceleration claim. The ECMS Authorization for Contract Work, which serves as the means of providing the Contractor with the required written authorization to perform Additional and/or Extra Work, includes a section wherein the Contractor is to be informed when additional contract time may be granted as a result of the authorized contract changes.

When the resulting work order is processed, re-evaluate and, if necessary, revise the number of working days and calendar days estimated for the potential change in contract time in the response to the applicable standard Explanation question, and identify the controlling operation(s) affected. In the event the estimate of time as stated in the work order differs from that included in the Authorization for Contract Work, address the differences in the response to the same question.

Ultimately, the need for an official time extension, as a result of the authorization of item quantity eliminations, item quantity reductions, Additional Work, and/or Extra Work, must be determined by the Contractor. If an extension of contract time is warranted (i.e., supported by the Construction Schedule), the Contractor must submit an electronic time extension request to the Department, using ECMS. The Contractor’s time extension request must be submitted within 30 calendar days after the date prices to be paid for authorized Additional Work and/or Extra Work at a Negotiated Price are agreed upon and, when applicable, accepted by the Department, or within 30 calendar days after the date authorized Extra Work on Force Account basis is completed. The request must include a revision to the Construction Schedule as specified in Publication 408, Section 108.06(a). The Department will respond to the electronic time extension request within 14 calendar days of receipt.
J. EXPLANATIONS

A complete, detailed explanation is to be provided for each Change Type included in the work order. The complexity of explanation needed is dependent upon the Category of the work order. Additional / Extra Work category change types generally require a more detailed explanation than those change types in the Legal category.

Since what constitutes a "complete, detailed explanation" is a matter of judgment and varies with the individual, a standard, electronic "Explanations" format has been developed for each work order Category and incorporated into ECMS. Within a given category, the form has been structured such that, by responding to the applicable questions, the significant aspects of the change type can be fully explained.

Most of the Explanations questions have been formatted to require a "Yes / No" or "Fill in the Blank" type response. However, in some instances, when a more detailed response is desired, the question is followed by a “Comment” field where such information is to be provided.

The series of questions to which ECMS has been programmed to prompt the User to respond, based on the specific Category and Change Type selected for the work order, constitute the Explanations for that work order.

In the Additional / Extra Work category; with the exception of “Design Error”, "Balancing Overruns / Underruns", “Finals Unit Audit”, and "Funding Change"; all Change Types will be explained by providing responses to 4 questions. If "Design Error" is selected as the change type, the District must address the issue of Consultant Designer liability by responding to one additional question. Explaining a "Balancing Overruns / Underruns" change type will require responses to two questions and, for the "Finals Unit Audit" change type, a response to only one question is required. Since the reason for selecting the “Funding Change” change type is considered self-explanatory, a written explanation will not be required.

The status of original contract items and established Extra Work items with respect to the +/- 25% quantity adjustment window specified in Publication 408, Section 110.02(d), will be evaluated by ECMS each time such items appear on a work order. If proposed quantity changes to the original contract items and/or previously approved Extra Work items associated with a given Change Type, when combined with the net quantity change to the same items from all prior work orders, result in one or more of the items being increased to in excess of 125% or decreased to below 75% of their original quantity, ECMS will prompt the User to indicate whether the unit price for affected items will be adjusted as a result of the significant change, and to explain why or why not. If the response to this question is intended to indicate that the unit price for an affected item will **not** be adjusted as a result of the significant change, the explanation is to include a statement indicating that the Contractor is in agreement with that determination.
In the Legal category, the three available change types correspond to the three tiers associated with the dispute / claim resolution process. Each change type in this Category will be explained by providing responses to two questions. In doing so the District is to outline the circumstances which led to the dispute or claim and explain the process by which the settlement or award determination was made.

As a result of the streamlining and simplification of the Explanations, attachments to the work order become even more important. Document links are available within the “Work Order” and “Time Extension” modules of ECMS. Links available within the “Work Order” module are to be used to include the various attachments that constitute the supporting documentation for most work orders. Such supporting documentation would include, but is not limited to, Force Account Estimate forms and related quotations and/or computations, screen prints showing the results of a manual ECMS Item Price History search, engineering analyses, Force Account forms and related invoices, correspondence, claim settlement memorandums, and legal opinion papers. Document links are also to be used to comply with the requirement that all time extension requests include a revision to the Construction Schedule in the specified format.

If the specifications that are applicable to the original contract do not address authorized Extra Work, a specification can be submitted to the Contractor in the form of a special provision attached to the ECMS Authorization for Contract Work (See Subsection B, Authorization for Contract Work). In such cases, applicable drawings should be specifically referred to in the special provision and attached to the Authorization using a document link.

If the Extra Work involves a change in the original design of a structure or foundation; a revision of drawings, such as a change of alignment or gradient; or other revision of importance, a document link should be used to attach a sketch or print of the revision to the work order or officially revised drawings should be referred to in the Explanations for the Change Type. Copies of prints are to be plainly marked to indicate the revisions. A tabulation of quantities, as may be required by the revision, is to be indicated on the sketch or print or included as part of the attachment.

The District Construction Unit is to consult with other organizational units (Bridge, Design, Environmental, Maintenance, Soils, Materials, R/W, etc.) whenever a proposed contract change involves them. Further, proposed contract changes involving structural design changes are to be submitted to the District Bridge Unit for review and comment before the Contractor is authorized by the District Executive to incorporate such changes.

Changes to the contract that involve previously undisturbed areas, are outside of the original project area, may potentially affect an environmental resource (i.e., wetlands, parks, historic resources, etc.), and/or will affect environmental mitigation features found in the Environmental Commitments and Mitigation Tracking System (ECMTS) report, are to be submitted to the District Environmental Unit for review and comment before the Contractor is authorized by the District Executive to incorporate such changes. Additionally, the District
Environment Unit is to obtain FHWA concurrence with any such planned contract changes, when applicable, before the Contractor is issued an ECMS Authorization for Contract Work. On Federal Oversight projects, environmental documents are required to have FHWA concurrence before any environmental commitments made in the National Environmental Policy Act (NEPA) document are modified or deleted. Failure to implement the environmental commitments contained in the NEPA document, without written concurrence from FHWA, will jeopardize Federal participation in the project.

Each Change Type must be presented and handled as an individual entity and is to reflect all factors involved. Deductions as well as additions in quantities, which are brought about by the change, are to be included, or a satisfactory explanation given for retaining any apparent reduction in contract quantities. Additionally, Change Types are to contain all of the items required for performance of the subject work and the total estimated cost. A piecemeal approach involving several work orders is unacceptable.

Any analysis used in determining a resolution to a field problem is to be documented in the work order. Field personnel and others preparing justifications and take-offs to support work orders are to sign and date the information produced.

Work orders for payment of claims based on a Board of Claims or Commonwealth Court decision are to have attached a copy of the recommendation to pay from the Office of Chief Counsel.

Claim work orders for Federal participation are to include the information, as appropriate, described in Section B.1.19, Highway Contract Claims.

K. FINANCING CONSIDERATIONS

Care must be taken in the preparation of work orders to ensure that items involving maintenance (e.g., cleaning of culverts and ditches), repair of accident damage subject to reimbursement by insurance, or compensation to the Contractor for material purchased but not used on the project, which are clearly nonparticipating items, are not coded for Federal participation.

Work identified as a maintenance need, but included as a Federal participation item, must be explained to clarify that the work is the result of a redesign or design change intended to eliminate a maintenance problem, and not simply maintenance.

Federal funds are not to be used to provide payment for dispute or claim settlements on Federal Oversight and PennDOT Oversight NHS projects until after FHWA has approved the associated Legal category work order. Such work orders are initially to be processed as 100% State funded. Following submission of this work order to FHWA and receipt of FHWA approval concurrence, a follow up, Legal category work order may be processed to change the funding source to Federal participation and the cost billed to FHWA at the appropriate pro
rata share. The Federal Highway Administration has committed to the expeditious review of
dispute / claim settlement work orders within 45 days.

L. FHWA AUTHORIZATIONS

For project changes that will alter the termini, character, or scope of the work, regardless
of the cost, formal, prior FHWA approval will be required. Form D-4232 (Request for FHWA
Authorization) is to be used to document the approval. An amended Form D-4232 must be
submitted, by the District, to the Center for Program Development and Management, for
FHWA approval. The District should consult with the FHWA Transportation Engineer if
there is a question regarding the need for an amended Form D-4232.

For major changes to Federal Oversight projects (i.e., project changes that will result in a
cost increase or decrease equal to or greater than $500,000 or 10% of the original contract
amount, whichever is less), formal, prior FHWA approval will be required. It should be noted
that the prior approval requirement applies to a specific change, regardless of how the items
associated with the change are processed on actual work orders. The prior approval
requirement is not intended for individual work orders that exceed the above threshold criteria
based on the sum of multiple small changes. In addition, the above threshold criteria cannot
be offset by unrelated contract deductions or increases. Form FHWA-1365, Record of
Authorization to Proceed with Major Contract Revision, is to be used to document the
approval prior to directing the Contractor to perform the work. The District should consult
with their FHWA Transportation Engineer as soon as major contract changes are anticipated.
A copy of approved Form FHWA-1365 is to be attached to the resulting work order(s) as
support documentation.

M. APPROVALS

Work orders may be processed at the discretion of the District Executive until the
cumulative net total of approved work orders exceeds the Maximum Change amount for the
project ($500,000). Continued processing of work orders, to increase the cumulative net total
to between $500,000 and $1,000,000, will require the approval of the Director of the Center
for Program Development and Management. Program Management Committee (PMC)
approval is required when the cumulative net total of approved work orders exceeds
$1,000,000.00.

Major, Additional / Extra Work category work orders for Federal Oversight projects
(including Federal Oversight municipal projects), claim settlements for Federal Oversight and
PennDOT Oversight NHS projects, and Federal Special Projects require approval concurrence
from the FHWA.
Notification that an applicable work order requiring FHWA review and approval concurrence is pending will be sent electronically by ECMS. The FHWA Transportation Engineer will have the option to approve, disapprove, or request clarification of the work order, upon completion of their review, by clicking on the “Workflow” button at the top of the ECMS “Work Order” screen and making the appropriate selection. If clarification is requested, ECMS will allow the Project to respond to the request, by revising or expanding on the existing work order Explanations or any associated document links, and then electronically resubmit the work order to the FHWA. If a work order, wholly or in part, is disapproved by the FHWA Transportation Engineer, the District can either attempt to rebut the FHWA position or process the necessary work order(s) to comply with the FHWA position.

N. DISTRICT QUALITY CONTROL

The District Executive is responsible for the quality of their District's work orders and for submitting a Quality Control Plan to the Bureau of Project Delivery outlining the procedures that will be implemented to ensure that work orders are complete and correct prior to being approved in ECMS.

As part of the submitted Quality Control Plan, the District must identify the individual who will serve as the District's Work Order Specialist. This individual will be responsible for performing a review of all work orders generated by the District prior to their being approved in ECMS by the District Executive or an authorized delegate.

In addition, the District's Quality Control plan must identify those individuals who will have the system user profile needed to access ECMS and approve work orders. The intent here is to identify one key individual who will be responsible for the majority of ECMS work order approvals plus those alternates who will be able to function in that capacity, in the absence of the key individual, to ensure that the work order approval process is not interrupted for an extended period of time.

The District's work order quality control review criteria should include, but is not limited to, the following:

- Ensure that the ECMS Authorization for Contract Work was submitted to the Contractor prior to the start of Additional and/or Extra Work or as the work was just beginning.

- Ensure that complete and accurate responses have been provided for all of the applicable "Explanations" questions, and that question responses address all items on the work order and support the selected Change Type.
• Ensure that Item Type Codes “C1” and “E” have been used properly based on whether the new item is being established to include unanticipated Extra Work at a Negotiated Price in the contract (Type Code “E”) or because the Department or the Contractor has requested an adjustment in the unit price for a contract item as a result of a significant change in the character of the work (e.g., where quantity changes have resulted in the item being increased to in excess of 125% or decreased to below 75% of original contract quantity) (Type Code “C1”).

• Ensure that Item Type Code “A” is used when the new item is being established to include unanticipated Extra Work on a Force Account basis in the contract, whether the decision to do so is made when the Extra Work is initially authorized or after attempts to negotiate a price for the Extra Work have been unsuccessful and the work is such that force account records can be kept by the Department.

• Ensure that the agreed price for each Extra Work item being established on the work order has been justified in accordance with one of the methods described in Subsection G, Extra Work, that all criteria applicable to a specific cost justification method have been met, that the agreed price was established prior to the start of the work, and that any applicable computations are complete and correct.

• Ensure that the supporting statement of costs for each item of Extra Work paid on a Force Account basis represents the required accounting of the work, based on whether the item being established is an Estimated or Actual Force Account item.

• When reviewing a force account statement, ensure that material costs are supported by invoices (when required), that equipment costs are based on correct and up to date Blue Book data, that the hours recorded on Daily Labor and Daily Equipment Breakdowns match the hours shown on Labor and Equipment Breakdown sheets, that indirect labor costs are computed based on the Contractor's method of paying fringe benefits to its workers and using applicable rates for taxes and insurance, and that all applicable computations are complete and correct.

• Ensure that all required supporting documentation has been electronically linked to the work order.

O. BUREAU QUALITY ASSURANCE

The Bureau of Project Delivery (BOPD) is responsible for performing a quality assurance review of work orders approved for payment by the District Executive or an authorized delegate. The BOPD is also responsible for computing a compliance level for each District based on the Q/A review of its Federal Oversight project work orders.
The percentage of each District's approved, Federal Oversight project work orders subject to quality assurance review by the BOPD will be established as stated herein and evaluated annually based on the District's compliance level for the previous year. In Year 1 of the cycle, 75% of Major and 20% of Minor, Additional / Extra Work category work orders will be reviewed. In Year 2, provided the District has achieved a minimum compliance level of 80% after Year 1, 50% of Major and 15% of Minor work orders in this category will be reviewed. In Year 3, the review percentage will drop to 25% for Major work orders and 10% for Minor work orders, provided the District is able to maintain the minimum 80% compliance level after Year 2. The review percentages will stay at Year 3 levels as long as the District continues to meet the minimum compliance level. If at any time the District's compliance level drops below 80%, the review percentages will revert to Year 1 levels and the cycle repeated.

For PennDOT Oversight (NHS & Non-NHS) and Non-Federal (100% State funded) projects, the BOPD will perform a quality assurance review of 10% of District Executive approved work orders annually.

The work order quality assurance review criteria used by the BOPD will include, but is not limited to, the following:

- Timely submission of the associated ECMS Authorization for Contract Work.
- Completeness of the Explanations.
- Use of proper methodology for agreed price cost justifications.
- Correctness of force account documentation, including use of proper Blue Book data in computing equipment costs and inclusion of required support documentation.
- Errors in computations which result in a significant overpayment or underpayment.
- Need for administrative corrections involving use of improper Funding source or Item Type Code.

The ECMS "BOPD Q/A Review" module will be used by the BOPD to record and track the results of the quality assurance review of District Executive approved work orders. A Quality Compliance Level will be computed for each District based on the findings from the quality assurance reviews of Federal Oversight project work orders. Quality assurance review results will also be used, along with the District's quality control review results, to identify future training needs for each District.

If significant computation errors or administrative inconsistencies are discovered during the quality assurance review of a Federal Oversight project work order, the District will be notified by the BOPD regarding the details of the error or inconsistency and instructed to provide additional support documentation or, if necessary, to process a corrective work order.
Additional / Extra Work Category
Work Order Flowchart

Start

What is the purpose of the contract change?

Is the purpose to incorporate Additional and/or Extra Work?

no → A

yes → Is the Additional / Extra Work related to a Federal Oversight Project?

yes → Will the proposed change result in an increase / decrease ≥ $500,000 or 10% of OCA whichever is less?

yes → PennDOT Action
- Prepare and submit Form FHWA-1365 to obtain prior conceptual approval of the major change.

no → FHWA Action
- Review submission and obtain required Division Office approval.
- Return approved copy of form to District for attachment to Work Order.

no → Create Authorization for Contract Work

PennDOT Action
(Draft Status)
- Identify Type of Work.
- Address Contract Time.
- Enter detailed Scope of Work.

Contractor Action
(Scope Review Status)
- Review Authorization details.
- Acknowledge Scope of Work or request clarification.
- Enter comment (if clarification requested).

Did the Contractor Acknowledge Authorization?

yes → PennDOT Action
- Determine item(s) needed to implement contract change.
- Estimate quantity for associated item(s).
- Keep Force Account records for any Extra Work that has commenced.

no → Contractor Action
(Contractor Review Status)
- Enter unit price for Extra Work negotiated items and submit supporting documentation.
- Take action on price for Additional Work items.
- "Accepted" or "Out of Scope"

PennDOT Action
(PennDOT Review Status)
- Add item(s) to Authorization.
- "New" to create Extra Work Item.
- "Modify" to add Additional Work item.
- Enter estimated quantity for each item.

D

Page 1-34

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Did Contractor "Accept" Contract Unit Price? 
no

Replace "Out of Scope" Additional Work item with Extra Work item (Type C1).

What is the Item Type?

• Additional Work
• Extra Work Force Account (Type Code A)

Did Contractor "Accept" Contract Unit Price? 
yes

Were Contractor's price for Extra Work item be justified? 
yes

Mark item "Accepted"

no

Stop keeping Force Account records for item.

Develop cost justification
• Search price history database to develop Historical Data (HD) or Allied Contracts (AC) cost justification.
• Review contractor's supporting documentation and develop Force Account Estimate (FAE).
• Work with BoPD to develop Engineering Analysis (EA).

PennDOT Action 
(PennDOT Review Status)
• Take action on price for Extra Work negotiated items.
• Take action on "Out of Scope" Additional Work Items.

Contractor Action 
(Contractor Review Status)
• Enter new unit price for "Rejected" Extra Work items.
• Enter unit price for "C1" Extra Work items.
• Submit supporting documentation.

Have all items been marked "Accepted" or "Force Account"?

no

Mark item "Rejected"

yes

Mark item "Force Account"

Does PennDOT want to continue with negotiations?

no

Mark item "Rejected"

yes

Mark item "Force Account"

Have all items been reviewed?

no

PennDOT Action
Will Authorization be associated with a Work Order?

no

End

yes

PennDOT Action
• Update Authorization status to "Accepted".

PennDOT Action
• Update Authorization status to "Work Not Completed".

Additional / Extra Work Category Work Order Flowchart

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Add Item to Work Order

What is the Item Type?
- Extra Work
- Negotiated (Type Codes E or C1)
- Force Account
- Additional Work (CUP or Approved Negotiated Price)

Enter exact item quantity

Locate associated Authorization(s) and link to Work Order.

Select Additional/Extra Work Change Type (Page 1-43)

Have all items been added to Work Order?

Prepare Explanations
- Describe change type, indicating affected operations. Explain circumstances of change condition and outline corrective action.
- Identify location of changes.
- Address change in contract time. Identify affected controlling operations. Address differences between Work Order time estimate and time estimate on Authorization.
- State work dates and identify whether dates are Actual or Estimated.
- Address pursuit of Consultant Designer liability for Design Error.
- Include necessary attachments (e.g. approved Form FHWA-1365 for major change to a Federal Oversight project).

Submit Work Order

Review/Approval Workflow

End

April 2017 Edition
Additional / Extra Work Category
Work Order Flowchart

A. Is the purpose to process an Administrative adjustment?
   - no → End
   - yes → Select Administrative Change Type (Page 1-42)

Select Administrative Change Type (Page 1-42)

D. Are any item quantities outside +/-25% window?
   - yes → E
   - no → Determine item(s) to be adjusted and the associated item quantity(ies).

Determine item(s) to be adjusted and the associated item quantity(ies).

E. Is the Change Type “Balancing Overruns/Underruns”?
   - yes → Are any item quantities outside +/-25% window?
     - yes → E
     - no → Create Work Order

Create Work Order

Add Items to Work Order

- Enter item quantities.
- For Force Account Adjustment items, attach final Force Account Statement as cost justification.

E
Legal Category
Work Order Flowchart

Start

Contractor Action
- Notify IIC of any negligent act or omission of the Department, Utility delay, or disagreement as to whether work is original contract work, additional work or extra work.

Contractor Action
- Confirm disagreement in writing to the District Executive (DE) within 10 Calendar Days (CDs) of notifying the IIC.

IIC and Contractor Action
- Begin keeping separate daily records of all labor, equipment, and materials used in the disputed work.
- Meet each Monday to compare records of the previous week's work and review for accuracy.

Contractor Action
- Report all disagreements with respect to daily records to the DE within 10 CDs of each review.

District Executive or Delegate Action
- Resolve dispute and determine basis of payment.
- Submit written notification to the Contractor.

Does Contractor submit written notice of intent to file a claim within 10 CDs of receipt of the DE’s decision?

IIC Action
- Stop keeping daily records of labor, equipment, and material used in the disputed work.

Contractor may not file a claim with the Board of Claims for additional compensation of any kind arising or relating to the disputed work or the decision of the DE.

Follow Additional / Extra Work Flow Chart to implement DE’s dispute resolution proposal. (Page 1-33)

IIC Action
- Continue keeping and reviewing daily records until completion of the disputed work.

Page 1-38

April 2017 Edition
Legal Category Work Order Flowchart

A

Contracting Officer or Delegate Action
- Immediately notify Construction QA Section Chief and contact Office of Chief Counsel for advice on how to proceed.

Is notice of intent to claim related to a Federal Oversight or PennDOT Oversight NHS project?

yes

Contracting Officer or Delegate Action
- Immediately notify the FHWA Transportation Engineer.

no

Does the Contracting Officer or Delegate elect to conduct a claim review meeting?

yes

Contracting Officer Action
Establish claim review meeting date and location and invite representatives of the following to attend:
- Contractor
- Bureau of Project Delivery / QA Section Chief
- Office of Chief Counsel
- FHWA, if claim is related to a Federal Oversight or PennDOT Oversight NHS project

Hold claim review meeting

no

Contracting Officer Action
Attempt to settle and resolve the claim / dispute with the Contractor.

D

Is agreement reached with the Contractor to resolve the claim / dispute?

yes

Contractor waives its right to assert the claim in any forum. Claim is disregarded by the Contracting Officer.

no

Contracting Officer Action
- Consult with QA Section Chief, Office of Chief Counsel and FHWA.
- Prepare written response to Contractor outlining the Department’s position.

Does the Contractor file a claim, in writing, with the Contracting Officer within 6 months of the date it accrued?

B

no

End

yes

April 2017 Edition
Legal Category
Work Order Flowchart

Contracting Officer or Delegate Action
• Immediately notify Construction QA
Section Chief and contact Office of Chief
Counsel for advice on how to proceed.

Is the claim related to a Federal Oversight or
PennDOT Oversight NHS project?

no

yes

Contracting Officer or Delegate Action
• Immediately notify the FHWA
Transportation Engineer.

Does the Contracting Officer or Delegate elect to
conduct a claim review meeting?

no

yes

Contracting Officer Action
Establish claim review meeting date and location
and invite representatives of the following to attend:
• Contractor
• Bureau of Project Delivery / QA Section Chief
• Office of Chief Counsel
• FHWA, if claim is related to a Federal Oversight or
PennDOT Oversight NHS project

Hold claim review meeting

Contracting Officer Action
• Consult with QA Section Chief, Office
of Chief Counsel and FHWA.
• Attempt to settle and resolve the claim
with the Contractor.

Is the claim resolved by agreement between
the Contracting Officer and Contractor?

no

yes

Determination of the Contracting Officer is the final order of the
Department and is conclusive and binding on the Contractor.

The claim is deemed denied.

Does the Contracting Officer issue a written
determination regarding denial of the claim
within 120 CDs?

no

yes

Does the Contractor appeal the determination by filing a statement of claim
with the Board of Claims / Court within the
specified time period?

no

yes

End

Contracting Officer Action
• Immediately notify Construction QA
Section Chief and contact Office of Chief
Counsel for advice on how to proceed.

Page 1-41

Page 1-40

April 2017 Edition
Is the Office of Chief Counsel able to negotiate a settlement with the Contractor before the Board of Claims / Court hearing?

- yes
- no

Does the settlement amount negotiated by the Office of Chief Counsel exceed $500,000?

- yes
- no

Does the Deputy Secretary for Highway Administration approve settlement amount negotiated by the Office of Chief Counsel?

- yes
- no

Does Board of Claims / Court find in favor of the Contractor?

- yes
- no

End
Legal Category Work Order Flowchart

District Review / Approval Workflow

Is the settlement/award related to a Federal Oversight or PennDOT NHS project?

Yes

No

End

End

End

Submit Work Order

BoPD and FHWA Review / Approval

Does FHWA approve full or partial use of Federal funds?

Yes

Create new Legal Work Order to change item funding to Federal Participation (full or partial).

End

Prepare Explanations

• Describe the legal and contractual basis for the dispute/claim.
• Describe the dispute/claim resolution process.
• Attach supporting documentation as needed.
• For utility relocation delay claims, attach the Right of Way and Utilities Section’s determination letter.

Add Item to Work Order (Type Code L)

• Attach cost data supporting the settlement or award amount as cost justification.
• Item fund must be 100% State, if dispute/claim is related to a Federal Oversight or PennDOT Oversight NHS project.
• For utility relocation delay claims, item funding should comply with the Right of Way and Utilities Section’s determination.

Work Order Change Type: “Negotiated Dispute Settlement”

Work Order Change Type: “Negotiated Claim Settlement”

Work Order Change Type: “Board of Claim / Court Award”

Create Legal Work Order

Was the dispute resolved before the Contractor filed a claim?

Yes

No

Was the claim resolved before a Board of Claims hearing?

Yes

No

Contracting Officer or Delegate Action

• Submit the Contractor’s claim submission with the DE’s decision to the Right of Way and Utilities Section Chief for review and concurrence.
• See Design Manual Part 5, Chapter 5 for further information.

Right of Way and Utilities Section Action

• Review submission.
• Determine if the utilities were relocated in accordance with PenndOT’s utility accommodation policy and the FHWA Program Guide.
• Provide letter to Contracting Officer documenting compliance or noncompliance.

April 2017 Edition
Additional / Extra Work (Administrative Adjustment) Change Type Selection Flowchart

Start

What is the purpose of the Administrative adjustment?

Is the purpose to move item quantity from one fund to another fund? yes → Change Type is “Funding Change”
no

Is the purpose to adjust a previously established actual force account item? yes → Change Type is “Force Account Adjustment”
no

Is the purpose to correct an error discovered by the Finals Unit during an Audit? yes → Change Type is “Finals Unit Audit” For Finals Unit Use ONLY
no

Is the purpose to establish a firm, binding price for EW as determined by the District Executive? yes → Change Type is “DE Specified Change” See Pub 408/110.03(a)
no

Is the purpose to adjust item quantity due to normal variation between plan quantity and field measured quantity? yes → Change Type is “Balancing Overruns / Underruns” NOT to be used for Work Orders involving changes to the original contract and/or plan.
no

Is the purpose to eliminate an item(s) found to be unnecessary? yes → The purpose is not to process an Administrative adjustment. See Additional/Extra Work Change Types Flowchart. (Page 1-43)
no

April 2017 Edition
What is the purpose for the incorporation of Additional / Extra Work?

Is the purpose to implement contract changes related to an approved VE proposal?
- yes: Change Type is “Changes Related to Value Engineering” See Pub 408/110.07
- no:

Is the purpose to process a contract adjustment due to the work being suspended?
- yes: Change Type is “Suspension of Work Ordered by Engineer” See Pub 408/110.02(c)
- no:

Is the purpose to correct a costly error made by the project Designer?
- yes: Change Type is “Design Error”
- no:

Is the purpose to add an item or item quantity that was omitted by the Designer?
- yes: Change Type is “Design Omission”
- no:

Is the purpose to establish a new unit price for a contract item that has experienced a significant change in character?
- yes: Change Type is “Required Change in Scope of Work” See Pub 408/110.02(d)
- no:

Is the purpose to address subsurface or physical conditions that differ from those indicated or ordinarily found?
- yes: Change Type is “Differing Site Conditions” See Pub 408/110.02(b)
- no:

Is the purpose to correct field conditions that have deteriorated between project design and construction?
- yes: Change Type is “Unforeseen Field Condition”
- no:

Is the purpose to implement a decision or directive of the Engineer?
- yes: Change Type is “Field Change by Engineer”
- no: Change Type is “Other”
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<th>SECTION</th>
<th>PAGE</th>
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<td>3</td>
<td>1-44</td>
<td>April 2, 2018</td>
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In ECMS, all original contract items and extra work items carry a corresponding work classification code.

The work classification code is the identifier for the established work classifications assigned to contractors through the prequalification process. The work classifications assigned the contractor determines the type of work they are eligible to bid as a prime contractor or are eligible to perform as a subcontractor.

Standard items listed in the Master Items list in ECMS are pre-coded by the Bureau of Project Delivery and the Prequalification Office when the items are established. Modified standard items are likewise pre-coded through the root item number. As a result, extra work involving use of standard or modified standard items will also be pre-coded.

Non-standard items identified in the proposal are assigned a work classification at the time the items are established in the ECMS Design Items.

Non-standard extra work items are to be assigned a work classification at the time the items are established for a work order.

Codes X, Z, and ZZ are not codes assigned to contractors, but are instead used to identify contract items that involve project management, administrative, and specialty type work.

**Code X** - Some items on the Schedule of Prices in the proposal do not relate to physical construction operations but to project management and administrative functions. Such items include Mobilization, Inspector's Field Office and Inspection Facilities, Engineering Stakes, Microcomputers, CPM Scheduling Requirements, and other equipment, material and services furnished by the contractor for the Department's use in administering the contract. These types of items are coded X and the value thereof is deducted from the total bid amount when determining if the contractor holds the necessary work classifications to qualify for at least 50% of the contracted work.

**Code Z** - Some items on the Schedule of Prices may relate to physical construction operations but have been determined to be excluded from the provisions of the Prequalification Regulations. These items are generally maintenance type services such as snow removal, roadside mowing, pesticide spraying, and hazardous material testing and disposal. Additional items which have been determined to be excluded include moving of building structures, boring and enlarging of holes on girder webs for bridge pin hanger projects, and removal and rehabilitation of granite face of highway tunnels. Trucking work items should also be coded as Z. Under the provisions of the Prequalification Regulations these items require the approval of both the Deputy Secretary for
Highway Administration and the Office of Chief Counsel to be determined as being not under the purview of the Prequalification Regulations.

Approved items will be coded Z in the proposal. The value of these items will not be deducted when evaluating the 50% work classification requirement; instead, all contractors will be presumed to be qualified to perform the work involved. The following list of items has been approved by the Office of Chief Counsel as being exempt from prequalification requirements. The list will be modified when deemed appropriate.

- Dust Palliative
- Snow Removal
- Sign Maintenance (Routine cleaning, etc.)
- Sweeping
- Mowing
- Pesticide Application (Insecticides, etc.)
- Refuse Pick-up and Disposal

Code ZZ - This relates to any Specialty items that may be included in a project, and as noted in the regulations, will be deducted from the total original contract price before computing the amount of work required to be performed by the contractor. Specialty Items should be considered to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract, and in general are to be limited to minor components of the overall contract. Subcontractors performing Specialty Items on Non-ECMS projects are to be submitted on Form CS-4339R, Request for Subcontractor Approval, in accordance with present procedures for subcontractors. Subcontractors performing Specialty Items for ECMS projects are to be entered on the Subcontractor, Service and DBE Supplier Request screen. Any requests which include work items with ZZ codes will be approved by the Prequalification Office.

If there are any questions concerning work classifications, please contact the Bureau of Project Delivery, Contract Management Section, Prequalification Office at (717) 787-3733.
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<td>EARTHWORK</td>
<td>A</td>
<td>Clearing and Grubbing</td>
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<td></td>
<td>B</td>
<td>Building Demolition</td>
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<tr>
<td></td>
<td>C</td>
<td>New Roadway Excavating and Grading</td>
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<td>C1</td>
<td>Other Excavation and Grading (Roadway Patches, Drainage, Structure Related, etc.)</td>
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<td>C2</td>
<td>Drilling and Blasting</td>
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<td></td>
<td>C5</td>
<td>Anchors</td>
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<td>Drilling</td>
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<tr>
<td>BASE COURSE</td>
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<tr>
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<td>D</td>
<td>Rigid Base Course</td>
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<tr>
<td></td>
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<td>F1</td>
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<td>Milling, Rumble Strips, Scarification Bituminous or Concrete</td>
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<td>Bituminous Surface Treatments, Seal Coats</td>
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<td>Guide Rail, Steel Median Barrier, Fences</td>
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<tr>
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<td>Disposal of Bridge Waste/Containment/Worker Health and Safety</td>
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The following guidelines and procedures are provided for the Department's Partnering Process.

Project Selection:

- After the project has been awarded but not later than the preconstruction conference, the project’s Assistant Construction Engineer (ACE), or Representative, and the Contractor Project Manager shall complete Form CS-9 – Project Facilitation Type Score Sheet and discuss what level of partnering facilitation will be required for the project.

Partnering Process:

The Partnering process will initially be as follows:

- All Design, bid, and letting requirements, procedures, and policies will remain the same.

- If required to hold a Kick-off Partnering Workshop, the ACE and Contractor Project Manager shall meet prior to the workshop to select potential dates, a location, and a facilitator for the workshop. Also, create an agenda, develop presentations and a list of attendees, and discuss objectives for partnering on the project.

- If required, the Kick-off Partnering workshop shall be held within 30 days of the Notice to Proceed, but not later than 10 days after work has started.

- If required, the District and the Contractor will mutually arrange for a Kick-off Partnering Workshop as follows:
  - If using a facilitator, the facilitator must be mutually acceptable to the Contractor and the Department. The District must concur with the Contractor's selection.
  - Key project "stakeholders" will attend. A Workshop attendee checklist is found on page B.3.3-3.
  - The workshop agenda will consist of a discussion of partnering principles, development of the escalation matrix, development of a project charter with defined goals and objectives, and development of a defined problem solving procedure and evaluation process.
For semi-formal facilitation, the workshop will be held for a minimum of \( \frac{1}{2} \) day. For formal facilitation, the workshop will be held for a minimum of one full day.

Location will be a neutral site and in close proximity to the project site.

At the end of the partnering workshop, the participants shall sign a Partnering Charter. The Partnering Charter includes all the principles and commitments made during the partnering session and the project goals and identified values of the team.

A structured partnering follow-up plan should result from the partnering workshop that will be followed for the duration of the project and that can effectively assist the project managers in the successful completion of the project.

Facilitator and partnering session evaluations will be completed by participants at the end of the Kick-off Partnering Workshop.

- The Department agrees to reimburse 50% of the invoice costs for the facilitator workshop and session costs, monthly partnering evaluation survey service cost, cost for partnering skills development and trainer and training site cost (if necessary).
When invitations to the workshop are prepared, the following Representatives should be considered:

**Local Officials:**
City Manager/Engineer  
Borough Manager/Engineer  
Township Manager/Engineer  
Chamber of Commerce Representative

**Consultant Designer:**
Owner/President  
Vice President  
Design Engineer  
Squad Leader

**Contractor Officials:**
Owner/President  
Vice President  
Superintendent  
Project Manager  
Lead Foreman

**Consultant Inspection:**
Owner/President  
Vice President  
Construction Engineer  
Project Engineer  
Lead Inspector

**Sub-Contractor Officials:**
Owner/President  
Vice President  
Superintendent  
Project Manager  
Lead Foreman

**PennDOT Officials:**
District Executive  
ADE for Construction  
ADE for Design  
ADE for Maintenance  
Assistant Construction Engineer/Manager  
Construction Services Engineer  
District Bridge Engineer  
District Materials Engineer/Manager  
Structure Controls Engineer  
Liaison Engineer  
Design Services Engineer  
Plans Engineer  
Squad Leader  
Traffic Engineer  
Environmental Engineer  
Utilities Engineer  
Grade Crossing Engineer  
Project Engineer  
Lead Inspector  
Project Office Manager  
Geotechnical Engineer  
Materials Engineer  
Chief of Surveys  
Mining Engineer  
County Maintenance Manager

**Supplier Officials:**
Owner/President  
Vice President  
Manager  
Sales Representative

**Utilities:**
Electric  
Gas  
Water  
Sewer  
Telephone  
Cable

**Other:**
Federal Highway Administration  
Pennsylvania Turnpike Commission  
Department of Environmental Resources  
Archeology  
Historical  
Parks & Recreation  
Fish and Game Commission  
Railroads (Norfolk Southern, Amtrak, CSX, etc.)
Transit Authorities (SEPTA, CAT, etc.)

Note: This list is not intended to be conclusive. Any party impacting the project should be invited to the Partnering Workshop.
CONSTRUCTION VALUE ENGINEERING

The requirements and procedures for Construction Value Engineering are contained in Section 104.04, Publication 408, Value Engineering. This section permits Contractors to apply cost reduction proposals and cost saving techniques to highway and bridge projects.

In addition to the provisions specified in Section 104.04, the following procedures apply in evaluating the Contractor's Value Engineering proposals:

CONSTRUCTION VALUE ENGINEERING (VE) CONCEPT PROPOSALS

- The Districts will be responsible to review and approve/reject all Construction VE Concept Proposals received from the Contractors.

- The Contractor will submit the Construction VE Concept Proposal to either the Inspector-In-Charge or the District Construction Unit. The District Construction Unit will immediately notify the District Value Engineering Coordinator and the Bureau of Project Delivery’s Quality Assurance Regional Engineer of the concept proposal.

- On a Federal Oversight project, the District Construction Unit will notify the FHWA Transportation Engineer whenever a Concept Proposal has been received from the Contractor.

- The VE Concept Proposal should contain sufficient information to provide concept evaluation and review. The Contractor does not need to develop detailed design specifics until after receiving approval to proceed. However, in cases involving major design changes, the Concept Proposal will require somewhat more detail so a proper evaluation can be made.

- Rejection or approval to proceed for all Construction VE Concept Proposals is the responsibility of the District Executive and their staff. Rejections need not be cleared through the Chief Engineer's Office.

- After concept approval is given, the Contractor must be notified promptly so preparation of the actual detailed Construction VE Proposal can begin. A copy of the notification to the Contractor to proceed is to be sent to the Bureau of Project Delivery.

- Approval of the Contractor's VE Concept Proposal authorizes the Contractor to proceed in preparing an official Construction Value Engineering Proposal. Concept approval does not imply the Department's acceptance of the Construction VE Proposal.
CONSTRUCTION VALUE ENGINEERING (VE) PROPOSALS

- All Construction Value Engineering Proposals will be submitted to the Bureau of Project Delivery for concurrence on behalf of the Chief Engineer.

- On Federal Oversight Projects, the FHWA must also approve and concur with the proposal. (Bureau of Project Delivery will coordinate.)

- Construction Value Engineering proposals may be rejected by the District Executive without the Chief Engineer's approval. Rejections do not need to be cleared through the Chief Engineer's Office.

- The Contractor is to submit, in writing, a Construction VE Proposal following the procedures outlined in Section 104.04 of Publication 408, including acceptable cost justification for all items of Extra Work being proposed for incorporation into the contract. The Contractor may request an oral presentation in addition to its written submission.

- The Contractor is to submit one original and five (5) copies of the Construction Value Engineering Proposal to the District Construction Unit. The District Value Engineering Coordinator is to be notified immediately.

- The District VE Coordinator and VE team, if utilized, (use of VE team is optional) will be responsible for coordinating the review and will present the proposal and recommendations of either approval or rejection to the District Executive.

- On Federal Oversight Projects, after the District reviews the proposal and approval is given, the District VE Coordinator will submit the original and four (4) copies of the Construction Value Engineering Proposal to the Director, Bureau of Project Delivery.

- After receiving either rejection or concurrence from the Bureau of Project Delivery, the District Executive will notify the Contractor, in writing, of the results. If the District Executive’s approval is conditional, the written notification to the Contractor will note the conditions. If rejected, the District Executive's written notification to the Contractor must include the reasons for rejection.

- If concurrence is granted, the District Executive’s written notification will serve as authorization for the District to prepare the necessary work order, as well as any required contract adjustment. The work order will identify necessary changes in the plans and specifications and incorporate the contract changes (i.e. item quantity eliminations / reductions, Additional Work, and/or Extra Work) needed to permit the VE Proposal, or any part of it accepted, to be put into effect.
BUREAU OF PROJECT DELIVERY’S REVIEW (BOPD)

- Review of Construction VE Proposals will be coordinated by the Bureau of Project Delivery on behalf of the Chief Engineer, including review by the FHWA when required.

- The Bureau of Project Delivery will send comments and concurrence/rejection to the District Executive "to the attention of the District VE Coordinator" and "District Construction Unit".

Concept VE Proposals and Construction Value Engineering Proposals should be processed as quickly as possible.

DISTRICT CONSTRUCTION UNIT IMPLEMENTATION

- Before compensation is made to the Contractor for its share of the actual net cost savings associated with an approved Construction Value Engineering Proposal, the work order, as well as any required contract adjustment, needed to incorporate the contract changes identified in the VE Proposal must be prepared and approved by the District Executive or an authorized delegate.

- Necessary contract changes could include item quantity eliminations / reductions, Additional Work, and/or Extra Work. A contract adjustment “Rebate” might be required if the approved VE Proposal involves the elimination of, or a reduction in quantity for, one or more component items associated with a lump sum Structure.

- Approval of the work order and any required contract adjustment should typically result in a net decrease in the overall construction cost for the project.

- Upon completion of all Additional Work and Extra Work items included as part of the VE Proposal, a follow-up work order should be processed to account for any difference between estimated item quantities as identified in the proposal and actual, field-measured item quantities.

- The actual net cost savings associated with the approved VE Proposal should be determined based on the net decrease in the construction cost for the project after taking into consideration the initial work order and any required contract adjustment, as well as any follow-up work order.

- Compensation to the Contractor will be made as specified in Section 110.07, Publication 408. One-half of the actual net cost savings associated with an approved Construction Value Engineering Proposal is to be paid to the Contractor.
• Reimbursement of the Contractor’s share of the actual net cost savings is to be made through the processing of a two-part Contract Adjustment.

• The “Value Engineering – Initial Payment” contract adjustment is to be processed to provide payment for one-half of the Contractor’s share based on the estimated net cost savings as identified in the approved VE proposal.

• The “Value Engineering – Final Payment” contract adjustment is to be processed upon completion of all items of work included as part of the VE proposal and the processing of any follow-up work order. The amount of the final payment is to equal one-half of the actual net cost savings associated with the VE proposal; based on actual, field-measured item quantities; minus the amount paid to the Contractor under the “Value Engineering - Initial Payment” contract adjustment.
Contractor submits concept proposed to inspector-in-charge
district construction unit

District construction unit reviews concept proposal

Notify district VE coordinator and bureau of project delivery quality assurance
regional engineer

Notify FHWA if federal oversight project

APPROVED
Concept proposal approved / contractor notified by district

REJECTED
Concept proposal rejected / contractor notified by district

Contractor submits construction VE proposal to district / district reviews
(use of VE team optional by district)

REJECTED
District rejects / notifies contractor

APPROVED
District approves

District VE coordinator immediately sends construction VE proposal + 4 copies each
to bureau of project delivery for review & concurrence

Bureau of project delivery provides rejection / concurrence to district executive

District executive notifies contractor

Approved / district prepares work order / contract change

Rejected / not implemented

Coordinates with:
central office bureaus

FHWA (if federal oversight project)

Chief engineer

** District needs bureau of project delivery concurrence on projects before proceeding

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It is sometimes necessary for the Department to acquire material from contractors when contract changes delete work for which on-hand, nonreturnable material has been purchased.

In such instances, the Department will take possession of the material for use on other contract work or work performed by Department forces.

The contractor will be reimbursed for the actual cost of the material including applicable tax and transportation charges, as evidenced by receipted invoices, plus 20% for overhead and profit as specified in Section 110.03(d)7, Publication 408.

If the acquired material was ordered by and invoiced to an approved subcontractor, an additional 6% of the invoice amount is applicable.

Payment for material acquired from a contractor will be made on an Actual Force Account basis through the establishment of an Extra Work item (Item Type Code “A”) and the processing of an “Additional / Extra Work” category work order. Care must be taken in the preparation of the work order to ensure that the item is not coded for Federal participation if the material will later be used in contract work involving maintenance or in work performed by Department forces (i.e. District Maintenance).
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In accordance with Publication 408, Section 108.06(a), weather-related events warranting an emergency declaration by the Federal Government or by the Government of the Commonwealth of Pennsylvania may qualify for an extension of contract time provided it can be clearly established that the delay to the project for which a time extension is sought is not, in fact, the responsibility of the Contractor, and that the Contractor has taken all necessary precautions to protect the project from damage, as required. Furthermore, the Secretary of Transportation, or an authorized delegate, must determine, following an emergency declaration, that the emergency conditions had a direct adverse impact on one or more active construction projects. Finally, for a given project to qualify, the accepted Schedule in place at the time of the weather-related event giving rise to the emergency declaration must show work on one or more controlling operations occurring during the period in which the weather-related event took place.

Publication 408, Section 105.13(a) states that if the Representative determines the damage is due to unforeseeable causes beyond the control of the Contractor and occurs despite satisfactory precautions taken, the work will be paid for at the Department’s expense as specified in Section 110.03.

Photographs verifying the damage should be taken prior to performing the disaster-related work.

The District’s Disaster Recovery Coordinator and the PennDOT Emergency Management Manual should be consulted for proper coding, work order identification, Damage Survey Reports and procedures.
This Section applies to PennDOT personnel using PennDOT owned nuclear gauges.

Construction's nuclear testing program is regulated by a Department of Environmental Protection (DEP) license, which requires each and every certified operator to wear a dosimetry exposure badge to determine exposure to occupational radiation at all times while operating, transporting, or handling a nuclear gauge. Additionally, other non-operator individuals will be issued dosimetry badges dependent on their exposure as related to NRC regulations.

Dosimetry badges which show monthly exposure rates of 100 millirem or higher require an investigation by the compaction control supervisor to determine the cause of the high reading(s). Many times the high exposure is due to incorrect handling and storage of the dosimetry badges. Dosimetry badges are to be worn consistently at the core of the body (i.e., chest/waist level) when working around the gauges. Dosimetry badges shall be returned (mail to: Radiation Safety Officer, Laboratory Testing Section (LTS), Bureau of Project Delivery, 81 Lab Lane, Harrisburg, PA 17110-2543) in a prompt manner at the end of each wearing period for the badge (quarterly). All badged personnel should refer to their latest copy of the "Nuclear Operator's Testing Manual" or check with their compaction control supervisor to resolve questions.

Non-compliance may result in fines and/or civil penalties by the DEP and could jeopardize our PennDOT license for all Districts to operate gauges statewide.
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This Section applies to PennDOT personnel using PennDOT owned nuclear gauges.

Handling Procedures

Do not operate a gauge unless you have been properly instructed in its operation and have been authorized to do so. Only PennDOT licensed operators can operate PennDOT owned gauges. (Contractors and consultants have their own gauges and their own operator licenses. Contractors and consultants are responsible for the proper use and operation of their gauges on PennDOT projects. If PennDOT personnel notice contractors and consultants not operating gauges properly on PennDOT projects, PennDOT personnel shall report these issues to their immediate PennDOT supervisors for direction. If these issues cannot be resolved between the contractor’s Radiation Safety Officer (RSO), consultant’s personnel and PennDOT personnel, PennDOT supervisors can contact the PennDOT RSO for guidance.)

Keep the gauge in the "SAFE" position when not performing a test.

Wear your dosimetry badge at all times while operating or transporting a gauge.

Keep all unauthorized persons at least 15 feet away from the gauge.

Maintain security of the gauge at all times. Never leave a gauge unattended while in use! When not in use, the gauge should be placed in its transport case and locked in a secure temporary or permanent storage facility.

Storage of Gauges

Three Types of Storage:

Permanent: These are long-term (multiple years, over winter, multiple construction seasons) locations used to store nuclear gauges in permanent department facilities such as District/County facilities, garages, stock piles, etc.

Temporary: Short term (one construction season) locations such as specially equipped job trailers (on project site), rental storage units, custom stand-alone storage devices, etc. All such locations must be anchored/fixed so that removal/transport is not feasible.

- Vehicles: Vehicles can only be used as a limited, temporary storage location. Gauges may be stored in vehicles overnight if the gauge will be used within 24 hours from the previous usage. Otherwise, storage needs to be in one of the locations defined above. For
security purposes, the box shall be secured to the truck using a locked cable or chain. If a locked cap is used, the gauge shall be secured to the truck using a locked chain or cable.

All gauges when not in use:

Gauges must be locked in the "SAFE" position and locked inside their transport cases.

Gauges in Permanent or Temporary storage locations (exception of vehicles):

Gauges shall be stored in an area away from non-gauge using personnel. The storage area shall be posted as to the presence of radioactive materials (i.e., caution radiation materials emblem, notice to employees, notice to workers, and radiation incident instructions (POM B.4.4-1)) and be inaccessible to unbadged individuals. Department gauges shall be stored in areas completely separate from all contractor/consultant gauges.

**Operation of Gauges**

Direct Transmission Method of In-Place Nuclear Density and Moisture Content:

The nuclear gauge operator must have special training on the direct transmission method and shall not use this method to determine material specification compliance without prior Central Office approval. This approval will be granted District-wide. To receive District-wide approval, the District Executive (or designee) must submit a written request to the LTS Radiation Safety Officer for review and approval. The LTS Radiation Safety Officer will grant District-wide approval for operation of nuclear gauges by the direct transmission method when at least one District personnel has received training and a nuclear gauge operator license from the LTS Radiation Safety Officer for operation by the direct transmission method. This District-wide approval for operation of a nuclear gauge by the direct transmission method will only be for the direct transmission method applications specified in appropriate Sections of Publication 408 Specifications or applications specified in active Central Office Standard Special Provisions. Use for alternate direct transmission applications that are not specified in either the Publication 408 or the Central Office Standard Special Provisions will not be approved under the District-wide approval from the LTS Radiation Safety Officer.
This Section applies to PennDOT personnel using PennDOT owned nuclear gauges.

The United States Department of Transportation requires that all hazardous materials be transported according to the requirements as stated in Title 49 of the United States Code of Regulations (49CFR). The portable moisture/density gauges used on Department projects are considered to be a hazardous material by USDOT.

49CFR requires that "the gauge must be secured in the vehicle to prevent movement and possible damage during normal transportation situations and when unoccupied, the vehicle must be secured to prevent unauthorized removal of the gauge". Gauges are transported in many different types of vehicles which require different methods of securing the gauges for transport.

Mandatory procedures and safeguards are listed as follows:

- Gauges shall be logged in and out (on a manifest-type document) when returning and removing gauges from permanent District storage facilities.

- Gauge must be locked in the "safe" position. The shutter opening covering the source rod of the gauge shall be checked prior to transport. The shutter opening must be in the closed position during transport.

- Gauge must be in the Type A container (gauge box) supplied with the gauge.

- The Type A container shall be locked.

- When the gauges are not under a person’s direct control (usually during transportation or storage), the two-lock method for security of the gauges shall be used. These locks, unless otherwise designed, do not constitute devices to prevent movement and damage during transport. For permanent or construction storage areas, use a locked storage facility within a separate secured area. For a pick-up truck or vehicle, use a locked non-removable box or a locked cap hiding the gauges. The box shall be secured to the truck using a locked cable or chain. If a locked cap is used, the gauge shall be secured to the truck using a locked chain or cable.

- The Type A container shall bear two "Radioactive Yellow II" labels and a USA DOT 7A TYPE A label.

- No vehicle placards are required when transporting gauges.
• The Type A container shall not be transported in the passenger area of the vehicle. If using a van, station wagon, etc., transport with the container as far as possible from occupied area of vehicle.

• Restrain the Type A container to prevent shifting or movement during transportation by blocking and bracing the gauge shall be secured to the vehicle with a control device (chain or cable).

• The vehicle, when not occupied by the licensed nuclear gauge operator, shall be locked.

49CFR requires that, "a driver of a motor vehicle containing hazardous material shall ensure that the shipping papers (describing the hazardous material) are readily available to and recognizable by authorities in the event of accident or inspection". Specifically, the driver shall:

• Clearly distinguish the shipping papers, if they are carried with other papers of any kind, by either distinctively tabbing the papers or by having the papers appear first.

• Locate the shipping papers as follows:
  
a. When the driver is at the vehicle controls, the shipping papers must be within the driver's immediate reach while the driver is restrained by the seat belt.

b. When the driver is not at the vehicle's controls, the shipping papers shall be on the driver's seat in the vehicle.
This Section applies to PennDOT personnel using PennDOT owned nuclear gauges.

All personnel who operate, handle or transport Nuclear Testing Gauges (hereafter referred to as ‘the operator’) should be instructed in and are required to adhere to the following safety practices and notification procedures in the order they are listed, in the event of an incident/accident involving a nuclear gauge. Some examples of an incident/accident could be any of the following: theft of a gauge, physical damage to a gauge by a moving vehicle, the source rod of a gauge stuck in the ground or damaged, and the radioactive source unable to be pulled up into the shielded position.

1. Stop all vehicles or construction equipment involved, and do not move equipment until it is determined safe to do so by proper individuals. Cordon off a restricted area twenty (20) feet around the gauge and equipment or vehicles involved. Protect the nuclear gauge from further damage. Do not leave the gauge unattended. Keep the general public away from the immediate area of the incident until it is determined to be safe by proper individuals.

2. **IMMEDIATELY** notify the District Office or the Operator's Compaction Control Supervisor giving the location of the incident, gauge make/model, and what damage has occurred with the gauge.

3. The notified District Office or Compaction Control Supervisor must **IMMEDIATELY** inform the PA Department of Environmental Protection (DEP) at (717) 787-2480 about the incident. The person who calls the DEP must document the time of the call, the date, and the name of the person contacted at DEP. Also, tell DEP that the Pennsylvania Emergency Management Agency (PEMA) will be made aware of the incident.

4. If the incident takes place during transportation on a public road, the District Office or Compaction Control Supervisor must **IMMEDIATELY** inform the U.S. Department of Transportation's National Response Center at 1-800-424-8802. You must describe the incident to them. Inform them that PEMA will be made aware of the incident. Document the time of the call, the date, and the name of the person contacted at the National Response Center.

5. **IMMEDIATELY** after informing the DEP, PEMA must be notified by the District Office or Compaction Control Supervisor. PEMA's 24-hour contact number is (717) 651-2001 or PEMA can be reached by using their toll-free number at 1-800-424-7362.

6. The notified District Office or Compaction Control Supervisor will then contact the following individual at the Laboratory Testing Section:

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David H. Kuniega  
Radiation Safety Officer  
Office No. (717) 787-3966  
Home No. (717) 540-5916  

It is required by the Pennsylvania Department of Environmental Protection (DEP) and the United States Department of Transportation that this notification procedure, described above, be completed within one hour of the occurrence of any incident involving a nuclear gauge. It is mandatory that this procedure be followed even after normal working hours, as well as on weekends and holidays. The operator is ultimately responsible for all communications in the event the various individuals can’t complete these notifications.  

It is imperative that all parts of the stated notification procedures are followed. Recurrence of any type of non-compliance may place the Licensee's radioactive materials license in jeopardy. A breach of procedures will cause the DEP to assess the Licensee with a violation of its license.  

All Department personnel who operate, handle, or transport gauges, and who supervise or manage any project or location where a gauge is used or stored, must be aware of the importance of following completely these notification procedures.
Contractors and Consultants for the Department shall abide by their company nuclear licensing documents and NOT by the directives of this POM. Sections B.4.1, B.4.2, B.4.3, and B.4.4 apply to PennDOT personnel using PennDOT owned nuclear gauges.

When contractor/consultant personnel bring a nuclear gauge onto a project, the Inspector-in-Charge must confirm the existence of a current, valid nuclear license for the company the contractor/consultant represents.

Radiation Incidents

In the event of a radiation incident/accident involving a contractor/consultant nuclear gauge, the Inspector-in-Charge must confirm that the contractor/consultant has notified the contractor/consultant Radiation Safety Officer (RSO), and the Inspector-in-Charge must document this in the project record.

Gauge Storage

Contractor/Consultant gauges must be stored in secured locations separate from Department gauges.
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The Contractor is responsible for complying with all OSHA Regulations at all times during the life of each project.

Section 107.08, Publication 408 requires the submission of a written safety program. The District Project Safety Officer (DPSO) is responsible for reviewing all contractor and Subcontractor Safety Programs. If the DPSO feels that any submitted program is inadequate, the District Construction Unit is to write to the contractor and say that the safety program is inadequate. When this occurs, the DPSO should visit the project as soon as practicable after the contractor begins work to review the project safety.
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The District Project Safety Officer (DPSO) is responsible for implementing and monitoring the District Safety Assurance Program for all construction contracts.

The DPSO will be familiar with all construction safety provisions, their application, and will advise the Inspector-in-Charge, as necessary, on matters relating to contractor compliance with safety regulations. The DPSO will ensure that the Assistant District Executive – Construction (ADE-C) is advised of a contractor's repeated failure to comply with the contract safety requirements.

1. Pre-construction

The DPSO (or designee) should attend the preconstruction conference, receive and discuss the contractor's proposed safety program, identify and discuss any specific safety hazards (confined spaces, fall protection, working over water, lead, asbestos, etc.) pertinent to the project and discuss any additional safety requirements.

A US Department of Labor Poster, OSHA 3165 (Job Safety and Health: It's the Law), the contractor's emergency phone number (after hours contact personnel), the contractor's safety officer’s name and phone number, and a listing of hazardous materials found in the workplace along with the location of the Safety Data Sheets (SDS) for these hazardous materials must be posted on the project bulletin board.

2. Project Inspection

A. Project

The Contractor is responsible for project safety.

If you see a major safety issue (life threatening), have the problem resolved immediately or stop work on that operation. If a stop work order is issued, follow up with written notification.

If you see a non-life-threatening safety concern, notify the foreman. If the problem is not corrected the next day, notify the project superintendent. If the problem still exists the next day, call the company's home office and inform the Assistant Construction Engineer/Manager (ACE/ACM). If the situation is not corrected one day after notifying the home office, the Inspector-in-Charge is to notify the ACE/ACM and document these notifications in a PSA. The ACE/ACM will promptly contact OSHA (see ATTACHMENT for contact information) with the
ADE-C's concurrence and provide written notification to the Contractor. DO NOT EXPOSE YOURSELF TO A SAFETY HAZARD.

Subsequent corrective action will be documented and reported to the DPSO. A copy of the report and subsequent corrective action will be part of the permanent project records.

Promote safe practices:
   - Be safe yourself - show a good example.
   - Encourage the contractor to hold tool box talks.
   - Promote safety programs - Department issued hard hat stickers, newsletters, etc.

B. District

The DPSO will perform periodic safety field reviews of projects during construction. More frequent inspections may be required for those projects having high exposure to hazardous conditions, such as, multiple operations being performed concurrently within relatively confined areas, or construction operations being performed immediately adjacent to areas of public use, or to follow-up on previous findings or reports of fatalities or disabling injuries.

The DPSO will evaluate safety compliance on construction projects. In accordance with Pub 408, Section 107.08, it is the contractor’s responsibility to comply at all times with applicable Federal, State, and local laws, provisions, and policies governing safety and health including Occupational Safety and Health regulations for construction.

The DPSO will provide a verbal report to the Inspector-in-Charge, following up with a written report of the review, with findings and recommendations. The report should include any corrective action taken by the time the report is prepared.

The DPSO is to perform a follow-up safety review of projects on which fatalities or disabling injuries have occurred to ensure that safety related practices and procedures for the project are being performed in compliance with contract requirements and Department procedures.

The DPSO will maintain a log of all reported disabling injuries and fatalities on construction projects, by County, State Route and Segment, Contract Number and, when appropriate, Federal Project Number. The DPSO will log the date of the follow-up review which is made to ensure that safety related practices and procedures for the project are being performed in compliance with contract requirements and Department procedures. For vehicle accidents, the DPSO will also log the date of the notification to the contractor's insurance company.
The District will monitor the performance of the reporting procedures to ensure that the required information relating to fatalities and disabling injuries is being provided in a timely manner. The Inspector-in-Charge is to communicate with the District Traffic Unit to ensure that the Unit receives its copy of each Construction Zone Vehicular Accident Report Form. The Traffic Unit can then report to the Central Office Highway Safety and Traffic Operations Division all motor vehicle accidents and traffic related disabling injuries that occur in the construction zone as described in the Project Office Manual (POM) Section C.9.13.

If consultant inspection will be utilized on a project, the District will ensure that a copy of the consultant’s safety program containing their safety officer’s or responsible individual’s name and phone number is attached within their consultant agreement in ECMS.

3. Reports and Notifications

A. Serious Incidents

The Inspector-in-Charge will report to the DPSO and the ACE/ACM all disabling injuries and fatalities that occur within the limits of the project signing or within a traffic queue that extends beyond the limits of the project signing.

NOTE: Disabling injuries for this procedure are defined as those that require a doctor's care at the scene of the accident or transportation to a hospital or doctor's office for treatment. Accident victims refusing or deferring treatment or transportation for treatment shall not be reported as a disabling injury.

The DPSO will notify the Construction Quality Assurance Section, Bureau of Project Delivery, at (717) 787-5610 and also the County Manager, about the occurrence of the following special events on Department projects:

a. Chain reaction collisions of 15 or more vehicles.
b. Accidents in construction and maintenance work zones resulting in death or disabling injury.
c. School bus accidents resulting in death or disabling injury.
d. Accidents involving the release of hazardous materials.
e. Incidents which cause a major highway to be closed for six or more hours, except closures for maintenance and construction activities where the public and county have been notified in advance.
f. Catastrophic events such as a bridge failure.

NOTES: 1) The Construction Quality Assurance Section will notify the FHWA Division Office of these special events by email at Pennsylvania.FHWA@dot.gov.

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2) The foregoing is in addition and subsequent to following Emergency Response requirements and procedures for the notification of the Pennsylvania Emergency Management Agency (PEMA) at (717) 651-2001 when an emergency situation is discovered.

B. Routine Incidents and Project Accidents

The District will ensure that the Contractor's insurance company is notified of every vehicle accident which occurs at the construction site in accordance with the procedures found in the POM Section C.9.14.

All accidents and near misses which involve a Department employee or Commonwealth vehicle must be reported, investigated, and appropriate corrective actions must be implemented in a timely manner as described in PennDOT Personnel Information Memorandum (PPIM) 13-156.

Accidents in construction sites which involve a consultant employee are to be reported to the consultant’s safety officer or responsible individual by the District.

4. Project Safety Meeting

The Inspector-in-Charge is responsible for ensuring that each inspector receives briefings regarding the potential hazards to the inspector's and the contractor workmen's safety and the required safety procedures that are to be followed by the inspector and the contractor for each construction operation to which the inspector is assigned.

The briefings are to consist of an initial briefing (I) and refresher briefings (R) and may include participation in contractor safety meetings as well as in meetings conducted by Department personnel. Participation in the contractor's tool box talks is encouraged.

The initial briefing should be received prior to or within two (2) working days of the inspector's first assignment to the inspection activity on the project.

Refresher briefings are to be received at intervals of approximately two (2) weeks for as long as the inspector is assigned to the activity. More frequent briefings may be required as determined by the Inspector-in-Charge, the DPSO or their supervisors.

A consolidated record of these briefings is to be kept in a book or file marked for identification and traceable by index (or folder X) in the General File System and is to consist of the following format:

| Date of Briefing | Type (I or R) & Subject of Briefing | Signature of Inspector |

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This documentation will be reviewed by the DPSO as a part of their inspection of the project to determine that adequate precautions are being taken to safeguard the inspectors.

The Contractor is responsible to monitor its own operations to see that it performs in accordance with its written project safety program. The Inspector-in-Charge is to provide written notification to the contractor of unsatisfactory practices that are observed or that are brought to their attention and to document in a PSA or other approved source reference, notifications of such unsatisfactory practices and satisfactory resolutions thereof.

5. Child Labor Law

The Fair Labor Standards Act specifies a minimum age of eighteen for any nonagricultural occupation which the Secretary of Labor has declared hazardous, or detrimental to the health and well-being of sixteen and seventeen-year-olds. This minimum age applies even when the minor is employed by their parent or guardian.

The Inspector-in-Charge is to request a birth certificate or certification of age when a violation is suspected. The prime contractor is to be advised, and the prime contractor must direct removal of any person in violation.

6. PROCUREMENT NOTE

Occupational Safety and Health Administration (OSHA) regulations pertaining to construction are contained in Federal Regulations for Labor, CFR 29 Parts 1910, General Industry, and 1926, Construction.

These regulations are available on OSHA’s website https://www.osha.gov/law-regs.html

Specific questions can be addressed by a local OSHA office. See Attachment, pages B.4.7-6 thru B.4.7-7 for area OSHA offices.
ATTACHMENT

U.S. Department of Labor
Area Offices for the Occupational Safety and Health Administration

PENNSYLVANIA

Allentown Area Office
Saucon Valley Plaza
3477 Corporate Parkway, Suite 120
Center Valley, PA 18034
Telephone: (267) 429-7542

Erie Area Office
U.S. Department of Labor – OSHA
1128 State Street, Suite 200
Erie, PA 16501
Telephone: (814) 874-5150

Harrisburg Area Office
U.S Department of Labor – OSHA
43 Kline Plaza
Harrisburg, PA 17104-1529
Telephone: (717) 782-3902

Philadelphia Area Office
U.S. Department of Labor – OSHA
U.S. Custom House, Room 242
Second and Chestnut Street
Philadelphia, PA 19106-2902
Telephone: (215) 597-4955

Pittsburgh Area Office
U.S. Department of Labor – OSHA
William Moorhead Federal Building, Room 905
1000 Liberty Avenue
Pittsburgh, PA 15222
Telephone: (412) 395-4903

Wilkes-Barre Area Office
U.S. Department of Labor – OSHA
The Stegmaier Building, Suite 410
7 North Wilkes-Barre Boulevard
Wilkes-Barre, PA 18702-5241
Telephone: (570) 826-6538

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U.S. Department of Labor Regional Office
for the
Occupational Safety and Health Administration

REGION III (Washington DC, DE, MD, PA, VA, WV)

U.S. Department of Labor – OSHA
The Curtis Center – Suite 740 West
170 S. Independence Mall West
Philadelphia, PA 19106-3309
Telephone: (215) 861-4900
Introduction:

The Department's policy is to provide transportation and transportation related facilities and services in a manner that will make travel safer and more efficient, yet will preserve the quality of the environment while complying with federal, state and local environmental laws, regulations and procedures.

Throughout project development, construction and post-construction, the Department strives to reach a satisfactory solution - not only among resource and regulatory agencies, but also the public - regarding environmental issues and the specific measures needed to lessen environmental impact. Comprehensive public and agency involvement ensures that projects respond to transportation's needs with a minimum of community, environmental and quality-of-life impacts, while enabling the Department to better fulfill the promise of its mission:

Mission:

"It is the Department's Mission to provide excellent transportation systems, products and services in an environmentally responsible manner, and to promote economic vitality and enhance the quality of life."

Mitigation Commitments:

The District must implement all mitigation measures as described in the project's contract documents. Mitigation measures described in a project's contract documents must not be changed without the written approval of the District Environmental Manager and any additional approving Authority.

Mitigation commitments are binding, and project personnel should be made aware of the mitigation commitments made and incorporated into the project's design. Project personnel must have a thorough understanding of the Department's responsibilities and must know clearly their role in fulfilling those responsibilities. Publication 10X (Design Manual, Part 1X, Appendices to Design Manuals 1, 1A, 1B, and 1C, Appendix T) outlines the Environmental Commitments and Mitigation Tracking System (ECMTS) Process which is a tool to monitor and document the successful implementation of environmental commitments and mitigation measures agreed to during a project's environmental compliance and approval process. The matrix template is set up to identify project team members, including Department personnel, consultants, and contractors assigned with the responsibilities to ensure compliance is achieved.
Avoidance measures for impacts to all environmental resources, including natural and cultural resources that are identified on the permit drawings must be fully implemented during the construction of the project. This is not optional as the avoidance measures are requirements to avoid impacts to these protected resources.

Once constructed as specified in the contract documents, mitigation measures must be monitored and maintained by the contractor through final inspection and completion of the contract.

Scope Changes:

Scope changes are any changes to the original project concept, made during construction. Such changes need to be carefully evaluated so as not to increase impacts to the natural, cultural and/or human environment. The following are a few examples of areas which are particularly critical/sensitive as related to project scope changes:

- Streams/Watersheds
- Floodplains/Wetlands
- Agricultural Resources
- Air/Noise/Vibration Receptors
- Public Facilities/Services
- Park and Recreation Facilities
- Utilities
- Historic Properties
- Archaeological Sites
- Graveyards
- Waste Sites
- Threatened and Endangered Species

During construction, the Inspector-in-Charge must notify the District Environmental Manager of any unanticipated involvement with environmental resources, hazards and/or substantial changes in the project's scope of work, before actions are undertaken.
The Department wants to conserve and maintain the natural, scenic and aesthetic value of the environment and to assure its residents and visitors of clean air and pure water. One way this mandate is met is through a system of permits, licenses, registrations and certifications.

The following permits are common to transportation construction projects. Copies of all applicable permits should be included in the project files:

- Blaster's License 25 PA Code § 210.1-6, 211.1-78
- Explosives Storage Permit 25 PA Code § 211.78
- Explosives Purchase Permit 25 PA Code § 211.78
- U.S. Nuclear Regulatory Commission Material License 10 CFR § 80-1711
- Earth Disturbance Permit 25 PA Code § 102.31
- National Pollutant Discharge Elimination System (NPDES) Permit 25 PA Code § 102.31
- Bridge Permit 23 CFR § 650.805, 650.807
- Section 404 Permit for Discharge of Dredged or Fill Material 33 CFR § 320-331
- Water Obstruction and Encroachment Permit 25 PA Code § 105, 106
- Submerged Lands License Agreement 25 PA Code § 105.31-35
- Emergency Permit for Activities in a Waterway or Body of Water 25 PA Code § 105.64
- Federal 401 Water Quality Certification 40 CFR § 121
- USFWS Biological Opinion/Incidental Take Statement or Permit 50 CFR Part 402
- PFBC Biological Opinion Take Permit 58 PA. CODE § 75.1-4
- Storage Tank Installer Certification 25 PA Code Chapter 245
- Storage Tank Inspector Certification 25 PA Code Chapter 245
- Storage Tank Company Certification 25 PA Code Chapter 245
- Above Ground and Underground Storage Tank Registration 25 PA Code Chapter 245
- Open Burning Permit Inside on Air Basin 25 PA Code Chapter 129.14

Except for the USACE Section 404 Permit and the Incidental Take Permits, these permits are most often approved and issued by the Pennsylvania Department of Environmental Protection in conjunction with the following:

Advisory Council on Historic Preservation (COUNCIL)

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Avoidance measures for impacts to threatened and endangered species that are identified on the permit drawings must be fully implemented during the construction of the project. This is not optional as the avoidance measures are requirements to avoid impacts to the threatened and endangered species.

Many of the Department's bridge replacement projects require aids to navigation (ATON) which warn waterway users of the changing conditions ahead as well as help guide these users through or around the project area. Under Chapter 113 of the PA Fishing and Boating Regulations, placement of the aids to navigation requires an approved ATON Plan which is processed by the PA Fish & Boat Commission (PFBC). The Department submits ATON plans to the PFBC when Department projects will obstruct any portion of a recreational boating waterway. For the purposes of ATON, a recreational boating waterway is one where motorized boating, canoeing and kayaking are possible during suitable flow conditions. Additional information on ATON may be found in Publication 13M, Design Manual Part 2: Highway Design.
Overview

Pennsylvania Department of Environmental Protection's (DEP) Chapter 102 Regulations require that all persons, municipalities and agencies engaged in earthmoving activities shall develop, implement and maintain effective erosion and sedimentation pollution control measures that will minimize accelerated erosion and prevent sediment pollution.

Erosion and sedimentation are normal geologic processes, which when accelerated by project operations such as the removal of vegetative cover, soil disturbance and/or other significant changes in topography, are frequently followed by sudden drastic increases in soil erosion. These can be minimized by thoughtful planning and scheduling of construction activities.

The purpose of an Erosion and Sediment Pollution Control (E & SPC) Plan is to identify potential erosion problems and to define effective and economical measures to be used, along with construction operations, to minimize erosion and sedimentation.

An E & SPC Plan, as it pertains to PennDOT (Department), projects consists of:

- Maps and drawings showing the topography of the existing area, proposed alteration and the E & SPC measures and facilities.
- A narrative report describing the project and indicating the purpose and the engineering assumptions and calculations for control measures and facilities.
- Detailed instruction in the contract, special provisions and/or the plans to define staging, sequencing and scheduling of operations and the installation of such measures and facilities.

Prevention of sediment pollution of waterways involves the following principles:

- Schedule construction operations to reduce soil areas exposed, including special precautions to be taken in the use of construction equipment to prevent operations which promote erosion. (Allowing excessive wheel rutting, etc.).
- Control erosion at the source.
- Control water that flows across the right-of-way.
- Keep all water originating outside the project separate from that originating within.
Borrow pits and waste disposal areas shall be selected with full consideration of E & SPC requirements during borrow and/or disposal operations and during the final treatment or restoration of the area(s).

Wherever located, special precautions shall be taken to control E & S problems and off-site effects. All waste areas, Department, Municipal and privately owned, shall be approved as required in Section 105.14, Publication 408.

Responsibilities

Projects that have National Pollutant Discharge Elimination System (NPDES) Permits have specific requirements that include monitoring and reporting. All NPDES-permitted projects are required to have a site inspection, weekly, and within 24 hours after each measurable rainfall event by the Department inspector and the contractor. The visual site inspections are to continue throughout the duration of construction and until the receipt and acknowledgment of the Notice of Termination (NOT) from DEP or authorized by the CCD. Document the findings of these inspections on the DEP form titled Visual Site Inspection Report (DEP form 3150-FM-BWEW0083 2/2012); the form is available at the following DEP link http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-87500/3150-FM-BWEW0083.pdf

In the event a BMP is not functional or is noncompliant, (e.g., silt fence down between station 1+00 and 2+00), the non-functioning / noncompliant BMP’s must be repaired within 48 hours under normal conditions. When the project identifies non-functioning BMP’s the County Conservation District (CCD) must be contacted immediately by the department and the visual inspection report documenting the non-functioning BMP’s must be sent to the CCD within 5 days. More specific details are included in the permit.

When an NPDES Permit is issued, the Inspector-in-Charge (IIC) shall establish a preconstruction meeting with the Contractor and the CCD at the project site prior to any construction activities. Prior to this meeting the contractor needs to complete the Transfer/Co-Permittee Application Form and provide documentation that it has been executed. At this preconstruction meeting discuss how the site inspection reports are to be conveyed to the CCD (faxed, e-mailed, mailed, etc.). If not defined in the NPDES permit, the definition of a rainfall event is 0.1” of rain in a 24-hour period unless otherwise agreed to by the CCD or detailed in the NPDES permit. Each project field office will have a rain gauge supplied by the Department to monitor rainfall events; the location of the rain gauge should also be discussed as part of this meeting and agreed to by all parties. The rain gauges will have a 5” capacity with easy to read gradation readings of 0.1” and, be constructed of weather resistant heavy gauge plastic. The Project Manager or their delegate will record meeting minutes, and distribute the meeting minutes to all attendees within 14 days of the meeting. Keep a copy of the meeting minutes in the E & SPC file folder at the project field office.
No borrow or wasting of material will be permitted on any project prior to the project receiving all required approvals and permits. The appropriate E & SPC’s are to be installed prior to start of these operations.

Construction inspection personnel are to assure that all E & SPC’s are adequately maintained in order for them to work satisfactorily.

Under no circumstance are construction inspection personnel to allow waste material to be placed outside of approved waste disposal areas, including the prohibition of the disposal of waste in "Wetlands" or in the floodway or floodplain of any stream.

As per Section 107.28, Publication 408, the contractor may submit an alternate plan that will equally or better control erosion and run-off. When the contractor chooses to submit an alternate plan, work shall not start until the plan is approved by the CCD and the Department.

All necessary E & SPC measures and facilities are to be installed, maintained and monitored throughout the duration of the construction project. Personnel involved with project administration and inspection are to aggressively enforce the state's environmental regulations.

To ensure compliance, the Project Manager will issue a written “Stop Work” notice to the Contractor, for that particular area of work, under the following conditions:
- When waste disposal operations are not being performed in accordance with the Commonwealth’s environmental regulations or the requirements of all other existing permits.
- When the contractor proceeds with work outside the parameters of the approved E & SPC plan or permit conditions.
- When any non-functioning BMP is not corrected, within 48 hours after being notified, unless otherwise specified in the NPDES permit.

**Documentation**

Keep in the E & SPC file folder all documentation that is generated for the purposes of complying with the E & SPC and the NPDES permit(s). In this file, keep records of any meetings with the CCD, or DEP and any decisions that are made during these meetings. Keep a copy of all site inspection reports and a fax confirmation sheet that the non-functioning BMP inspection report(s) has been faxed to the CCD or a copy of an email sent to the CCD. All site inspections reports documenting non-functioning BMP’s must be conveyed to the CCD. Failure to comply with this requirement may be a violation of the permit and could result in a notice of violation assessed by the CCD or DEP. In addition to performing weekly or bi-weekly inspections per the NPDES permit, perform a site inspection within 24 hours of each rainfall event, as defined by the CCD. Document the site inspections the findings of these inspections on the DEP form titled Visual Site Inspection Report (DEP form 3150-FM-BWEW0083 2/2012).

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Exx-9999 Permits

The Exx-9999 Permit is an Agency Programmatic Permit issued by DEP to PennDOT Engineering District Offices for maintenance activities located along various streams within the Commonwealth. The Project Manager must perform the following actions to ensure that the contractor fully understands what is required to be in compliance with the Exx-9999 Permit when work is authorized for a particular project.

- Discuss at the pre-construction meeting the requirements of the Exx-9999 Permit and Sketch Plan and that E & S BMP’s must be constructed and maintained in accordance with the permit which should reference PennDOT Publication No. 464 Maintenance Field Reference for Erosion and Sediment Controls.
- The contractor will develop and submit a written E & S Control Plan for PennDOT review and approval prior to commencing any field activities. The E & S Control Plan should be based on and include the Sketch Plan provided by PennDOT for in stream E & S BMP’s. The written E & S Control Plan developed by the contractor shall include Sketch Plans for each work site and include: all staging areas, waste areas, access points / roadways to the work area, all of the areas where work is to be performed (including tree and brush removal), the upstream and downstream limits of the proposed activities, and a complete list of the E & S BMP’s to be used and their exact locations. The contractor should maintain a copy of the approved E & S Control Plan on site at all times. The contractor will notify PennDOT in writing that the E & S plan has been revised.
- The contractor will be responsible to notify Pennsylvania Fish and Boat Commission (PABFC), DEP, and the CCD 10 days in advance of starting any construction activities.
- The Project Manager will be responsible for monitoring contractor compliance with the 10-day notification requirement prior to the start of any construction activities.
- The Project Manager should be familiar with Publication No. 464, Maintenance Field Reference for Erosion and Sediment Controls, and a hard copy should be part of the project library.
- The Project Manager will be responsible for site inspections and reporting contractor compliance with the approved E & S Control Plan. Document the findings of these inspections on the DEP form titled Visual Site Inspection Report (DEP form 3150-FM-BWEW0083 2/2012), Best Management Practices (BMP) are functioning properly. If the contractor is in noncompliance, work shall cease until the contractor is back in compliance with the approved E & S Control Plan.

Partnering with other Agencies

Employees of other agencies are to be extended every courtesy and assistance when they are working on Department projects. Take advantage of the environmental expertise of the District environmental staff and the Bureau of Project Delivery, Environmental Policy and Development...
Section staff to train and assist construction inspection personnel and contractors in complying with environmental laws and regulations. We are all working toward the same goal of providing an excellent transportation product and service to our customers in an environmentally responsible manner.

**Permit Compliance and Enforcement Process**

It is the intent of DEP to seek voluntary compliance for violations under each NPDES Permit. When violators express their willingness to correct violations, DEP’s efforts shall be focused on assisting the violator to correct any violation(s). The contractor will be directed towards restoring damaged areas, implementing and maintaining non-functioning BMP’s, and completing any other actions required to bring the project back into compliance with the NPDES permit. Since it is recognized that voluntary compliance will not always be obtainable, the guidance outlined under the Conflict Resolution below will provide steps necessary to complete the enforcement actions.

This guidance is intended to provide general instruction / assistance to those involved in compliance activities under the Commonwealth’s E&SPC and NPDES Storm Water Construction programs.

**Who will handle enforcement:**

The CCD, unless otherwise specified, is the responsible agency for performing site inspections and responding to complaints related to E&SPC and NPDES activities.

In most cases the CCD will be the first agency on site, and they will determine whether or not they have enforcement jurisdiction if there is a violation. If the CCD does not have jurisdiction they will contact the appropriate jurisdictional agency.

**Permit Responsibilities:**

It is the responsibility of the District and Contractor as the Permittee and Co-Permittee to ensure that all requirements of the NPDES permit are being followed, including implementation of the approved E&SPC plan.

**Conflict Resolution:**

1. Project personnel, both Department and Contractor, should be monitoring site conditions for compliance with the NPDES permit and E&SPC plans. Department personnel are responsible for ensuring that the contractor is following the NPDES permit as well as the approved E&SPC plans. The NPDES permit and approved E&SPC plans should be available for review in the project field office.
If the project has an Exx-9999 programmatic permit or does not have a written E&SPC plan the project must still use the appropriate BMP’s to prevent environmental pollution.

2. Immediately upon discovering non-compliance of the NPDES permit or the E&SPC plan the Department will:
   - Document the non-compliance issue.
   - Notify the contractor and inform them that they should implement an appropriate corrective action.
   - Notify the CCD of the nature of the non-compliance issue and the corrective action taken and anticipated timeframe.

3. Upon notification of the non-compliance issue and corrective actions from the Department the CCD may visit the project, and perform an inspection to ensure that the non-compliance issue has been resolved. If the non-compliance issue has not been resolved the CCD will notify the agency having jurisdiction to complete an inspection report noting any non-compliance issue and corrective measures to be instituted to resolve the non-compliance issue. The inspection report will indicate a timeframe for the Contractor to address the violation(s) and indicate a date for a follow-up inspection. Depending upon the circumstances of the violation(s) the CCD may involve other jurisdictional agencies at that time, or if the project conditions warrant, the CCD may immediately contact the regional office of DEP for compliance assistance.

4. The CCD will return to the project for a follow-up inspection as noted on the inspection report. If “voluntary” compliance is achieved the CCD will note on a new inspection report that no violations were found and that the site is in compliance.

5. If the site is not in compliance, the CCD will note the non-compliance issue and require corrective actions be taken on the inspection report. The CCD will inform both the Department and Contractor that the Regional Office of DEP will be notified and requested to assist in the enforcement matter.

6. The CCD will contact the respective DEP Funded Position (DFP) to assist with compliance and will coordinate a date for a follow-up inspection at the project.

NOTE: Anyone, not just the CCD, can contact the DFP staff for technical assistance/guidance as these positions are funded for expedited service. The DFP staff is available to mediate any irresolvable disputes between the Department, Contractor and the CCD. DFP staffs are a part of the “permitting and technical service section” and can be reached at each regional office:

SERO (484)-250-5970
7. If DEP and CCD staff inspect the project and find that compliance has been achieved, follow step 4 above with the exception that the violation will be entered into DEP’s EFACTS system, an electronic file system for future reference related to compliance history.

8. If “voluntary” compliance has not been achieved the DEP regional staff will immediately notify the Transportation Coordinator (TC) and the Chief, EPDS at DEP Central Office and provide copies of all inspection reports and compliance efforts to date.

   The responsibility of enforcement will still be with the regional office; however, DEP’s central office may assist and give recommendations to resolve the violation(s).

9. Situations/violations that cannot be resolved at the regional level with the assistance of the TC and the Chief, EPDS are elevated to the Deputy Secretary level.

**Authority for DEP to stop work:**

A Compliance Order can be issued by the DEP Staff to the Department requiring the contractor to cease all earth moving activities on the project except for any earth moving activities that would be required to bring the project back into compliance with the NPDES permit. The CCD does not have the authority (at this time) to write a Compliance Order.

   A Compliance Order could be issued for, but is not limited to, the following: a site where a pollution event has occurred, a site that has the “potential” to pollute, a site that is operating without a permit, or a site where “voluntary” compliance cannot be achieved.

**Issuance of a Notice of Violation:**

An inspection report with violations noted is sometimes confused with what is referred to as an “official” Notice of Violation (NOV). An official NOV is issued by DEP and will be assigned a DEP case number. A NOV can also be issued by the CCD. An official NOV is usually the result of a serious violation, which resulted in or had the potential to cause significant environmental harm or public health/safety issues. Issuance of an official NOV usually warrants some type of punitive action beyond correcting the non-compliance issue and / or the environmental harm.
If an official NOV is issued by DEP or the CCD, the responsible District will submit a copy of the NOV within 48 hours to both the Bureau of Project Delivery, and the Office of Chief Counsel.
The term "Wetland" describes, in a collective way, what are more commonly known as marshes, bogs, swamps, wet meadows and shallow ponds. There are several technical definitions of wetlands. For regulatory and legal purposes, the Commonwealth of Pennsylvania (25 PA Code, CH. 105) uses the following:

"Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions...."

Wetlands are identified by three basic conditions:

- Hydrophytic Plants - Plants adapted to life in saturated soil conditions.
- Hydric Soils - Soils that are characterized by their wetness.
- Wetlands Hydrology - The presence of water at or near the surface at some time during the growing season.

Based on the vegetation, several types of wetlands have been described as:

- Forested Wetlands - wet habitats where large woody trees (over 20 feet in height) find a home.
- Scrub Shrub Wetlands - inhabited by wood shrubs and small trees (less than 20 feet in height).
- Emergent Wetlands - vegetated by grasses, sedges, rushes, and other herbaceous plants that emerge from the water or soil surface.
- Open Water Wetlands - standing water bodies typically absent of wetland vegetation and typically with greater than 18 inches of water. Open water wetlands may have a vegetated fringe.
Dams, water obstructions and encroachments in bodies of water of the Commonwealth, including **Wetlands**, are regulated by both State and Federal statutes. The United States Army Corps of Engineers (USACE) regulates these activities under the authority of the Clean Water Act "404" Permit Program (1972), and the Pennsylvania Department of Environmental Protection (PA DEP) regulates these activities under the authority of the Dam Safety and Encroachment Act's Chapter "105" Permit Program (1978). Some of the more commonly regulated activities include, but are not limited to:

- Filling Wetlands
- Construction of Bridges
- Construction of Dams
- Construction of Docks
- Dredging Bodies of Water
- Construction of Levees
- Construction of Roads
- Alteration of Stream Banks
- Construction of Roads

Before commencing with any activity in a stream, river, floodway, lake, pond or wetland, the appropriate permits must be secured and available on the project. To simplify the process the PA DEP and the US Army Corps of Engineers have developed a Joint Permit Application. Although there is a single application form, each agency (PA DEP and USACE) conducts its own project review and issues or denies permits accordingly. Applicants must have both permits on file before beginning any operation.

The Contractor should read, understand and assure compliance with the permit conditions to avoid any potential problems and/or enforcement actions for non-compliance.

PennDOT Publication 325, Wetland Resources Handbook, provides additional information on wetlands. In particular, Chapter 12 of Pub 325 provides guidance on addressing wetland permit conditions during the project construction phase.
Open Burning is defined as any fire that emits contaminants directly into the outdoor atmosphere and not through a flue.

Open burning of materials is not permitted in designated high population areas or "Air Basins" which are defined in Pennsylvania's Air Pollution Control Act (P.L. 989, No. 245 Amended Oct. 26, 1972) and include the Commonwealth's larger cities and surrounding municipalities. There also may be Municipal restrictions which apply. If necessary, consult with the District Environmental Manager. It is permitted outside of these areas if the emissions are not seen or an ill-smelling odor is not noticed outside of the property where the burning occurs. Open burning may not interfere with the reasonable enjoyment of life or property and may not be harmful to humans, animals, plants or property.

In keeping with the present-day concern to avoid and/or reduce air pollution, the problem of disposal of dried stumps, roots (free of dirt) and brush during the clearing and grubbing operation becomes extremely important. Burning is permitted in a basin subject to the following requirements: [PA Code 25 § 129.14(d)2.]

- Air curtain destructors are to be used when burning, clearing and grubbing wastes.
- Each proposed use of air curtain destructors is to be reviewed and approved by the Department in writing with respect to equipment arrangement, design and existing environmental conditions prior to commencement of burning. Proposals approved under this subparagraph need not obtain plan approval or operating permits under Chapter 127 (relating to construction, modification, reactivation and operation of sources).
- Approval for use of an air curtain destructor at one site may be granted for a specified period not to exceed 3 months, but may be extended for additional limited periods upon further approval by the Department.
- The Department reserves the right to rescind approval granted if a determination by the Department indicates that an air pollution problem exists. If an air pollution problem is created by the operation of this unit, the Department of Environmental Protection will take enforcement action, if necessary.

When open burning is permitted under Section 213, Publication 408, the following must be complied with:

- Burning must be kept under control at all times for the duration of the burn.
- Burning is not to take place within 40 feet of remaining vegetation.

- The sites of fires shall be reconditioned as specified in Section 105.14, Publication 408.

The contractor is not to perform any of the above operations without prior written authorization from the Deputy Secretary for Highway Administration or authorized designee and, if applicable, the Federal Highway Administration.
Commitments that mitigate the impacts of eligible historic properties (also referred to as Cultural Resources) under Section 106 of the National Historic Preservation Act are legally binding when contained within agreement documents or spelled out within environmental documents. Examples of agreement documents include: Memoranda of Agreement, Programmatic Agreements, Letters of Agreement, Memoranda of Understanding, and Letters of Understanding. Examples of environmental documents include: Categorical Exclusions, Environmental Assessments, and Environmental Impact Statements. (e.g., CE, BRPA) which are also legally binding. It is very important that the District's Construction Project Manager carefully monitor any conditions that are placed on the construction activities and the fulfillment of commitments made to minimize or mitigate such effects in the project area.

For those projects requiring changes of contract commitments for this mitigation, the construction contractor is to coordinate with the District Environmental Manager to ensure compliance. This should also include a field visit to review and discuss the requirements and how they will be met in the field. The District Environmental Manager must notify the Bureau of Project Delivery Cultural Resources Professional (CRP) Archaeologist assigned to the District. Construction is to cease in the area specific to the potential changes. A work order may or may not be required.

In the event of "Unanticipated Discoveries," defined as previously unidentified archaeological resources or above-ground historic properties that were previously believed to be unaffected by the project but may now be affected due to changes in project design or implementation, the following notification procedure will be followed. Note: If there is a project-specific agreement document, stipulations in that document will supersede the following guidance.

1. Construction will cease immediately in the immediate area of the discovery to avoid disturbance. The District is to notify the Bureau of Project Delivery, Environmental Policy and Development Section (EPDS) and FHWA of the discovery. Notification of the Bureau of Project Delivery CRP Archaeologist assigned to the District constitutes notification of the Bureau of Project Delivery. Construction activities will continue in the subject areas after the District receives approval from the Bureau of Project Delivery CRP Archaeologist assigned to the District and FHWA.

2. The District is responsible for stabilizing and protecting the area of the discovery.

3. The District, in consultation with EPDS and FHWA, shall arrange to have the District’s CRP visit the site within 48 hours of the discovery to determine the nature of the archaeological resources.
4. The Pennsylvania Historical and Museum Commission (PHMC) and federally recognized Tribes/Nations that may attach religious or cultural significance to the discovery will be notified within 72 hours of the discovery by the Bureau of Project Delivery CRP Archaeologist assigned to the District. PHMC and federally recognized Tribes/Nations that may attach religious or cultural significance to the discovery shall be provided an opportunity to meet in the field with the FHWA, Office of Chief Counsel - Real Property Division, EPDS, and the District to assess the discovery and consult on the plan of action.

5. The CRP shall develop a plan of action based on consultation with the District, EPDS, PHMC, FHWA, and federally recognized Tribes/Nations that may attach religious or cultural significance to the discovery. When human remains or gravesites are involved, contact the Office of Chief Counsel, Real Property Division as soon as possible to determine if any court orders are necessary. The Real Property Division will assist in obtaining any required court orders.

6. Within 96 hours of the discovery, EPDS, through the CRP, shall provide the PHMC and federally recognized Tribes/Nations that may attach religious or cultural significance to the discovery with the plan of action for review and comment. FHWA may also notify the Advisory Council on Historic Preservation (ACHP) and request interim comments within 48 hours.

7. If the PHMC and federally recognized Tribes/Nations that may attach religious or cultural significance to the discovery decline to meet or do not comment on the plan within 48 hours of receipt, FHWA shall proceed with the implementation of the plan of action taking into consideration, to the extent feasible, the comments of the ACHP.

8. The Project is to prepare a work order to address time and cost for the effects of the "Unanticipated Discoveries."

Human Remains, Grave Monuments, and Grave-Related Materials/Artifacts

The policy of the Department is to treat all identified human remains, grave monuments, and grave-related materials/artifacts in a respectful and responsible manner that takes into consideration scientific data and cultural values. When feasible, human remains, grave monuments, and grave-related materials/artifacts shall be preserved in-place rather than excavated for study or reburial. State law (9 P.S. §8) prohibits new highway alignments through cemeteries or burial grounds.

Human remains, potential human remains, burial-related monuments, and other grave-related items may be discovered on a project during either design or construction. If a known cemetery or burial ground is in the immediate vicinity of the project area, it is the responsibility of the CRP and Environmental Manager to establish a Plan of Action that is sensitive and respectful to the human remains that are contained within. If monuments will be temporarily moved prior to
construction to prevent inadvertent damage, a Monument Conservation Plan would also be required (NPS Preservation Brief 48 should be used as a guideline [2016]). This plan would document the pre-construction location and condition of the monuments, provide recommendations on moving and re-setting, and document the post-construction condition. A copy of that Plan of Action must be reviewed by the construction inspector, Assistant Construction Engineer, and contractor prior to start of work, and a copy must be kept in the construction trailer until the completion of the project. It is recommended that the District CRP attend the pre-construction meeting.

The remainder of this guidance is for circumstances where human remains have not been anticipated within the project area.

1. If human remains or likely human remains, grave monuments, or grave-related materials/artifacts are discovered on a project site, work shall cease immediately and the vicinity of the discovery shall be secured both against the elements and against potential vandalism. The items should also be shielded from public view.

2. The contractor shall notify the construction inspector, who shall then contact the District Environmental Manager and/or the District-assigned CRP archaeologist with the following information:

   Name of project
   Name and contact information of construction inspector
   Date and time of the discovery
   Nature of the discovery, e.g., what was located
   Whether construction has been stopped and the site secured

3. If the human remains appear to be recent, the State Police shall be notified. Otherwise, the county coroner shall be notified. The list of current county coroners is available at: http://pacoroners.org/coroners_list.php.

   Note: the coroner will be the one responsible for “releasing” the remains if they will be moved. Otherwise, a court order would be needed.

As per PA Code and discussions with PA Office of Vital Records, a court order is necessary to disinter/reinter remains that will be “exposed to the air,” which would be the case for any burials old enough that the coffin disintegrated and/or if they cannot be disinterred/reinterred within 72 hours. A court order provides a blanket "disinter" permit, which is needed in situations where the total number of individuals is not known. Disinter/reinter permits are secured from the local registrar. Pennsylvania Code, Title 28 Chapter 1 Section 1.25.
4. The Environmental Manager and/or assigned CRP archaeologist shall notify the Project Manager, PennDOT’s Office of Chief Counsel, Real Property Division, (where appropriate), FHWA, the PA SHPO, and any Federally Recognized Tribes with an interest in the area. With specific regard to Federally Recognized Tribes, relevant tribes shall be notified unless the remains are known to be recent. The Environmental Manager is responsible for keeping a call list in the District Office, which is to be maintained by the CRP Archaeologist. A copy of the Discovery of Human Remains Checklist (attached) shall be provided to FHWA within 24 hours of discovery. Most funeral directors and some coroners have storage facilities where remains can be stored until reinternment.

5. If remains will be disinterred/reinterred, a qualified funeral director will need to be contacted. PennDOT should prepare a record of the removal indicating the date of removal and the site or place to which the removal was made. Copies of those records should go to the PHMC, local historical/genealogical societies, other interested parties, and the Office of Vital Records.

Discovery of Human Remains Checklist (to be provided to FHWA) – Page 5

Project Name and description:
______________________________________________________________________________
______________________________________________________________________________

Project status

Archaeology Preliminary Design ___

Archaeology Final Design/construction ___

Construction activities ___

Date and time of discovery

____________________

Name and title of individual making discovery

____________________

Contact information ____________________________________________

Discovery was: unexpected ___ expected ___ (if expected provide workplan)

Nature of discovery, i.e., what was found:
______________________________________________________________________________
______________________________________________________________________________

What is the setting of the discovery, e.g. historic home, industrial setting, farm/rural?

______________________________________________________________________________

□ Construction work has ceased in the immediate vicinity of the discovery

□ Work site has been secured

□ Pennsylvania State Police have been notified

Contact information ____________________________________________

□ Coroner has been notified

Contact information ____________________________________________

□ Environmental Manager has been notified

Contact information ____________________________________________
Discovery of Human Remains Checklist (to be provided to FHWA) – Page 6

☐ CRP Archaeologist has been notified
   Contact information ________________________________

☐ PA SHPO has been notified
   Contact information ________________________________

☐ Associated church or cemetery association has been notified (where applicable)
   Contact information (Name of Contact, Phone, e-mail)

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

☐ Federally Recognized Tribe(s) has been notified
   Contact information (Tribe, Name of Contact, Phone, e-mail)

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

☐ Is there a project-specific mitigation commitment related to burials?

Other information:
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Preparer (name) _________________________ Date __________
   Contact information ________________________________
HAZARDOUS WASTES

Hazardous Wastes are substances that, in sufficient quantities and concentrations, pose a threat to human life, human health or the environment when improperly stored, transported, treated or disposed.

A waste is characteristically a "Hazardous" waste if it exhibits any of the following properties:

**IGNITABLE** - A liquid (other than an aqueous solution containing less than 24 percent alcohol by volume) and has a flash point of less than 140°F determined by a Pensky-Martens Closed-Cup Tester or a Seta Flash Closed-Cup Tester,

A nonliquid capable of causing fire through friction, absorption of moisture or spontaneous chemical changes, and that burns vigorously and persistently when ignited.

Ignitable, compressed gas.

Oxidizer.

**CORROSIVE** - As a solution, shows a pH of 2 or less, or 12.5 or greater.

As a liquid, corrodes steel faster than 0.250 inch/year at 130°F.

**REACTIVE** - Normally unstable and readily undergoes violent change without detonating.

Reacts violently with water.

Forms potentially explosive mixtures with water.

When mixed with water, generates dangerous quantities of toxic gases, vapors or fumes.

Cyanide or sulfide that generates dangerous quantities of toxic gases, vapors or fumes when exposed to pH conditions between 2 and 12.5.

Capable of detonation or explosive reaction if subjected to strong initiating source or if heated under confinement.
Capable of detonation, explosive decomposition or reaction at normal temperatures and pressures.

Forbidden, Class A or Class B explosive.

**TOXIC** - Is determined to be characteristically toxic, per the Toxicity Characteristic Leaching Procedure Test.

Mixtures of hazardous and non-hazardous waste are also labeled hazardous. The hazardous waste designation does not include low-level radioactive waste, polychlorinated biphenyls or asbestos which are covered under separate state and federal rules.

When it is not promptly possible to determine if a suspect waste material will be a hazardous waste, the material shall be managed as a hazardous waste until the determination is made that indicates it is not a hazardous waste.

For site remediation that is required prior to roadway construction, a Waste Management Plan (WMP) shall be developed and included in the contract. The WMP will include specifications, plans and special provisions detailing the selected remedial action. Included within the WMP and special provisions may be detailed specifications for some or all of the following:

- Scope of Work
- Health and Safety Plan
- Site Work Plan
- Site Air Monitoring
- Sampling and Analytical Requirements
- Contaminated Material Handling
- Excavation and Storage of Contaminated Material
- Personnel Protection Requirements
- Site Control
- Employee Training

The Department also recognizes that at sites not suspected of being contaminated, as a result of previous investigative efforts, contaminated materials may be unexpectedly encountered. In such cases, the following procedures are intended to minimize worker and public exposure, limit the migration of contaminants, and allow for the mobilization of trained and qualified staff to the site. They should be utilized for sites where contamination is unexpectedly encountered or suspected:

- Upon recognition that contamination has been encountered or suspected, all activities in the area of the contamination are to cease in a safe and controlled manner.
- After ceasing operations and securing the area, the Inspector-In-Charge will immediately contact the District Environmental Manager who will make the
necessary notifications. Notifications shall include the Pennsylvania Department of Environmental Protection (PA DEP), local fire or emergency response teams or a qualified consultant engineer.

- Under no circumstance shall workers perform activities for which they have not been adequately trained. In such cases, the contractor shall secure the site until appropriate personnel can enter the site to complete the remediation efforts.

Site security is the responsibility of the Contractor. The security measures taken will be dependent upon such factors as: accessibility of the site to the public; the potential for endangerment of public health or safety; and site terrain. As a minimum, a physical deterrent against unauthorized site entry, such as barricade fencing and/or high visibility barricade tape, shall be supplied and erected by the Contractor around the entire site perimeter.

When a Consultant Remedial Construction Monitor is not on the project or until such time as one is acquired, documentation of the complete history of the remedial activities, including any required revisions to the established plans, must be maintained through daily field logs of the following criteria:

- That cleanup objectives are met.

- That health and safety of all employees involved in remedial activities is being maintained.

- That waste material removed from the site is being properly disposed of and documented.

Waste transported for off-site treatment, storage or disposal must be transported by a licensed transporter and accompanied by a manifest, and a United States Environmental Protection Agency (EPA) shipping form which is obtained from PA DEP or the state of destination. The manifest travels with the hazardous waste from the point of generation to the point of final disposal and is completed at each step of the journey. It identifies the type and amount of hazardous waste shipped, the generator, and the permitted facility that will receive the waste. It also contains all necessary information for proper handling of the waste during shipping. If the remediated hazardous material is not immediately removed from the site, the contractor must store it in an approved container(s), and the storage containers must be in a locked and secure location.

Additional details on hazardous waste management can be found in PennDOT Publication 611 Vol 1.
This page left intentionally blank.
When a hazardous waste is discovered on a construction site, an appropriately qualified consultant engineer is required to prepare the site assessment and clean-up plan. The consultant will oversee the actual clean-up operation and will complete necessary manifests. The Inspector-in-Charge is to sign the manifest on behalf of the District Executive for the Department. The Department is listed on the manifest as the "Generator". Any employee signing a hazardous waste manifest is required to be trained every three years in accordance with the Hazardous Materials Regulations 49 CFR 172.704 (c) (3). Publication 611, Vol 1 (Waste Management Guidance Manual for Project Delivery) has further information on hazardous waste manifests.

The Inspector-in-Charge is to oversee and ensure that the testing, clean-up, removal, and loading of the hazardous or residual waste is properly completed. The Inspector-in-Charge shall review the completed manifest and assure that the information entered therein is consistent with the following:

- Site assessment
- Clean-up plan prepared by the consultant engineer
- Laboratory test results
- EPA hazardous waste generator ID number
- Approvals and guidance provided by the consultant engineer or its inspectors
- Additional information provided by the contractor or its subcontractors
- Additional site-specific knowledge possessed by the Inspector-in-Charge.

See page B.4.15-6 for a copy of the Manifest Form, Environmental Protection Agency Form 8700-22.

If everything appears in order, the Inspector-in-Charge shall sign the manifest, place an asterisk after their signature and add the following:

"My certification is subject to the attached Additional Information Sheet."

If the Inspector-in-Charge has not received the aforementioned triennial hazardous waste training within the last three years, a Department representative with the required training must be found to sign the manifest.

The Inspector-in-Charge shall complete the attached form entitled "Additional Information," which is on page B.4.15-4. The manifest number must also be entered on the Lab Report. Seven copies of the Additional Information Sheet and the Lab Report shall be securely attached to the manifest.

NOTE: When disposing of bridge painting blast waste, use the Additional Information Sheet on page B.4.15-3.
If information is incorrect or the Inspector-in-Charge has questions, the District Environmental Manager shall be immediately notified and appropriate action taken to correct the problem before signing the manifest. If there is any reason to suspect wrongdoing, the manifest should not be signed and the District Environmental Manager is to be consulted for guidance.

**Closeout Checklist**

☐ A copy of the manifest and its attachments is retained by the Inspector-in-Charge in the project file.

☐ Each District shall establish a central file and filing system for the retention of all original manifests and related documents. *

☐ A copy of the manifest and related documents must be mailed to:
  - SEMP Section
  - Maintenance Technical Leadership Division
  - PA Department of Transportation
  - Bureau of Maintenance & Operations
  - 400 North Street - 6th Floor | Harrisburg PA 17120

*All documents pertaining to the hazardous waste, including the manifest and attachments, must be kept for a minimum of twenty years.*
ADDITIONAL INFORMATION SHEET

My certification on the Hazardous Waste Manifest on behalf of the Pennsylvania Department of Transportation is based upon lab test results, the site assessment and previous remediation records (if applicable) and upon information provided to me and to the Department of Transportation by the ________________, its subcontractors, Name of Construction Contractor

_____________________, and the ________________, Name of Consulting Engineer (if applicable) Name of Testing Laboratory

which I believe to be true and accurate.

A copy of the laboratory report and test results are attached. The manifest or form to which this Additional Information Sheet is attached was completed by 

_____________________. Name of Consultant Engineer of firm completing the manifest or form to which this Additional Information Sheet is attached

The waste is used blast waste from the preparation of the steel bridge superstructure for painting at the Pennsylvania Department of Transportation highway construction site. The material has been collected and stored at a temporary storage area for proper disposal.

______________________ for Manifest Number __________

Signature

______________________

Title

______________________

Date

April 2017 Edition
ADDITIONAL INFORMATION SHEET

My certification on behalf of the Pennsylvania Department of Transportation is based upon lab test results, the site assessment and previous remediation records (if applicable) and upon information provided to me and to the Department of Transportation by the ________________, its subcontractors,
Name of Construction Contractor

_________________________, and the ____________________________
Name of Consultant Engineer (if applicable) Name of Testing Laboratory

which I believe to be true and accurate.

A copy of the laboratory report and test results are attached. The manifest or form to which this Additional Information Sheet is attached was completed by

__________________________
Name of Consultant Engineer of firm completing the manifest or form to which this Additional Information Sheet is attached

The waste was discovered on a Pennsylvania Department of Transportation highway construction site and is being excavated for proper disposal. The Department of Transportation did not produce this waste, but acquired the property which contains the waste through eminent domain or in lieu thereof.

__________________________ for Manifest Number __________
Signature

__________________________
Title

__________________________
Date

April 2017 Edition
(EXAMPLE OF COMPLETED FORM)

*You May Photocopy This Form

ADDITIONAL INFORMATION SHEET

My certification on the Hazardous Waste Manifest on behalf of the Pennsylvania Department of Transportation is based upon lab test results, the site assessment and previous remediation records (if applicable) and upon information provided to me and to the Department of Transportation by the **John Doe and John Doe Construction Company**, its subcontractors, Name of Construction Contractor

**Jim Doe and Jim Doe Consultants, Inc.**, and the **Robert Doe Laboratory**

Name of Consultant Engineer (if applicable)  Name of Testing Laboratory

which I believe to be true and accurate.

A copy of the laboratory report and test results are attached. The manifest or form to which this Additional Information Sheet is attached was completed by

**Remington Doe Testing and Consultants, Inc.**

Name of Consultant Engineer of firm completing the manifest or form to which this Additional Information Sheet is attached

The waste is used blast waste from the preparation of the steel bridge superstructure for painting at the Pennsylvania Department of Transportation highway construction site. The material has been collected and stored at a temporary storage area for proper disposal.

________________________________________ for Manifest Number **MI 1562586**

Signature

**Assistant District Engineer, Engineering District 1-0**

Title

**February 28, 1991**

Date

April 2017 Edition
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<tbody>
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<td>Generator's Name and Mailing Address</td>
<td>Generator's Site Address (if different than mailing address)</td>
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<tr>
<td>Generator's Phone:</td>
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<td>Transporter 2 Company Name</td>
<td>U.S. EPA ID Number</td>
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<tr>
<td>Designated Facility Name and Site Address</td>
<td>U.S. EPA ID Number</td>
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<tr>
<td>Facility's Phone:</td>
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<tr>
<td>U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))</td>
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15. Specified Handling Instructions and Additional Information

16. Generator Certification
   I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and, if classified, packaged, marked, and labeled in accordance with the DOT regulations, good faith, and the applicable transportation regulations.

   I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.

   I certify that the waste minimization statement identified is in 40 CFR 262.3 (a) (i) a large quantity generator or (b) (ii) a small quantity generator).

   Date: [Signature] [Month] [Day] [Year]

17. Transporter Acknowledgment of Receipt of Materials
   Transporter 1 [Signature] [Month] [Day] [Year]
   Transporter 2 [Signature] [Month] [Day] [Year]

18. Alternate Facility (or Generator)
   Facility's Phone: [Signature] [Month] [Day] [Year]

19. Hazardous Waste Manifest Management Codes (e.g., codes for hazardous waste treatment, disposal, and recycling systems)
   1. [ ] 2. [ ] 3. [ ] 4. [ ]

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 10c.
   [Signature] [Month] [Day] [Year]

EPA Form 8700-22 (Rev. 12-17) Previous editions are obsolete.

DESIGNATED FACILITY TO EPA's e-MANIFEST SYSTEM
Underground Storage Tank (UST) sites are considered by the Department to represent a high potential for the presence of contaminated soil and groundwater. Contamination from USTs migrates away from the original source and often can extend beyond the UST site boundaries. For these reasons, UST sites deserve special attention relative to site evaluation procedures. In most cases, older UST sites may be considered contaminated until proven otherwise.

The only absolute way to determine whether USTs and associated piping have leaked is to excavate and remove the tanks and piping followed by confirmatory soil sampling and analysis.

The Department recognizes that there are instances where USTs may be encountered unexpectedly. The following procedures are to be followed where USTs are encountered or suspected during construction:

All activities are to cease within the affected area, and the area is to be made secure by an effective physical barrier, to prevent unaware employees or the public from wandering into the area. If an open excavation is present, fencing is required to prevent unauthorized employees or the public from trespassing or falling into the hole.

The Inspector-in-Charge is to immediately contact the District Environmental Manager who will make the necessary notifications, and follow-up, since UST trained personnel must evaluate the situation.

The initial removal of a UST or contaminated soil does not necessarily signify the end of site cleanup activities, due to the possibility that laboratory test results for confirmatory soil samples will exceed regulatory cleanup standards. Therefore, construction activities shall not resume until the Inspector-in-Charge has obtained approval to do so from the District Environmental Manager or their representative. Note: Please refer to PennDOT Publication 281, Waste Site Evaluation Procedures for the Highway Project Development Process, Section 4.9.2, Additional Guidance for UST Removals, for the appropriate confirmatory soil sampling protocol.

Currently, there are specific guidelines from the PA DEP for performing UST closures and subsequent investigations if a release has occurred. Further, there are guidelines for subsequent contaminated soil and groundwater cleanup operations. These guidelines provide a solid basis for the performance of actual site investigations to determine the presence or absence of contamination at an UST site under these procedures.

Underground storage tank remediation can involve dangerous conditions with the possibility of exposure to various toxic materials. Exposure routes include skin and respiratory pathways.
One of the major concerns in dealing with UST removals is the potential for combustible or flammable environments. Workers can be exposed to flammable and explosive materials and atmospheres, resulting in dangerous conditions if not handled properly. Only properly trained personnel are to be allowed to conduct such activities.

When dealing with flammable and combustible material, personnel must be aware of potential pathways of these materials. Depending on the location of a potential release, hazardous materials can migrate into underground facilities such as basements, utility conduits, sewers, wells, and other areas. The urgency of the hazard depends on several factors: how much liquid or vapor is involved; where it is found; how it is confined; sources of ignition; and the type of material.

General precautions include no smoking or other sources of ignition, including sparks from excavating equipment, allowed on-site during any UST activities. Although gasoline and refined petroleum products usually have a strong, distinctive odor, it cannot be assumed: if there is no odor, there is no contamination. Often, highly weathered petroleum presents no detectable odor.

When the potential danger for fire or explosion exists, all unnecessary personnel must be kept away from the site. Only properly trained, equipped personnel should be allowed on-site.

On-site personnel must display an informed, cooperative attitude and must be made aware of the potential dangers. Danger greatly increases when people are unfamiliar with the characteristics of flammable or explosive materials. A lack of cooperation can result in fatal mistakes. On-site operations must be conducted in the best possible manner protective of life and property.

Confined spaces represent a significant health and safety issue related to USTs. Special precautions must be implemented prior to any entry into a confined space, and such entry can only be conducted by properly trained personnel. Adequate monitoring of the confined space must be conducted prior to entry. Under no circumstances should untrained personnel be allowed in a confined space. Entry into a confined space with significant hydrocarbon vapors should only be conducted with a self-contained breathing apparatus.
Pavements containing asbestos should not be disturbed. Simply overlaying these layers without disturbing them is the best management option. However, if the material must be disturbed, the following management guidelines must be followed:

1. Before the start of work, an air emissions control plan and HASP must be developed by an appropriately trained and certified Health and Safety (H&S) professional, e.g. a Certified Safety Professional (CSP) or Certified Industrial Hygienist (CIH).

2. The PA DEP Regional Office must be notified at least 10 working days before the project begins. Notification must be made by submitting the standard Asbestos Abatement and Demolition/Renovation Notification Form (2700-FM-AQ0021) as required in 40 CFR Part 61 Subpart MS Section 145 (b). The notification must be accompanied by an air emission control plan, if 160 square feet or more of asbestos-containing pavement will be disturbed. There are additional notification and permit application requirements for asbestos projects in Allegheny County and the City of Philadelphia. Refer to Publication 611, Vol 1 for details.

3. All project personnel (Department, Consultants, and Contractors) must receive written notification that the bituminous concrete contains asbestos.

4. The road surface and all equipment used in the sawing, milling and/or removal process must be heavily watered. Dry operations are not permitted. The national emission standard for asbestos disturbance is to exhibit no visible emissions to the ambient (outside) air.

5. If the material qualifies as clean fill under the PA DEP Management of Fill Policy, then it may be placed on Department right-of-way and buried in an area where it will not be disturbed by future land use or construction activities. If the material must be transported away from the generation site for disposal, it is regulated as a residual waste and must be taken to an approved landfill by a licensed transporter. Each District must submit residual waste disposal notification forms to the PA DEP Regional Office. A list of all PA DEP Regional offices and phone numbers is on page B.4.17-3. Each PA DEP Regional Office has a list of approved landfills.

Initial monitoring of the removal operation must be performed in order to determine the airborne concentrations of asbestos to which workers are exposed. If there are visible emissions or if monitoring indicates that concentrations are above the Permissible Exposure Limit (PEL), STOP WORK. Consult with a certified Health and Safety professional to determine what measures must be taken to eliminate visible air emissions or to reduce worker exposure to within the PEL. The following control methods must be used in order to achieve compliance:
1. Use of asbestos vacuum cleaners, equipped with High Efficiency Particulate filter dust collection systems, to clean the roadway as milling and removal operations progress.

2. Prompt disposal of collected asbestos-containing wastes.

In areas where these control methods are insufficient to reduce worker exposure to or below the PEL, properly fitted HEPA-filter respiratory protection must be used. All respirators worn by workers must meet the appropriate NIOSH standard. For more complete information concerning regulations for worker safety when dealing with asbestos, please refer to 29 CFR Parts 1926, et al.

It is also required that in heavily developed areas, local residents and property owners be informed of the operation, and be advised to avoid exposure to dust generated by removal and milling processes. The certified H&S professional will determine whether additional air monitoring stations are warranted for the protection of nearby residents.

All records shall be maintained in accordance with PennDOT's Records Retention and Disposition Schedule, Item Nos. 812/812E.
## PA DEP FIELD OPERATIONS REGIONAL OFFICES

<table>
<thead>
<tr>
<th>Office</th>
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| **Southeast Office - (484) 250-5900**  
2 East Main Street  
Norristown, PA 19401 | Bucks, Chester, Delaware, Montgomery, and Philadelphia                                   |
| **Northeast Office - (717) 826-2511**  
2 Public Square  
Wilkes-Barre, PA 18701-1915 | Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Wayne and Wyoming |
| **South Central Office - (717) 705-4700**  
909 Elmerton Avenue  
Harrisburg, PA 17110-8200 | Adams, Bedford, Berks, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, and York |
| **North Central Office - (717) 327-3636**  
208 West Third Street, Suite 101  
Williamsport, PA 17701 | Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga, and Union |
| **Southwest Office - (412) 442-4000**  
400 Waterfront Drive  
Pittsburgh, PA 15222-4745 | Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington, and Westmoreland |
| **Northwest Office - (814) 332-6945**  
230 Chestnut Street  
Meadville, PA 16335-3481 | Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango, and Warren |
Section 9073 - Waste Management

A. Submittals (Section 9073)

1. Waste management submittals identified in Section 9073 must be submitted to the Department for review and acceptance prior to start of work. The submittal requirements are summarized in item 2 below.

2. The following submittals are required a minimum of 21 calendar days prior to the start of paint removal.

   a. Waste Handling Plan - addresses the overall handling and disposal of waste. Plan must include the following minimum information:

      1) Procedures for the handling and storage of all waste on site.
      2) Procedures for the packaging of all waste for transportation.
      3) Preparedness, Prevention, and Contingency Plan (PPCP) for the handling and clean up of spills, together with emergency telephone numbers and a 24-hour Contractor contact.
      4) Procedures for the collection of representative samples of waste for testing to determine if it is hazardous. If steel abrasives are used, the paint debris is classified as hazardous for lead even though it passes the TCLP test.
      5) The laboratory testing and analysis procedures that will be used.

   b. Notification of Resource Conservation and Recovery Act (RCRA) Subtitle C Activity – EPA/PA DEP requires Notification of RCRA Subtitle C Activity EPA Form 8700-12 (see Appendix A for form) be submitted and an EPA RCRA ID Number be obtained prior to generating, transporting, recycling, treating, storing or disposing of hazardous waste. Signature(s) are required from the Contractor’s responsible person(s). The Department’s responsible person(s) must sign the RCRA notification form prior to submission to PA DEP. The anticipated turnaround time is approximately 7 – 10 business days from PA DEP receipt.
To request an EPA RCRA ID Number, submit EPA Form 8700-12 to PA DEP at:

**Pennsylvania Department of Environmental Protection**

**Bureau of Waste Management**

**Division of Hazardous Waste Management**

P.O. Box 69170
Harrisburg, PA 17106-9170

Note: Signatures must be original. Stamped or photocopied signatures are not acceptable.

c. Transporter Information - information must be provided for the proposed transporters of all waste (hazardous, non-hazardous, residual, and waste water). Minimum information must include:

1) Name, address, and qualifications.

2) Type of waste being hauled by the transporter (i.e., hazardous, non-hazardous, residual, or waste water).

3) License or permit number. Note that for work in Allegheny County, solid waste transportation vehicles must be permitted per Article VIII.

d. Hazardous Waste Recycle/Disposal Information:

1) Verify that only licensed recycling or TSD facilities are used.

2) Name and address of recycler/disposer.

3) Original signed letter stating that the facility is legally authorized to accept the waste, has the capability to treat and dispose of the waste, and will assure that it is disposed properly.

4) Permit Number, and phone contact in the State Regulatory Agency where the Disposal Site is located.

e. Residual and Non-Hazardous Waste Disposal Information:

1) Name and address of permitted residual waste disposer.

2) Name and address of permitted non-hazardous waste disposer.

3) Permit Number, and phone contact in the State Regulatory Agency where the Disposal Site is located.
f. Waste Water Disposal Information:

1) Name and address of the disposer of waste water.

2) Original signed letter stating that the facility will accept the waste water, and has the capability to handle and properly dispose of it.

3) Permit Number, and phone contact in the State Regulatory Agency where the Disposal Site is located.

g. Laboratory Qualifications - Minimum information for the laboratory conducting the waste sampling and analysis:

1) Name, address, and contact telephone number.

2) Experience and qualifications.

3) PA DEP Laboratory Certification in accordance with the PA Laboratory Accreditation Act.

B. Department Requirements Prior to Project Start up (Section 9073)

1. Review all submittals.

2. Verify an EPA RCRA ID Number has been obtained prior to production of hazardous waste.

3. Approve all waste storage locations (assist Contractor in the selection of the storage sites, if needed).

4. Verify that waste is transported at the established frequency.

C. Department Requirements After Project Start up (Section 9073)

1. Observe the collection of waste samples for testing.

2. Advise the Contractor if the Department wants subsequent shipments of waste sampled and tested. Unless stipulated otherwise, the initial classification of the waste will be used for all shipments of the same waste stream.

3. Verify that the Department receives the original laboratory test report, and that the report is issued no later than 10 calendar days after the samples were collected.
4. Sign hazardous waste manifests prepared by the Contractor. [Note: Must have completed the HAZMAT General Awareness Manifest Training within the last 3 years, in order to sign manifests.] Steel abrasive/paint debris is classified as hazardous regardless of the TCLP results. Box 9b of the Uniform Hazardous Waste Manifest (EPA Form 8700-22) must be completed as “paint chips, hazardous” for paint debris generated through the use of steel abrasives.

5. Sign completed Waste Characterization Data Sheets prepared by the Contractor.

6. Prepare Additional Information Sheet (See page B.4.15-3) to accompany the TCLP test results.

7. Review bills of lading for non-hazardous waste.

8. Verify that waste is transported to waste treatment facility within 90 days of generation.

9. Verify receipt of Certification of Disposal for all shipments. If you do not receive a signed and dated copy of the manifest from the designated facility within 60 days from the date on which the initial transporter accepted the waste, you must submit an exception report to: PA DEP Manifest Section P.O. Box 8550 Harrisburg, PA 17105-8550 Tel. (717) 783-9183

Section 9075 - Containment

A. Submittals (Section 9075)

1. Containment submittals identified in Section 9075 must be submitted for Department review and acceptance prior to start of work. The submittal requirements are summarized in item 2 below.

2. The following submittals are required a minimum of 21 calendar days prior to the erection of the containment.

   a. Detailed drawings stamped by a Pennsylvania Professional Engineer.

   b. Data, calculations, and assumptions used for the design of the containment and ventilation system and the imposed loads on the existing structure.
c. The plan for staging, installing, moving, and removing the containment; and the methods of attachment that will be used. Attachment points are to be made to substantial framing members only.

d. Provisions for lowering or securing the containment in inclement weather, for movement out of navigation lanes, and the controls exercised to prevent excessive cable sagging during installation and paint removal operation to ensure the protection of traffic (e.g., use of temporary cradles).

e. Verify that the Contractor has identified the distance that the containment will extend below the bottom of the bridge when operation in a navigation channel, and unless otherwise directed by the Coast Guard, verify that the containment is designed to allow it to be moved out of the navigation channel within 24 hours of notification that ships needing additional clearance require passage.

f. Plans for maintaining the navigational lighting during the work.

g. Methods for routing run-off from existing deck drains through the containment enclosure.

h. Plans for the collection and removal of debris from the surface of water when working over streams, rivers, lakes, and other bodies of water.

B. Department Requirements Prior to Project Start up (Section 9075)

1. Review all submittals.

2. When working over water:

   a. Verify that the Contractor has the material and equipment for the cleaning of spills of abrasive or paint debris that might occur.

   b. When working over a navigational channel:

      1) Verify that the Contractor has advised the Coast Guard of the distance that the containment will extend below the bottom of the bridge.

      2) Verify that the Contractor has obtained advance approval from the Coast Guard any time that the work necessitates partial or total restrictions to the movement of vessels beneath the bridge. Requests to the Coast Guard must be issued at least 30 days prior to the need to commence such activities.
3) Verify that the Contractor has provided the Coast Guard with a 24-hour telephone number and contacts for the discussions regarding the containment system.

3. Verify that the Contractor has provided the Engineer with a 24-hour telephone number and contacts for the discussions regarding the containment system.

4. Verify that the Contractor submits certification of installation signed by a Pennsylvania Professional Engineer before work begins inside of the containment.

C. Department Requirements After Project Start up (Section 9075)

1. Verify that a minimum of 108 lux (10 footcandles) is maintained for visibility during surface preparation and painting, and that a minimum of 323 lux (30 footcandles) is maintained for inspection. Require additional lighting if the workers or inspectors have difficulty seeing.

2. Verify that bridge deck drains are not closed without explicit approval by the Department.

3. Verify that loose dust and debris have been removed from containment materials and equipment prior to relocation.

4. Verify that the Contractor’s materials and equipment are thoroughly cleaned of loose dust and debris prior to removal from the project site. If adequate cleaning is not possible, verify that the materials are disposed of properly.

Section 9077 - Worker Protection

A. Submittals (Section 9077)

1. Worker Protection submittals must be submitted to the department for review and acceptance as identified in 9077.1(d) prior to start of work. The submittal requirements are summarized in item 2 below.

2. The following submittals are required a minimum of 21 calendar days prior to worker exposure to toxic metals.

   a. Lead Health and Safety Compliance Program addressing protection from lead (per 29 CFR 1926.62) and other toxic metals in the paint. A checklist is to be included in the program that will be followed by the competent person for site inspections.

   b. Name, experience, and qualifications of the Certified Industrial Hygienist (CIH) and competent person who will be involved in the project.
c. Name, address, and qualifications of the launderer, if one will be used, including a letter from the laundry indicating that it is permitted to handle clothing contaminated with lead and other toxic metals, as appropriate.

d. Name, address, and qualifications of the laboratory and/or firm that will be used for worker and area exposure monitoring. Note that the laboratory must be American Industrial Hygiene Association (AIHA) accredited for metals analysis and/or have successfully participated for the previous 12 months at a minimum in the AIHA Environmental Lead Proficiency Analytical Testing Program (ELPAT).

e. Acknowledgment that protective clothing and equipment, hygiene facilities, and training will be provided for two Department Representatives at each site for each shift. Also, assure fit tests for two Department Representatives at each site for each shift.

B. Department Requirements Prior to Project Start up (Section 9077)

1. Review all submittals.

2. Verify that the Department Representatives who will be wearing respirators have had the necessary medical evaluations to confirm that they are medically fit to wear the respirators.

3. Verify that all Department employees who will be exposed to lead or other toxic metals on the project have received the necessary training (e.g., per 29 CFR 1926.62 in the case of lead). The Contractor is required to provide this training for the Department Representatives.

C. Department Requirements After Project Start up (Section 9077)

1. Regulated areas will initially be established a minimum of 15 feet away from equipment and operations that are likely to generate airborne emissions of toxic metals until monitoring can be undertaken to confirm that it is properly positioned. Notify the Contractor if this initial boundary location is unacceptable (e.g., because it interferes with other operations).

2. After the initial monitoring of the regulated area is completed, additional monitoring is not required unless suspect visible emissions are observed, there are changes in the work practices or equipment being used, or if directed by the Department. For example, require additional monitoring if the controls that were in place at the time of the initial monitoring appear to have become lax.
3. Verify that the Contractor monitors the exposures of Department Representatives on the project, and that all exposure results (e.g. worker exposures – blood sampling and analysis) are provided to the Department within 5 days after receipt from the laboratory.

4. Verify that the Contractor provides the Department with a letter report signed by a CIH that summarizes the results of employee examinations that are indicative of exposures to lead or other toxic metals, including any medical removal provisions. Reports with an original signature are due to the Department within 10 calendar days after issuing the test results to the employees.

5. Verify program is updated every 6 months.

6. Verify daily inspections.

7. Verify monitoring results are received. All personal Health and Safety records are confidential and must be maintained in the individual employee’s personnel file.

Section 9079 - Environmental Protection

A. Submittals (Section 9079)

1. Environmental Protection submittals must be submitted to the Department for review and acceptance identified in 9079.1(d) prior to the start of work. The submittal requirements are summarized in item 2 below.

2. The following submittals are required a minimum of 21 calendar days prior to disturbing paints containing toxic metals.

   a. Environmental Compliance Plan - Written program for monitoring activities, including provisions for complying with the monitoring results. The plan must include:

      1) Program for the inspection and assessment of visible emissions and releases. Program must include the methods and frequency of observations and inspections (including compliance with local visible emissions regulations as applicable), areas and operations that will be inspected, and the names and qualifications of the observers. Program must identify and address any sensitive receptors in the project area.

      2) Program for final project clean up and clearance/cleanliness inspections, including a statement that all visible debris will be removed from the ground, water, and sediment as directed by the Department.
3) Agreement to comply with the results of the monitoring. Program should include statements that the appropriate corrective action to the containment or work practices will be taken if the emissions criteria are found to be violated. Includes Contractor monitoring.

b. Environmental Monitoring Programs - Provide a monitoring plan to the Department for review and acceptance a minimum of 21 calendar days prior to the disturbance of paints containing toxic metals. The plan must address the following as applicable to the project:

1) High Volume Ambient Air Monitoring - A written program addressing all aspects of monitoring including site selection, calibration, equipment operating, laboratory analysis, calculations, and reporting of results.

2) Water/Sediment Evaluations - A written program for pre and post project visual evaluations of the water and sediment.

B. Department Requirements Prior to Project Start up (Section 9079)

1. Review all submittals.

2. In Allegheny County, coordinate the abrasive blasting permit requirements with the Solid Waste Section of the Allegheny County Health Department.

C. Department Requirements After Project Start up (Section 9079)

1. Advise the Contractor of the type and amount of testing and monitoring that will be required. Review all test results. Ensure a copy of the test results are sent directly to the Department from the testing agency.

2. Verify that the Contractor makes changes to the containment or work practices in the event that the monitoring, observations, or analysis show that violations of emissions criteria are occurring.

3. Verify that the Contractor provides the Department with a written report each time work is halted due to unacceptable visible emissions or releases of material. The report is required within 48 hours of the occurrence and must include descriptions of the clean up activities and the corrective action taken to avoid a reoccurrence.

4. Establish the frequency for removing dust or debris from surrounding property and surfaces (if required more frequently than once each day).
5. Conduct a final inspection of the project site after all clean up activities are completed. If the final inspection is unacceptable, advise the Contractor of the extent of soil, water, and/or sediment cleanup required.

6. Verify that the Contractor provides a final letter report that presents the results of the inspections conducted to verify final project cleanliness including surrounding property, waterways, equipment, buildings, and structures. The report must also include a summary of problems or releases that occurred during the project and the clean up and corrective action taken to resolve the problem.

7. Verify that the Contractor has notified the Department any time that the release of a reportable quantity of hazardous substances has occurred. The specification identifies other agencies that must also be notified in addition to the Department.
A. Submittals

1. The Contractor is required to submit a written Project Safety Program, as specified in Publication 408 Section 107.08, for review at the preconstruction conference.

2. The program submittals must include the following, as applicable:
   a. Written permit-required confined space program as per 29 CFR 1910.146 including procedures for conducting air monitor calibrations as required by the equipment manufacturer’s instructions and a written permit-required confined space permit.
   b. Provide air monitoring equipment calibration documentation for spaces that have actual or potential atmospheric hazards.
   c. Written verification of rescue services availability and qualifications for permit-required confined spaces.
   d. Written verification of annual training for internal/contractor employed rescue team, if these services are provided by the contractor for permit-required confined space rescue, including a list of employees that attended the training and the date they attended.
   e. Procedure for assuring compliance by subcontractors and suppliers working within the project’s limit of work.

B. Department Requirements Prior to Project Start up

1. Review all submittals.

2. Provide comments to Contractors on contents of the submittals, when necessary.

C. Department Requirements After Project Start up (Requirements of the Contractor from 29 CFR 1910.146).

1. Prior to entry into any space that could be considered a confined space, Department Representatives should verify the following items:
   a. The Contractor must review/inspect the space to determine if it is a confined space, and if so, if it is a permit-required confined space. Use the Confined Space Determination Flow Chart (B/4/19-4) as a guideline to help determine if the Contractor is following 29 CFR 1910.146.

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b. If Department Representatives will be entering a permit-required confined space, the Contractor must review their written permit-required confined space program with those Department Representatives.

c. If the space has been evaluated using an air monitor, the results of the air monitoring are to be made available to Department Representatives.

d. If the space has been evaluated using an air monitor, the date of the last calibration of the equipment, including field verification, or “bump test” of the equipment is to be made available to Department Representatives.

e. If the space is a permit-required confined space, the Contractor must take all appropriate steps to reduce or eliminate the hazards of the space prior to entering the space.

f. If the space is a permit-required confined space, the Contractor must complete a written entry permit, and the completed entry permit must be posted at the entrance to the space.

g. If the space is a permit-required confined space, the Contractor must pre-arrange for rescue services to be available within 4 minutes of the space. Trained Contractor employees may serve as the rescue team.

h. If the Contractor will use their employees as a permit-required confined space rescue team, the Contractor must provide training to this team annually. The Contractor must provide a list of employees that attended the training and the date they attended.

i. Prior to entering a permit-required confined space, the Contractor must review the completed entry permit with Department Representatives that will enter the space. The conditions of the entry permit (ventilation, personal protective equipment requirements, communication, etc.) must be met prior to entering the space.

j. If any conditions of a permit-required confined space change during an entry, Department Representatives shall immediately exit the space. The space must be re-evaluated by the Contractor and if the changes are not covered by the initial entry permit, a new entry permit must be completed and issued prior to reentry.

D. Contractor Non-Conformances

1. If a non-conformance related to confined space entry is noted, or Department Representatives do not feel the Contractors program or on-site actions have appropriately addressed confined space hazards, Department Representatives are not to enter the confined spaces in question until directed by their supervisor/management.

2. If a non-conformance is noted, Department Representatives shall immediately notify the Department’s Project Supervisor.
3. The Department’s Project Supervisor can either address the non-conformance or elevate the concern. The chain-of-command for elevating concerns is:

   a. Department Project Supervisor
   b. Department Project Manager
   c. Department Assistant Construction Engineer/Manager
   d. Department District Safety Coordinator

   NOTE: If a non-conformance can’t be appropriately addressed, using the chain-of-command above, the Assistant Construction Engineer/Manager shall contact the Contractor’s home office and inform them that OSHA will be contacted and asked to conduct an inspection. Document all non-conformances and resolutions in the Project Site Activity (PSA), as appropriate.
CONFINED SPACE DETERMINATION

A space is identified

Is the space large enough to enter?

No

Is the space designed for continuous human occupancy?

Yes

The space is a Confining Space

No

Does the space have limited means of entry and exits?

Yes

The space is not a Confined Space

No

Does the space have an actual or potential for hazardous atmosphere?

Yes

The space is a Permit-Required Confined Space

No

Is there a potential for engulfment?

Yes

No

Is the internal configuration such that an entrant could become trapped?

Yes

No

Are there any other recognizable hazards?

Yes

No

The space is a Non-Permit Required Confined Space

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Underground utilities are to be located and marked out by the facility owner prior to construction on every project. Underground utilities that are struck or damaged during construction activities on a Department project are to be reported by the contractor, as the Excavator, and by the Department, as the Project Owner, as required by Pennsylvania’s Underground Utility Line Protection Law Act 50 (P.L.852, No. 287 amended Oct. 30, 2017).

The contractor is required to report immediately to the facility owner any break or leak on its lines, or any dent, gouge, groove or other damage to such lines or to their coating or cathodic protection, made or discovered during construction.

The Department is required to submit an Alleged Violation Report (AVR) to the PA Public Utility Commission through the One Call System, www.pa1call.org, within ten (10) business days after a utility line is struck or damaged on a Department construction project. The One Call System website requires the establishment of an account in order to submit an AVR. The AVR is in a digital format with fields to be filled out completely and submitted online at the link listed above.

Each District is required to establish a policy to specify the following:
- personnel that needs a One Call System account;
- personnel to be notified when a utility is struck or damaged on a Department project or local/municipal project with Department oversight; and
- personnel responsible for submitting an AVR to ensure compliance with the law.

Information to be included on the AVR:
- County
- Municipality
- Ward (Pittsburgh, Philadelphia, Erie, Allentown only)
- Site address
- Nearest intersection
- PennDOT permit number
- Latitude/longitude
- Type of work
- Depth, method and extent of excavation
- Proposed start of work
- Contractor name/address
- Construction site photographs

Utilities that are struck or damaged and are established as being unknown will be addressed

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in the summary section of the AVR. Photographs of the site are recommended to be included with the AVR and can be uploaded as attachments. An example AVR is available to be viewed on the website and can be accessed using the link provided above.
All materials incorporated into the work on a project must be accepted by one of the following methods:

- **Certification** - Be a material listed in Bulletins 14 or 15, or be a material produced at a producer listed in Bulletins 41 or 42. Materials from Bulletin listed manufacturers or producers can be accepted on certification unless otherwise specified. Section 106.03(b)3, Publication 408, requires the manufacturer or producer of the material to certify on Form CS-4171 that the material meets or exceeds the specification requirements. Certain Bulletin materials require the submission of supplemental Form CS-4171 certifications in addition to the Form CS-4171. Supplemental Form CS-4171C is required for Epoxy Coated and Galvanized reinforcement steel. Certain Bulletin materials require an alternate certification Form CS-4171 as specified in the particular material specification. Submission of alternate Form CS-4171B is required for daily bituminous mixture certification. Certain non-Bulletin materials, that by specification can be locally approved, require an alternate Form CS-4171LA to be submitted.

- **On-Site Inspection** at the point of production of the manufacturer or producer by Department representatives.

- Some materials are specifically specified to be accepted by acceptance sampling and testing. Acceptance sampling and testing is usually sampled at the point of placement, and tested on the project, in the vicinity of the project, at a material Producer’s laboratory, or at the Laboratory Testing Section (LTS).

- Materials not listed in Bulletins 14 or 15, or materials not produced from producers listed in Bulletins 41 and 42, are not to be shipped to the project or incorporated into the work until approved by the Representative, according to Publication 408, Section 106.02(a)2.

- **Construction-Aid Materials**, as defined in Section 106.02(a)2.a, do not require Department approval for delivery and use on a project, do not need to be listed on Form CS-200 or CS-201, and do not need to be certified using Form CS-4171.

Materials delivered to the project suspected of non-compliance with the specification requirements should be sampled and sent to LTS for testing to determine if the quality of the materials meets the specifications.

Department Representatives are required to monitor and maintain ‘custody’ of any material samples, collected on behalf of the Department, from point of sampling through delivery.

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Regardless of the acceptance criteria, three levels of responsibility for the Control of Materials exist: 1) Quality Control, 2) Acceptance Sampling and Testing, and 3) Quality Assurance Monitoring, Sampling and Testing.

**Quality Control (QC):**

Contractors, suppliers and manufacturers are responsible for the quality control of materials. They are to perform necessary QC sampling and testing in order to determine that the material control and construction meet the specification requirements.

**Acceptance Sampling and Testing:**

The Department or its representative is responsible to perform the required acceptance sampling and testing in accordance with Section B.6.5 to determine the acceptability of the materials being incorporated into the work.

**Quality Assurance Monitoring:**

The Department also has the responsibility to perform the necessary Quality Assurance Reviews of the construction activities and to sample materials on a random basis to provide an independent assessment of both the QC and the acceptance sampling and testing programs to determine if materials and construction operations meet the specification requirements.

Each of these acceptance criteria will be discussed in more detail in either this Section B.6, Materials Control on Projects, or in Section B.7, Materials Control Off-Project.
I. Project Documentation

A. Computer-generated checklist (page B.6.2-3) for all items, which indicates the method of field acceptance.

- This list is to be signed and dated on the last page (page B.6.2-4) by the Inspector-in-Charge when all items are verified and all material certifications are received.

B. A Material Deviation and Disposition Form (page B.6.2-5) will be maintained and upon completion of the project turned into the District Materials Engineer/Manager.

C. A Project Materials Form for each material item of the computer-generated checklist, except for construction aggregates, which will have a Project Materials Form for each aggregate size (e.g., AASHTO No. or PennDOT No.) on the project. A computer-generated Project Materials Form requiring the same information as page B.6.2-6 may be used.

- Each day material is received, the required information will be entered onto the appropriate Project Material Form.

II. Responsibility

A. Project Engineer

- Initial each Project Material Form for acceptance prior to paying estimate. Verify certifications are on file for all material quantities being paid on the estimate.

B. District Documentation Unit

- Review project records for accuracy of record and certification requirements at least once on small projects and once every six months on large scale projects.

  - Project Materials Acceptance Review report (page B.6.2-7) is to be completed only when deviations are noted, signed by designated personnel, and entered into the project records.
C. Assistant Construction Engineer/Assistant Construction Manager

- Review material documentation on a monthly basis by making random item reviews.
  - Project Materials Acceptance Review report (page B.6.2-7) is to be completed only when deviations are noted, signed by designated personnel, and entered into the project records.

D. District Materials Unit

- Review material documentation for compliance of certifications and acceptance testing at least once during the on-going construction and perform a complete review of records prior to signing Form TR-4238A. This should be done prior to the Final Inspection.
  - Project Materials Acceptance Review report (page B.6.2-7) is to be completed only when deviations are noted, signed by designated personnel, and entered into the project records.

III. Action Points

A. Missing or incomplete material certification Form CS-4171.

- The Contractors will be given a maximum of two weeks from the receipt of notification to obtain any missing certifications.

B. Federal-aid participation will be suspended in the material and work item when material is incorporated into the work without certification.

C. If several instances occur on the same project, the work quality can be declared "unsatisfactory" by FHWA and all project progress payments will be suspended.
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*Item that is not in the Item Catalog. Determine requirements offline. Record material deviations on attached form.*

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I hereby certify that all items have been verified and all material certifications have been received.

_________________________ Date ____________

Inspector-in-Charge
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## Project Materials Form

**Item Number:** 0203 - 0001  **Fund:** 01  **Cost Function:** 2629
**CLASS 1 EXCAVATION**

**Price/Unit:** $25.00  **CY**
**Original Qty:** 620.00  **Final Qty:**

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**ECMS #:** 81607  **SR:** 2983 (A01)

Page: 1

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# Project Materials Acceptance Review

**Contract:** 083054  
**FED. Project:**  
**Route:** SR 0016 (002)

**Review Date:**  
**Reviewed By:**  
**Acceptance Deviations:**  
**Date Corrected:**  

**Comments:**

**Project Inspector:**  
**Date:**  
**Materials Engineer:**  
**Date:**  
**A.D.E. Construction:**  
**Date:**

---

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Construction Material Certification

Bulletin materials must be certified to be from a Bulletin source and to be in compliance with the material specification requirements, using Form CS-4171, Certificate of Compliance. Bulletin materials are defined in Publication 408, Section 106.02(a)1.

As indicated in POM Sections B.6.1 and B.6.2, the contractor is required to obtain properly completed certifications for all Bulletin materials delivered to a project.

Acceptance of the manufacturer's certification is not a substitute for Verification or Assurance Sampling. In addition, the Department reserves the right to inspect and test any material. All certified material should be examined carefully at the delivery point to validate the certifications and to check the material quality with the specifications.

If the material appears questionable, sampling and testing by LTS is recommended (even if it has the appropriate Form CS-4171)

Alternate or Supplemental Certification

All material listed in Bulletin 15 will be accepted solely by certification Form CS-4171, except for specific types and classes of material. These exceptions include structural steel, aluminum, or precast/prestressed concrete products produced in a Bulletin 15 approved facility with an on-site state inspector or a state representative. The inspector or representative will stamp acceptable fabricated materials that are furnished with the Form CS-4171 prepared by the fabricator, prior to shipment to the project.

Sections 701 and 702, Publication 408 material must be certified by the bill of lading method (all product quality is verified by the Laboratory Testing Section (LTS) testing).

Daily bituminous mixtures must be certified using Form CS-4171B.

Locally approved non-Bulletin materials may be certified by submission of Form CS-4171LA.

Fabricators of epoxy coated or galvanized reinforcement steel must supplement Form CS-4171 with Form CS-4171F (Fabrication Facility). Epoxy coaters and galvanizers of reinforcement steel must supplement Form CS-4171 with Form CS-4171C (Epoxy Coating or Galvanizing Facility). Forms CS-4171C and CS-4171F provide traceability for the materials used in the manufacturing of epoxy coated and galvanized reinforcement.

The manufacturers, fabricators, precasters, and producers of products containing foreign steel must supplement Form CS-4171 with Form CS-4171S to certify the foreign steel content in its products.
and to determine compliance with the PA Steel Products Procurement Act and FHWA Buy America. Receipts showing the cost of the domestic and foreign steel must be submitted with the Form CS-4171S.

**Form CS-4171 Completion**

Form CS-4171 is completed by the manufacturer, fabricator, or producer of Bulletin material provided to the project or to a distributor/supplier. When material is provided to a distributor/supplier, the distributor/supplier completes a new Form CS-4171 for the material shipped to the project.

The Originator of the Form CS-4171 always maintains the original form and provides a copy of Form CS-4171 for each direct shipment of material.

The following items must be filled in on form CS-4171:

1. Job Description (To be completed by the party that ships the material to the project, otherwise leave blank)
   a. County
   b. State Route (Legal Route) and Section (Segment)
   c. ECMS# (Contract Number)
2. Manufacturer, Fabricator, Coater, Precaster, or Producer's name and Supplier Code listed in Bulletin 14, 15, 41 or 42.
3. Publication 408 Section, AASHTO, ASTM, Federal, or other designation applicable to the material
4. Shipping destination (Manufacturer, Fabricator, Coater, Precaster, Producer, Supplier, Distributor, or Contractor)
5. Material Identity
   a. Lot Number
   b. Quantity shipped (include units, e.g. feet, lbs., etc....)
   c. Material description as it appears in Bulletin 14 or Bulletin 15
6. Appropriate boxes checked for iron or steel products
7. Appropriate box checked for vendor classification
8. Vendor Identification
   a. Name of Vendor representative
   b. Representative's title
   c. Company Name
   d. Representative’s signature
   e. Date signed
9. Vendor's source (when vendor classification box #2 is checked. See instructions)

For any materials listed in Bulletin 15 produced from ‘unidentifiable’ steel as defined in Section 106.01 of Publication 408, the Bulletin 15 supplier must provide certified mill test reports or other acceptable certification from the steel producer (in addition to Form CS-4171) that positively identifies that the steel product was "melted and manufactured in the United States". 

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For any materials that are not listed in Bulletin 15 and which contain either ‘identifiable’ or ‘unidentifiable’ steel as defined in Section 106.01, the contractor must furnish documentation including invoices, bills of lading, mill test reports or other acceptable certification from the supplier that positively identifies that the steel product was "melted and manufactured in the United States". To facilitate certification documentation reviews by field staff and to improve traceability, suppliers may provide additional handwritten markups on the documentation. For example, if a guidewire manufacturer’s bill of lading lists its ‘lot number’ for steel, this lot number may be marked on the appropriate mill certification document.

**Form CS-4171 Submission for Project Shipments**

A properly completed and signed copy of Form CS-4171 must be received for each project shipment of material.

Certification should be distributed as follows:

1. Original copy retained by the originating company
2. One copy sent with the shipment to the next destination (i.e. either to the project, to the next manufacturer, or to a distributor/supplier).
3. If a manufacturer or fabricator adds to, modifies or changes a product, it must complete a new CS-4171 certifying the work performed. A copy of the new Form CS-4171 must be forwarded to the next manufacturer, to the distributor/supplier, or to the project. If items contain steel, copies of the appropriate CS-4171 forms and mill certifications, when required, from all different primary steel manufacturers must be forwarded as well.
4. If a distributor/supplier ships the material to the project, it must complete a new CS-4171 certifying that the material being supplied is the same as that provided to them by the manufacturer. The name of the manufacturer and the quantity of material provided to the project must be listed on the CS-4171.

The contractor may divert material from one project to another or from contractor stock, provided the material is the same as produced under the original certification and the appropriate certification documentation is provided. This is the only instance in which an original certification is required at the project along with a newly completed certification for the amount of material diverted or shipped from the contractor. (Examples #4 and #5)

Form CS-4171 is to be sent with each shipment of material(s) to the job site or submitted electronically to the project. Copies of original mill certifications or other documentation, when required and as described above, must be attached to the CS-4171 submitted to the Department. Electronic submission requirements for material certification documentation [e.g. where to submit – PennDOT Project Collaboration Center (PPCC), resource account, etc....] should be established at the Pre-Construction Conference.

Manufacturers or suppliers are permitted to submit a computer-generated certification document identical to the current CS-4171 (i.e. the same information in the same format as the
current CS-4171) ONLY if the document is approved by the BOPD, Construction and Materials Division, New Products and Innovations Section. Manufacturers and suppliers who have been approved by NPI to submit a computer-generated CS-4171 certification document will be designated as such in Bulletin 15.

CS-4171 Record Retention

Manufacturers, fabricators, coaters, precasters, or producers providing materials to the project will retain copies of Form CS-4171, as well as supplemental and alternate certifications as defined on page B.6.3-1 and in Publication 408, Section 106.03(b)3.c, and all other certifications for components, sub-assemblies, or subcomponents that have been incorporated into the finished product, for a period of not less than three (3) years from the date of shipment to a Department project or from the date of shipment to a distributor supplying Department projects. These files must be available for inspection by a Department representative. Failure to have proper certifications on hand at time of inspection will be grounds for removal from Bulletin 15.

Improper or Missing Material Certification

Material is not to be incorporated into the work or paid on estimates without proper certification to verify material specification compliance.

Material listed in Bulletin 15 that is delivered to the project without the appropriate certification and documentation should be returned to the vendor or stocked in an isolated area. Do not use this material until certification is received or until Project-Specific LTS approval, per Publication 408 Section 106.02(a)2.b, is obtained. If circumstances require incorporation of the material (e.g. guiderrail installation), no payment is to be made until proper certification is received or Project-Specific LTS approval is obtained. Non-payment, however, cannot be used to circumvent Buy America requirements. Incorporation of any material failing to comply with Buy America requirements is not allowed on any Federal-Aid project without the prior approval of FHWA.

Material Certification Examples

The following examples are included to assist project personnel in reviewing CS-4171 forms to determine if the submitted forms meet the documentation requirements. Form CS-4171 is included (with instructions for completion) in the Appendix.

Example 1:

This example shows how a manufacturer of precast products, who is listed in Bulletin 15, certifies material shipped directly to a Department project.

The manufacturer (precaster) initiates one (1) Form CS-4171 that covers the quality and quantity of the item(s) and sends a copy along with the shipment to the job site. The original CS-4171 is maintained on file at the manufacturer's facility as per Publication 408, Section 106.03(b)3. For products containing steel, copies of the original mill certifications or the CS-4171 forms from the
steel manufacturer must be maintained in the same file with the original CS-4171 at the manufacturer’s facility.

The contractor retains all certifications of quality and quantity that it receives from the manufacturer/supplier and maintains these certifications on file as per Publication 408, Section 106.03(b)3. The contractor submits a copy of the CS-4171 to the Department Representative for each material shipment delivered to the jobsite.

See example certification #1 attached.

**Example 2:**

_This example shows how a supplier, who is not listed in Bulletin 15, ships materials produced by a manufacturer, who is listed in Bulletin 15, to a Department project._

The general supply house sends one (1) CS-4171 to the job site. This CS-4171 would cover the quality and quantity of all components and items supplied. The original CS-4171 is kept on file at the general supply house’s main facility. The supplier is to maintain the original copy of the CS-4171 along with copies of all prior certifications. For products containing ‘unidentified’ steel (as defined in Section 106.01), steel other than fabricated structural steel, or precast/prestressed products receiving in-plant inspection, copies of the original mill certifications indicating the steel products were melted and manufactured in the United States are required to be furnished along with Form CS-4171 and maintained in the same file with the original CS-4171 at the supplier’s facility as per Publication 408, Section 106.03(b)3.

The contractor retains all certifications of quality and quantity that it receives from the manufacturer/supplier and maintains these certifications on file as per Publication 408, Section 106.03(b)3. The contractor submits a copy of the CS-4171 to the Department Representative for each material shipment delivered to the jobsite.

See example certification #2 attached.

**Example 3, Example 3.1 and Example 3.2:**

_These examples show how reinforcement steel (black, epoxy coated or galvanized) is certified by the fabricator who ships the fabricated reinforcement steel to a Department project._

The fabricator would retain copies of all certifications of quality and quantity that it receives from the epoxy coater or galvanizer (CS-4171 and CS-4171C, when applicable). These certifications would be kept on file as per Publication 408, Section 106.03(b)3 and Section 709.5. If the reinforcement is not identifiable, as defined in Section 106.01, copies of the original mill certifications indicating the steel products were melted and manufactured in the United States are required to be furnished along with Form CS-4171.
For Black Steel Reinforcement:

The fabricator initiates a new CS-4171 to accompany the shipment to the contractor, along with certified mill test reports, if required. On the CS-4171, line 5 must contain the grade of steel and size of the reinforcement, the length or type of reinforcement, the number of pieces (quantity), and the name and heat number from the original mill certification. This CS-4171 from the fabricator would cover the quality and quantity of all components and items supplied and would also include fabrication, cutting and bending. The original will be maintained in a file at the fabricator's location. For reinforcement that is unidentifiable, as defined in Section 106.01, copies of the original mill certifications and the CS-4171 forms from the steel manufacturer must also be maintained in the same file with the original CS-4171 at the fabricator’s facility as per Publication 408, Section 106.03(b)3.

The contractor retains all certifications of quality and quantity that it receives from the fabricator and maintains these certifications on file as per Publication 408, Section 106.03(b)3. The contractor submits a copy of the CS-4171 and certified mill test reports, if the material is unidentifiable to the Department Representative for each material shipment delivered to the jobsite.

See example certification #3 attached.

For Epoxy Coated Reinforcement:

The fabricator initiates a new CS-4171, certified mill test reports (for unidentifiable steel), and CS-4171F to accompany the shipment to the contractor. On the CS-4171, line 5 may refer to the CS-4171F. The CS-4171F must contain the fabricator’s name and location, the fabricator's Bulletin 15 supplier code, the reinforcement steel specification and steel grade, a Structure Number when applicable, the fabricator’s Bill of Lading number and Bill of Lading date, the designated size of the reinforcement steel, the reinforcement steel Bulletin 15 supplier code, heat number from mill certification, the epoxy coater’s lot/tag number, the quantity and unit of measure, the epoxy coater’s Bulletin 15 supplier code, the epoxy powder manufacturer's Bulletin 15 supplier code and the powder manufacturer's lot number applied to the reinforcement. The CS-4171, certified mill test reports, and CS-4171F from the fabricator would cover the quality and quantity of all components and items supplied and would also include fabrication, cutting and bending. The original will be maintained in a file at the fabricator's location. Copies of the original mill certifications and/or the CS-4171 forms from the steel manufacturer must also be maintained in the same file with the original CS-4171 at the fabricator’s facility as per Publication 408, Section 106.03(b)3 and Section 709.5.

The contractor retains all certifications of quality and quantity that it receives from the fabricator and maintains these certifications on file as per Publication 408, Section 106.03(b)3. The contractor submits a copy of the CS-4171, mill certifications for unidentifiable reinforcement steel and CS-4171F to the Department Representative for each material shipment delivered to the jobsite.

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See example certification #3.1 (2 pages) attached.

**For Galvanized Reinforcement Bar:**

The fabricator initiates a new CS-4171 and CS-4171F to accompany the shipment to the contractor. On the CS-4171, line 5 may refer to the CS-4171F. The CS-4171F must contain the fabricator’s name and location, the fabricator's Bulletin 15 supplier code, the reinforcement steel specification and steel grade, a Structure Number when applicable, the fabricator’s Bill of Lading number and Bill of Lading date, the designated size of the reinforcement steel, the reinforcement steel Bulletin 15 supplier code, heat number from mill certification, the galvanizer's lot/tag number, the quantity and unit of measure, the galvanizer's Bulletin 15 supplier code. The CS-4171, certified mill test reports and the CS-4171F from the fabricator would cover the quality and quantity of all components and items supplied and would also include fabrication, cutting and bending. The original will be maintained in a file at the fabricator's location. Copies of the original mill certifications and/or the CS-4171 forms from the steel manufacturer must also be maintained in the same file with the original CS-4171 at the fabricator’s facility as per Publication 408, Section 106.03(b)3 and Section 709.5.

The contractor retains all certifications of quality and quantity that it receives from the fabricator and maintains these certifications on file as per Publication 408, Section 106.03(b)3. The contractor submits a copy of the CS-4171, mill certifications for unidentifiable reinforcement steel and CS-4171F to the Department Representative for each material shipment delivered to the jobsite.

See example certification #3.2 (2 pages) attached.

**Example 4:**

*This example shows how a contractor certifies material that is transferred from one project to another.*

The manufacturer initiates one (1) Form CS-4171 that covers the quality and quantity of the item(s) and sends a copy along with the shipment to the initial job site. The original CS-4171 is maintained on file at the manufacturer's facility as per Publication 408, Section 106.03(b)3. For products containing unidentified steel, copies of the original mill certifications and the CS-4171 forms from the steel manufacturer must be maintained in the same file with the original CS-4171 at the manufacturer’s facility.

The contractor retains all certifications of quality and quantity that it receives from the manufacturer/supplier and maintains these certifications on file as per Publication 408, Section 106.03(b)3. The contractor submits a copy of the CS-4171 to the Department Representative for each material shipment delivered to the jobsite.
To transfer material to another project, the contractor initiates a new CS-4171 that includes the QUANTITY that will be transferred to the second or subsequent projects. The contractor will also make a copy of the CS-4171 that accompanied the shipment when the material was originally delivered to the first project. The contractor will attach the original certification to the transfer certification, including copies of certified mill test reports for products containing unidentified steel, as defined in Section 106.01.

Add a note in line 5 that identifies the project that the material was transferred from.

The contractor retains all certifications of quality and quantity that it receives from the first project and must maintain these certifications on file as per Publication 408, Section 106.03(b)3. The contractor submits a copy of the CS-4171 to the Department Representative for each material shipment delivered to the jobsite.

See example certification #4 (2 pages) attached.

**Example 5:**

This example shows how a contractor certifies material that is delivered to its stockyard and is later distributed to multiple projects at a later date.

The manufacturer initiates one (1) Form CS-4171 that covers the quality and quantity of the item(s) and sends a copy along with the shipment to the initial job site. The original CS-4171 is maintained on file at the manufacturer's facility as per Publication 408, Section 106.03(b)3. For products containing unidentified steel, copies of the original mill certifications and the CS-4171 forms from the steel manufacturer must be maintained in the same file with the original CS-4171 at the manufacturer's facility.

To transfer material to a project, the contractor initiates a new CS-4171 that includes the QUANTITY that will be shipped to the jobsite. The contractor will also make a copy of the CS-4171 that accompanied the shipment when the material was originally delivered to the contractor's stockyard. The contractor will attach the original certification to the transfer certification, including copies of certified mill test reports for products containing unidentified steel, as defined in Section 106.01.

Add a note in line 5 that identifies that the material was transferred from contractor stock.

The contractor retains all certifications of quality and quantity that it receives from the manufacturer/supplier and maintains these certifications on file as per Publication 408, Section 106.03(b)3. The contractor submits a copy of the CS-4171 to the Department Representative for each material shipment delivered to the jobsite, including certified mill test reports for products containing unidentified steel.

See example certification #5 (2 pages) attached.
Example 6:

This example shows how a Bulletin 15 listed manufacturer, fabricator, precaster, or producer of steel products certifies material shipped directly to a Department project when the product contains domestic and foreign steel.

The manufacturer, fabricator, precaster, or producer initiates both a Form CS-4171, which covers the quality and quantity of the item(s); and a Form CS-4171S, which documents the domestic and foreign steel content/cost of the items. The manufacturer sends a copy of both completed Forms CS-4171 and CS-4171S, including required supporting documentation, along with the shipment to the job site. For products containing ‘unidentified’ steel (as defined in Section 106.01), copies of the original mill certifications indicating that the steel products were melted and manufactured in the United States are required to be furnished along with Form CS-4171. Additionally, receipts verifying the cost of the product’s domestic and foreign steel are required to be furnished with Form CS-4171S.

The original CS-4171 and CS-4171S, and supporting documentation, are maintained on file at the manufacturer's facility per Publication 408, Section 106.03(b)3. For products containing steel, copies of the original mill certifications or the CS-4171 forms from the steel manufacturer must be maintained in the same file with the original CS-4171 at the manufacturer’s facility.

The contractor retains all certifications that it receives from the manufacturer/supplier and maintains these certifications on file per Publication 408, Section 106.03(b)3. The contractor submits a copy of the CS-4171 and CS-4171S with receipts to the Department’s field representative for each material shipment delivered to the jobsite.

See example certification #6 attached.
Example #1: Page 1 of 1 - Bulletin 15 Supplier (Precaster) to Contractor

CERTIFICATE OF COMPLIANCE

1. COUNTY: Any County

2. I / WE hereby certify that the material listed on line 5 was:
   - Manufactured
   - Fabricated
   - Coated
   - Precast
   - Produced

   By: Precaster Listed in Bulletin 15
   (Name of Manufacturer, Fabricator, Coater, Precaster or Producer)
   (Supplier Code in Bulletin 15)

3. and the party listed above certifies that the material(s) on line 5 meets the requirements of Publication 408, Section(s) 714

   AASHTO, ASTM, Federal or other designation

4. The material listed below is being shipped to:
   Contractor Name
   (Company Name)

5. LOT NO. 08/21/18
   QUANTITY 2 each
   APPROVED MATERIAL AS LISTED IN PennDOT BULLETIN
   Precast Concrete Manhole Assembly (Base, Riser, Conical Top)

6. CHECK HERE IF YOUR PRODUCT CONTAINS IRON OR STEEL. I certify the material identified above conforms to Sections 106.01 and 106.10(a) of Publication 408.

   CHECK ONE OF THE TWO BOXES:
   - Product is 100% US steel.
   - Product contains minimal foreign steel in accordance with Act 3 and Buy America.

   CHECK THE BOX THAT APPLIES TO YOUR PRODUCT:
   - Identifiable Steel - Steel products that contain permanent markings that identify that the material was melted and manufactured in the United States. Only Form CS-41171 is required.
   - Steel Products and Products Containing Steel with In-Plant Inspection by the Department or a Department Representative - For 100% US steel products and products where in-plant inspection has verified that the steel was melted and manufactured in the United States, only Form CS-41171 is required. For products where in-plant inspection has verified minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.
   - Unidentified Steel - Steel products that do not meet the definition of "Identifiable Steel" and do not receive in-plant inspection as defined above. For 100% US steel products, attach supporting documentation including invoices, bills of lading and mill test reports that positively identify that the steel was melted and manufactured in the United States. For products containing minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.

7. VENDOR CLASSIFICATION (CHECK ONE BLOCK ONLY) -
   #1 Manufacturer, Fabricator, Coater, Precaster Listed in Bulletin # 15, or Producer Listed in Bulletin # 14, 41 or 42
   I certify that the above statements are true and to the best of my knowledge, fairly and accurately describe the product(s) listed.

   #2 Distributor, Supplier or "Private Label Company Not Listed in Bulletin # 15.
   Also, complete line 9
   I certify that the material being supplied is one and the same as provided to us by the manufacturer listed on this document and quantities listed above are accurate.

8. NAME (print): Company Representative
   TITLE: Company Title
   COMPANY NAME: Bulletin 15 Precaster Name
   SIGNATURE: By Responsible Company Official
   DATE: ______________________

9. List company that sold you the material(s) documented above:
   (Complete if you checked Block # 2 on line # 7, otherwise leave blank.)

   (Company Name)

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Example #2: Page 1 of 1 - Non Bulletin 15 Supplier to Contractor

CS-4171 (3-19)

CERTIFICATE OF COMPLIANCE

1. **COUNTY**: Any County  **LR/RS**: 000000  **SEC/SEG**: 000  **ECMS#**: 0000000
   (∗ - To be completed by the party that will ship the material to the project, otherwise leave blank.)

2. I/WE hereby certify that the material listed on line 5 was:
   If a single company performs more than one operation (e.g., a company manufactures and costs guide rail), more than one box may be checked.
   □ Manufactured  □ Fabricated  □ Coated  □ Precast
   By: Bulletin 15 Manufacturer Name
   (Name of Manufacturer, Fabricator, Coater, Precaster or Producer)
   Supplier Code in Bulletin 15
   (Supplier Code)

3. and the party listed above certifies that the material(s) on line 5 meets the requirements of
   Publication 408, Section(s) 705.41(d) 1 a
   AASHTO, ASTM, Federal or other designation
   (Company Name)

4. The material listed below is being shipped to: **Contractor Name**
   (Company Name)

5. **LOT NO.**
   X99
   **QUANTITY**
   10,000 ft
   **APPROVED MATERIAL AS LISTED IN PennDOT BULLETIN**
   Pavement Seal V-1625

6. □ CHECK HERE IF YOUR PRODUCT CONTAINS IRON OR STEEL. I certify the material identified above conforms to
   Sections 106.01 and 106.10(a) of Publication 406.
   CHECK ONE OF THE TWO BOXES:
   □ Product is 100% US steel.
   □ Product contains minimal foreign steel in accordance with Act 3 and Buy America.
   Attach Form CS-4171S with receipts or invoices.
   CHECK THE BOX THAT APPLIES TO YOUR PRODUCT:
   □ "Identifiable Steel" - Steel products that contain permanent markings that identify that the material was melted and
   manufactured in the United States. Only Form CS-4171S is required.
   □ Steel Products and Products Containing Steel with In-Plant Inspection by the Department or a Department Representative -
   For 100% US steel products where in-plant inspection has verified that the steel was melted and manufactured in the
   United States, only Form CS-4171S is required. For products where in-plant inspection has verified minimal foreign steel
   in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form
   CS-4171S with supporting documentation.
   □ "Unidentified Steel" - Steel products that do not meet the definition of "Identifiable Steel" and do not receive in-plant inspection as
   defined above. For 100% US steel products, attach supporting documentation including invoices, bills of lading and mill test
   reports that positively identify that the steel was melted and manufactured in the United States. For products containing
   minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign
   steel, and attach Form CS-4171S with supporting documentation.

7. **VENDOR CLASSIFICATION (CHECK ONE BLOCK ONLY)** -
   □ #1 Manufacturer, Fabricator, Coater, Precaster
   Listed in Bulletin # 15, or Producer Listed in
   Bulletin # 14, 41 or 42
   I certify that the above statements are true and to the
   best of my knowledge, fairly and accurately describe
   the product(s) listed.
   □ #2 Distributor, Supplier or "Private Label Company
   Not Listed in Bulletin # 15.
   Also, complete line 9
   I certify that the material being supplied is one and the same as
   provided to us by the manufacturer listed on this document and
   quantities listed above are accurate.

8. **NAME (print)**: Company Representative  **TITLE**: Company Title
   **COMPANY NAME**: Non Bulletin 15 Supplier Name
   **SIGNATURE**: By Responsible Company Official
   **DATE**: 

9. □ List company that sold you the material(s) documented above: Bulletin 15 Manufacturer Name
   (Complete if you checked Block # 2 on line # 7, otherwise leave blank.)
   (Company Name)

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Example #3: Page 1 of 1 - Bulletin 15 Fabricator to Contractor

CS-4171 (3-19)

CERTIFICATE OF COMPLIANCE

1. ◆ COUNTY: Any County ◆ LR/ST: 00000 ◆ SEC/SEG: 000 ◆ ECMS#: 000000*
   (* To be completed by the party that will ship the material to the project, otherwise leave blank.)

2. I / WE hereby certify that the material listed on line 5 was:
   If a single company performs more than one operation (e.g., a company manufactures and coats girders), more than one box may be checked.
   □ Manufactured  □ Fabricated   □ Coated   □ Precast   □ Produced
   By Bulletin 15 Fabricator Name
   (Name of Manufacturer, Fabricator, Coater, Precaster or Producer)
   Supplier Code in Bulletin 15
   (Supplier Code)

3. and the party listed above certifies that the material(s) on line 5 meets the requirements of
   Publication 408, Section(s) 709.1
   AASHTO, ASTM, Federal or other designation

4. The material listed below is being shipped to: Contractor Name
   (Company Name)

5. LOT NO. QUANTITY APPROVED MATERIAL AS LISTED IN PennDOT BULLETIN
   Heath # 32876 25,452 lbs. Grade 60, #8 Rebar - Marion Steel Co.
   Heath # 43289 12,354 lbs. Grade 60, #11 Rebar - ReSteel Supply Co.

6. □ CHECK HERE IF YOUR PRODUCT CONTAINS IRON OR STEEL. I certify the material identified above conforms to
   Sections 106.01 and 106.10(a) of Publication 408.

CHECK ONE OF THE TWO BOXES:

□ Product is 100% US steel. □ Product contains minimal foreign steel in accordance with Act 3 and Buy America.
   Attach Form CS-4171S with receipts or invoices.

CHECK THE BOX THAT APPLIES TO YOUR PRODUCT:

□ "Identifiable Steel" - Steel products that contain permanent markings that identify that the material was melted and
   manufactured in the United States. Only Form CS-4171 is required.

□ Steel Products and Products Containing Steel with In-Plant Inspection by the Department or a Department Representative -
   For 100% US steel products where in-plant inspection has verified that the steel was melted and manufactured in the
   United States, only Form CS-4171 is required. For products where in-plant inspection has verified minimal foreign steel in
   accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form
   CS-4171S with supporting documentation.

□ "Uncertified Steel" – Steel products that do not meet the definition of “Identifiable Steel” and do not receive in-plant inspection as
   defined above. For 100% US steel products, attach supporting documentation including invoices, bills of lading and mill test
   reports that positively identify that the steel was melted and manufactured in the United States. For products containing
   minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign
   steel, and attach Form CS-4171S with supporting documentation.

7. VENDOR CLASSIFICATION (CHECK ONE BLOCK ONLY) -
   □ #1 Manufacturer, Fabricator, Coater, Precaster
      Listed in Bulletin 15, or Producer Listed in
      Bulletin # 14, 41 or 42
   □ #2 Distributor, Supplier or "Private Label Company
      Not Listed in Bulletin # 15.
   (Also, complete line 9)

I certify that the above statements are true and to the best of my knowledge, fairly and accurately describe
the product(s) listed.

8. NAME (print): Company Representative TITLE: Company Title

COMPANY NAME: Bulletin 15 Fabricator Name

SIGNATURE: ____________________________ DATE: ____________________________
   (By Responsible Company Official)

9. List company that sold you the material(s) documented above: ____________________________
   (Company Name)
   (Complete if you checked Block # 2 on line # 7, otherwise leave blank.)

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Example #3.1: Page 1 of 2 - Bulletin 15 Fabricator to Contractor

CS-4171 (3-19)

CERTIFICATE OF COMPLIANCE

1. COUNTY: Any County  LR/SR: 00000  SEC/SEG: 000  ECMS#: 000000
   *( To be completed by the party that will ship the material to the project, otherwise leave blank.)*

2. I / WE hereby certify that the material listed on line 6 was:
   [ ] Manufactured  [ ] Fabricated  [ ] Coated  [ ] Precast  [ ] Produced
   By Bulletin 15 Fabricator Name  Supplier Code in Bulletin 15
   (Name of Manufacturer, Fabricator, Coater, Precaster or Producer)  (Supplier Code)
   and the party listed above certifies that the material(s) on line 6 meets the requirements of
   Publication 408, Section(s) 708.1
   AASHTO, ASTM, Federal or other designation

3. The material listed below is being shipped to: Contractor Name
   (Company Name)

5. LOT NO.  QUANTITY  APPROVED MATERIAL AS LISTED IN PennDOT BULLETIN
   Refer to attached  
   CS-4171F

6. [ ] CHECK HERE IF YOUR PRODUCT CONTAINS IRON OR STEEL. I certify the material identified above conforms to
   Sections 106.01 and 106.10(a) of Publication 408.

CHECK ONE OF THE TWO BOXES:
   [ ] Product is 100% US steel.
   [ ] Product contains minimal foreign steel in accordance with Act 3 and Buy America.
   Attach Form CS-4171S with receipts or invoices.

CHECK THE BOX THAT APPLIES TO YOUR PRODUCT:
   [ ] 'Identifiable Steel' - Steel products that contain permanent markings that identify that the material was melted and
   manufactured in the United States. Only Form CS-4171 is required.
   [ ] Steel Products and Products Containing Steel with In-Plant Inspection by the Department or a Department Representative -
   For 100% US steel products where In-plant Inspection has verified that the steel was melted and manufactured in the
   United States, only Form CS-4171 is required. For products where in-plant inspection has verified minimal foreign steel in
   accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form
   CS-4171S with supporting documentation.
   [ ] 'Unidentified Steel' – Steel products that do not meet the definition of "Identifiable Steel" and do not receive in-plant inspection as
   defined above. For 100% US steel products, attach supporting documentation including invoices, bills of lading and mill test
   reports that positively identify that the steel was melted and manufactured in the United States. For products containing
   minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign
   steel, and attach Form CS-4171S with supporting documentation.

7. VENDOR CLASSIFICATION (CHECK ONE BLOCK ONLY) -
   [ ] #1 Manufacturer, Fabricator, Coater, Precaster
   Listed in Bulletin # 15, or Producer Listed in
   Bulletin # 14, 41 or 42
   I certify that the above statements are true and to the best of my knowledge, fairly and accurately describe
   the product(s) listed.
   [ ] #2 Distributor, Supplier or "Private Label Company
   Not Listed in Bulletin # 15.
   Also, complete line 9
   I certify that the material being supplied is one and the same as
   provided to us by the manufacturer listed on this document and
   quantities listed above are accurate.

8. NAME (print) : Company Representative  TITLE: Company Title
   COMPANY NAME : Bulletin 15 Fabricator Name
   SIGNATURE :  
   Date:  
   By Responsible Company Official

9. List company that sold you the material(s) documented above:
   (Complete if you checked Block # 2 on line # 7, otherwise leave blank.)
   (Company Name)

April 2017 Edition
<table>
<thead>
<tr>
<th>Bar / Wire Size</th>
<th>Bar / Wire Manufacturer Supplier Code</th>
<th>Heat Number</th>
<th>Epoxy Coater's or Galvanizer's Lot or Tag Number</th>
<th>Quantity (Area, Sheets, Pounds, etc.)</th>
<th>Epoxy Coater’s Supplier Code</th>
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</table>

* This supplemental form must be completed and a copy attached to the CS-4171 “Certificate of Compliance” form by the FABRICATOR for all reinforcing steel being shipped or transferred to a PROJECT, DISTRIBUTOR, SUPPLIER, PRIVATE LABEL COMPANY or PRECAST PLANT for use in a Pennsylvania Department of Transportation funded project. Information required on lines 7 of the CS-4171 may be referenced to this form.
Example 3.2: Page 1 of 2 - Fabricator to Contractor

<table>
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<tr>
<th>PART</th>
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<th>DATE</th>
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<td>3-15</td>
<td>April 1, 2019</td>
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</tbody>
</table>

**CERTIFICATE OF COMPLIANCE**

1. **COUNTY:** Any County

2. **LR/SR:** 000000 **SEC/SEG:** 000 **ECMS#:** 000000
   (* - To be completed by the party that will ship the material to the project, otherwise leave blank.)

3. I / WE hereby certify that the material listed on line 5 was:
   - [ ] Manufactured
   - [ ] Fabricated
   - [ ] Coated
   - [ ] Precast
   - [ ] Produced

   By Bulletin 15 Fabricator Name
   (Name of Manufacturer, Fabricator, Coater, Precaster or Producer)

   Supplier Code in Bulletin 15
   (Supplier Code)

3. and the party listed above certifies that the material(s) on line 5 meets the requirements of:
   - Publication 408, Section(s) 708.1(e)
   - AASHTO, ASTM, Federal or other designation

4. The material listed below is being shipped to:
   - Contractor Name
   (Company Name)

5. **LOT NO.**
   Refer to attached
   CS-4171F

   **QUANTITY**

   **APPROVED MATERIAL AS LISTED IN PennDOT BULLETIN**

6. [ ] CHECK HERE IF YOUR PRODUCT CONTAINS IRON OR STEEL. I certify the material identified above conforms to Sections 106.01 and 106.10(a) of Publication 408.

   **CHECK ONE OF THE TWO BOXES:**
   - [ ] Product is 100% US steel.
   - [ ] Product contains minimal foreign steel in accordance with Act 3 and Buy America.
     Attach Form CS-4171S with receipts or invoices.

   **CHECK THE BOX THAT APPLIES TO YOUR PRODUCT:**
   - [ ] 'Identifiable Steel' - Steel products that contain permanent markings that identify that the material was melted and manufactured in the United States. Only Form CS-4171 is required.
   - [ ] Steel Products and Products Containing Steel with In-Plant Inspection by the Department or a Department Representative.
     For 100% US steel products where in-plant inspection has verified that the steel was melted and manufactured in the United States, only Form CS-4171 is required. For products where in-plant inspection has verified minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.
   - [ ] 'Unidentified Steel' - Steel products that do not meet the definition of "Identifiable Steel" and do not receive in-plant inspection as defined above. For 100% US steel products, attach supporting documentation including invoices, bills of lading and mill test reports that positively identify that the steel was melted and manufactured in the United States. For products containing minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.

7. **VENDOR CLASSIFICATION (CHECK ONE BLOCK ONLY):**
   - [ ] #1 Manufacturer, Fabricator, Coater, Precaster Listed in Bulletin #15, or Producer Listed in Bulletin #14, 41 or 42
     I certify that the above statements are true and to the best of my knowledge, fairly and accurately describe the product(s) listed.
   - [ ] #2 Distributor, Supplier or *Private Label Company* Not Listed in Bulletin #15.
     I certify that the material being supplied is one and the same as provided to us by the manufacturer listed on this document and quantities listed above are accurate.

8. **NAME (print):** Company Representative
   **TITLE:** Company Title

   **COMPANY NAME:** Bulletin 15 Fabricator Name

   **SIGNATURE:** Responsible Company Official
   **DATE:**

9. **List company that sold you the material(s) documented above:**
   (Complete if you checked Block #2 on line #7, otherwise leave blank.)

   **(Company Name)**

   **April 2017 Edition**
### Example 3.2: Page 2 of 2 - Fabricator to Contractor

<table>
<thead>
<tr>
<th>Bar / Wire Size</th>
<th>Bar / Wire Manufacturer Supplier Code</th>
<th>Heat Number</th>
<th>Epoxy Coater's or Galvanizer's Lot or Tag Number</th>
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* This supplemental form must be completed and a copy attached to the CS-4171 "Certificate Of Compliance" form by the FABRICATOR for all reinforcing steel being shipped or transferred to a PROJECT, DISTRIBUTOR, SUPPLIER, PRIVATE LABEL COMPANY or PRECAST PLANT for use in a Pennsylvania Department of Transportation funded project. Information required on line 9 of the CS-4171 may be referenced to this form.
Example #4: Page 1 of 2 - Contractor Transfer

CS-4171 (3-19)

CERTIFICATE OF COMPLIANCE

1. ◆COUNTY: Any County ◆LR/SR: 00000 ◆SEC/SEG: 000 ◆ECMS#: 000000
   (◆ - To be completed by the party that will ship the material to the project, otherwise leave blank.)
2. I / WE hereby certify that the material listed on line 5 was:
   If a single company manufactures more than one operation (e.g., a company manufactures and coats guardrail), more than one box may be checked.
   ☑ Manufactured ☑ Fabricated ☑ Coated ☑ Precast or Produce
   By Bulletin 15 Manufacturer Name ☑ Supplier Code in Bulletin 15
   (Name of Manufacturer, Fabricator, Coater, Precaster or Producer) (Supplier Code)
3. and the party listed above certifies that the material(s) on line 5 meets the requirements of
   Publication 408, Section(s) 735 & 865
   AASHTO, ASTM, Federal or other designation
4. The material listed below is being shipped to: Contractor Name
   (Company Name)
5. LOT NO. QUANTITY APPROVED MATERIAL AS LISTED IN PennDOT BULLETIN
   A00135 100 LF Transferred from Project #104183 SR 0119-492 Indiana County
   (see attached CS-4171)
6. [CHECK HERE IF YOUR PRODUCT CONTAINS IRON OR STEEL. I certify the material identified above conforms to Sections 106.01 and 106.10(a) of Publication 408.]
   CHECK ONE OF THE TWO BOXES:
   ☑ Product is 100% US steel.
   ☑ Product contains minimal foreign steel in accordance with Act 3 and Buy America.
   Attach Form CS-4171S with receipts or invoices.
   CHECK THE BOX THAT APPLIES TO YOUR PRODUCT:
   ☑ ‘Identifiable Steel’ - Steel products that contain permanent markings that identify that the material was melted and manufactured in the United States. Only Form CS-4171 is required.
   ☐ Steel Products and Products Containing Steel with In-Plant Inspection by the Department or a Department Representative - For 100% US steel products where in-plant inspection has verified that the steel was melted and manufactured in the United States, only Form CS-4171 is required. For products where in-plant inspection has verified minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.
   [Unidentified Steel] - Steel products that do not meet the definition of ‘Identifiable Steel’ and do not receive in-plant inspection as defined above. For 100% US steel products, attach supporting documentation including invoices, bills of lading and mill test reports that positively identify that the steel was melted and manufactured in the United States. For products containing minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.
7. VENDOR CLASSIFICATION (CHECK ONE BLOCK ONLY) -
   ☑ #1 Manufacturer, Fabricator, Coater, Precaster
   Listed in Bulletin #15, or Producer Listed in Bulletin #14, #41 or #42
   I certify that the above statements are true and to the best of my knowledge, fairly and accurately describe the product(s) listed.
   ☑ #2 Distributor, Supplier or “Private Label Company”
   Not Listed in Bulletin #15.
   Also, complete line 9
   I certify that the material being supplied is one and the same as provided to us by the manufacturer listed on this document and quantities listed above are accurate.
8. NAME (print) : Company Representative TITLE: Company Title
   COMPANY NAME: Contractor Name
   SIGNATURE: By Responsible Company Official DATE: 
9. List company that sold you the material(s) documented above: Bulletin 15 Manufacturer Name
   (Complete if you checked Block #2 on line #7, otherwise leave blank.)
   (Company Name)

April 2017 Edition
Example #4: Page 2 of 2 - Manufacturer to Contractor

CS-4171 (3-19)

CERTIFICATE OF COMPLIANCE

PART B  SECTION 6  PAGE 3-18  DATE April 1, 2019

 COUNTY: Indiana     LR/SR: SR 0119     SEC/SEG: 492     ECMS#: 104183

☐ WE hereby certify that the material listed on line 5 was:
☐ If a single company performs more than one operation (e.g., a company manufactures and coats guardrail), more than one box may be checked.
☐ Fabricated ☐ Coated ☐ Precast/ed ☐ Produced

By Bulletin 15 Manufacturer Name

Supplier Code in Bulletin 15

(Name of Manufacturer, Fabricator, Coater, Precaster or Producer) (Supplier Code)

and the party listed above certifies that the material(s) on line 5 meets the requirements of Publication 408, Section(s) 735 & 865 AASHTO, ASTM, Federal or other designation

The material listed below is being shipped to:

Contractor Name

(Company Name)

LOT NO. A00135

QUANTITY 100 LF

APPROVED MATERIAL AS LISTED IN PennDOT BULLETIN
PennDOT3818 18” HT Silt Fence w/Posts

☐ CHECK HERE IF YOUR PRODUCT CONTAINS IRON OR STEEL. I certify the material identified above conforms to Sections 106.01 and 106.10(a) of Publication 408.

CHECK ONE OF THE TWO BOXES:
☐ Product is 100% US steel. ☐ Product contains minimal foreign steel in accordance with Act 3 and Buy America. Attach Form CS-4171S with receipts or invoices.

CHECK THE BOX THAT APPLIES TO YOUR PRODUCT:
☐ ‗Identifiable Steel‘ - Steel products that contain permanent markings that identify that the material was melted and manufactured in the United States. Only Form CS-4171 is required.

☐ Steel Products and Products Containing Steel with in-Plant Inspection by the Department or a Department Representative - For 100% US steel products where in-plant inspection has verified that the steel was melted and manufactured in the United States, only Form CS-4171 is required. For products where in-plant inspection has verified minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.

☐ ‗Unidentified Steel‘ - Steel products that do not meet the definition of ‗Identifiable Steel‘ and do not receive in-plant inspection as defined above. For 100% US steel products, attach supporting documentation including invoices, bills of lading and mill test reports that positively identify that the steel was melted and manufactured in the United States. For products containing minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.

VENDOR CLASSIFICATION (CHECK ONE BLOCK ONLY)
☐ #1 Manufacturer, Fabricator, Coater, Precaster Listed in Bulletin # 15, or Producer Listed in Bulletin # 14, 41 or 42
I certify that the above statements are true and to the best of my knowledge, fairly and accurately describe the product(s) listed.

☐ #2 Distributor, Supplier or *Private Label Company Not Listed in Bulletin # 15.
I certify that the material being supplied is one and the same as provided to us by the manufacturer listed on this document and quantities listed above are accurate.

NAME (print): Company Representative TITLE: Company Title

COMPANY NAME: Bulletin 15 Manufacturer Name

SIGNATURE: By Responsible Company Official DATE:

List company that sold you the material(s) documented above:

(Complete if you checked Block # 2 on line # 7, otherwise leave blank.)

(Company Name)

April 2017 Edition
Example #5: Page 1 of 2 - Contractor Transfer from Stock

CS-4171 (3-19)

CERTIFICATE OF COMPLIANCE

<table>
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<th>PART</th>
<th>SECTION</th>
<th>PAGE</th>
<th>DATE</th>
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<tr>
<td>B</td>
<td>6</td>
<td>3-19</td>
<td>April 1, 2019</td>
</tr>
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</table>

1. **COUNTY:** Any County
   **LR/SR:** 000000
   **SEC/SEG:** 000
   **ECMS:** 000000
   *(Note: To be completed by the party that will ship the material to the project, otherwise leave blank.)*

2. I/WE hereby certify that the material listed on line 5 was:
   - [ ] Manufactured
   - [ ] Fabricated
   - [ ] Coated
   - [ ] Precast
   - [ ] Produced

   By Bulletin 15 Manufacturer Name
   (Name of Manufacturer, Fabricator, Coater, Precaster or Producer)

   Supplier Code in Bulletin 15
   (Supplier Code)

3. and the party listed above certifies that the material(s) on line 5 meets the requirements of Publication 408, Section(s) 711.2(a)
   AASHTO, ASTM, Federal or other designation
   AASHTO M148

4. The material listed below is being shipped to:
   Contractor Name
   (Company Name)

5. **LOT NO.** A199
   **QUANTITY** 100 Gal.
   **APPROVED MATERIAL AS LISTED IN Penndot Bulletin**
   Concrete curing compound, white pigmented
   Transferred from contractor stock (See attached CS-4171)

6. [ ] CHECK HERE IF YOUR PRODUCT CONTAINS IRON OR STEEL. I certify the material identified above conforms to Sections 106.01 and 106.10(a) of Publication 408.

   CHECK ONE OF THE TWO BOXES:
   [ ] Product is 100% US steel.
   [ ] Product contains minimal foreign steel in accordance with Act 3 and Buy America.

   Attach Form CS-4171S with receipts or invoices.

   CHECK THE BOX THAT APPLIES TO YOUR PRODUCT:
   [ ] "Identifiable Steel" - Steel products that contain permanent markings that identify that the material was melted and manufactured in the United States. Only Form CS-4171 is required.

   [ ] Steel Products and Products Containing Steel with In-Plant Inspection by the Department or a Department Representative - For 100% US steel products where in-plant inspection has verified that the steel was melted and manufactured in the United States, only Form CS-4171 is required. For products where in-plant inspection has verified minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.

   [ ] "Unidentifiable Steel" - Steel products that do not meet the definition of "Identifiable Steel" and do not receive in-plant inspection as defined above. For 100% US steel products, attach supporting documentation including invoices, bills of lading and mill test reports that positively identify that the steel was melted and manufactured in the United States. For products containing minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.

7. **VENDOR CLASSIFICATION (CHECK ONE BLOCK ONLY)**
   [ ] #1 Manufacturer, Fabricator, Coater, Precaster
   Listed in Bulletin # 15, or Producer Listed in Bulletin # 14, 41 or 42

   [ ] #2 Distributor, Supplier or "Private Label Company"
   Not Listed in Bulletin # 15.

   I certify that the above statements are true and to the best of my knowledge, fairly and accurately describe the product(s) listed.

8. **NAME (print):** Company Representative
   **TITLE:** Company Title

   **COMPANY NAME:** Contractor Name

   **SIGNATURE:**
   By Responsible Company Official
   **DATE:**

9. List company that sold you the material(s) documented above:
   Bulletin 15 Manufacturer Name
   (Company Name)

   (Complete if you checked Block # 2 on line # 7, otherwise leave blank.)

April 2017 Edition
Example #5: Page 2 of 2 - Manufacturer to Contractor

CS-4171 (3-19)

CERTIFICATE OF COMPLIANCE

1. *(COUNTRY:* Any Country) *(LR/RS:* 00000) *(SEC/SEG:* 000) *(ECMS#: 000000)
   *(# - To be completed by the party that will ship the material to the project, otherwise leave blank.)*

2. I / WE hereby certify that the material listed on line 5 was:
   - [ ] Manufactured
   - [ ] Fabricated
   - [ ] Coated
   - [ ] Precast/ed
   - [ ] Produced

   By Bulletin 15 Manufacturer Name
   (Name of Manufacturer, Fabricator, Coater, Precaster or Producer)

   Supplier Code in Bulletin 15
   (Supplier Code)

3. and the party listed above certifies that the material(s) on line 5 meets the requirements of
   Publication 408, Section(s) 711.2(a)
   AASHTO, ASTM, Federal or other designation
   AASHTO M148

4. The material listed below is being shipped to:
   Contractor Name
   (Company Name)

5. LOT NO. A199
   QUANTITY 100 Gal.
   APPROVED MATERIAL AS LISTED IN PennDOT BULLETIN
   Concrete curing compound, white pigmented

6. [ ] CHECK HERE IF YOUR PRODUCT CONTAINS IRON OR STEEL. I certify the material identified above conforms to
   Sections 106.01 and 106.10(a) of Publication 408.

CHECK ONE OF THE TWO BOXES:
   - [ ] Product is 100% US steel.
   - [ ] Product contains minimal foreign steel in accordance with Act 3 and Buy America.
     Attach Form CS-4171S with receipts or invoices.

CHECK THE BOX THAT APPLIES TO YOUR PRODUCT:
   - [ ] Identifiable Steel - Steel products that contain permanent markings that identify that the material was melted and
     manufactured in the United States. Only Form CS-4171 is required.

   - [ ] Steel Products and Products Containing Steel with In-Plant Inspection by the Department or a Department Representative -
     For 100% US steel products where in-plant inspection has verified that the steel was melted and manufactured in the
     United States, only Form CS-4171 is required. For products where in-plant inspection has verified minimal foreign steel in
     accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form
     CS-4171S with supporting documentation.

   - [ ] Unidentified Steel – Steel products that do not meet the definition of “Identifiable Steel” and do not receive in-plant inspection as
     defined above. For 100% US steel products, attach supporting documentation including invoices, bills of lading and mill test
     reports that positively identify that the steel was melted and manufactured in the United States. For products containing
     minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign
     steel, and attach Form CS-4171S with supporting documentation.

7. VENDOR CLASSIFICATION (CHECK ONE BLOCK ONLY) -
   - [ ] Manufacturer, Fabricator, Coater, Precaster
     Listed in Bulletin 15, or Producer Listed in
     Bulletin # 14, or Bulletin # 14, or Bulletin # 42
     I certify that the above statements are true and to the best of my knowledge, fairly and accurately describe
     the product(s) listed.
   - [ ] Distributor, Supplier or *Private Label Company
     Not Listed in Bulletin # 15.
     Also, complete line 9
     I certify that the material being supplied is one and the same as
     provided to us by the manufacturer listed on this document and
     quantities listed above are accurate.

8. NAME (print): Company Representative
   TITLE: Company Title

   COMPANY NAME: Bulletin 15 Manufacturer Name

   SIGNATURE: ____________________________ DATE: ____________________________
   By Responsible Company Official

9. List company that sold you the material(s) documented above:
   (Complete if you checked Block # 2 on line # 7, otherwise leave blank.)
   (Company Name)

April 2017 Edition
Example #6: Page 1 of 2 – Manufacturer of Product containing Foreign Steel to Contractor

CS-4171 (3-19)

CERTIFICATE OF COMPLIANCE

<table>
<thead>
<tr>
<th>COUNTY: Any County</th>
<th>LR/SR: 000000</th>
<th>SEC/SEG: 000</th>
<th>ECMS#: 000000</th>
</tr>
</thead>
<tbody>
<tr>
<td>( - To be completed by the party that will ship the material to the project, otherwise leave blank.)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. I / WE hereby certify that the material listed on line 5 was:
   
   | □ | □ | □ | □ | □ |
   | Manufactured | Fabricated | Coated | Precasted | Produced |

   By Precaster Listed in Bulletin 15
   (Name of Manufacturer, Fabricator, Coater, Precaster or Producer)

   Supplier Code in Bulletin 15
   (Supplier Code)

2. and the party listed above certifies that the material(s) on line 5 meets the requirements of Publication 408, Section(s) 7.14 AASHTO, ASTM, Federal or other designation

3. The material listed below is being shipped to: Contractor Name
   (Company Name)

4. LOT NO. 10/14/18

   QUANTITY 3

   APPROVED MATERIAL AS LISTED IN PennDOT BULLETIN Precast Inlet Boxes, Type 6

   |

   |

   |

   |

5. ☑ CHECK HERE IF YOUR PRODUCT CONTAINS IRON OR STEEL. I certify the material identified above conforms to Sections 106.01 and 106.10(a) of Publication 408.

   CHECK ONE OF THE TWO BOXES:
   □ Product is 100% US steel.
   ☑ Product contains minimal foreign steel in accordance with Act 3 and Buy America. Attach Form CS-4171S with receipts or invoices.

   CHECK THE BOX THAT APPLIES TO YOUR PRODUCT:
   □ "Identifiable Steel" - Steel products that contain permanent markings that identify that the material was melted and manufactured in the United States. Only Form CS-4171 is required.
   ☑ Steel Products and Products Containing Steel with In-Plant Inspection by the Department or a Department Representative - For 100% US steel products where in-plant inspection has verified that the steel was melted and manufactured in the United States, only Form CS-4171 is required. For products where in-plant inspection has verified minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.
   □ "Unidentified Steel" - Steel products that do not meet the definition of "Identifiable Steel" and do not receive in-plant inspection as defined above. For 100% US steel products, attach supporting documentation including invoices, bills of lading and mill test reports that positively identify that the steel was melted and manufactured in the United States. For products containing minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.

6. VENDOR CLASSIFICATION (CHECK ONE BLOCK ONLY) -
   ☑ #1 Manufacturer, Fabricator, Coater, Precaster Listed in Bulletin # 15, or Producer Listed in Bulletin # 14, 41 or 42
   □ #2 Distributor, Supplier or "Private Label Company Not Listed in Bulletin # 15.

   I certify that the above statements are true and to the best of my knowledge, fairly and accurately describe the product(s) listed.

   |

   |

   |

   |

   |

   |

   |

   |

   |

7. NAME (print): Company Representative

   TITLE: Company Title

   COMPANY NAME: Bulletin 15 Precaster Name

   SIGNATURE: By Responsible Company Official

   DATE: _______________________

8. List company that sold you the material(s) documented above:
   (Complete if you checked Block # 2 on line # 7, otherwise leave blank.)
   (Company Name)

April 2017 Edition
**SUPPLEMENTAL CERTIFICATION**

**STEEL PRODUCTS CONTAINING FOREIGN STEEL**

This Form is to be completed by the manufacturer, fabricator, precaster, or producer of the product containing foreign steel. **Attach this completed form to the CS-4171, Certificate of Compliance, to accompany the shipment to the project.** The manufacturer, fabricator, precaster, or producer is required to maintain files of supporting receipts and mill certifications at their facility, for a period of not less than 3 years from the date of the project shipment.

**ECMSe 000000 S.R., 0000 SEC. 000 County Any County**

**Compliance with PA Act 3 - PA Steel Products Procurement Act (Applies to All Projects)**

<table>
<thead>
<tr>
<th>Product Quantity</th>
<th>Product Description</th>
<th>Foreign Steel Description</th>
<th>Domestic Steel Cost (D)</th>
<th>Foreign Steel Cost (F)</th>
<th>25% of Total Steel Cost (0.25x(D+F))</th>
<th>PA Act 3 Compliance* (Is F ≤ 0.25x(D+F)?)</th>
<th>FHWA Buy America Compliance**</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Precast Inlet Boxes, Type 6</td>
<td>Lifters and Tie Wire</td>
<td>$150.00</td>
<td>$30.00</td>
<td>$45.00</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$0.00</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$0.00</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

*If "Yes", Acceptable. If "No", Not acceptable without a waiver from PennDOT.*

**Coordinate with Contractor or PennDOT project personnel to ensure FHWA Buy America compliance before shipping to the project.**

Receipts/Invoices for the cost of domestic and foreign steel as listed on this document must be provided.

**"This Section for Department Use Only – To be Completed by the Inspector at the Project"**

**Total Contract Amount ($)**: $1,000,000.00

**Contractor Name**: Contractor Name

**Federal Project No.**: 0000-000-0000 or 100% State Project

**Compliance with FHWA Buy America (Applies to all projects with Federal funding and to 100% State projects that are eligible for assistance under NEPA)**

<table>
<thead>
<tr>
<th>Total Contract Amount ($)</th>
<th>Cost of Foreign Steel used on this project to date (excluding this invoice)</th>
<th>Cost of Foreign Steel used on this project to date (including this invoice)</th>
<th>0.10% of Total Contract Amount</th>
<th>$2,500.00</th>
<th>Threshold = Greater Value of Columns 4 &amp; 5</th>
<th>FHWA Buy America Compliance* (Is Total Cost of Foreign Steel (including this invoice) ≤ Threshold?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,000,000.00</td>
<td>$0.00</td>
<td>$30.00</td>
<td>$1,000.00</td>
<td>$2,500.00</td>
<td>$2,500.00</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*If "Yes", Accept. If "No", Do not accept without a waiver from FHWA.*
This subsection includes all the materials specified to be accepted by project acceptance sampling. The samples, unless specified otherwise, are to be taken at the point of placement of the material. The testing can be accomplished directly on the project, in the vicinity of the project, at the material producer’s laboratory, or at the Laboratory Testing Section (LTS) Laboratory in Harrisburg.

The following guidelines are a minimum for sampling frequencies for acceptance testing of construction materials.

The guidelines also list recommendations for sample sizes that should be sent into LTS. These sample sizes may differ from what is listed in the PTMs because the PTMs list the minimum sizes needed to complete that particular PTM. Department Representatives are required to monitor and maintain ‘custody’ of any material samples collected on behalf of the Department from point of sampling through delivery.

Frequencies may need to be increased as required by the level of construction.

NOTE: Sampling Location is at the point of placement unless otherwise noted.
### Section I

**Materials Sampling Guidelines for Field Inspectors**

<table>
<thead>
<tr>
<th>Material</th>
<th>Embankment and Fill</th>
<th>Subgrade</th>
<th>Pipe Backfill</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>In place density &amp; moisture. One acceptance test per lift for each 4,000 square yards placed; minimum one test per lift per day. In limited or restricted areas, the test rate should not exceed the rate for pipe backfill.</td>
<td>In place density &amp; moisture. One acceptance test per lift for each 3,000 square yards placed; minimum one test per lift per day.</td>
<td>In place density &amp; moisture. For every pipe run conduct one acceptance test for every 500 cubic yards of pipe backfill; minimum one test per lift per day.</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>50 lb. (PTM 106)</td>
<td>50 lb. (PTM 106)</td>
<td>50 lb. (PTM 106)</td>
</tr>
<tr>
<td><strong>Test Method</strong></td>
<td>Proctors run initially and when material changes. PTM No. 402*</td>
<td>Proctors run initially and when material changes. PTM No. 402*</td>
<td>Proctors run initially and when material changes. PTM No. 402*</td>
</tr>
<tr>
<td><strong>Small Quantity</strong></td>
<td>Less than 1000 cu. yd. per project.</td>
<td>N/A</td>
<td>No nuclear testing is required for pipe extensions less than 20 ft.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A maximum of 400 ft. of pipe per project.</td>
</tr>
</tbody>
</table>

* Accepted by non-movement under compaction equipment if material meets the requirements of Pub 408, Section 206.2(a).l.c, l.d, l.e, or l.f. Complete Form TR-478A.
Section I

Materials Sampling Guidelines for Field Inspectors

<table>
<thead>
<tr>
<th>Material</th>
<th>Structure Backfill</th>
<th>Subbase</th>
<th>Base Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Continuous</td>
<td>Continuous</td>
<td>See appropriate specification for type of base.</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>See appropriate specification for type of base.</td>
</tr>
<tr>
<td><strong>Test Method</strong></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td><strong>Small Quantity</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>Publication 408 Section 309</td>
</tr>
</tbody>
</table>

* Accepted by non-movement under compaction equipment. Complete Form TR-478A.
Section I

Materials Sampling Guidelines for Field Inspectors

<table>
<thead>
<tr>
<th>Material</th>
<th>Base Repair</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>See appropriate specification for type of base.</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>See appropriate specification for type of base.</td>
</tr>
<tr>
<td><strong>Test Method</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Small Quantity</strong></td>
<td>Publication 408 Section 309 and Section 316</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>AASHTO No. 10</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Coarse Aggregate</td>
<td>AASHTO No. 1</td>
</tr>
<tr>
<td>Size of Sample</td>
<td>Pub 408, Section 850.2(a)1 &amp; 2</td>
</tr>
<tr>
<td>Frequency</td>
<td>Project Verification Samples</td>
</tr>
<tr>
<td>Test Method</td>
<td>Grading PTM 616, Loss by Wash PTM 100, Crush Count ASTM D5821</td>
</tr>
<tr>
<td>Small Quantity</td>
<td></td>
</tr>
</tbody>
</table>
Note: This page refers to gradation testing.

<table>
<thead>
<tr>
<th>Fine Aggregate</th>
<th>Type A</th>
<th>Type B</th>
<th>Type C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Publication 408, Section 703.5(b)3, Table F.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>1 lb.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Test Method</strong></td>
<td>Grading PTM 616, Loss by Wash PTM 100, Moisture AASHTO T 255, Fineness Modulus PTM 501 (Type A &amp; Type C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Small Quantity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cement Concrete</td>
<td>Structure **</td>
<td>**</td>
<td>Pavement (RPS) **</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------</td>
<td>---</td>
<td>-----------------</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>Acceptance tests per Publication 408. Control tests per accepted quality control plan.</td>
<td>Acceptance tests per Publication 408. Control tests per accepted quality control plan.</td>
<td>Air and Slump 1 per truck until control is established, then, every 200 cu. yd. thereafter. Cylinders A set of 4 cylinders molded at the same time from the same load for each 100 cu. yd. or fraction thereof daily.</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>PTM 601</td>
<td>PTM 601</td>
<td>PTM 601</td>
</tr>
<tr>
<td><strong>Test Method</strong></td>
<td>Air AASHTO T 196 or AASHTO T 152 Temperature ASTM C 1064 Slump AASHTO T 119 Molding PTM 611 Compression PTM 604</td>
<td>Air AASHTO T 196 or AASHTO T 152 Temperature ASTM C 1064 Slump AASHTO T 119 Molding PTM 611 Compression PTM 604 Surface Tolerance PTM 424 Core Thickness PTM 614</td>
<td>Air AASHTO T 196 AASHTO T 121 and C 136 AASHTO T 152 Slump AASHTO T 119 Molding PTM 611 Compression PTM 604</td>
</tr>
<tr>
<td><strong>Small Quantity</strong></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* **NOTE** - Form CS-458A must be completed in order to document Department inspection of cylinder breaks. This form must be in the project records within 3 days of the breaks. Also, see Section B.6.10.

** **NOTE** - Document the results of air meter calibrations in the Concrete Inspector's Diary.
<table>
<thead>
<tr>
<th>Cement Concrete (Standard)</th>
<th>Structural  **</th>
<th>Pavement  **</th>
<th>Pavement Patching Concrete  **</th>
<th>Incidental Work  **</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Air, Temp, and Slump 1 every 100 cu. yd. thereafter. Cylinders A set of 4 cylinders molded at the same time from the same load for each 100 cu. yd. or fraction thereof daily.</td>
<td>Air, Temp, and Slump 1 every 500 cu. yd. thereafter. Cylinders A set of 4 cylinders molded at the same time from the same load for 500 cu. yd. or fraction thereof daily.</td>
<td>Air, Temp, and Slump 1 every 200 cu. yd. thereafter. Cylinders A set of 4 cylinders molded at the same time from the same load for each 200 cu. yd. or fraction thereof daily.</td>
<td>Air, Temp, and Slump 1 every 100 cu. yd. thereafter. Cylinders A set of 4 cylinders molded at the same time from the same load for each 100 cu. yd. or fraction thereof daily.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Size of Sample</strong></th>
<th>PTM 601</th>
<th>PTM 601</th>
<th>PTM 601</th>
<th>PTM 601</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test Method</strong></td>
<td>Air AASHTO T 196 or AASHTO T 152 Temperature ASTM C 1064 Slump AASHTO T 119 Molding PTM 611 Compression PTM 604</td>
<td>Air AASHTO T 196 or AASHTO T 152 Temperature ASTM C 1064 Slump AASHTO T 119 Molding PTM 611 Compression PTM 604</td>
<td>Air AASHTO T 196 or AASHTO T 152 Temperature ASTM C 1064 Slump AASHTO T 119 Molding PTM 611 Compression PTM 604</td>
<td>Air AASHTO T 196 or AASHTO T 152 Temperature ASTM C 1064 Slump AASHTO T 119 Molding PTM 611 Compression PTM 604</td>
</tr>
</tbody>
</table>

| **Small Quantity** | N/A | N/A | N/A | Not to exceed 25 cu. yd./day, for each class of concrete/project for non-critical incidental items. |

**NOTE** - Form CS-458A must be completed in order to document Department inspection of cylinder breaks. This form must be in the project records within 3 days of the breaks. Also, see Section B.6.10.

**NOTE** - Document the results of air meter calibrations in the Concrete Inspector's Diary.
<table>
<thead>
<tr>
<th>Material</th>
<th>Bituminous Concrete 409 (Standard)</th>
<th>Bituminous Concrete 409 (RPS)</th>
<th>Stone Matrix Asphalt 419</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Per Publication 408</td>
<td>Per Publication 408</td>
<td>Per Publication 408</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>Per Publication 408</td>
<td>Per Publication 408</td>
<td>Per Publication 408</td>
</tr>
<tr>
<td><strong>Test Method</strong></td>
<td>Per Publication 408</td>
<td>Per Publication 408</td>
<td>Per Publication 408</td>
</tr>
<tr>
<td><strong>Small Quantity</strong></td>
<td>Per Publication 408</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Section II

Materials Tested in the LTS Laboratory

<table>
<thead>
<tr>
<th>Material</th>
<th>Admixtures</th>
<th>Bearing Pads-Neoprene</th>
<th>Bituminous Concrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Each Lot</td>
<td>As per PTM 312</td>
<td>Core</td>
</tr>
<tr>
<td>Size of Sample</td>
<td>1 quart</td>
<td>As per PTM 312</td>
<td>6-inch diameter</td>
</tr>
<tr>
<td>Shipping Container</td>
<td>Plastic bottle</td>
<td>Label</td>
<td>Box, plastic concrete cylinder molds, or PVC pipe.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Bituminous Materials PG Binders and Cutback Asphalts</th>
<th>Bituminous Materials Emulsified Asphalts</th>
<th>Block, Concrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>For Verification</td>
<td>For Verification</td>
<td>Each Lot</td>
</tr>
<tr>
<td>Size of Sample</td>
<td>1 quart</td>
<td>1 quart</td>
<td>2</td>
</tr>
<tr>
<td>Shipping Container</td>
<td>Metal Can</td>
<td>Plastic Container</td>
<td>Box</td>
</tr>
</tbody>
</table>
## Section II

**Materials Tested in the LTS Laboratory**

<table>
<thead>
<tr>
<th>Material</th>
<th>Brick</th>
<th>Bridge Steel</th>
<th>Burlap</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Each Lot</td>
<td>For Verification Each Lot</td>
<td>Each lot</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>5</td>
<td>10” x 4”</td>
<td>1 yard length</td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Box</td>
<td>Label</td>
<td>Label</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Cement</th>
<th>Calcium &amp; Sodium Chloride</th>
<th>Caulking Mastic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>For Verification and after Winter Storage</td>
<td>For Verification Each Lot</td>
<td>Each Lot</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>1 gallon</td>
<td>1 quart</td>
<td>1 quart</td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Plastic Bucket</td>
<td>Plastic Jar</td>
<td>Can</td>
</tr>
</tbody>
</table>

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Section II

Materials Tested in the LTS Laboratory

<table>
<thead>
<tr>
<th>Material</th>
<th>Curing Compound</th>
<th>Curing – Protective Covers</th>
<th>Epoxy Resin Material</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Each Lot</td>
<td>Each Shipment</td>
<td>Each Lot</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>1 quart</td>
<td>1 yard</td>
<td>1 can each component</td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Jar or Can</td>
<td>Label</td>
<td>Can</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Erosion Blanket</th>
<th>Gabions</th>
<th>Geogrid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>For Verification</td>
<td>Each Lot</td>
<td>For Verification</td>
</tr>
<tr>
<td></td>
<td>Each Lot</td>
<td></td>
<td>Each Lot</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>Full width x 10 feet</td>
<td>3 feet square</td>
<td>Full width x 10 feet</td>
</tr>
<tr>
<td></td>
<td>Do not sample within 10 feet of a roll end</td>
<td></td>
<td>Do not sample within 10 feet of a roll end</td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Label</td>
<td>Label</td>
<td>Label</td>
</tr>
<tr>
<td></td>
<td>Do not fold. Roll material up for shipping.</td>
<td></td>
<td>Do not fold. Roll material up for shipping.</td>
</tr>
</tbody>
</table>
## Section II

### Materials Tested in the LTS Laboratory

<table>
<thead>
<tr>
<th>Material</th>
<th>Geocell</th>
<th>Geotextiles</th>
<th>Glass Beads</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Each Lot</td>
<td>Each Lot</td>
<td>Each Lot for Verification</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>1 Panel (PTM 301)</td>
<td>6 feet by full width</td>
<td>3 pounds</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do not sample within 10 feet of roll end</td>
<td></td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Label</td>
<td>Label</td>
<td>Can</td>
</tr>
<tr>
<td></td>
<td>Panel consisting of a minimum of 10 welded seams, each having cell wall lengths of at least 6 inches on each side of the seams</td>
<td>Do not fold. Roll material up for shipping.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Grout: Mortar</th>
<th>Guide Rail</th>
<th>Joint Sealant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Each Lot</td>
<td>Each Lot</td>
<td>Each Lot</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>1 gallon</td>
<td>Rail – 3 feet with markings</td>
<td>1 gallon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post – 2 feet with holes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hardware - 3 each</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Separate TR-447 for each component)</td>
<td></td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Plastic Container</td>
<td>Label</td>
<td>Plastic Container</td>
</tr>
</tbody>
</table>
Section II

Materials Tested in the LTS Laboratory

<table>
<thead>
<tr>
<th>Material</th>
<th>Latex Emulsion</th>
<th>Load Transfer Unit</th>
<th>Neoprene Comp. Seal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Each Lot</td>
<td>For Verification Each Lot</td>
<td>Each Lot</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>1 quart</td>
<td>1 cage with 3 dowels</td>
<td>5 feet length</td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Plastic Jar</td>
<td>Label</td>
<td>Label</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Lubricant</th>
<th>Premolded Joint</th>
<th>Joint Backup-Etha Foam Plank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Each lot</td>
<td>Each Shipment</td>
<td>One per Project</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>1 quart</td>
<td>6 lineal feet</td>
<td>3 feet of plank</td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Can or Jar</td>
<td>Label</td>
<td>Label</td>
</tr>
</tbody>
</table>
## Section II

### Materials Tested in the LTS Laboratory

<table>
<thead>
<tr>
<th>Material</th>
<th>Etha Foam Filler 1/2 inch</th>
<th>Paper Rope</th>
<th>Paint</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>One per Project</td>
<td>One per Project</td>
<td>For Verification - Each Lot</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>3 feet</td>
<td>3 feet</td>
<td>1 quart</td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Label</td>
<td>Envelope</td>
<td>Can</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Pipe, Plastic</th>
<th>Pozzolan</th>
<th>Protective Coating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>For Verification – Each Lot</td>
<td>Each Shipment</td>
<td>Each Lot</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>2 pieces 2 feet</td>
<td>1 gallon</td>
<td>1 quart</td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Label</td>
<td>Plastic Bucket</td>
<td>Can or Jar</td>
</tr>
</tbody>
</table>
## Section II

### Materials Tested in the LTS Laboratory

<table>
<thead>
<tr>
<th>Material</th>
<th>Rebar</th>
<th>Rebar Support</th>
<th>Rebar, Wire Mesh</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>For Verification – Each Lot</td>
<td>For Verification Each Lot</td>
<td>For Verification – Each Lot</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>3 bars</td>
<td>Full length</td>
<td>3 feet square</td>
</tr>
<tr>
<td></td>
<td>4 feet each</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Label</td>
<td>Label</td>
<td>Label</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Right of Way Fence Fabric</th>
<th>End Posts, Corner and Pull Posts, Line Posts, Steel Posts, Braces, Offset Brackets, Splice and Base Plates, Backing Plates, Etc.</th>
<th>Fasteners, Nuts, Bolts, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Each 150 Rolls or Fraction thereof.</td>
<td>First 500 Lengths or Fraction thereof and One per each additional 2500 lengths.</td>
<td>Once if same type and material for entire project.</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>One each 3 feet full depth.</td>
<td>One each –3 feet section.</td>
<td>3 each of all fittings and hardware, etc. (Separate TR-447 for each component)</td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Label</td>
<td>Label</td>
<td>Label</td>
</tr>
<tr>
<td>Material</td>
<td>Stay-in-place-Form</td>
<td>Strand</td>
<td>Waterproof Fabric</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>1 per each 200</td>
<td>For Verification</td>
<td>Each Lot</td>
</tr>
<tr>
<td>Sections or less.</td>
<td>Sections or less.</td>
<td>Each Lot</td>
<td></td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>1 foot by full width</td>
<td>3 strands</td>
<td>3 feet by full width</td>
</tr>
<tr>
<td>Accessories - 2 feet lengths.</td>
<td>Accessories - 2 feet lengths.</td>
<td>4 feet each</td>
<td></td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Label</td>
<td>Label</td>
<td>Label</td>
</tr>
<tr>
<td></td>
<td>Label</td>
<td></td>
<td>Do not fold. Roll material up for shipping</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Material</th>
<th>Water Stop, Copper Flashing</th>
<th>Water Stop, PVC</th>
<th>Project Specific, LTS Approved Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>Each Shipment</td>
<td>Each Shipment</td>
<td>Each Lot</td>
</tr>
<tr>
<td><strong>Size of Sample</strong></td>
<td>12-inch square</td>
<td>4 feet length</td>
<td>Pub 408, Section 106.02(a)2.b</td>
</tr>
<tr>
<td></td>
<td>4 feet length</td>
<td></td>
<td>QC Plan and 3rd party test data required prior to material being sampled</td>
</tr>
<tr>
<td><strong>Shipping Container</strong></td>
<td>Label</td>
<td>Label</td>
<td>Varies based on material being sampled</td>
</tr>
</tbody>
</table>
This page left intentionally blank.
Reduced inspection and acceptance procedures are permitted only for relatively small quantities of material for which standard procedures would be too costly. Specifications are not to be waived nor are materials of lower quality to be accepted.

The Contractor shall be informed by the District at the preconstruction conference of the circumstances under which this acceptance procedure will be used.

1. **PLANT-MIXED BITUMINOUS CONCRETE COURSES ---**

   Less than 50 tons per day per course according to Publication 408, Section 409 and as follows:

   The field inspector is to obtain a copy of TR-4276B and document that the compaction testing was performed in accordance with PTM 402 or PTM 403 for each day density is accepted by the optimum rolling pattern procedure. For density acceptance by non-movement, the inspector must document visual non-movement of the material under the compaction equipment.

   The Contractor will furnish the Department daily, from the material producer, a Form CS-4171 certifying that the material was produced in accordance with the approved job mix formula and PennDOT specifications.

2. **PORTLAND CEMENT CONCRETE ---**

   Less than 25 cu. yd. per day per class of concrete for non-critical incidental items.

   This procedure is not permitted for structures of any type; mainline, shoulders, and ramp paving; or other structurally critical items which may carry traffic loads.

   Items that are non-critical may be included in this procedure. Some of the incidental items for which reduced inspection control may be used include:

   - Paved Ditch
   - Curb and Gutter
   - Curb Cuts
   - Raised Medians
   - Pipe Headwalls
   - Inlets
   - Base Course Widening
   - Sidewalks
   - Fence Posts

   *April 2017 Edition*
The requirement for molding cylinders may be waived when small quantities acceptance is utilized. However, it is recommended that QC tests for slump, plastic air and temperature are performed.

If the total quantity of Portland Cement Concrete for a contract line item exceeds 100 cubic yards, at least one set of AT cylinders shall be molded during one of the daily placements for acceptance of that day’s material.

It is recommended that this policy is discussed at the Pre-construction meeting held for the project. Acceptance of small quantities of Portland Cement Concrete must be detailed in the Contractor’s QC plan.

The Contractor will furnish the Department daily, from the material producer, a Form CS-4171 certifying that the material was produced in accordance with the approved mix design and PennDOT specifications.

3. **EMBANKMENT ---**

Less than 1000 cu. yd. per project.

The field inspector will ensure that specification compaction equipment is used and that the contractor obtains non-movement under the equipment. Place in loose lift thicknesses specified in Publication 408 Section 206.3. The field inspectors will document their findings on Department Form TR-478A.

4. **CONSTRUCTION AGGREGATE ---**

Publication 408 Section 703.

5. **PIPE BACKFILL ---**

No nuclear testing is required for pipe extensions less than 20 ft.

A maximum of 400 ft. of pipe may be placed per project.

One nuclear test will be required on the first run of pipe to determine a rolling pattern which will then be used for subsequent runs of pipe provided the material, compaction equipment and supplier remain the same. The field inspector will document all subsequent runs utilizing this pattern on Department Form TR-478A.
Due to the difficulty in obtaining a maximum dry-weight density and no density requirements, no nuclear testing will be required for Combination Storm Sewer and Underdrain backfill.

Place material in appropriate loose lift thicknesses for the type of material specified and compact to non-movement using specified compaction equipment. The field inspector will document findings on Department Form TR-478A.

6. **SUBBASE ---**

Less than 2000 sq. yd. per project.

The field inspector will ensure that specified compaction equipment is used and that the contractor obtains non-movement under the equipment. Place in loose lift thicknesses specified in Publication 408 Section 350.3. The field inspector will document pertinent findings on Department Form TR-478A.

7. **BRIDGE PAINT ---**

Less than 50 gallons.

District provides CS-4171 and Manufacturer Certification test results to the Laboratory Testing Section (LTS) for review.
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The intent of the TR-478A non-movement form is to document the compactive effort by the contractor on any material that cannot be tested for density requirements using either AASHTO T 191 or AASHTO T 310.

When embankment, subgrade, subbase or pipe backfill material is too coarse or granular (more than 20% retained on the 19.0 mm (¾-inch) sieve or whenever a viable proctor cannot be obtained on the material), the compaction density is to be accepted on the basis of non-movement of the material under compaction equipment.

Form TR-478A is to be used to document the visual density testing by the inspector. The form was designed to be self-explanatory; however, some important items are as follows:

- The type of construction must be identified, one type of construction for each form.

- It is very important to document the justification for using this method of testing. Justification is more than 20% of the material is retained on the 19.0 mm (¾-inch) sieve or that a viable proctor test could not be obtained on the material being placed. Space is provided on the form to calculate the percentage of plus 19.0 mm (¾-inch) sieve material. If a proctor cannot be run on the material, this should be noted in the remarks section. A gradation test is not needed for each compaction test when the material does not change.

- Note whether the compaction test passed or failed.
Material may be released to the project site from the bituminous or cement concrete plant or from the aggregate quarry, when the field inspector notifies the plant or quarry that conditions are acceptable. The District Materials Engineer/Manager should be notified at least twenty-four hours in advance of any anticipated releases.
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Section 704.1(d)5 of Publication 408 establishes the acceptance criteria for cement concrete strength requirements.

When the acceptance cylinder compressive strength does not meet the specified 28-day minimum mix design compressive strength specified in Table A, Section 704, Publication 408 or the 28-day quality control compressive strength test is less than the 28-day structural design compressive strength specified in Table A, Section 704, Publication 408, the procedure outlined in Section 110.10, Publication 408 is to be used to determine material acceptance and payment.
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Form CS-458A is the required test report form for concrete cylinders. It is a comprehensive report to summarize compressive strength data. The form is used to provide a proper audit trail for determination of loading, form work removal, cure removal, acceptance and payment.

The Inspector-in-Charge or delegate is to complete each CS-458A by entering the information required by the form. Record the compressive strength for each cylinder break to the nearest 10 psi. The molder's name may be printed on the form. However, the molder's signature must be placed in the Concrete Inspector's Daily Record Book, CS-472. This will preclude taking Form CS-458A to the site of actual concrete placement. All other signature blocks will contain actual signatures.

The "Project Engineer" copy is to remain in the project field office except when accompanying project personnel to perform or witness compressive strength testing. The Inspector-in-Charge is to review the completed form to verify the strengths meet contract requirements prior to acceptance and payment. Do not submit this copy to the District office for review with other copies. This procedure will prevent loss of all copies and will retain a copy on the project for review by FHWA Engineers and others.

The "District Materials Engineer" copy is to be submitted to the District Materials Engineer/Manager for review once completed. The District Materials Engineer/Manager is to review the CS-458A to assure the Inspector-in-Charge properly completes the form. The District Materials Engineer/Manager should also verify that proper quality levels are being attained.

The "MTD/QA Division" copy is to be submitted to the District Materials Engineer/Manager once completed. The District Materials Engineer/Manager will retain these in a separate file or mailbox until obtained by Construction Quality Assurance Section (CQAS) representatives. The CQAS representative will be reviewing the CS-458A's to target future evaluations of the associated contractors and suppliers with lower quality levels.
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Publication 408 requires the contractor to drill cores for density acceptance at the sampling location selected by the inspector in accordance with PTM No. 1, PTM No. 729 and PTM No. 746. All coring is to be done as directed and under the inspector’s supervision. The proper location is the intersection of the X and Y coordinates as determined by PTM No. 1. The inspector should mark the core location with a cross or 6-inch dot. The core must be taken at this location. If damage occurs during removal, follow Publication 408, Section 409.3(j)4.c.

Inspection personnel should inspect bituminous concrete core samples to assure proper identification throughout the sampling and testing process. The contractor is responsible for drilling and identifying the cores in the presence of an inspector and providing sample containers for transport. The Inspector-in-Charge is responsible for taking immediate possession of the cores and for transporting them to a Department pick-up point within three days for shipment to the Laboratory Testing Section (LTS). Projects that do not get the samples delivered to LTS within three weeks will receive a Written Response Required (WRR) notification and the Inspector-in-Charge will be required to respond in writing detailing the reason for the delay. Responses will be sent to Bureau of Project Delivery, Construction Quality Assurance Section Chief.

Be sure that cores are stored in the proper environment while awaiting delivery. Overheating, impact, or sitting cores on uneven surfaces can damage cores and prevent accurate test results.
This section concerns the sampling and testing of granular fill material for use in mechanically stabilized earth walls according to the specifications. The testing required includes gradation, resistivity, chemical analysis for chloride and sulfate content, pH determination, Atterburg limits, wash test, unit weight and a direct shear test. In addition, a proctor test is needed to determine the moisture content to be used in the direct shear test. Make sure the samples that are being submitted contain enough finer material to run all of the above tests. This is especially true of the No. 57 size aggregate which is sometimes submitted for this use.

In order for the Laboratory Testing Section (LTS) to perform all the required tests, each sample submitted is to consist of the following:

- 3 bags of approximately 40 pounds each, containing a normal specimen representing the complete gradation.
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I. Lighting Material Submission

A. General

Section 1101.01, Publication 408 requires that suppliers certify lighting poles, nuts, bolts, and associated hardware. All highway lighting material items require the submission of catalog cuts and/or shop drawings for approval.

Approval of the catalog cuts, drawings and manufacturer's specifications reasonably assures acceptance of the actual material at the time of delivery. However, the Engineer may reject or take test samples of the material at this time. If deficiencies are discovered in the field, the deficient material shall be rejected and replaced with acceptable material. Large quantities of cable or conduit should be occasionally and randomly sampled for testing by the Department.

B. Basis of Acceptance

The material must comply with project requirements, in order to be accepted.

C. Submission Content

1. Submit material separately for each project.

2. Include a transmittal letter containing the county, state route, segment (section), ECMS or MPMS number, and submission distribution.

3. Submit dimension sheets, schematic diagrams and outlines only when these data are needed to ensure compliance with project requirements.

4. Include manufacturer's letters as supplements to catalog cuts, drawings and manufacturer's specifications, if additional information is required for consideration during review. The letter must specify the specification reference and project.

5. Only material manufactured by established and reputable firms will be approved.

6. Identify each material cut by item number.

7. Indicate the material's use when it is not otherwise obvious, for example, "Conduit for direct burial," "Cable for non-burial," "Circuit breakers for sign structures."
8. Indicate additional optional features being provided, for example, "Finish to be galvanized," "Hardware to be stainless steel."

9. Materials that do not conform to Standard Drawings or Specifications must be marked and accompanied by Special Provision and applicable drawings.

10. Changes to standard products should not be made on a catalog cut or drawing. Any changes require a letter from the manufacturer stating the change.

11. Accessories, such as tools and minor devices necessary for material installation and not included in Standard Specifications or Special Provisions, are not to be submitted for Central Office Review. These accessories will be accepted based on installation practices of the industry.

12. Material approval does not include size, dimensions, rating, quantity, class and installation, although replies to material submission may question these factors if an error is believed. The contractor is responsible for the material's correct size, dimensions, rating, quantity, class and installation.

II. Lighting Material Approval Procedure

A. The contractor must submit an original PDF of the catalog cut, drawing and manufacturer's specifications for the material with a cover letter to the District, Attention: Assistant Construction Engineer.

B. The District shall review the submission, add relevant comments, then forward the submission to the Highway Lighting group in the Bureau of Maintenance and Operations – Maintenance and Technical Leadership Division. E-mail materials submissions to: RA-pdHwyLighting@pa.gov. The Highway Lighting group will review the catalog cuts, drawings and manufacturer's specifications and, when appropriate, obtain Federal Highway Administration approval.

1. If the material is approved, the submitted PDF will be stamped "Approved" and returned to the District.
   If the material is not approved, the submitted PDF will be stamped “Not Approved” and returned to the District.

C. The Assistant Construction Engineer is to forward all information on the reviewed material to the Inspector-in-Charge on the project.

D. If the material is not approved, the contractor must submit new PDF catalog cuts, drawings and manufacturer's specifications. The approval procedure will then be repeated.
III. Material Substitute Procedure

A. Material proposed as a substitute will be submitted using the same procedure as Part II.

B. Material submitted as a substitute will be considered only under the following conditions:

1. The specified material is no longer available. Two letters from reputable manufacturers stating that the specified material is no longer available are required with the substitute material submission.

2. The delivery period is unacceptable to the work schedule, and the delay in delivery is not the contractor's fault. Two letters from reputable manufacturers stating their best delivery dates are required with the substitute material submission.

3. The difference in material cost between the specified and substitute material can be determined. Added cost of the substitute material will be absorbed by the contractor; cost savings of the substitute material will be returned to the Department.

4. The difference in labor cost between the specified and substitute material can be determined. Added labor cost of the substitute material will be absorbed by the contractor; labor cost savings of the substitute material will be returned to the Department.
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The purpose of the Department's Quality Assurance (QA) program is to evaluate the quality of materials and the construction operations through an unbiased and independent review of project quality control and acceptance sampling and testing systems.

Construction Quality Assurance Section (CQAS) Teams make random visits to construction projects, bituminous and Portland Cement Concrete plants, aggregate quarries, cement mills, refineries, and miscellaneous manufacturers on a statewide basis. The CQAS Teams perform in-depth inspections and evaluations at the plants, quarries and projects. They observe sampling and testing procedures to assure conformance with Department policies and procedures. The reporting of these evaluations is made utilizing the Quality Assurance Reporting Systems (QARS). Quality Assurance samples will be lifted by the CQAS Teams. These samples, in addition to being a comparison to quality control and acceptance tests, provide data to be used by the quality assurance data bank to analyze existing specifications and develop new ones.

The QARS checklists cover construction operations, material operations, sampling and testing operations, and support operations. Copies of the checklists are available upon request through the Assistant Construction Engineers/Managers and at P:\penndot\shared\BOCM\QA Checklists. Listings of the individual checklists are also found in Appendix A of this publication.
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Concrete cylinders will be molded as part of the Quality Assurance operation review process in accordance with the Quality Assurance Manual, Publication 25, and Publication 408, Section 704.1(d)7. The cylinders will be tested for 28-day compressive strength and hardened concrete entrained air content. The purpose of the Quality Assurance (QA) samples is to check the strength potential of the concrete mix design, check the accuracy of the equipment used for project acceptance testing, and to evaluate the hardened concrete entrained air content relative to specification requirements and corresponding plastic concrete test results performed on the same sample.

The QA sample shall consist of molding five (5) concrete cylinders. Prior to molding the cylinders, plastic slump and air tests will be performed on the concrete sample. The Contractor’s Certified Concrete Field Technician will perform the concrete testing and mold QA cylinders for the Construction Quality Assurance Section (CQAS) representative. The CQAS representative will witness the concrete testing and molding of the QA cylinders.

Quality Assurance cylinders are to be field cured, in accordance with PTM 611, Section 11.2, for the specified curing period for the structural element they represent, and shall be identified in accordance with PTM 611, Section 12. When curing of the cement concrete is discontinued, relocate the cylinders to a pre-approved secure area and continue curing in a manner consistent with the contractor's 28-day field cured quality control cylinders.

Conduct 28-day compressive strength testing on two (2) of the cylinders in accordance with PTM No. 604 using the same equipment used for acceptance testing. The compressive strength of the sample will be determined as the average of the compressive strength of the two (2) individual cylinders.

The TR-447, "Sample Identification Form", will be completed by the CQAS representative at the time of the review and left with the Project Inspector. The original copy of this form must accompany the QA cylinders being shipped to the LTS. The bar code stickers from the bottom of the TR-447 form must be attached to the outside of each shipping box, indicating the appropriate sample increment.

Maintain the cylinders at the project for approximately 21 days prior to shipment to LTS. Ship the remaining three (3) Quality Assurance cylinders to LTS in time for 28-day compressive strength testing in accordance with PTM No. 604 and testing for hardened air content in accordance with PTM No. 623. The contractor is to furnish packaging material and package cylinders under the direction and supervision of the Project Inspector.
The cylinders must be in a moist condition, placed in plastic bags and sealed to prevent drying during shipping. Ship the cylinders in individual containers cushioned with suitable material to prevent damage and freezing during handling and transportation. The total weight of each container, cylinder, and cushioning material must not exceed 50 lbs. Quality Assurance cylinders may be shipped to the LTS via Pony Express or by commercial carrier.

The LTS will return the shipping containers to the pickup location via Pony Express, if the Contractor places the following additional information on the outside of the container:

Return To: [Company Name]
SR and Section
District and County Code of the pickup location.

The test results will be reported on form CS-458A, "Report of Compressive Strength of Portland Cement Concrete", and a copy will be forwarded to the District Materials Engineer/Manager (DME/DMM).

The results of the 28-day compressive strength test and hardened concrete entrained air content test conducted by the LTS will be reported to the District. The District will be responsible for comparing the results of tests conducted by the project to those conducted by the LTS for the corresponding QA sample. The comparison of these results will aid in determining the accuracy of the equipment used for project acceptance testing. The District should also compare the QA sample test results to the concrete strength reported on the TR-4221A, "Concrete Mix Design Form", to verify the compressive strength of the Master Design. Any significant variations resulting from the comparison of test results must be investigated to determine possible causes and, when necessary, appropriate actions implemented to correct deficiencies.

It is important that the QA concrete cylinder samples be properly molded, handled, cured, packaged and delivered to the LTS in a uniform manner, in accordance with this policy. This will aid in assuring that reliable test results are achieved.
FIELD ADJUSTMENT OF CONCRETE MIXES

In accordance with Publication 408, Section 704, water may only be added to concrete mixes from a concrete plant's water measuring system. However, due to errors that may occur in the moisture content of the aggregates at the start of a batching operation or due to unforeseen circumstances at or in route to a jobsite, the need may arise to add water to correct the slump of the mix at the project site.

The decision to add water to a mix at a project site must be made by the contractor's PennDOT certified field testing technician. The Department Representative will determine the maximum amount of water that can be added. The addition of water must be done under the supervision of the Department Representative.

Water may only be added to trucks at the start of the batching operation or due to unforeseen circumstances that may occur during the concrete placement. The producer should be informed immediately whenever field adjustments are required. Allow the producer sufficient time to make necessary adjustments at the plant. Concrete shall be mixed to the approved proportions in the design. Water shall not be withheld deliberately.

The addition of water is limited to 1 gallon per cubic yard of concrete in the truck, and the total water in the mix cannot exceed the maximum water/cement ratio of the trial mix on the design. The addition of water is only permitted to be added at the beginning of the full load after the initial testing is complete. All mix adjustments must be recorded in the Concrete Inspectors Daily Record Book. After the additional water has been loaded into the mixing drum, the drum must be turned an additional 30 revolutions or more at mixing speed. The total number of mixing revolutions cannot exceed 300. The concrete must be resampled and retested for slump, temperature, and plastic air content and meet the specification requirements prior to incorporating into the work. In addition, compressive strength cylinders must be molded from the retested material.

Transit truck mixers must be inspected annually, including the truck-mounted water systems, and documentation (See Form CS-4337) must be presented to the Inspector prior to adjusting the mix.

Specific details regarding the field adjustment of concrete mixes must be included in the contractor's concrete quality control plan. Districts that do not currently permit the field adjustment of concrete mixes may continue this policy.
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The Bureau of Project Delivery Construction Quality Assurance Section (CQAS) will administer the Independent Assurance program at construction projects receiving concrete for paving, patching, shoulders, or structures. The Independent Assurance program provides an unbiased and independent evaluation of the sampling and testing personnel, the testing equipment, and the sampling and testing procedures used in the Department's concrete acceptance program. Independent Assurance samples will be tested by the Bureau of Project Delivery, and the test results will be compared with companion test results run at the project to verify that results are within established tolerance limits.

The Bureau of Project Delivery CQAS will annually perform a minimum of ten (10) Independent Assurance reviews in each District on construction projects receiving concrete for paving, patching, shoulders, or structures. Included among these reviews are federal-aid projects on the National Highway System meeting the following minimum project quantities:

- **Pavement / Shoulders / Patches:** 1 Review > 20,000 yd$^2$ (combined quantity for each contract)

- **Structural Concrete:** 1 Review > 1,000 yd$^3$

Note: Projects receiving concrete from the same source for paving, patching, shoulders, and structures require only 1 review.

Projects for review are not limited to federal-aid projects on the National Highway System.

CQAS will determine the projects to be reviewed. Independent Assurance sampling and testing will normally be performed in conjunction with a Quality Assurance review of the construction operation.

Sampling and testing will be performed by a PennDOT certified field testing technician.

During the review, the CQAS representative and the contractor's PennDOT certified field testing technician will take a temperature from the same sample. A comparison will be performed to evaluate the precision of the thermometers. Corrective measures will be implemented immediately if the temperatures are outside the tolerance.

Air meters must be calibrated a maximum of two weeks before beginning concrete placement. Recalibrate all air meters every two weeks during concrete placement. Document the results of air meter calibrations in the Concrete Inspectors Daily Record Book.

April 2017 Edition
Independent Assurance plastic air content testing will be performed by the contractor's PennDOT certified field testing technician. The technician will perform plastic air testing with the equipment used for acceptance testing and, from the same sample of concrete, will perform plastic air testing using the contractor's back-up air meter. A comparison will be performed to evaluate the precision of the plastic air content testing. Corrective measures will be implemented immediately if the results are outside the tolerance.

The contractor's PennDOT certified field testing technician will also mold five (5) Quality Assurance cylinders from one of the samples tested for plastic air content. The cylinders will be field cured with the 28-day quality control cylinders used for acceptance. Two (2) cylinders will be tested for compressive strength at 28 days on the compression machine used for acceptance and verification testing. The compressive strength of the sample will be determined as the average of the compressive strength testing of two (2) individual cylinders.

Three (3) cylinders will be forwarded to the Bureau of Project Delivery in time for 28-day compressive strength testing and for hardened air content. The hardened air content will be for informational purposes.

Upon receipt of the 28-day compressive strength test results from the project and LTS, a CQAS representative will compare the test results to the Independent Assurance precision tolerances specified below.

As a part of the Independent Assurance review, a CQAS representative will review project records to insure verification and acceptance test results have remained within the prescribed precision tolerances.

<table>
<thead>
<tr>
<th>Independent Assurance Precision Tolerances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
</tr>
<tr>
<td>28-day Compressive Strength</td>
</tr>
<tr>
<td>Plastic Air Content</td>
</tr>
</tbody>
</table>

When test results vary from the allowed precision tolerances or problems with sampling and testing personnel or equipment are discovered, CQAS will immediately inform the Project Manager. The District will perform an investigation of the discrepancies and take appropriate corrective action where necessary. The District will inform CQAS with the results of their investigation and what corrective actions were taken. Where necessary, a CQAS representative will perform a follow-up review to insure all deficiencies have been corrected.

Independent Assurance review results will be maintained by CQAS for each District. The Bureau of Project Delivery will summarize the Independent Assurance review results at the conclusion of each construction season and submit the results to FHWA in an annual report.
INDEPENDENT ASSURANCE PROCEDURES - BITUMINOUS SOURCES

The Bureau of Project Delivery Construction Quality Assurance Section (CQAS) will administer the Independent Assurance program at bituminous sources supplying Department construction projects. The Independent Assurance program provides an unbiased and independent evaluation of the sampling and testing personnel, the testing equipment, and the sampling and testing procedures used in the Department's bituminous acceptance program. Independent Assurance samples will be tested by the Bureau of Project Delivery and the test results will be compared with companion test results run at the source by the source technician to verify that results are within established tolerance limits.

During each construction season the Bureau of Project Delivery CQAS will perform a minimum of ten (10) Bituminous Independent Assurance reviews in each District where practical, at bituminous sources shipping base courses, binder courses, or wearing courses to Department projects. In Districts where the number of active bituminous sources are limited, a minimum of one (1) but no more than two (2) Bituminous Independent Assurance reviews will be conducted at each source per construction season. Included among these reviews are bituminous sources shipping material to federal-aid projects on the National Highway System meeting the following minimum project quantities:

- Bituminous Wearing Course: 1 Review > 100,000 yd\(^2\) [or equivalent tonnage]

Note: The plant may be producing base, binder, or wearing courses at the time of the review and satisfy this requirement.

Bituminous Independent Assurance reviews are not limited to bituminous plants shipping to federal-aid projects on the National Highway System.

CQAS will determine the sources to be reviewed. Independent Assurance sampling and testing will normally be performed in conjunction with a Quality Assurance review of the plant operations.

With one of the Quality Assurance samples lifted during the review, a companion sample will be lifted and tested by the plant technician. The companion sample will normally be lifted with the first QA increment. The TR-447 will designate which increment was lifted with the companion sample.

During the review, the CQAS representative and the plant technician will take a minimum of three (3) temperatures from the same location. A comparison will be performed to evaluate the precision of the thermometers. Corrective measures will be implemented immediately if the temperatures are outside the tolerance.
The plant technician will test the companion loose box sample and the results will be recorded by the CQAS representative.

Sampling and testing at the source will be performed by a PennDOT Certified Bituminous Plant Technician.

Upon receipt of the test results from LTS, a CQAS representative will compare the test results to the Independent Assurance precision tolerances specified below.

### Independent Assurance Precision Tolerances

<table>
<thead>
<tr>
<th></th>
<th>Maximum Difference Between Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong></td>
<td>± 5° F</td>
</tr>
<tr>
<td><strong>Bitumen</strong></td>
<td>± 0.5 %</td>
</tr>
<tr>
<td><strong>Gradation</strong></td>
<td></td>
</tr>
<tr>
<td>Sieve Size</td>
<td></td>
</tr>
<tr>
<td>2.36 mm (No.8)</td>
<td>6 %</td>
</tr>
<tr>
<td>1.18 mm (No.16) through 150 µm (No.100)</td>
<td>4 %</td>
</tr>
<tr>
<td>75 µm (No.200)</td>
<td>2 %</td>
</tr>
</tbody>
</table>

When test results vary from the allowed precision tolerances or problems with sampling and testing personnel or equipment are discovered, CQAS will immediately inform the District Materials Engineer/Manager. The District will perform an investigation of the discrepancies and take appropriate corrective action where necessary. The District will inform CQAS with the results of their investigation and what corrective actions were taken. Where necessary, a CQAS representative will perform a follow-up review of the source to insure all deficiencies have been corrected.

Independent Assurance review results will be maintained by CQAS for each District. The Bureau of Project Delivery will summarize the Independent Assurance review results at the conclusion of each construction season and submit the results to FHWA in an annual report.
The Bureau of Project Delivery Construction Quality Assurance Section (CQAS) will administer the Independent Assurance program at aggregate sources supplying Department construction projects. The Independent Assurance program provides an unbiased and independent evaluation of the sampling and testing personnel, the testing equipment, and the sampling and testing procedures used in the Department's aggregate acceptance program. Independent Assurance samples will be tested by the Bureau of Project Delivery, and the test results will be compared with companion test results run at the aggregate source to verify that results are within established tolerance limits.

During each construction season, the Bureau of Project Delivery CQAS will perform a minimum of ten (10) Aggregate Independent Assurance reviews in each District at aggregate sources shipping material to Department projects. Included among these reviews are aggregate sources shipping material to federal-aid projects on the National Highway System meeting the following minimum project quantities:

<table>
<thead>
<tr>
<th>No.</th>
<th>Aggregate Type</th>
<th>Minimum Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2A</td>
<td>Aggregate Subbase</td>
<td>&gt; 50,000 yd²</td>
</tr>
<tr>
<td>57</td>
<td>Structure Backfill</td>
<td>&gt; 5,000 yd³</td>
</tr>
</tbody>
</table>

Note: The source does not need to be producing or shipping material at the time of the review to satisfy this requirement. Material must be obtained from a Department approved stockpile. Sources shipping material for both items require only 1 review. Sources shipping to multiple projects meeting the above requirements require only one review per construction season.

Aggregate Independent Assurance reviews are not limited to aggregate sources shipping to federal-aid projects on the National Highway System. Independent Assurance reviews are not limited to No. 2A or No. 57 aggregate types.

The CQAS will determine the sources to be reviewed. Sampling and testing for Independent Assurance will be coordinated with the District Materials Engineer/District Materials Manager (DME/DMM) or their staff to coincide with a scheduled DQA review, or at a mutually agreed upon time with the DME/DMM or their staff, such as when the District is at the source to test project verification samples.

The following process will constitute an Independent Assurance review. An Independent Assurance sample (n=1) will be taken from an approved Department stockpile at a source supplying aggregate to a Department project, under the direction and supervision of the DME/DMM or their staff. The Independent Assurance sample will be split in accordance with
AASHTO R 76 to obtain two (2) equivalent samples for testing. In addition, a representative sample will be obtained for an IA Wash Test by LTS.

To obtain the required minimum sample size after splitting, the initial sample for each aggregate type must be as follows:

<table>
<thead>
<tr>
<th>Aggregate</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 3</td>
<td>130 lbs.</td>
</tr>
<tr>
<td>No. 5</td>
<td>80 lbs.</td>
</tr>
<tr>
<td>No. 57</td>
<td>75 lbs.</td>
</tr>
<tr>
<td>No. 67</td>
<td>65 lbs.</td>
</tr>
<tr>
<td>No. 7</td>
<td>65 lbs.</td>
</tr>
<tr>
<td>No. 8</td>
<td>30 lbs.</td>
</tr>
<tr>
<td>No. 10</td>
<td>5 lbs.</td>
</tr>
<tr>
<td>No. 2A</td>
<td>100 lbs.</td>
</tr>
<tr>
<td>No. OGS</td>
<td>100 lbs.</td>
</tr>
</tbody>
</table>

Only one (1) aggregate type is required to be tested per each Independent Assurance review.

Sampling and testing at the source will be performed by certified aggregate technicians.

One sample will be tested by the DME/DMM or their staff at the source and one sample will be tested by the source technician, both using the same equipment. The sample tested by the source technician will then be re-bagged and sent for testing to the Bureau of Project Delivery, Laboratory Testing Section (LTS). Samples will be tested for compliance with Publication 408, Section 703, Tables C & D, plus the Crushed Fragments Test of Table B, when applicable.

A CQAS representative does not need to be present for the entire process of Independent Assurance sampling and testing at the source. Whenever a CQAS representative does not witness any portion of the process of Independent Assurance sampling and testing at the source, the test results obtained at the source by the DME/DMM or their staff and the source technician should be forwarded to the appropriate CQAS representative in a timely manner.

Arrangements for the transportation of the Independent Assurance sample to LTS will be coordinated by a CQAS representative with the DME/DMM or their staff. The CQAS representative coordinating the review will complete the TR-447 for the LTS sample and identify it as an Independent Assurance sample. The method used to perform the Wash Test (Manual or Automatic Aggregate Washer / Plain Water or Wetting Agent) should be reported in the remarks section of the TR-447.

Test results from the source will be compared to the Independent Assurance precision tolerances by CQAS immediately upon receipt from the District. Those results will then be
compared with the test results obtained by LTS for compliance with the Independent Assurance precision tolerances.

### Independent Assurance Precision Tolerances

<table>
<thead>
<tr>
<th>Gradation</th>
<th>Sieve Size</th>
<th>Maximum Difference between Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.36 mm (No. 8) sieve and larger</td>
<td>6 %</td>
</tr>
<tr>
<td></td>
<td>1.18 mm (No. 16) through</td>
<td>4 %</td>
</tr>
<tr>
<td></td>
<td>150 µm (No. 100) sieves</td>
<td></td>
</tr>
<tr>
<td></td>
<td>75 µm (No. 200) sieve</td>
<td>2 %</td>
</tr>
</tbody>
</table>

When test results vary from the allowed precision tolerances or problems with sampling and testing personnel or equipment are discovered, CQAS will immediately inform the DME/DMM. The District will perform an investigation of the discrepancies and take appropriate corrective action where necessary. The District will inform CQAS with the results of their investigation and what corrective actions were taken. Where necessary, a CQAS representative will perform a follow-up review of the source to insure all deficiencies have been corrected.

Independent Assurance review results will be maintained by CQAS for each District. The Bureau of Project Delivery will summarize the Independent Assurance review results at the conclusion of each construction season and submit the results to FHWA in an annual report.
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In accordance with Publication 408, Section 704, air entraining admixture may only be added to concrete mixes from a concrete plant's measuring system. However, due to the unpredictable nature of estimating proper dosages at the start of a batching operation, the need may arise to add additional air entraining admixture (AEA) to correct the air content of the mix at the plant prior to the mixture being shipped to the project.

The decision to add additional AEA to a mix at the production source must be made by the producer’s certified concrete plant technician. Additional AEA may only be added to the first three trucks at the start of the batching operations. The producer should make appropriate adjustments prior to batching additional loads after air adjustments are made. Concrete shall be mixed to the approved proportions in the design. AEA shall not be withheld deliberately.

The AEA must be the same brand and type as originally proportioned into the mix. The admixture liquid must be accurately measured and placed into a container of sufficient size to be thoroughly diluted with one gallon of water. The total water in the mix cannot exceed the maximum water/cement ratio of the trial mix on the design. With the drum momentarily stopped, the AEA admixture and water solution should be added to the front (or discharge location) of the drum. All mix adjustments must be recorded on the delivery ticket including the 1 gallon of water and the dosage of the AEA added. After the AEA and water solution has been loaded into the mixing drum, the drum must be turned an additional 30 revolutions or more at mixing speed and retested for plastic air content to ensure uniformity in air content throughout the batch. The total number of truck drum revolutions cannot exceed 300 on the project. Only one air adjustment is permitted per load.

Specific details regarding the plant adjustment of concrete mixes must be included in the producer's quality control plan.
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The following is a guide for filling aggregate sample containers (woven polypropylene bags or 5-gallon plastic or metal buckets with lids) with a sample of aggregate material for laboratory testing. This guide will help ensure the acceptable amount of aggregate sample material is obtained and submitted for laboratory testing. The guide will also help prevent overfilling the sample containers with too much aggregate sample material, to enable easy and safe handling of the filled sample containers.

### Typical Sample Bag (17” Width)

See Table Below

<table>
<thead>
<tr>
<th>Material</th>
<th>Inches from Bottom of 17” Wide Bag</th>
<th>Approximate Weight to be Submitted in Each Bag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Aggregate</td>
<td>14</td>
<td>50 lbs.</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>15</td>
<td>50 lbs.</td>
</tr>
<tr>
<td>Anti-Skid materials</td>
<td>12</td>
<td>50 lbs.</td>
</tr>
<tr>
<td>AASHTO # 3</td>
<td>11</td>
<td>30 lbs. (2 bags required to = 1 increment)</td>
</tr>
<tr>
<td>AASHTO # 1</td>
<td>14</td>
<td>40 lbs. (6 bags required to = 1 increment)</td>
</tr>
</tbody>
</table>
Typical Sample Bag (15” Width)

See Table Below

<table>
<thead>
<tr>
<th>Material</th>
<th>Inches from Bottom of 15” Wide Bag</th>
<th>Approximate Weight to be Submitted in Each Bag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Aggregate</td>
<td>15</td>
<td>50 lbs.</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>16</td>
<td>50 lbs.</td>
</tr>
<tr>
<td>Anti-Skid materials</td>
<td>13</td>
<td>50 lbs.</td>
</tr>
<tr>
<td>AASHTO # 3</td>
<td>11</td>
<td>30 lbs. (2 bags required to = 1 increment)</td>
</tr>
<tr>
<td>AASHTO # 1</td>
<td>14</td>
<td>40 lbs. (6 bags required to = 1 increment)</td>
</tr>
</tbody>
</table>
Typical Sample Five Gallon Bucket

See Table Below

<table>
<thead>
<tr>
<th>Material</th>
<th>Inches from Bottom of 5-Gallon Bucket</th>
<th>Approximate Weight to be Submitted in Each Bucket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Aggregate</td>
<td>14</td>
<td>50 lbs.</td>
</tr>
<tr>
<td>Fine Aggregate</td>
<td>15</td>
<td>50 lbs.</td>
</tr>
<tr>
<td>Anti-Skid materials</td>
<td>12</td>
<td>50 lbs.</td>
</tr>
<tr>
<td>PART</td>
<td>SECTION</td>
<td>PAGE</td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>B</td>
<td>6</td>
<td>22-4</td>
</tr>
</tbody>
</table>

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VERIFICATION PROCESS FOR RIDE QUALITY OF NEWLY CONSTRUCTED PAVEMENTS

Publication 408, Section 404 and Section 507, respectively address the evaluation of bituminous and concrete pavement surface profiles and the determination of the ride quality incentive associated with the pavement surface profile. In addition, standard special provisions provide for the evaluation of ride quality across bridge decks and approach slabs and the payment of ride quality incentives. These specifications and special provisions require the contractor to determine the ride quality of the finished pavement surfaces.

In the presence of the Inspector, the contractor must measure the pavement surface profile using a Light Weight Profiler (LWP) according to PTM No. 428. The LWP operator must be certified. A printed copy of the distance calibration, laser height verification results, and bounce test results must be submitted to the PennDOT Representative each day prior to taking the measurements. The resultant final International Roughness Index (IRI) data must be provided to the Representative within 24 hours of the conclusion of each test. The required IRI data consists of the final raw binary data files, a summary printout of the final IRI value calculated for each pass as generated by the equipment performing the test, and the final processed data. The printout from the inertial profiler must include the following information:

- Date and time of day
- Operator and equipment identification
- Weather conditions: temperature, cloud cover, and wind
- Surface description: type of pavement and condition
- Location and description of section: Job ID, lot, lane, wheel path, beginning and ending stationing, and direction measured
- Lot length
- Software version: both the LWP and the reporting software
- Data filter settings
- High-pass filter setting = 100 ft.
- Lot IRI value: the average of the IRI values for the two wheel paths for each lot will be the IRI for the lot
- IRI values for excluded areas

The Department uses the contractor’s IRI data to evaluate ride quality and pay an appropriate incentive.

In addition, PennDOT conducts an annual verification process for acceptance of pavement rideability as measured using the International Roughness Index (IRI). 23 Code of Federal Regulations (CFR) requires a verification of at least 10% when using data obtained by the contractor in an acceptance decision. To achieve the 10% requirement, the verification process will be performed on at least one project per District per construction season.
Based on a report listing all projects that include the standard specification or a special provision for the evaluation of ride quality and payment of incentive, the BOPD Construction Quality Assurance Section Chief will identify which projects are subject to the annual verification, and notify the Assistant District Executive – Construction (ADE-C) in each District as well as the Bureau of Maintenance and Operation’s Roadway Inventory and Testing Unit (RITU), by June 30th of each year. Notification provided to the ADE-C and RITU should include the contract number, project contact person (generally IIC or ACE), physical length, and expected duration of the projects subject to verification. Projects involving bituminous pavement, concrete pavement, bridge decks and approach slabs ride quality evaluation are all subject to verification.

The verification will not entail retesting, but rather a re-analysis by RITU of the raw (unfiltered) binary data collected by the contractor and used to determine the IRI values. For the projects to be verified, once paving items are completed and the ride quality is evaluated by the contractor, the District will submit the completed PennDOT Form M-7, Contractor IRI Data Collection Form, and a file containing the final raw (unfiltered) binary data collected for each wheel path to RITU. For multi-year projects, the information should be submitted for the portion of the project completed in the year subject to verification. Each pass shall be clearly labeled and include county, state route, project number, lot number, and wheel path as required in PTM No. 428. The data file must be in “ERD” or PPF format, as defined in PTM No. 428. Submit via email to the Roadway Inventory and Testing Unit Chief using the Resource Account link, PD, IRI Data Collection, or via email address (RA-PDIRIDATACOLLECT@pa.gov) or submit in electronic format on a CD or data stick to:

Pennsylvania Department of Transportation  
Bureau of Maintenance and Operations  
Roadway Inventory and Testing Unit  
IRI Verification  
907 Elmerton Avenue  
Harrisburg, PA 17110

All data must be submitted to RITU by December 15th each year. RITU will analyze the raw (unfiltered) binary data and compare the IRI results to those reported by the contractor. RITU will provide the results of the IRI verification to the Construction Quality Assurance Section Chief by February 1st of the following year, who will then notify the Districts of the results and any follow-up action that must be taken.
A licensed public weighmaster is required by current construction and maintenance aggregate contracts and for bituminous concrete plants utilizing a recording truck scale.

A licensed public weighmaster must sign all weigh tickets to certify that the mass (weight) of each material, as determined by the truck scale, is correct. Any licensed public weighmaster who falsifies a delivery ticket, or who delegates their authority to any person not licensed as a public weighmaster, or who pre-signs a delivery ticket before performing the act of weighing, shall be guilty of a misdemeanor as stipulated in Section 21 of Act 64.

In case of recorder failure of the truck scale in a bituminous concrete plant, the Department requires the signature of the public weighmaster on the delivery ticket.

All licensed public weighmasters are permitted to weigh at all locations owned by their employer.

For all bituminous and aggregate shipments originating outside the Commonwealth of Pennsylvania, each District Materials Engineer/Manager shall contact all vendors in their area of responsibility to determine the name(s) of the individual(s) who will be attesting to the accuracy of the masses (weights) recorded. This person(s) shall sign the delivery ticket. PennDOT will accept the certification procedure of other States to meet our requirements.

The public weighmaster license identity number can be used as identification of the respective weighmaster responsible for the accuracy of weight included on the weigh ticket. The personal license identity number can be used by the public weighmaster as a secure electronic signature. Contingent with the implementation of this new procedure, the following security procedures must be in place:

1. Each public weighmaster must have personal, exclusive password protection on the computer.

2. An Electronic or Hard Copy of each ticket is to be maintained at the plant and be made accessible to the Department representative.

3. The public weighmaster’s name and license number must be provided on the ticket along with all other information currently required in the Project Office Manual (POM).

4. Once in use, the computer system must have an automatic security time-out feature in place to revert to a password sign-on screen if the computer stands idle for more than 15 minutes.
5. The producer’s Quality Control Plan must indicate the use of the electronic record, and must establish a policy strictly prohibiting sharing of the licensed public weighmaster identification with any other staff. The policy must include the repercussions of misuse or abuse of this electronic procedure.
Bituminous Plant and Field Technicians

For bituminous plant technicians, Publication 408 [Section 409.2(e)1.b] requires the Producer to provide a certified HMA Level 1 Plant Technician during mixture production and to provide a HMA Level 2 Plant Technician on-call during mixture production. The Level 1 and Level 2 Plant Technicians are to meet and be certified according to the requirements of Publication 351. Performance of technicians should be reviewed during each plant inspection and these performance review(s) should be used as the basis for PennDOT sign-off of technicians to attend the PennDOT/NECEPT Bituminous Plant Technician Certification Program courses to be initially certified or to be used as the basis for PennDOT sign-off of technicians requiring certification renewal.

For bituminous field technicians, Publication 408 [Section 409.3(h)1.c] requires the Contractor to provide a certified HMA Field Technician during placement of all HMA mixtures. The Bituminous Field Technicians are to meet and be certified according to the requirements of Publication 351. Performance of technicians should be reviewed during each paving operation and these performance review(s) should be used as the basis for PennDOT sign-off of technicians to attend the PennDOT/NECEPT Bituminous Field Technician Certification Program courses to be initially certified or to be used as the basis for PennDOT sign-off of technicians requiring certification renewal.

For bituminous plant or field technicians whose performance is deemed to be potentially substandard or include potential intentional misrepresentation of test results or documentation, the Performance Review Process in Publication 351 should be referenced for the proper procedure to follow to determine if any action is required against the technician’s certification status.

Concrete Plant Technicians

For concrete plant technicians, Publication 408 [Section 704.1(d)2] requires a concrete technician properly instructed and trained to develop the concrete design, to control the quality and gradation of aggregates used, to perform required concrete tests, and to control the operations and concrete deliveries so that the completed mixture conforms to the specifications at the point of placement.

The District Materials Engineer/Manager is responsible for evaluating cement concrete plant technicians. The evaluation is used to determine the technician's qualifications and to assure the District Plant Supervisor or project personnel of the technician's abilities to perform the work in accordance with specifications and required testing procedures.
The plant technician may be evaluated at the annual plant inspection or in conjunction with a District Quality Assurance inspection. The evaluation may be updated at the producer's request if the technician improves or gains experience in their Quality Control responsibilities. Adverse performance should be reported to the District Materials Engineer/Manager for corrective action.

If the technician's evaluation or lack of evaluation is questioned, the Chief, Laboratory Testing Section of the Bureau of Project Delivery may review the situation for disposition.

Concrete Field Technicians

For concrete field technicians, Publication 408 [Section 704.1(d)2.a] requires the Contractor to provide an ACI/PennDOT certified field testing technician during placement of material to perform the required acceptance testing. The Concrete Field Technicians are to meet and be certified according to the requirements of Publication 536.

For concrete field technicians, whose performance is deemed to be potentially substandard or include potential intentional misrepresentation of test results or documentation, the Performance Review Process in Publication 536 should be referenced for the proper procedure to follow to determine if any action is required against the technician’s certification status.

Aggregate Technicians

For aggregate technicians, Publication 408 [Sections 703.1(b)1 and 703.2(b)1] requires the Producer to provide a PennDOT Certified Aggregate Technician who will test fine aggregate and coarse aggregate at the source according to the requirements listed in Bulletin 14. The Aggregate Technicians are to meet and be certified according to the requirements of Publication 725.

For aggregate technicians, whose performance is deemed to be potentially substandard or includes potential intentional misrepresentation of test results or documentation, the Performance Review Process in Publication 725 should be referenced for the proper procedure to follow to determine if any action is required against the technician’s certification status.
The following documentation policies are required for proper record keeping and corrections to any documentation at all aggregate sources, bituminous and Portland cement concrete plants.

1. No (photocopied) forms with changed dates are to be used as source documents for testing not performed. This has been and will continue to be judged as forging of Department records. Severe measures are warranted and will be imposed when this condition is found.

2. All paper Department forms that carry a Department number are to be completed in black ink. Only worksheets may be completed in pencil. All electronic Department forms including all forms in the Electronic State Book are to be completed with the same care as paper forms.

3. When an error on a paper form is discovered by either Department or Industry personnel, a line is to be drawn through the incorrect entry and the correct data written above the lined-out entry. The correction will be initialed and dated by the person making the change.

4. When an error on an electronic form is discovered by either Department or Industry personnel, the incorrect entry should be deleted and the correct data recorded. The correction must be recorded on the paper Electronic Changes Form, Form CS-705, with the following information: details on what specific form and entry was corrected, the name of the person making the correction, the date and time of the correction, and the previously recorded incorrect entry. This form must be filled out and signed in black ink by the person making the change. At the end of the production season, the paper form shall be scanned and kept as an electronic record with the rest of the Electronic State Book.

District and Construction Quality Assurance Section (CQAS) representatives will be reviewing plant records to assure that properly approved procedures are being used.
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Section 409.2(e), Publication 408, Mixture Composition for Standard and RPS Construction, requires the producer to test the materials, proportions, and the mixture at the bituminous concrete plant laboratory in order to verify conformance with the uniformity specified. These requirements may be modified or there may be additional requirements in other Publication 408 Sections, including but not limited to Sections 309, 311, 410, 411, and 419. The producer must also design a bituminous mix that meets all Department requirements. A copy of the completed mix design is to be submitted to the District Materials Engineer/Manager (DME/DMM) at least three weeks before the planned start of mixture production.

The Department reserves the right to review any design through plant production, prior to using the design for Department work.

Each bituminous concrete producer must prepare and submit a quality control plan to the DME/DMM for review annually at least three weeks before the planned start of mixture production. The purpose of this requirement is to ensure that the producer will consistently produce a uniform and quality product within Department specifications.

The following Quality Control Plan is the minimum plan designed to meet these standards:

A. QC Organization Chart.
   1. Names of personnel responsible for quality control.
   2. Area of responsibility of each of the following individuals:
      a. Plant Superintendent
      b. QC Manager
      c. Technicians (include certification number)
      d. Other
   3. List outside agencies, e.g., testing laboratories and a description of services provided.

B. Testing Plan with Action Points:
   1. Production lot size 1000 Tons.
   2. Sample in accordance with PTM No. 1.
   a) Section 409 Superpave:
      i) 50 tons to less than 150 tons: asphalt content, gradation and theoretical maximum specific gravity.
      ii) 150 tons or more: asphalt content, gradation, theoretical maximum specific gravity and volumetrics.

4. Asphalt Content: PTM No. 757 and AASHTO T 308, PTM No. 702 and ASTM T 164, or PTM No. 742
   a) Frequency: Minimum Daily Testing and per PTM No. 1 for each established plant lot size. (Minimum daily testing may coincide with lot sample).
      i) After three tests, check multiple sample compliance (n ≥ 3): Table A (409).
      ii) After five tests, check running average compliance (n ≥ 3): Table A (409).
      iii) Action Point = JMF +/- 0.2%
      iv) Plot straight-line charts at n=1 and n=5

5. Gradation: PTM No. 757 and AASHTO T 30, PTM No. 739 or PTM No. 743
   a) Frequency: Minimum Daily Testing and per PTM No. 1 for each established plant lot size. (Minimum daily testing may coincide with lot sample).
      i) After three tests, check multiple sample compliance (n ≥ 3): Table A (409) or Table B (401).
      ii) After five tests, check running average compliance (n ≥ 3): Table A (409) or Table B (401).
      iii) Action Point = JMF +/- 1.0% on the 75 µm (No. 200) sieve; +/-3.0% on the 9.5 mm (3/8 inch) to the 150 µm (No. 100) sieves; +/- 5.0% on the 12.5 mm (1/2 inch) and larger sieves.
      iv) Plot straight-line charts for 2.36 mm (No. 8) and 75 µm (No. 200) sieves at n=1 and n=5, plot all other sieves at n=1 and n=5.

6. Theoretical Maximum Specific Gravity: AASHTO T 209
   a) Frequency: Minimum Daily Testing and per PTM No. 1 for each established plant lot size. (Minimum daily testing may coincide with lot sample).
      i) Condition and test according to the current Bulletin 27, Appendix I.
      ii) Plot on straight-line chart. (Action Point +/- 0.020).
      iii) CS-4171B Certification: List the most recent theoretical maximum specific gravity or average value as specified in Bulletin 27.

April 2017 Edition
7. Volumetrics:

   a) Section 409 Superpave Material:

      i) Frequency: Minimum Daily Testing and per PTM No. 1 for each established plant lot size. (Minimum daily testing may coincide with lot sample).

         a. Perform volumetric analysis using the mixture composition results from the same sample. Mix Design mixture composition values are not valid for volumetric analysis during production.

         b. Prepare a minimum of two specimens (AASHTO T 312).

         c. Determine bulk specific gravity (AASHTO T 166).

         d. Calculate Air Voids (AASHTO R 35). (Use most recent theoretical maximum specific gravity or average value as specified in Bulletin 27).

         e. Calculate VMA according to AASHTO R 35 and as specified in Bulletin 27, Appendix I.

         f. Check compliance with Section 409 Table B:

            1. Air Voids – each specimen must meet the +/-2% tolerance and the average of the two specimens must meet the multiple specimen tolerance of +/- 1.5%

            2. VMA – each specimen must meet the minimum VMA tolerance for the appropriate mix size.

         g. Record the individual and average Air Voids test results in the plant book.

         h. Record the individual VMA test results in the plant book.

         i. Record Lab Density and F/A test results in plant book.

         j. Plot Air Voids, VMA, and F/A test results on straight-line charts.

         k. Establish action points for voids and VMA to be within 408 Specification limits. F/A may be monitored during production also.

8. Aggregate Stock Gradations: PTM No. 616, AASHTO T 27, AASHTO R 90 and ASTM D 75

   a) Frequency: Weekly for each aggregate type and source used.

9. Hot Bin Gradations: PTM No. 743

   a) Frequency: Weekly to determine screening efficiency.

10. Apparent Moisture Content: PTM No. 749

    a) Frequency: Daily on each completed mixture containing a coarse aggregate with a water absorption exceeding 2.0%.
11. Check Recording Pyrometers (Batch plant – Bulletin 27/1-6)
   a) Frequency: Daily (Drum or other – Bulletin 27/1-6 & 1-14)
   b) Date: Record the production date on each pyrometer chart.

12. Mix Temperature
   a) Frequency: Daily on the first load and a minimum of five loads.
      i) Document mix temperatures on all copies of the delivery ticket.
         (Hot mix delivery tickets as per POM. B.7.6 – 2, 3)

13. RAP Material
   a) Moisture Content: AASHTO T 255
      i) Frequency: A minimum of Once Daily.
   b) Extraction for AC and gradation: PTM No. 757 or PTM No. 702 and PTM No. 739
      i) Frequency: One for each 1000 tons of RAP used or weekly.
   c) Refer to POM, Part B, Section 7, Page 22-1 for additional minimum requirements when incorporating greater than 15% RAP and less than or equal to 35% RAP in a bituminous mixture.

14. Drum Mix and Continuous Volumetric Proportioning Plants
   a) Aggregate Gradations: PTM No. 616, AASHTO R 90, AASHTO T 27, and AASHTO R 76
      i) Frequency: Daily when shipping 50 tons or more of completed mix.
         Aggregates will be sampled from bituminous plant stockpiles.
   b) Aggregate Moistures: AASHTO T 255 and Bulletin 27/1-13
      i) Fine Aggregate
         a. Frequency: A minimum of Twice Daily.
         Aggregates will be sampled from bituminous plant stockpiles.
      ii) Coarse Aggregate
         Aggregates will be sampled from bituminous plant stockpiles.
   c) Gate Calibration (Bulletin 27/1-5,1-14)
      i) Frequency: Annually for each type of material used or more frequently if required.
d) Bituminous Pump Calibration (Bulletin 27/1-15)
   i) Frequency: Start of season and every four months thereafter or more
      frequently if required.

e) Belt Weight Scale Calibration (Bulletin 27/1-14,15)
   i) Frequency: Start of season and then biweekly thereafter.

15. Plant Calibration and Verification Procedures

a) 50 pound test weight certification. (Bulletin 27/1-10)
   i) Frequency: Every three years by an outside agency.

b) Plant Scale Check: PTM No. 410
   i) Frequency: Full scale check at start of season and biweekly thereafter.

c) Truck Scale Certification (Bulletin 27/1-8)
   i) Frequency: Annually by an outside agency.

d) In event of failure of automatic proportioning or recording devices:
   i) All provisions and criteria of Bulletin 27, Chp.1, Sec. 3.7.4 will apply.

e) Calibrate anti-strip meter to meet +/– 1.0% tolerance at start of season and
   every four months thereafter.

16. Laboratory Equipment Calibrations and Verifications:

a) Volumeters, Bitumenometers, and Pycnometers: PTM No. 703, PTM No. 704
   i) Frequency: Twice a year. The first calibration will be conducted prior to mix
      design and production each year.

b) Ignition Oven: PTM No. 757
   i) Frequency: Annual calibration by the original manufacturer or by other
      outside agencies.

c) Gyratory Compactor: AASHTO T 312 (Bulletin 27/1-2, 3)
   i) Frequency: Perform calibrations and verifications as specified in AASHTO T
      312 following manufacturer’s recommendations.

d) Internal Angle Calibration
   i) Frequency: Initially calibrated to 1.16 ±0.03 degrees and recalibrated at least
      every 12 months or more frequently depending on high use or manufacturer's
      recommendations.
e) Gyratory Specimen Molds
   i) Frequency: Inspect molds prior to mix design and production each year and regularly throughout the production season. The difference between the inside diameter of the mold and the diameter of the mold plate face (side presented to the specimen) shall not exceed 0.50 mm. On SGC models where the loading head contacts the specimen, the difference between the inside diameter of the mold and the diameter of the loading head shall not exceed 0.50 mm.

f) Weighing Devices Certification
   i) Frequency: Annually by an outside agency.

g) All other equipment will be calibrated at start of season and when needed.

h) Document all calibrations, certifications and verifications.

i) The producer will specify what procedures will be followed to provide required testing, in a timely manner, in case of any testing device/equipment failure.

17. Annual JMF Verification: [Specification 408/409.2(e) & Bulletin 27/2A-10]

a) Verify each JMF within the first two days of production.

b) Perform asphalt content, gradation and volumetric tests.

c) Additional samples lifted in accordance with PTM No. 1 for each established plant lot size.

   i) Section 409 Superpave:
      a. If the mixture does not conform to the single and multiple sample tolerances of Section 409 Tables A and B within the first two days of production, suspend shipping the mixture to the project.
      b. Do not ship to the project until after the Representative reviews and verifies that results conform to the single and multiple sample tolerances of Section 409 Tables A and B.
      c. During JMF verification, mixture acceptance is according to the approved acceptance level of Section 409 Table C.

18. Corrective Action:

   a) Corrective action shall be taken, and the action shall be documented if one or more of the following occurs:
      a. Section 409:
1. Single sample (n=1) results for the 2.36 mm (No. 8) sieve, the 75 µm (No. 200) sieve, or asphalt content are not within Section 409 Table A tolerances.

2. The average of multiple samples (n ≥ 3) for percent passing any sieve or asphalt content as determined according to Section 409.2(e)1.d, are not within Section 409 Table A tolerances.

3. Temperature of the mixture is not within Section 409 Table A tolerances

4. Voids do not meet the single (n=1) or multiple (n>2) specimen tolerances of Section 409 Table B.

5. VMA is not within the single (n=1) specimen tolerances of Section 409 Table B.

6. IA or QA sample results tested at the producer’s plant are not within tolerances of Section 409 Tables A or B.

7. After taking corrective actions, the completed mixture will be sampled within 150 tons of production.
   (i) After sampling, the mixture will be tested and results provided to the Representative within 500 tons of production.
   (ii) If less than three samples are tested for mixture composition, determine conformance with Table A by comparing each result to the multiple sample tolerances.
   (iii) If the mixture does not conform to the single and multiple sample tolerances in Section 409 Table A and the single and multiple specimen tolerances in Section 409 Table B, suspend production and shipping to the project and determine the cause of the problem.
   (iv) Provide a written explanation of the problem and a proposed solution to the Department.
   (v) After the Representative reviews the proposed solution and authorizes production to continue, resume production and perform JMF verification.
   (vi) During corrective actions and JMF verification, mixture acceptance is according to the approved acceptance level of Section 409 Table C.

19. Plot all laboratory results from LTS for QA and DQA samples.

   a) Compare these results to companion samples run at the plant.

   b) Document finding of comparison.

20. Certification of materials to project within one working day on Form CS-4171B. Form CS-4171B shall be completed daily for both acceptance levels specified in Table C.
C. Materials Storage and Handling

1. Aggregate/RAP/RAM stockpiles. [Specification 408/409.3(c)]
   
   a) Refer to POM, Part B, Section 7, Page 22-1 for additional minimum requirements when incorporating greater than 15% RAP and less than or equal to 35% RAP in a bituminous mixture.

2. Cold-feed systems for aggregates/RAP/RAM [Specification 408/409.3(c)]

3. Additives or modifiers for mixture. (Bulletin 27/2A-11)

4. Modified asphalt/liquid additive storage tanks. (Bulletin 27/2A-11)

5. Surge/storage silos for mixture. No more than one mixture represented by a single JMF maybe stored in a surge/storage silo at any given time. Bulletin 27, Appendix G provides details concerning system approval, sampling, submission, and reporting.

6. All measuring and conveying devices, including calibration procedures.

7. Haul vehicle loading and tarping procedures. [Specification 408/409.3(c)]

8. Truck weighing policy meeting the requirements outlined in Bulletin 27/1-8 & POM B.7.2-1).

D. Plant Book Documentation – Use of electronic plant books (as per POM B.7.6-1 to 6-3)

1. The plant book shall be maintained in an electronic version acceptable to the District Materials Engineer/Manager (DME/DMM).
   
   a. The entire electronic plant book shall be backed up daily by a method acceptable to the District Materials Engineer/Manager (DME/DMM).
   
   b. The Department Representative shall have access to the electronic plant book.
   
   c. The electronic plant book shall be printed if requested by the Department Representative.
   
   d. The electronic plant book shall be printed and/or saved to CD as requested by the Department Representative at the end of the production season.

These are the minimum process control requirements and may be added to, or the frequency increased, by the producer or the Department Representative, to assure compliance.
Both the plant inspector and producer must annually maintain documentation at the plant. Update all documentation on a daily basis. The producer is responsible for source documentation and production control in accordance with the reviewed Quality Control Plan. Testing procedures are found in Publication 19, Field Test Manual, and the AASHTO Standard Specifications.

**Plant Inspector's Documentation**

On a daily basis, keep Form CS-4346, Items Quantity Book (or its equivalent), as a Plant Master Diary. Record all entries in black ink. Include the following information:

1. Date, Weather, Temperature Range
2. Inspector's Name, Title, Hours Worked
3. Visitors
4. Material Tests Performed and/or Witnessed
5. Material Deviations
6. Unusual Occurrences, Comments concerning Plant Operation, Conditions, Record Keeping
7. Inspector's Signature

**Producer's Documentation**

The producer is responsible to maintain one set of test records as documentation for all projects supplied from that plant.

Records to be kept in the eCAMMS system include:

- Plant Summary
- Burnoff and Volumetrics and/or Centrifuge and Volumetrics (depending on test method)

Records to be completed and kept in the Electronic State Book (ESB) include:

- Scale Check
- LTS Sample Submission Records
• Hot-Bin Gradations
• Material Test Results for Coarse Aggregate
• Material Test Results for Fine Aggregate
• RAP Burnoff Results and Moisture
• Daily Orders and Releases Record
• Equipment Calibration Record

Details of the documentation procedures for eCAMMS and the ESB must be included in the plant Quality Control Plan submitted for review annually.

In eCAMMS, the producer must monitor straight-line diagrams which show material control at the plant.

Plant Approval, Form TR-498, Approved Master Designs, and Certifications are to be on file at the Plant. All technicians must carry a valid NECEPT certification card during mixture production.

Production Acceptance

The producer's delivery ticket must accompany material released from a plant for acceptance on a project. The ticket shall contain the following information:

1. Contract Number, State Route and Section or Purchase Order
2. Bituminous Concrete Plant Supplier Code
3. County and District
4. Material Type and JMF Number
5. Date and Time
6. Total Amount of Material
7. Truck Number

The plant inspector must sign the first and last delivery tickets. The last ticket shall also show the total number of tickets issued and the words "Last Load." If there is no plant inspector present, the producer's technician is to sign the first and last tickets. Enough copies of each ticket are to be supplied for record keeping and payment. If printout equipment is out of service, see Chapter 1, Subsections 3.7.4 and 4.4.1, Bulletin 27.
These requirements also apply when bituminous material is shipped from a storage bin or silo. A weighmaster, in accordance with requirements outlined in Section B.7.2, shall be provided by the producer. The weighmaster’s signature on each delivery ticket is required to certify the weight of the material as determined by the recording truck scale.

The producer is to include QC test results for all acceptance values specified in Section 409.2(f)2.b, Publication 408, when completing Form CS-4171B.

Form CS-4171B must be sent to the Project Inspector-in-Charge within one working day to certify the material.
1. The District Materials Engineer/Manager (DME/DMM) or a member of their staff will visit each active Bituminous Concrete Plant once a year. In addition, a visit will be made to each plant for each (30) thirty production days for Department work.

2. A visit will include a detailed review of the Producer's quality control activities utilizing a District check-off list. All findings and corrective actions will be documented in the Plant Master Diary and a copy of the check-off list will be filed with the plant records.

When DQA samples are taken, the technician must also take a companion quality control sample for comparison purposes. DQA sample test results are to be entered on the straight-line analysis charts for comparison purposes.

3. District Verification Sampling:

   a. For material that is being shipped for Department work, witness the technician perform all the required acceptance tests at least once a year. Document test results in the Electronic State Book as a DQA plant verification test. In addition, document any observed deviations in the testing procedures.

   b. When deviations from the testing procedures are observed, or when otherwise considered necessary, submit a sample (n=3) to LTS identified as a Plant Verification (PV) sample. Witness the technician perform all the required tests on a companion sample for one of the three increments. When sample results are received from LTS, compare the results with the companion results from the producer and submit a copy of the companion results to the LTS.

4. Records Review:

   a. All quality control test results will be checked for compliance to approved QC plan frequencies.

   b. Plant facilities will be reviewed for compliance to Bulletin 27, Chapter 1.

   c. Straight-Line charts will be reviewed, and documentation will be made of any noted trends and whether appropriate action was taken.

   d. Compare the results of all previous District/Central Office quality assurance samples from LTS to the results of the companion samples performed by the technician for uniformity and document all comments.
e. Technician's plant documentation system and plant delivery ticket will be reviewed for compliance with Section B.7.5.
DISTRICT QUALITY ASSURANCE
BITUMINOUS CONCRETE PLANT INSPECTION

PRODUCER __________________________
LOCATION __________________________

REPORT # __________________________
DATE OF REVIEW _____________________

DATE OF LAST REVIEW

NUMBER OF PRODUCTION DAYS BETWEEN REVIEWS __________________________

<table>
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1. The current TR-498 on file at the source. (Bulletin 27, Bulletin 41)
2. Master designs on file and being used for shipments. (Pub 408, Section 409)
3. Inspectors/Laboratory facilities meet Publication 408 requirements. (Section 409.3)
4. All required lab equipment on hand and working. (Bulletin 27)
5. Laboratory scales & balances have annual calibration stickers attached. (Bulletin 27)
   Calibration Date____________________________
6. Approved QC Plan on file and being followed. (Pub 408, Section 409; POM B.7.5)
7. Approved technician controlling the operations.
   Cert No. ________ Expires ________
   Cert No. ________ Expires ________
   (Pub 408, Section 409)
8. PTM 1 used for all sampling & recorded in records. (Pub 408, Section 409)
9. All testing performed as per the applicable testing procedures. (Pub 408, Section 409; Bulletin 27)
10. AASHTO T-209 ran at proper time to keep running average. (Pub 408, Section 409; Bulletin 27)
<table>
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<tr>
<th>Y</th>
<th>N</th>
<th>N/A</th>
<th>11. Asphalt determinations, gradations, Air Voids, VMA and VFA test, and AASHTO T-209 results documented and plotted on straight-line charts. (POM B.7.5)</th>
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<td>12. Action points established on straight-line charts. (POM B.7.5)</td>
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<td>13. DQA and QA sample results compared to plant tests and plotted on straight-line charts. (POM B.7.5)</td>
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<td>14. Plant meets requirements of Bulletin 27, Chapter 1, for safety, production, and stockpile storage.</td>
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<td>15. Plant meets A/R or truck scale requirements of Bulletin 27.</td>
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<td>16. Pyrometers working properly and charts kept on file unless equipped with paperless recorder. (Bulletin 27)</td>
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<td>17. Superpave Gyratory Compactor (SGC) calibrated according to AASHTO T 312. (Bulletin 27) Calibration Date ___________________________</td>
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<td>( )</td>
<td>18. Gyratory compactor molds within allowed dimensions (Bulletin 27). Date Checked ___________________________</td>
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<td>19. Internal angle standardized at a maximum frequency of every 12 months. (AASHTO R 18-10) Calibration Date ___________________________</td>
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<td>20. Plant has Bill of Loading for AC in the file and copy sent to project as required. (Pub 408, Section 409)</td>
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<td>21. Truck beds are free of foreign substances and have acceptable tarps to protect entire load. (Pub 408, Section 409)</td>
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<td>22. Truck beds properly insulated or heated when applicable. (Pub 408, Section 409)</td>
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<td>( )</td>
<td>23. Temperature checks on completed mixes within specifications and taken as per QC plan. (Bulletin 25; Pub 408 Sections 409)</td>
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<td>24. Delivery ticket has all required information including mix design code number. (POM B.7.6)</td>
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25. Plant records and documentation kept up to date. (POM B.7.5)  
26. Asphalt pump or meter calibrated before start of production and every four months thereafter. (POM B.7.5)  
   Calibration Date ____________________________  
27. Cold feed checked and adjusted to keep minus 2.36 mm (#8) material within tolerance. (Bulletin 27)  
28. Batch scale calibration weights calibrated every three years. (Bulletin 27, POM B.7.5)  
   Calibration Date ____________________________  
29. Timers functioning properly. (Bulletin 27)  
30. Batch size within allowed tolerance of rated capacity. (Bulletin 27)  
31. Aggregate, asphalt and filler components batched within allowed tolerance. (Bulletin 27)  

DEVIATIONS FOUND:  
__________________________________________________________________________________________  
CORRECTIVE ACTION TAKEN:  
__________________________________________________________________________________________  
FOLLOW-UP REVIEW REQUIRED: _____ (YES) _____ (NO)  
ADDITIONAL COMMENTS:  
__________________________________________________________________________________________  
INSPECTION CONDUCTED BY: _______________________ DATE: ____________  
*TECHNICIANS SIGNATURE: _______________________ DATE: ____________  
REVIEWED BY: ________________________ DATE: ____________  
* Technician is required to sign. Leave a copy of this review at the plant.
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MINIMUM QUALITY CONTROL PLAN FOR PORTLAND CEMENT CONCRETE

Section 704.1(c), Publication 408, requires each producer to make trial mixtures and computations for each class of concrete, including the molding, curing and testing of test specimens and to prepare and compute each design in accordance with ACI 211. Each design must meet all Department requirements.

A copy of each completed mix design must be submitted to the District Materials Engineer/Manager (DME/DMM) prior to its use on a Department project.

The Department reserves the right to review any design through plant production prior to using the design for Department work.

Each producer of Portland Cement Concrete is required to submit a quality control plan to the DME/DMM at the project's start and at least annually thereafter. The purpose of this requirement is to ensure that the producer will consistently produce a uniform and high quality product within Department specifications.

The following Quality Control Plan is a minimum plan designed to meet these standards. The Quality Control Plan is to also state that the frequency of sampling and testing will be increased whenever borderline material is encountered:

I. Raw Aggregate Testing
   Minimum Testing Frequency
   A. Fine Aggregate
      1. Gradation and Fines Modulus
         Daily when restocking bins - PTM No. 616.
      2. Minus 75μm (No. 200) material
         Every five dry gradings or once weekly - PTM No. 100.
      3. Percent of moisture
         Beginning of work and every 4 hours thereafter or as required - AASHTO T 255 and ASTM C 70.
   B. Coarse Aggregate
      1. Gradation
         Daily when restocking bins - PTM No. 616.
      2. Minus 75μm (No. 200) material
         Every 5 gradations or once weekly - PTM No. 100.
      3. Percent of moisture
         Beginning of work and every 4 hours thereafter or as required - AASHTO T 255.
      4. Crush count (Gravel)
         Weekly, or daily when restocking bins - ASTM D 5821.
5. % of solids

Beginning of season or as necessary due to extreme aggregate changes.

II. Batch Scale Checks

<table>
<thead>
<tr>
<th>Minimun Testing Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Aggregate scale</td>
</tr>
<tr>
<td>In accordance with PTM No. 410, Bi-weekly*</td>
</tr>
<tr>
<td>B. Cement scale</td>
</tr>
<tr>
<td>In accordance with PTM No. 410, Biweekly*</td>
</tr>
<tr>
<td>C. Water scale</td>
</tr>
<tr>
<td>In accordance with PTM No. 410, Biweekly*</td>
</tr>
</tbody>
</table>
|                                                            *

Calibration of equipment

<table>
<thead>
<tr>
<th>Minimum Testing Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Volumetric Mixing Plants</td>
</tr>
<tr>
<td>Start of season and change of materials.</td>
</tr>
<tr>
<td>B. Transit mix trucks</td>
</tr>
<tr>
<td>Start of season and as necessary, Form CS-4337.</td>
</tr>
<tr>
<td>C. Water meters (Batch, Slump, Adjust and Wash Down)</td>
</tr>
<tr>
<td>Start of season and as necessary.</td>
</tr>
<tr>
<td>D. Plant admixture dispensers</td>
</tr>
<tr>
<td>Start of season and as necessary.</td>
</tr>
<tr>
<td>E. Cubic meter (cubic feet) buckets</td>
</tr>
<tr>
<td>Start of season and as necessary.</td>
</tr>
<tr>
<td>F. Air meter</td>
</tr>
<tr>
<td>Start of season and minimum bi-weekly.</td>
</tr>
<tr>
<td>G. Cylinder Compression machine</td>
</tr>
<tr>
<td>Once per year by private calibration service.</td>
</tr>
<tr>
<td>H. Moisture Meter</td>
</tr>
<tr>
<td>Once per month.</td>
</tr>
<tr>
<td>I. 22.6 kg (50 lbs.) weights</td>
</tr>
<tr>
<td>Minimum of once every three years, or more often when DME/DMM deems necessary. Calibration by Department of Agriculture or private calibration service.</td>
</tr>
</tbody>
</table>

Note: Equipment calibrations will be documented and kept in the Plant Book.

IV. Temperature Checks

A. Aggregate
   1. Hot weather
   2. Cool and cold weather
B. Cement
C. Water
D. Concrete mixture

V. Concrete Mixture

A. Slump Tests
B. Air Content Tests  
C. Yield Tests  
D. Molding Cylinders (Optional)  

VI. Documentation  

A. Concrete Plant Book  

Maintain per Section B.7.10  

B. Straight-line Analysis Charts  

1. Fine Aggregate  
2. Coarse Aggregate  

   Note: Action points will be established on critical test values.  

3. Plotting QA and DQA results for comparison with QC companion sample.  

C. Certifications  

1. Admixtures  
2. Cement  
3. Fly ash  
4. Ground Granulated Blast-Furnace Slag  
5. Certification of Small Quantities  
6. Silica fume  
7. Aggregate Certification Yearly for Quality Requirements as required by Publication 408, Section 703.6 on Form CS-4171
The producer's name and plant address are required on the outside cover of the Material Plant Book. The producer will maintain the plant book as one book containing one set of test records as documentation for all projects supplied. Form CS-4211, Table of Contents, lists all forms required for the plant book.

The producer is responsible for source documentation and production control in accordance with the approved Quality Control Plan. All testing procedures are found in Publication 19, Field Test Manual or appropriate AASHTO or ASTM test methods.

**Plant Inspector's Documentation**

Keep, on a daily basis, Form CS-4346, Items Quantity Book, as a Plant Master Diary, in black ink, and include the following information:

1. Date, Weather, Temperature Range
2. Inspector's Name, Title, Hours Worked
3. Visitors
4. Material Tests Performed
5. Material Deviations
6. Unusual Occurrences, Comments concerning Plant Operation, Conditions, Record Keeping
7. Inspector's Signature

**Producer's Documentation**

The producer is responsible for completion of the following form which will comprise the Material Plant Book. Use separate copies for coarse and fine aggregate gradations. For coarse aggregate, use the last row for percent solids or dry-rodded mass (weight). For fine aggregate, use the last row for fineness modulus.

Form CS-4211    Table of Contents
Form CS-4211A   Material Test Result
Form CS-4211B   Project Summary Record

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In addition, the producer is to keep straight-line diagrams or statistical quality control charts which show material control at the plant. The producer must also plot Quality Assurance samples when the results are received from the Laboratory Testing Section.

Plant Approval Form TR-4109, Technicians Evaluation, Current Approved Master Designs, Properly Completed Certifications and the Quality Control Plan are to be on file at the plant.

Production Acceptance

The producer's original delivery ticket (or a copy of the recordation ticket) must accompany material released from a plant for acceptance on a project. The ticket is to contain the following information:

1. Contract number, complete state project number or purchase order number
2. The concrete plant supplier code
3. Method of concrete mixing (i.e., central or truck)
4. Class of concrete, JMF number, and trial mix number (i.e., trial #1, 2, etc.)
5. Number of cubic yards
6. Time of completion of mixing
7. Truck number
8. Number of mixing revolutions, if applicable
9. Total amount of batch water used in each truck (pounds)

10. The weight in pounds of the total cementitious materials

11. The types of additives and amount used in each truck (i.e., water reducer, AEA, retarder, etc.)

Submit the plant delivery slip and batcher-mixer slip (as specified in AASHTO M 157) to the Inspector-in-Charge.

The plant inspector or the producer's technician must sign the first and last delivery ticket. The last ticket will also show the total number of tickets issued and the words "Last Load." If there is no plant inspector, the producer's technician is to sign the first and last ticket. Enough copies of the tickets are to be supplied for record keeping and payment.

**NOTE:** Job Plants - A ticket printed by an automatic clock is to be provided giving time, date and number of cubic yards.
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1. The District Materials Engineer/Manager (DME/DMM) or a member of their staff will visit each Portland Cement Concrete Plant at least once for every (20) twenty days of production for Department work.

2. A visit will include a detailed review of the Producer's quality control activities utilizing a District Quality Assurance check-off list. All findings and corrective actions will be documented in the Plant Master Diary and a copy of the check-off list will be filed with the plant records.

When DQA samples are taken, the technician must also take a companion quality control sample for comparison purposes. DQA sample test results are to be entered on the straight-line analysis charts for comparison purposes.

3. District Verification Sampling:
   a. When considered necessary, but at least at the time of plant re-inspection and then once a year, pull one sample (n=3) each of fine and coarse aggregate. The samples are to be tested for gradation and wash by the DME/DMM or a member of their staff.
   b. Witness the technician perform all required tests on a companion sample for one of the three increments for each material.

4. Records Review:
   a. All quality control test results will be checked for compliance to approved Q.C. plan frequencies.
   b. Plant facilities will be reviewed for compliance to AASHTO M 157.
   c. Plant stocking area will be reviewed to assure the aggregates are properly stocked and prepared before use.
   d. Straight-line charts will be reviewed and documentation will be made of any noted trends and whether appropriate action was taken.
   e. Compare the results of all previous District/Central Office quality assurance samples from LTS to the results of the companion samples performed by the technician for uniformity and document all comments.
   f. Technician's plant documentation system and plant delivery ticket will be reviewed for compliance with Section B.7.10.
   g. The system of communication used between the projects receiving the material and the plant technician will be reviewed and comments made as to its adequacies.
DISTRICT QUALITY ASSURANCE
CEMENT CONCRETE PLANT INSPECTION

PRODUCER __________________________ LOCATION __________________________

REPORT # __________________________ DATE OF REVIEW __________________________

DATE OF LAST REVIEW

NUMBER OF PRODUCTION DAYS BETWEEN REVIEWS (20 DAYS MAX.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>N</td>
<td></td>
</tr>
</tbody>
</table>

1. The current TR-4109 on file at the source.
2. Master designs on file and being used for shipment.
3. Inspectors/Laboratory facilities meet Publication 408 requirements.
4. All required lab equipment on hand and working properly.
5. Laboratory scales & balances have annual calibration stickers attached.
6. Approved Quality Control Plan on file and being followed.
7. Approved technician is available and controlling the work.
8. All testing performed as per applicable PTMs.
9. Aggregate test results meet §703, Publication 408 requirements.
10. Fineness Modulus meets §703.1(c)1, Publication 408 requirements.
11. Unit weight / % solids determined as required.
<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.</td>
<td>Batch weight of slag coarse aggregate adjusted if daily determination of bulk specific gravity ± 0.5kg (1 lb.) from design.</td>
</tr>
<tr>
<td>13.</td>
<td>Action points established on straight-line charts.</td>
</tr>
<tr>
<td>14.</td>
<td>DQA and QA sample results compared to plant test results and plotted on straight-line charts.</td>
</tr>
<tr>
<td>15.</td>
<td>Compression testing as per PTM and calculations corrected.</td>
</tr>
<tr>
<td>16.</td>
<td>Neoprene caps do not exceed allowable 100 number of tests.</td>
</tr>
<tr>
<td>17.</td>
<td>Difference between any sets of cylinders less than 6.9 MPa (1,000 psi).</td>
</tr>
<tr>
<td>18.</td>
<td>Plant meets requirements of AASHTO M 157 for production and stockpile storage.</td>
</tr>
<tr>
<td>19.</td>
<td>Aggregates stored and controlled as per §106.05(b) and §106.05(c), Publication 408.</td>
</tr>
<tr>
<td>20.</td>
<td>Scales checked in accordance with PTM No. 410.</td>
</tr>
<tr>
<td>22.</td>
<td>Batch masses (weights) adjusted for free moisture on aggregates.</td>
</tr>
<tr>
<td>23.</td>
<td>Materials used in mixes from suppliers listed on designs.</td>
</tr>
<tr>
<td>24.</td>
<td>Batch masses (weights) posted at the scales during operations?</td>
</tr>
<tr>
<td>25.</td>
<td>Do scales return to zero after batching is complete?</td>
</tr>
<tr>
<td>26.</td>
<td>Temperature checks taken and documented when required.</td>
</tr>
</tbody>
</table>

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27. Transit trucks and water meters calibrated and approved.

28. Department plant records and documentation as per Section B.7.10 and quality control plan.


DEVIATIONS FOUND:

CORRECTIVE ACTION TAKEN:

FOLLOW-UP REVIEW REQUIRED: ______ (YES) ______ (NO)

ADDITIONAL COMMENTS:

INSPECTION CONDUCTED BY: ________________ DATE: __________

*TECHNICIANS SIGNATURE: ________________ DATE: __________

REVIEWED BY: ________________ DATE: __________

* Technician's signature is required. Leave a copy of this review at the plant.
Construction aggregates are accepted by the Department by the certification process commonly referred to as ‘certification acceptance’. This acceptance is based on Quality Control tests conducted by the producer at the quarry and District Quality Assurance Source Verification samples (stockpile verification) tested by the Department plant inspector. Refer to Publication 408, Section 703.5(b).

Subbase aggregate placed under roadway and shoulders on the project is subject to additional testing, as is any size of aggregate which is visually suspect for its intended use regardless of the estimated project quantity. No. 2A aggregate used as shoulder backup material, pipe backfill or other uses is not to be included for testing. These additional tests are project verification samples that are taken at the point of placement and tested by the Department representative, if quantities exceed minimum threshold amounts. These samples may be tested at the producer’s location or on the project if a soils lab is present. Refer to Table F, Section 703.5(b)3. This table indicates the number of project verification (FV)* samples that must be taken for various amounts of each type (gradation) of coarse aggregate. Each sample consists of three increments or three bags (n=3). Table F is based on estimated total project quantities (of each aggregate type) at the beginning of the project. The table is not a progressive table that is advanced through, row by row, as quantities placed on the project accumulate. Sampling points (targets) should be established in the initial stages of the project and posted so that inspectors are aware of their responsibility to capture project verification increments at the proper time and tonnage. The running total of each aggregate will also need to be maintained so the inspector will be able to anticipate when a sampling point is reached. The aggregate should be sampled in accordance with PTM No. 639 or AASHTO R 90.

The increments that compose a sample must be randomly selected, using PTM No. 1 under the direction and supervision of the inspector. Regardless of how the increment locations are calculated, the important point is that the increments that make a sample are unbiased and randomly selected.

*Note: The abbreviation “FV” is used here to maintain consistency with the sample classifications listed on the reverse side of a TR-447 except these samples are not sent to LTS for testing and completing a TR-447 is not required.

TYPICAL SAMPLE PROCEDURE

The contractor will furnish the inspector or Project Manager with an estimate of tonnage for each type of aggregate at the beginning of the project. If the project is to use 1000 or more tons of No. 2A aggregate for subbase under the roadway or shoulders, the inspector should select project verification samples. The inspector then refers to Table F in Section 703 of the specifications. The estimated project quantities provided by the contractor (or determined by the inspector) are compared with the “Aggregate Quantities” column of Table F. “Aggregate Quantities” should be considered as the total quantity of subbase under the roadway or shoulders that will be used throughout an entire project lifespan. The inspector will then determine how many total numbers of samples will be required over the life of the project.
It is recommended but not required that the contractor’s person who lifts the field verification samples seek training from a certified aggregate technician. This can help to minimize potential issues and ensure that a proper sample is obtained for testing.

The following examples are presented to clarify several different scenarios, based on different total project quantities that an inspector may encounter. Project verification sample locations must be based on tonnage. Once those tonnage locations are determined however, several methods may be employed to randomly select the increments such as time, tons, square area, or distance as long as the method is unbiased and random.

I. SINGLE SAMPLE PROCEDURE (1000 to 1999 tons)

The contractor informs the inspector or Project Manager that an estimated total amount of 1200 tons of 2A subbase is needed for this project. The first row of Table F indicates a quantity of 1000 tons to less than 2000 tons will require one sample consisting of three increments (n=3).

The 1200 tons of subbase can be broken down into three equal “sublots” of 400 tons each. Divide the total 1200 tons by the number of increments in your sample (n=3) to determine the quantity of each “sublot”. Next, go back to PTM No. 1 and select the next three random numbers in order. Multiply each of the three ‘x’ factors from PTM No. 1 by the tonnage of the “sublot” to determine the sample ton for the individual increments. This method is illustrated in Example A.

EXAMPLE A – Increments by ton

Estimated 2A subbase for project = 1200 tons

CALCULATING THE “SUBLOTS”

STEP A - Go to TABLE F and determine that for 1200 tons of this aggregate gradation, one (1) sample consisting of three (3) increments is required for a project verification sample.

Divide 1200 tons by three increments to get 400 tons/increment.

1200 tons ÷ 3 increments = 400 tons/increment

CALCULATING THE SAMPLING POINTS

STEP B - To determine the sampling point to lift the first increment, go to PTM No. 1 and select a number randomly. Start with any PTM No. 1 number, for this example select 30. The ‘x’ factor = 0.63 from Table I. Multiply that number by the increment tonnage to determine the target ton to sample for that increment. At this time, also note the succeeding numbers in sequence, 31 and 32, where the ‘x’ factor is 0.53 and 0.99 respectively.
Increment No. 1 target ton to sample = Tons in “sublot” multiplied by the ‘x’ factor
Increment No. 1 target ton to sample = 400 × 0.63 = 252nd ton
The sample increment may be selected from any part of the hauling unit that contains the target tonnage, in this case, the hauling unit containing the 252nd ton.

STEP C - The next two numbers in sequence from 30 (31 and 32) in PTM No. 1 are used to calculate the second and third “sublot” sample points. To determine the subsequent increment locations remember to add the quantities of the previous “sublot”(s).

STEP D - 400 x 0.53 = 212th ton of “sublot” No. 2
Add the total tonnage for “sublot” No. 1 to the target ton for increment No. 2 to determine the sampling point from the total tonnage.
Add 400 + 212 =612th ton
The second increment would come from the hauling unit containing the 612th ton.

STEP E - 400 x 0.99 = 396th ton of “sublot” No. 3
Add the total tonnage of the previous two sublots to the target ton for increment No. 3 to determine the sampling point from the total tonnage.
Add 400 + 400 + 396 = 1196th ton
The third increment would come from the hauling unit containing the 1196th ton.

These three increments represent one sample and are to be placed on one TR-4126A form and tested for compliance.

II. MULTIPLE SAMPLE PROCEDURE (2,000 to less than 10,000 tons)

The contractor on a project informs the inspector or Project Manager that an estimated 2,100 tons of 2A subbase is needed for this project. For a project quantity greater than 2,000 tons but less than 10,000 tons, two samples consisting of three increments each (n=3) are required. Compare the anticipated total project tonnage of each material gradation to Table F to determine the number of samples needed. A multiple sample project is explained in Example B. The following example illustrates the procedure for computing multiple samples based on an estimated project quantity of 2,100 tons.

EXAMPLE B – Increments by ton

Estimated 2A material for project = 2,100 tons. Therefore, according to Table F, two samples are needed.

CALCULATING THE “VERIFICATION LOTS” AND “SUBLOTS”

STEP A – First divide the project tonnage by the number of samples needed. The estimated 2,100 ton project total is divided by 2 samples.

2,100 ÷ 2 = 1,050 tons of 2A in each “verification lot”.

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Three increments will be taken from the first “verification lot” of 1,050 tons delivered to the project. Three more increments will be taken from the second “verification lot” of 1,050 tons delivered to the project. Sample points for each 1,050 tons delivered will be performed as in Example A. Since three increments come from each 1,050 ton then divide each 1,050 into three equal “sublots”.

1,050 \div 3 = 350 \text{ ton in each “sublot”}.

CALCULATING THE SAMPLING POINTS

**STEP B** - The target ton for the first increment is determined by first going to PTM No. 1 and selecting a number randomly, for example select number 63. The ‘x’ factor is = 0.66 from Table I.

Increment No. 1 target ton to sample = 350 ton x 0.66 = 231\textsuperscript{st} ton.
Increment No.1 will come from the hauling unit containing the 231\textsuperscript{st} ton.

**STEP C** – The next five numbers in sequence from 63 (64, 65, 66, 67 and 68) in PTM No. 1 are used to calculate the second and third “sublot” sample points. To determine the subsequent sampling points, remember to add the quantities from the previous “sublot”(s).

**STEP D** - The target ton for the second increment is determined by selecting the next consecutive number from the PTM No. 1 Table which in this case is number 64. The ‘x’ factor is = 0.89

Increment No. 2 target ton to sample = 350 ton x 0.89 = 312\textsuperscript{nd} ton in the 2\textsuperscript{nd} “sublot”.
Increment No.2 sampling point = 350 + 312 = 662\textsuperscript{nd} ton.
Increment No. 2 will come from the hauling unit containing the 662\textsuperscript{nd} ton of 2A.

**STEP E** - The target ton for the third increment is determined by selecting the next consecutive number from the PTM No. 1 Table which is 65. The ‘x’ factor is = 0.67

350 ton x 0.67 = 235\textsuperscript{th} ton in the third “sublot”.
The target ton to sample would then be 350 + 350 + 235 = 935\textsuperscript{th} ton.
The final increment completing the first “verification lot” would come from the hauling unit containing the 935\textsuperscript{th} ton.

That completes the sampling points/target tons for the first “verification lot” of 1,050 out of the estimated 2,100 tons for the project.

The second “verification lot” will be sampled in the same way. The “sublot” size remains the same at 350 tons, except that 1,050 (2,100 \div 2) will be added to the target ton so that the three random increments fall into the second “verification lot”.

**STEP F** - The target ton is determined by selecting the next number from Table I of PTM No. 1 which is 66. The ‘x’ factor is = 0.02

350 ton x 0.02 = 7\textsuperscript{th} ton in the first “sublot” of the second “verification lot”.

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1,050 + 7 = 1,057th ton. This is the target ton for the first increment of the second “verification lot”.

**STEP G** - The next number in the sequence from Table I of PTM No. 1 is 67. The ‘x’ factor is = 0.93

350 x 0.93 = 326th ton.

1,050 + 350 + 326 = 1,726th ton. This is the target for the second of three increments needed for the second “verification lot” of subbase.

**STEP H** - Continuing the sequence, the next number is 68. The ‘x’ factor is = 0.40.

350 x 0.40 = 140th ton.

1,050 + 350 + 350 + 140 = 1,890th ton. This is the final increment of the second “verification lot”.

### III. MULTIPLE SAMPLE PROCEDURE (10,000 tons to 25,000 tons)

The contractor informs the inspector or Project Manager that an estimated 19,000 tons of 2A subbase/pipe backfill is needed for a project. For a project quantity equal to or greater than 10,000 tons but less than 25,000 tons three samples (of n=3) are required. Compare the anticipated total project tonnage of each material gradation to Table F to determine the number of samples needed. The following example illustrates the procedure for computing three samples based on an estimated project quantity of 19,000 tons.

**CALCULATING THE “VERIFICATION LOTS” AND “SUBLOTS”**

**EXAMPLE C – Increments by ton**

Estimated 2A material for project = 19,000 tons. Therefore, according to Table F, three samples are needed.

**STEP A** - Divide the project tonnage by the number of samples needed. The 19,000 ton project total is divided by 3 samples.

19,000 ÷ 3 = 6,333 tons of 2A material in each “verification lot” delivered to the project.

Three increments will be taken from the first 6,333 tons delivered to the project. Three more increments will be taken from the second 6,333 tons delivered to the project and another three increments from the last 6,333 tons delivered to the project. Sampling points for each 6,333 tons delivered will be performed as in Example B except additional steps will be added to calculate sampling points for a third “verification lot”. Since three increments come from each 6,333 ton “verification lot” then divide each 6,333 into three equal “sublots”.

6,333 ÷ 3 = 2,111 ton in each “sublot”.

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CALCULATING THE SAMPLING POINTS (First Verification Lot)

STEP B – The target ton is determined by first going to PTM No. 1 and selecting a number randomly, for example select number 23. The ‘x’ factor is = 0.06 from Table I.

Increment No. 1 target ton to sample = 2,111 ton × 0.06 = 127th ton placed on project.
The first increment would come from the hauling unit containing the 127th ton.

STEP C – The next sequence number from PTM No. 1 would be 24. The ‘x’ factor is = 0.03 from Table I.

Increment No. 2 target ton to sample = 2,111 × 0.03 = 63rd ton.
Increment No. 2 sampling point = 2,111 + 63 = 2,174th ton.
Increment No. 2 will come from the hauling unit containing the 2,174th ton.

STEP D – The next sequence number from PTM No. 1 would be 25. The ‘x’ factor is = 0.55 from Table I.

Increment No. 3 target ton to sample = 2,111 × 0.55 = 1,161st ton.
Increment No. 3 sampling point = 2,111 + 2,111 + 1,161 = 5,383rd ton.
Increment No. 3 will come from the hauling unit containing the 5,383rd ton and is the final increment in the first of three “verification lots”.

CALCULATING THE SAMPLING POINTS (Second Verification Lot)

STEP E – The next sequence number from PTM No. 1 would be 26. The ‘x’ factor is = 0.64 from Table I.

Increment No. 1 target ton from the second “verification lot” = 2,111 × 0.64 = 1,351st ton
Increment No. 1 sampling point from the second “verification lot” = 6,333 + 1,351 = 7,684th ton.
Increment No. 1 of the second “verification lot” will come from the hauling unit containing the 7,684th ton.

STEP F – The next sequence number from PTM No. 1 would be 27. The ‘x’ factor is = 0.30 from Table I.

Increment No. 2 of the second “verification lot” = 2,111 × 0.30 = 633rd ton.
Increment No. 2 sampling point from the second “verification lot” = 6,333 + 2,111 + 633 = 9,077th ton.
Increment No. 2 of the second “verification lot” would come from the hauling unit containing the 9,077th ton.

**STEP G** – The next sequence number from PTM No. 1 would be 28. The ‘x’ factor is = 0.51 from Table I.

Increment No. 3 target ton of the second “verification lot” = 2,111 × 0.51 = 1.077th ton.

Increment No. 3 sampling point from the second “verification lot” = 6,333 + 2,111 + 2,111 + 1,077 = 11,632nd ton.

The third increment No. 3 of the second “verification lot” would come from the hauling unit containing the 11,632nd ton

**CALCULATING THE SAMPLING POINTS (Third Verification Lot)**

**STEP H** – The next sequence number from PTM No. 1 would be 29. The ‘x’ factor is = 0.29 from Table I.

Increment No. 1 target ton of the third “verification lot” = 2,111 × 0.29 = 612th ton.

Increment No. 1 sampling point from the third “verification lot” = 6,333 + 6,333 + 612 = 13,278th ton.

Increment No. 1 of the third “verification lot” would come from the hauling unit containing the 13,278th ton.

**STEP I** – The next sequence number from PTM No. 1 would be 30. The ‘x’ factor is = 0.63 from Table I.

Increment No. 2 target ton of the third “verification lot” = 2,111 × 0.63 = 1,330th ton.

Increment No. 2 sampling point from the third “verification lot” = 6,333 + 6,333 + 2,111 + 1,330 = 16,107th ton

Increment No. 2 of the third “verification lot” would come from the hauling unit containing the 16,107th ton.

**STEP J** – The next sequence number from PTM No. 1 would be 31. The ‘x’ factor is = 0.53 from Table I.

Increment No. 3 target ton of the third “verification lot” = 2,111 × 0.53 = 1,119th ton.

Increment No. 3 sampling point from the third “verification lot” = 6,333 + 6,333 + 2,111 + 2,111 + 1,119 = 18,007th ton.

Increment No. 3 of the third “verification lot” would come from the hauling unit containing the 18,007th ton.
IV. MULTIPLE SAMPLE PROCEDURE (Each additional increment of 25,000 tons)

The contractor informs the inspector or Project Manager that an estimated total amount of 91,000 tons of 2A subbase is required for this project. The third row of Table F indicates that for a quantity between 10,000 tons to less than 25,000 tons, three samples (consisting of three increments in each sample) are required. Also, since the estimated quantity is more than 25,000 tons, an additional sample (n=3) for each 25,000 ton increment is required as can be seen in the fourth row of Table F. The first three samples will be taken out of the first 25,000 tons delivered as illustrated in Section III Example C. With the first 25,000 tons taken care of, the final step is to compute the number of samples needed for each additional 25,000 tons.

EXAMPLE D – Increments by ton

STEP A - Take the estimated total for the project and subtract 25,000.

\[ 91,000 - 25,000 = 66,000 \text{ tons remaining for each 25,000 ton “verification lot”} \]

(the first 25,000 ton increment)

STEP B - 66,000 – 25,000 = 41,000 tons remaining for the next 25,000 tons (25,001 to 50,000).

(the second 25,000 ton increment)

STEP C - 41,000 – 25,000 = 16,000 tons remaining for the last additional portion of 25,000 tons. (the third 25,000 ton increment)

STEP D - Since there now remains less than 25,000 tons, the last sample will be taken from that portion. In this example a sample (n=3) will be taken from the last 16,000 tons delivered to the project.

STEP E - Continue the PTM sequence used for the first 25,000 tons. For illustrative purposes continue the PTM No. 1 sequence from Section III, the next PTM number would be 32.

The 25,000 ton of subbase may be considered a “verification lot” and can be broken down into three equal “sublots” of 8,333 tons each. Each 8,333 tons would have an increment taken. The tonnage to sample would be figured as in Section I, with the exception being that the “sublot” size used would be 8,333 tons as opposed to 300 tons. Also, the PTM “x” factor would be 0.99. So, taking this into consideration, the following will be the first of three increments for a sample for the first 25,000 ton increment.

STEP A – Target ton to sample = 8,333 x 0.99 = 8,250 ton into the 25,000 ton increment.

\[ \text{Sampling point} = 25,000 \text{ ton} + 8,250 = 33,250^{th} \text{ ton delivered to the project} \]

STEP B – Target ton to sample = 8,333 x 0.02 (the PTM “x” factor for 33) = 167

\[ 167 + 8,333 + 25,000 = 33,500^{th} \text{ ton delivered to the project} \]
**STEP C** – Target ton to sample = 8,333 x 0.61 (the PTM “x” factor for 34) = 5,083

Sampling point = 5,083 + 8,333 + 8,333 + 25,000 = 46,749th ton delivered to the project

**STEP D** – Target ton to sample = 8,333 x 0.76 (0.76 = the “x” factor for 35) = 6,333

Sampling point = 25,000 + 25,000 + 6,333 = 56,333rd ton delivered to the project would be the first increment for the second 25,000th ton increment.

**STEP E** – Target ton to sample = 8,333 x 0.87 (the “x” factor for 36) = 7,250

Sampling point = 7,250 + 8,333 + 25,000 + 25,000 = 65,583rd ton delivered to the project and so on and so forth. For the final sample take 16,000 tons and dividing into three “sublots” = 5,333 tons in each “sublot”. Compute the sampling points as in the above examples.

**GENERAL NOTES**

All verification testing will be performed by the inspector. All increments of each sample are to be tested. Increments should be tested immediately upon lifting if a lab is convenient and should not wait for other increments to be lifted before tests are performed. As a minimum, tests are to include PTM No. 616 and PTM No. 100. ASTM D 5821 “Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate” would have to be included in the case of gravel aggregate. All test results are to be provided within 5 days of the material sampling.

Completed TR-4126A’s are requisite documentation for payment justification, along with certifications (CS-4171), delivery tickets, calculations, etc.

For all sample/increment locations, use the ‘y’ factor of each PTM No. 1 number to determine the location across the width of the placement of where to lift the sample increment. Multiply the ‘y’ factor by the width of the placement for the distance left or right as indicated by PTM No. 1. Take all samples prior to any grading or compaction in accordance with PTM No. 639 or AASHTO R 90.

Remember to select sample locations randomly. Never start each day at the beginning of PTM No. 1. Start at a different location each day or continue picking consecutive numbers from the table.

A sample may be taken at any time questionable or marginal material is observed. If the material appears to be segregated, overly fine, or overly coarse, or deemed to contain excessive deleterious material, immediately obtain a bag of material when such material is observed. The sample can always be discarded if not ultimately tested, but can be difficult to locate after the fact. The Department is not obligated to accept material that is deficient just because of certification acceptance. If such samples reveal that the material being shipped to the project is deficient, the
District Materials Engineer/Manager (DME/DMM) can investigate the source and implement corrective action in accordance with the specifications and Bulletin 14 if necessary.

In the event that project quantities change to the extent that a final increment would not be reached to provide at least three increments for the “verification lot”, adjust the “verification lot” quantity and re-compute the sampling point so three increments are tested and statistically evaluated. Justify through documentation the reason for adjusting sampling points.

FAILURES

Anytime that a project verification sample (n=3) has a PWL < 90, discontinue certification acceptance of the material and begin lot acceptance as outlined in Pub. 408, Section 703.5(b)3.

For subbase acceptance lots (n=3) where the PWL < 90, follow Section 703.5(b)3 and determine the degree of non-conformance (DNC) of the lot. Two examples are shown below to illustrate how to determine the DNC for the lot.

EXAMPLE E – Degree of Non-conformance for a non-gravel source

Step 1 Requires Gradation (no crush count) and PWL computations from PTM No. 6. A PWL for crush count will be 100, since this is a non-gravel source.

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Spec Limits</th>
<th>Incr 1</th>
<th>Incr 2</th>
<th>Incr 3</th>
<th>Average</th>
<th>Standard Deviation</th>
<th>PWL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-inch</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>3/4-inch</td>
<td>52-100</td>
<td>99</td>
<td>100</td>
<td>98</td>
<td>99</td>
<td>1.0</td>
<td>100</td>
</tr>
<tr>
<td>3/8-inch</td>
<td>36-70</td>
<td>68</td>
<td>66</td>
<td>69</td>
<td>68</td>
<td>1.5</td>
<td>100</td>
</tr>
<tr>
<td>No. 4</td>
<td>24-50</td>
<td>48</td>
<td>47</td>
<td>51</td>
<td>49</td>
<td>2.1</td>
<td>64</td>
</tr>
<tr>
<td>No. 16</td>
<td>10-30</td>
<td>31</td>
<td>33</td>
<td>32</td>
<td>32</td>
<td>1.0</td>
<td>0</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-10.49</td>
<td>12.52</td>
<td>11.03</td>
<td>10.99</td>
<td>11.51</td>
<td>0.872</td>
<td>0</td>
</tr>
<tr>
<td>Crushed Fragments</td>
<td>55-100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>464/7 = 66.3 or PWL = 66</td>
<td>100</td>
</tr>
</tbody>
</table>
Step 2: Since PWL < 90, Degree of Non-Conformance calculation will be performed

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Spec Limits</th>
<th>Incr 1</th>
<th>Incr 2</th>
<th>Incr 3</th>
<th>Average</th>
<th>Differences for Non-Conforming Averages (1)</th>
<th>Multiplier factor from tables G &amp; I</th>
<th>Product of difference and multiplier (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-inch</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>3/4-inch</td>
<td>52-100</td>
<td>99</td>
<td>100</td>
<td>98</td>
<td>99</td>
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<td></td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>No. 4</td>
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<td>47</td>
<td>51</td>
<td>49</td>
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<td>1</td>
<td>0</td>
</tr>
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<td>No. 16</td>
<td>10-30</td>
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<td>2</td>
<td>1.5</td>
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<tr>
<td>No. 200</td>
<td>0-10.49</td>
<td>12.52</td>
<td>11.03</td>
<td>10.99</td>
<td>11.51</td>
<td></td>
<td>1.02</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Total = 5.55

(1) For each sieve where the lot average falls out of spec, the absolute difference between the lot average and spec limit will be calculated.
(2) Each difference on a sieve will be multiplied by the factors in Table G.

Add the products in right hand column to provide the total Degree of Non-Conformance for the acceptance lot. Use Table H in Section 703.5(b)3 to determine lot disposition. This example would result in a 7% reduction in the unit price paid for the non-conforming acceptance lot.

**EXAMPLE F – Degree of Non-conformance for a gravel source**

Step 1 Requires gradation, crushed fragments and PWL computations from PTM No. 6

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Spec Limits</th>
<th>Incr 1</th>
<th>Incr 2</th>
<th>Incr 3</th>
<th>Average</th>
<th>Standard Deviation</th>
<th>PWL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-inch</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>3/4-inch</td>
<td>52-100</td>
<td>99</td>
<td>100</td>
<td>98</td>
<td>99</td>
<td>1.0</td>
<td>100</td>
</tr>
<tr>
<td>3/8-inch</td>
<td>36-70</td>
<td>55</td>
<td>46</td>
<td>52</td>
<td>51</td>
<td>4.6</td>
<td>100</td>
</tr>
<tr>
<td>No. 4</td>
<td>24-50</td>
<td>38</td>
<td>37</td>
<td>41</td>
<td>39</td>
<td>2.1</td>
<td>100</td>
</tr>
<tr>
<td>No. 16</td>
<td>10-30</td>
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<td>22</td>
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<td>1.0</td>
<td>100</td>
</tr>
<tr>
<td>No. 200</td>
<td>0-10.49</td>
<td>6.45</td>
<td>6.69</td>
<td>5.89</td>
<td>6.34</td>
<td>0.411</td>
<td>100</td>
</tr>
<tr>
<td>Crushed Fragments</td>
<td>55-100</td>
<td>42</td>
<td>49</td>
<td>56</td>
<td>49</td>
<td>7.0</td>
<td>23</td>
</tr>
</tbody>
</table>

623/7 = 89.0

or PWL = 89
Step 2: Since PWL < 90, Degree of Non-Conformance calculation will be performed

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Spec Limits</th>
<th>Incr 1</th>
<th>Incr 2</th>
<th>Incr 3</th>
<th>Average</th>
<th>Differences for Non-Conforming Averages (1)</th>
<th>Multiplier factor from tables G &amp; I</th>
<th>Product of difference and multiplier (2)</th>
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</thead>
<tbody>
<tr>
<td>2-inch</td>
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<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3/4-inch</td>
<td>52-100</td>
<td>99</td>
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<td>98</td>
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<td>55</td>
<td>46</td>
<td>52</td>
<td>51</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No. 4</td>
<td>24-50</td>
<td>38</td>
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<td>41</td>
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<td>0</td>
</tr>
<tr>
<td>No. 16</td>
<td>10-30</td>
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<td>22</td>
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<td>1.5</td>
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<td>0</td>
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<tr>
<td>No. 200</td>
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<td>6.45</td>
<td>6.69</td>
<td>5.89</td>
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<td>2.5</td>
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total = 6.0

(1) For each parameter (sieve or crushed fragments) where the lot average falls out of spec, the absolute difference between the lot average and spec limit will be calculated.
(2) Each difference on a parameter will be multiplied by the factors in Table G.

Add the products in right hand column to provide the total Degree of Non-Conformance for the subbase acceptance lot. Use Table H in Section 703.5(b)3 to determine lot disposition. This example would result in a 7% reduction in the unit price paid for the non-conforming acceptance lot.
The producer must submit a quality control plan to the District Materials Engineer/Manager annually. The purpose of this requirement is to ensure that the producer will consistently produce a uniform and high quality product within Department specifications.

The following Quality Control Plan is a minimum plan designed to these standards.

A. Sampling and Testing Frequencies
The minimum testing frequency for all aggregate types will be at least one sample daily for the first 500 tons and one sample for each additional 1,000 tons. Tests are to include, if applicable:

1. Gradations PTM No. 616
2. Wash Test PTM No. 100
3. Crush Count ASTM D 5821
4. Unit Weight AASHTO T 19 (To be tested twice a year or as required)

Tests other than gradations may be reduced to once weekly after uniformity has been established. For high volume aggregate production such as subbase material, sampling frequency may be increased to 1,000 tons daily and one for each additional 2,000 tons. All changes to sampling/testing frequencies must be approved by the District Materials Engineer/Manager.

B. Department Stockpiles
Establish and positively identify aggregate stockpiles intended for Department use. At a minimum, the respective grading (AASHTO or PennDOT) and specific use (if appropriate) will be provided.

C. Material Failures
Increase production testing frequencies to at least double the minimum required in Section A above until uniformity is established over five consecutive production days. Document all actions taken when failures are noted.

D. Certification
Certify each day’s shipments for each aggregate size to each project shipped, in accordance with Section 106.03(b)3, Publication 408.

E. Calibration of Mechanical Sieve Shaker
Calibrate mechanical sieve shaker in accordance with PTM No. 608 at the start of the season and when directed.
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The Material Plant Book must have the producer's name and plant location on the outside cover. It should be maintained as one book containing one set of test records as documentation for all projects supplied. Form CS-4211, Table of Contents, lists all forms required for plant book.

The producer is responsible for source documentation and production control in accordance with the approved quality control plan. All testing procedures are found in Publication 19, Field and Laboratory Testing Manual or appropriate AASHTO or ASTM test methods.

**Plant Inspector's Documentation**

The plant inspector should keep, on a daily basis, Form CS-4346, Items Quantity Book, as a Plant Master Diary, in black ink, and shall include the following information:

1. Date, Weather, Temperature Range
2. Inspector's Name, Title, Hours Worked
3. Visitors
4. Material Tests Performed
5. Material Deviations
6. Unusual Occurrences, Comments Concerning Plant Operation, Conditions and Record Keeping
7. Inspector's Signature

**Producer's Documentation**

The producer is responsible for completing the following forms which constitute the Material Plant Book:

- Form CS-4211 Table of Contents
- Form CS-4211A Material Test Result Records
  Separate copies must be used for each aggregate size.

*April 2017 Edition*
Form CS-4211B  Project Summary Record
   Separate sheet for each aggregate type.

Form CS-4211D  Plant Summary *
Form CS-4211E  MTD Sample Submission Record
Form CS-4211I  Aggregate No. 57
Form CS-4211J  Aggregate No. 8
Form CS-4211K  Fine Aggregate
Form CS-4211L  Aggregate No. OGS
Form CS-4211M  Aggregate No. 67
Form CS-4211N  Aggregate No. 2A
Form CS-4221C  Daily Orders and Releases Record
Form CS-4221E  Equipment Calibration Record (Including PTM 608)
Form CS-4221G  Anti-Skid Summary & Moisture Record

* - The CS-4211D Plant Summary is available as part of the eCAMMS ESB.

The Plant Technician will also establish straight line diagrams or statistical quality control charts for each aggregate size which will also include action points for critical test values.

Plot all District/Central Office Quality Assurance samples results along with all the companion sample results conducted by the Plant Technician. Comments will be made and documented on all LTS test results compared to companion sample results as to uniformity between laboratories.

Form TR-430A - Aggregate Source Evaluation Report, Technicians Evaluation and the Quality Control Plan shall be on file at the Plant.

**Production Acceptance**

The original producer delivery ticket (or a copy of the recordation ticket) must accompany material released from a plant or accepted on a project. The ticket must contain the following information:

1. Contract Number, State Route and Section or Purchase Order
2. County and District
3. Type Aggregate
4. Date
5. Truck Number
6. Mass (Weight), Gross, Tare, Net
7. Lot Number
8. Signature of Licensed Public Weighmaster
1. The District Materials Engineer/Manager (DME/DMM) or a member of DME/DMM staff will visit each source shipping for Department use at least once a year. Also, the District will conduct one visit per month to each source shipping a minimum of 10,000 tons per size of aggregate for Department use.

2. A visit will include District verification sampling and testing and a detailed review of the quarry's quality control activities utilizing a District Quality Assurance check-off list. All findings and corrective actions will be documented in the Plant Master Diary and a copy of the check-off list will be filed with plant records.

   For sources shipping less than 10,000 tons each month, perform a minimum of one visit for each 30 days of shipping for Department use. These visits will include a detailed review of the quarry's quality control activities utilizing a District Quality Assurance check-off list. All findings and corrective actions will be documented in the Plant Master Diary and a copy of the check-off list will be filed with plant records.

   Assure that the District Verification sample test results are entered on the straight-line analysis charts for comparison purposes to the most recent production test results.


   The District Representative will:

   a. Direct the supplier to obtain a sample (n=3) from the stockpiles designated for Department use. Assure that each sample from the stockpile is obtained in accordance with AASHTO R 90 or from mini stockpiles. When the mini-stockpile method is chosen, the following procedure will be used:

      • The District Representative will assure that the loader operator places approximately 10 tons of aggregate into a mini-stockpile on a suitable surface, and uses the loader bucket to strike off the top of the mini-stockpile.

      • The District Representative will assure that the supplier obtains sufficient material from random locations on the mini-stockpile using a square faced shovel to do the necessary sampling.
b. Assure that all required tests are performed on equipment provided for Department use under Sections 703.1(b) and 703.2(b), Publication 408. Evaluate material not meeting specifications in accordance with Section 106.03(a)3, Publication 408, to determine the percent within limits (PWL) for each sieve that does not meet the specifications, including the 75 μm (No. 200) sieve. Average the results of all sieve analysis tests and, when applicable, the crush count and wash test to determine the PWL. If results show less than 90% PWL, direct the supplier to immediately cease all shipments from that stockpile. Direct the supplier to build a new stockpile for that type of material for Department use.

Notify the supplier immediately to increase the quality control testing and to construct a minimum stockpile of 300 to 500 tons or the quantity remaining on the order. Do not permit shipments by certification from this stockpile until a Department representative evaluates all test data and verifies the test results.

4. Records Review:

The District Representative will:

a. Assure that all quality control test results comply with approved QC Plan frequencies.
b. Review straight-line charts and document any noted trends and whether appropriate action was taken.
c. Compare the results of all previous Central Office Quality Assurance samples from LTS to the results of the companion samples performed by the technician for uniformity and document all comments.
d. Assure that the technician's plant documentation system and plant delivery tickets comply with POM Section B.7.15.
### DISTRICT QUALITY ASSURANCE

#### AGGREGATE SOURCE INSPECTION CHECK-OFF LIST

<table>
<thead>
<tr>
<th>PRODUCER</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REPORT #</th>
<th>DATE OF REVIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DATE OF LAST REVIEW**

<table>
<thead>
<tr>
<th>Y</th>
<th>N</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Is current **TR-430A** form on file at the source?

2. Do Inspectors/Laboratory facilities meet Publication 408 requirements?

3. Do Laboratory scales and balances have annual calibration stickers attached?

4. Is all required lab equipment on hand and working properly?

5. Does the plant technician have required PTMs, ASTM, or AASHTO Standards available for review and use?

6. Is the Technician certified?
   - Certification #________ Exp. Date: __________

7. Is the plant technician performing the tests properly?

8. Is the technician able to perform their technical duties without outside interference?

9. Is a current copy of the approved Quality Control Plan on file?

10. Is Quality Control Plan being followed?

11. Are quarrying, dredging, or processing plant operations satisfactory?

*April 2017 Edition*
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>N</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

12. Are stockpiles intended for Department use identified?  

13. Are source verification samples lifted in accordance with AASHTO R 90 ___, or Mini-stockpiles ___?  (Check one)

14. If used, was mini-stockpile constructed and sampled properly?

15. Are aggregate samples reduced to testing size, in accordance with AASHTO R 76?

16. Is Unit Weight, in accordance with AASHTO T 19, tested twice a year or as required?

17. Is the Plant Master Diary being kept current?

18. Are Quality Assurance and District Verification sample results plotted on the straight-line charts?

19. Are production samples and field verification samples documented on Form CS-4211 and plotted on the straight-line charts?

20. Are production samples selected prior to stockpiling?

21. Do straight-line charts have action points established on critical screens?

22. Are CS-4171 certifications filled out properly?

23. Does weighmaster have a valid license?  
Exp. Date: ______________

24. Is licensed public weighmaster signing all delivery tickets or following the electronic signature security procedures in POM B/7/2?

25. Do truck scales have a valid annual certification?

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26. Were truck scales checked for zero balance, cleanliness, and freedom of action and documented in the Plant Master Diary?

( ) ( ) ( )

27. Are trucks tared by weighmaster once each day, or more when weather conditions warrant?

( ) ( ) ( )

28. Is the mechanical sieve shaker(s) calibrated per PTM No. 608?

( ) ( ) ( )

29. Do any unsafe conditions exist that warrant corrective action?

( ) ( ) ( ) ( ) ( ) ( ) ( )

DEVIATIONS FOUND:

____________________________________________________________________

____________________________________________________________________

CORRECTIVE ACTION TAKEN:

____________________________________________________________________

____________________________________________________________________

FOLLOW-UP REVIEW REQUIRED: ______ (YES) ______ (NO)

ADDITIONAL COMMENTS:

____________________________________________________________________

____________________________________________________________________

INSPECTION CONDUCTED BY: ___________________________ DATE: ___________

*TECHNICIAN'S SIGNATURE: ___________________________ DATE: ___________

REVIEWED BY: ___________________________ DATE: ___________

* Technician’s signature is required. Leave a copy of this review at the plant.
LISTING OF AGGREGATES IN BULLETIN 14

The following policy is applicable for listing of aggregate sources in Bulletin 14:

A. After testing of a qualification sample is completed, a copy of the test report is sent to the DME/DMM. This report includes a statement as to whether or not the material has met the appropriate specifications. When relevant, revised detailed statistics on test results will also be sent.

B. After reviewing the results, as well as any pertinent field data, the DME/DMM is to send a letter to the Laboratory Testing Section recommending acceptance or non-acceptance of the material. Upon receipt, the LTS will issue a letter to the producer informing them as to whether or not their material will be listed in Bulletin 14.

Listing and Sampling of Gradations other than No. 9, No. 8, No. 57, and No. 2A Coarse Aggregate and Type A, B, and C Fine Aggregate in Bulletin 14

The following sampling and Bulletin 14 listing criteria will be used for coarse and fine aggregate materials, as noted below:

1. If a source is approved for type A coarse aggregate use, no sample of No. 1, No. 3, No. 5, No. 67, or No. 7 size material needs to be submitted to the LTS for evaluation and approval. If a source is approved for No. 8 coarse aggregate, no samples of No. 89 size material needs to be submitted. If a source is approved for No. 9 coarse aggregate, no samples of No. 10 size material needs to be submitted. If a source is approved for No. 2A coarse aggregate, no samples of No. OGS material need to be submitted for evaluation and approval. The DME/DMM needs to only check the gradation of the material in question, and if the DME/DMM is then satisfied, the material type will be approved for use upon submission of a revised Form TR-430A to the LTS.

2. If a fine aggregate source is approved for Type A use, no samples of Type C fine aggregate need to be submitted to the LTS. The District needs only check the gradation; and if they are satisfied, the mortar sand will be automatically approved for use. If the District so desires, Type C fine aggregate will be listed in Bulletin 14 upon receipt of a revised Form TR-430A to the LTS.

3. For 2RC material, if a source is an approved Type A, B, or C coarse aggregate source, no samples need to be sent into the LTS. The DME/DMM needs to only check the gradation of the material in question, and if the DME/DMM is then satisfied, the material type will be approved for use upon submission of a revised Form TR-430A to the LTS. If the 2RC material is not from an approved aggregate source already listed in Bulletin 14, it must...
be submitted to the LTS for initial qualification and then every other year for requalification.

4. For Rock Lining material, if a source is an approved Type A coarse aggregate source, no samples need to be sent into the LTS. The DME/DMM needs to only check the gradation of the material in question, and if the DME/DMM is then satisfied, the material type will be approved for use upon submission of a revised Form TR-430A to the LTS. If the Rock Lining material is not from an approved aggregate source already listed in Bulletin 14, it must be submitted to the LTS for initial qualification and then every other year for requalification. When submitting Rock Lining Samples, R-3 rock may be submitted for testing. If the sample passes, the source will be approved for all sizes of Rock Lining.

If you have any questions, please contact the Bureau of Project Delivery, Laboratory Testing Section at (717) 787-2489.
Form CS-430 "Notification of Inspection" was issued to the Engineering Districts to provide prefabrication notice to the BOPD, Structural Materials Section for assigning inspection to each contract.

Many of the Engineering Districts have transferred this activity to the contractor at the preconstruction conferences, evidenced by the names and signatures on many of the CS-430 forms received by the Structural Materials Section (SMS). Some contractors have even copied the details from the form onto their letterhead. Many of the forms received were incomplete with only part of the required information provided. Improperly completed forms or notification after fabrication has commenced can result in production delays or production of the material without inspection.

Each District is responsible for completing and submitting form CS-430 to the Structural Materials Section. Submitting the CS-430 to the Structural Materials Section through PPCC is the preferred mode of receiving the form. A resource account (ra-pdstructmatls@pa.gov) was created and a PPCC role was added to facilitate the workflow. However, the Structural Materials Section will still receive the form via e-mail at the noted address. Complete WBS elements are required to ensure inspection charges are assigned to the correct project. In addition, an anticipated production date/range field was added to assist our contracted consultants in anticipating their resource needs and to coordinate with their assigned fabricators. Please complete the form in its entirety including but not limited to ECMS number, Project Let date, Fabricator name AND location (and/or Bulletin 15 code), and full/complete WBS element code.

Those Districts which continually exceed the current Performance Metrics Dashboard minimum percentage for completion (85%) have instituted formal procedures to ensure the form is completed and sent to the Structural Materials Section. Best practices include:

- discussion with the Contractor at the pre-construction meeting to have them complete and submit form CS-430 with their fabricator information and submit it to a designated individual within the District.
- verification of the information on the form by assigned District staff to ensure accuracy and completeness
- periodic reviews of the interim report by assigned District staff through the SMS’ Electronic Quality Management System (EQMS) report to determine if changes in source of supply were made.

Questions regarding the form or the performance metric where errors are suspected should be directed to the Chief Structural Materials Engineer.
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LETTERS OF APPROVAL FOR NEOPRENE COMPRESSION AND STRIP SEAL PRODUCTION LOTS

Neoprene bridge and pavement compression seal and strip seal lots are sampled and approved for use prior to delivery to Department projects.

The Laboratory Testing Section has an approval process for neoprene seals. A statement of approval or rejection will be placed on the eCAMMS generated laboratory test report. The project will receive a copy of the eCAMMS laboratory report.

Direct your staff to accept seal lots by an eCAMMS laboratory report with the approval statement.
GUIDELINES: DISTRICT TRUCK WEIGHT MONITORING

On pages B.7.20-2 to B.7.20-8 is the Department's Truck Weight Monitoring Policy titled, "Guidelines: District Truck Weight Monitoring".

As a guide, a producer’s quality control plan should be acceptable if it includes identification of the licensed weight master, the independent calibration service used along with the frequency of calibration, and the method and frequency of internal checks of scale accuracy. Additionally, the gross weight and loading procedures used to assure compliance with gross weight and axle weight requirements for all vehicles should be submitted.
GUIDELINES: DISTRICT TRUCK WEIGHT MONITORING

I. OBJECTIVE

The District Truck Weight Monitoring Program is to provide the Department information relating to the accuracy of the truck scales used by vendors and the weights of trucks and their contents that are delivering construction and maintenance materials for which the Department is being billed on a weight basis and for checking compliance with axle and gross weight limits established in Chapter 49 of the Pennsylvania Consolidated Statues Title 75, Vehicles (Vehicle Code), or as posted by the Department, for the enforcement of Section 107.23(b) of Publication 408.

II. PURPOSE

The information is required for the following reasons:

A. To provide the Department indication of the reliability of the measurement of the weights for which it is being billed.

B. To enable the Department to initiate appropriate action for its best interests when the need for corrective action is indicated.

C. To enable the Department to continue to use the program as an alternative procedure approved by the Division Administrator for the Federal Highway Administration in lieu of the validation of haul tickets for materials paid by weight at both the point of loading and the point of delivery (NS 23 CRF 635A).

D. To enable the assessment of liquidated damages in conformance with PennDOT Specifications, Publication 408, Section 107.23(b), Weight Limits and Weighing.

III. BACKGROUND

As the Department increased its requirements for contractors to establish improved and acceptable quality control plans and procedures, the Districts were encouraged to reduce their resident inspection at the sources of supply and to implement a District Quality Assurance operation.

Consequently, beginning in 1983, the use of the resident Department weight checker activity began to diminish, and the Department increasingly relied upon vendor-supplied certified weight persons, automated/recorded scale weights and random checking by District Quality Assurance Teams and District Mobile Weight Teams. The Department was paying in excess of 90 million dollars annually for construction and maintenance materials purchased on the basis of weight.
measurements supplied by vendors. The principal purchases measured by this method included bituminous mixes, aggregates, sodium chloride and anti-skid.

The District's mobile weigh teams functioned primarily for the spot-weighing to include weekly random checks of trucks traveling from procedures of bituminous materials to contract construction projects.

Based upon the experience that has been gained, these guidelines are being issued to provide direction to the Districts for implementing cost effective truck weight monitoring.

IV. GENERAL REQUIREMENTS

A. Each producer/source of materials supplying items invoiced to the Department by weight, is required to provide and effectively implement a Quality Control Plan for truck weight control. It will be submitted to the District for review at least annually. The Quality Control Plan should include but not be limited to the following:

1. A procedure and frequency is to be established for checking truck axle weights.
2. A procedure and frequency is to be established for checking loading methods.

Supplies out of tolerance (See V.D.) or not following their Quality Control Plan will be suspended from supplying material until such time as they take the necessary action to return to compliance. Repeated failure to comply with the Quality Control Plan may result in removal from the approved list of material suppliers in the applicable bulletins.

B. Districts are to establish a Quality Assurance Program that will:

1. Review the producer's Quality Control Plan.
2. Monitor and assure producer’s truck weighing is in compliance.
3. Monitor producer's loading procedures and assure axle weights are in compliance.
4. Weigh trucks for compliance as needed.
5. Coordination with Motor Carrier Division enforcement will be established to supplement the District program when appropriate.

C. Each District shall provide and operate a Team led by a properly trained Department employee (permanent employment status) to weigh trucks delivering materials, including aggregates, bituminous mixtures, sodium chloride and anti-skid to maintenance and construction sites. The Team shall record it findings on Form CS-6105, "District-Weigh Team Record".

Each District shall implement action based upon the findings of the Team to notify the contractors and the vendors, who provide the invoiced weights, of the deviations and required responses, to notify the construction of maintenance supervisors for the
assessment of liquidated damages in accordance with the Specifications and to recommend action, when appropriate and with justification, to the Bureau, to affect the prequalified or the approved status of the violating contractors and vendors.

Each District shall submit an Annual Report (calendar year) by March 15, to the Bureau of Project Delivery, using the format shown on the attached form titled, "Annual District Truck Weight Monitoring Report" or using the automated year-end report. Automated year-to-date reports can be selected (P1) from the menu screen of the Weigh Team System. The Weight Team System is an on-line user application for storing data generated by the District Weigh Team, for accessing data files in CMS 2, FMIS and MORIS and for producing reports.

Comments regarding the information required in the Annual Report are as follows:

1. **Tonnage Billed Column** - Enter the total tonnage of material for which the District has made and is in the process of making payment either through the estimate (construction contracts) or the invoice (purchase orders) procedure.

2. **Tonnage Weighed Column** - Enter total net weight tonnage from the Weigh Team Records.

3. **Number Trucks Weighed (net Weight) Column** - Enter total number of trucks that were weighed to check Invoice Weights.

4. **% Trucks Short Weight Column** - This column is to show the percent of trucks weighed that were apparently delivering less (more than 3% less) Material Weight than that for which the Department was being billed.

5. **Total No. Trucks Weighed Column** - Enter the total number of trucks weighed - includes the number in the column described in Comment No. 3, above, as well as the number checked only for overweight.

6. **% Trucks Liquidated Damages Column** - This column is to show the percent of all the trucks that were weighed for which liquidated damages were assessable.

7. **Federal-Aid Projects** - The information to be provided under this heading is only for Federal-aid projects and is required so that the District Truck Weight Monitoring Program may be considered to be an acceptable alternate weighing program per the requirements of FHPM 6-4-1-6./NS23CFR635A

8. **Number Trucks Weighed** - Column under the "Federal-Aid Projects" category is to show only the number of trucks that were weighed for net weight checks on Federal-aid projects.
9. **Costs of Weighing** - Information to be provided under this heading will help management to evaluate the program.

In order to track all costs of the District Truck Weight Monitoring Program, a cost function, 9845 - District Truck Weight Monitoring Program, has been established specifically for this activity. Cost Function 9845 is available in the following appropriations and programs.

<table>
<thead>
<tr>
<th>Appropriation</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>185</td>
<td>371, 372, 373, 374, 375, 376, 377, 378</td>
</tr>
<tr>
<td>187</td>
<td>381, 383, 611, 612, 711, 712, 714, 822</td>
</tr>
<tr>
<td>289</td>
<td>361, 362, 391, 3921, 392</td>
</tr>
</tbody>
</table>

All costs relating to this program should be charged to the appropriate work order (already established) and coded to the Cost Function referenced above. For instance, if the material being weighed is salt for winter services, the weighing activity should be charged to the FMIS blanket work order in Appropriation 187, Program 712; if the material being weighed is being used on a highway construction project, then the weighing activity should be charged to the appropriate Appropriation 185 FMIS construction work order established in the Program 370 series.

10. The "Comments" section at the bottom of the report is intended for clarification of the preceding entries, if the data is influenced by unusual circumstances, to help the reader avoid misinterpretation or misunderstanding. A brief statement of evaluation should be included relating to the purposes described in Section II of the Guidelines as well as a statement comparing the operation anticipated for the new year versus the past year. Comments should be included relating to the resolution of the shortweights.

Because of the apparent limited space, the comments may be continued on the reverse side of the form or on a second page.

D. The Bureau will provide an annual summary report to the Deputy Secretary for Highway Administration.

E. Each District Engineer/Administrator will determine the work unit in which the responsibility for this program rests, but it is recommended that the items detailed in Part B1, 2 and 3 of these guidelines be performed by the District Materials Engineer/Manager and their staff and that Part B4 of these guidelines may be considered a separate audit function, if desired.
V. PROCEDURES

A. Weighing Equipment - Each Team is to be equipped with a set of at least 12 scales - Haenni WL 100, or approved equal. The Bureau of Office Services utilizes the approved specifications for purposes of procurement.

Scales are to be tested for accuracy at the Truck Weight Enforcement Scale Maintenance and Certification Facility at Harrisburg [Phone (717) 787-8776]. A Scale Weight Test Report will be issued showing that the scale has been tested and the finding.

The frequency of scale testing should be set so that weighings on the Haenni scales occur within ninety (90) days of the testing, for the existing GEC MD-500 scales (until replaced by Haenni scales or approved equals) weighings are to be performed within (30) days of testing.

B. Team Leadership - The Leader of the Team is to be of permanent employment status, with a supervisor classification and properly trained.

The leader is to receive training consistent with the attached outline of a training program approved by the Motor Carrier Division. Training is to be provided by the Division or by others who have been trained by the Division. The trainer is to notify the District Engineer of the trainees who have successfully completed the training. Successful completion of the training is to be acknowledged by the District by entering the name of the trainee under the ATRA screen acronym, TRKWGTMON.

Each Leader is to be provided resource information consisting of a copy of the current Subchapter C of Chapter 49 of the Vehicle Code, a copy of the Guidelines and a copy of the Trucker's Handbook (Publication 194).

C. Frequency and Nature of Checking - The intent of the checking is to discover if there is indication of fraudulent practice or of unacceptable weighing practice, to respond to requests for weighing arising from suspicion of registered gross and/or axle overloads and to enable the assessment of liquidated damages in accordance with Section 107.23(b), Weight Limits and Weighing, or Publication 408.

The District Engineer shall assure that procedures are established and followed by Construction and Maintenance personnel to provide the Team Leader timely notification of material deliveries.

The frequency of checking should be related to the nature of discovery, to the nature of contractor/vendor response, to the quantity of tonnage being received and to the frequency of requests for overload checking.
Checking for overload is to include those trucks delivering all types of construction materials to Department projects, whether or not the Department is invoiced on a tonnage basis, whenever there is reason for suspicion of violation of gross or axle weight limits as described in Section 107.23(b) of Publication 408.

D. Overloads, Shortweights and Responses

1. Overloads - If the vehicle is discovered to exceed the registered gross, and/or axle weight limits after deducting the 3% tolerance from the determined weight, the following action is to be taken:

   a. Liquidated damages are to be determined only for the weight violation that is the largest and for the amount of the determined weight (minus the tolerance) that exceeds the allowable weight (see the attached examples). Allowable weights are to be obtained from Chapter 49 of the Vehicle Code.

   If weighing is performed at the source, the operator can be permitted to readjust the load to bring axle weights into compliance before traveling on the roadway. NO ADJUSTMENT will be permitted when weighing is at the delivery point.

   b. The rate of assessment of liquidated damages is to be as specified in Section 107.23(b) of Publication 408, that is, the sum of $50.00 for each 500 lbs. or part thereof.

   c. A remark is to be noted on the Weigh Team's report that the weight (gross or axle - after subtracting a tolerance of 3%) exceeds the weight limit established in Chapter 49 of the vehicle code.

      NOTE: The tolerance is not to be added to the weight limit, the tolerance is to be subtracted from the Team's scale reading.

   d. Copies of the report are to be distributed promptly as in Section E. Documentation.

2. Shortweights and Responses - If the invoice weight exceeds by more than 3% of the net weight that is determined by the mobile weigh team, the deviation shall be described as excessive.

   The vendor shall be notified in writing confirming:

   a. The determination of the excessive deviation.

   b. The need to take prompt corrective action.
c. The need to respond in writing to the District Engineer within 30 days of the notification to describe the corrective actions and safeguards that were implemented and the time at which they were implemented.

d. The need to provide a corrected billing, or to furnish material at no charge (as directed by the Department, to compensate the Department for the weight in excess of 3% that was invoiced but not received.

Notes:

1. If repeated excessive deviations are discovered, the Contractor and the vendor should be notified that failure to adequately respond may be considered cause to reject subsequent deliveries and to recommend suspension or removal of the prequalification of the approved status of the Contractor and/or vendor.

2. Overload or Net Weight violations committed by those delivering to contract construction projects should be noted under the "Remarks" section of the Past Performance Report filed for that project.

E. Documentation

1. A form, CS-6105, District Weight Team Record, shall be issued for each weighing with copies distributed to the contractor, truck driver, District Materials Engineer/Manager, Project Engineer or Maintenance Manager and inspector or vendor, if the vendor doing the weighing is not the contractor.

2. The "Remarks" block of the form should describe follow-up action that is required of the contractor/vendor in accordance with subparagraph D.
Section 1001.3(k)3.a provides for the use of 25% more cement than the quantity specified for the concrete class being used on an exception basis if approved by the District Materials Manager/District Materials Engineer (DMM/DME). This is specifically for concrete placements made in or under water.

The extra cement is actually considered cementitious material including fly ash, ground granulated blast furnace slag, and silica fume. These replacements can be made in the same proportions as established in the master mix design being used.

When extra cement (cementitious material) is added to the load, some additional water may be added to the mix, not to exceed the maximum water/cement ratio for the class of concrete specified. Maximum allowable extra water is calculated as follows:

\[ E = 0.5 \times A \times \frac{W}{(C + P)} \]

Where:
- \( E \) = extra weight of water
- \( W \) = total weight of water in design
- \( C \) = total weight of cement in design
- \( P \) = total weight of pozzolan (fly ash, GGBFS, or silica fume) in design
- \( A \) = extra cementitious weight

The intent is to put up to one-half of the water normally used for this additional weight of cementitious material in this mix in order to provide a stiffer paste which will be more resistant to scour and compensate for eventual loss or dilution of paste by water. By specification, the maximum allowable slump for use in the field under this condition is 2 ½ inches.

Air entrainment agent (AEA) is normally dosed based on 100 lbs. of cement, but can be varied due to conditions such as ambient temperature and haul time. Therefore, additional AEA will most likely have to be added to compensate for the extra cement in order to have plastic air content within specification for field placement. Acceptance criteria for plastic air content are not waived for extra cement concrete regardless of its structural use or location.

This procedure will increase the volume of concrete and should be considered by the inspector if computing yield and by the contractor when calculating and ordering concrete in a placement. A separate mix design is not necessary unless required by the DMM/DME.
These RAP stockpile requirements are a supplement to the Project Office Manual (POM), Part B, Section 7, Page 5-1, Minimum Quality Control Plan for Bituminous Concrete when a bituminous producer proposes to produce bituminous mixtures containing greater than 15% RAP and less than or equal to 35% RAP. These minimum stockpile requirements are intended for both incoming RAP material (raw RAP) and processed RAP material where the processed RAP material is processed and stockpiled prior to being incorporated into the plant production process. These minimum quality control guidelines do not address incoming RAP material that is processed in-line as part of the plant production process and directly incorporated into the plant production process.

Each bituminous concrete producer intending to produce bituminous mixtures containing greater than 15% RAP and less than or equal to 35% RAP, must include these supplemental minimum requirements in their Quality Control Plan under Section B.13., RAP Material or Section C.1., Aggregate/RAP/RAM Stockpiles of the POM, Part B, Section 7, Page 5-1.

The following Quality Control Plan is the minimum plan designed to meet these standards:

A. Stockpile Preparation of Incoming RAP Material (Raw RAP)

1. Prepare stockpile area by constructing a level pad. Construct the pad according to the aggregate storage requirements in Section 106.05(b) for use in bituminous concrete.

2. Producer is responsible to monitor the unprocessed RAP stockpile to prevent the incorporation of contaminated or deleterious material into the stockpile. This type of material must be immediately removed from the stockpile.

3. Do not incorporate plant waste material consisting of uncoated or partially coated aggregate material discarded from the plant during mixture transition or plant start-up.

4. When RAP material is to be used in wearing courses, the Producer is responsible for monitoring, documenting (SRL and quantity), and segregating (separate stockpiles) the incoming RAP material for SRL from both PennDOT projects and other projects (commercial, municipal, etc.).

5. For a specific designated unprocessed RAP stockpile to be utilized in a wearing course, Penn DOT will provide the producer with the SRL of the wearing course(s) to be milled from PennDOT projects (This information is typically provided in the pavement history part of the contract documents). The producer
will be responsible for maintaining the integrity of the SRL for that designated stockpile.

B. Processing and Sampling of RAP Stockpile (Processed RAP)

1. Prepare a stockpile area by constructing a level pad. Construct the pad according to the aggregate storage requirements in Section 106.05(b) for use in bituminous concrete.

2. The maximum size of aggregate in the processed RAP shall be no greater than the maximum aggregate in the JMF.

3. During processing, a representative sample shall be taken every 500 tons to determine the asphalt content, aggregate gradation, and effective specific gravity (Gse).

4. After obtaining and testing ten (10) samples, calculate the average for each individual sieve, asphalt content, and effective specific gravity (Gse) for these ten (10) samples. These calculated values will serve as a baseline for the aggregate gradation and asphalt content. Each additional RAP sample will be evaluated against the baseline criteria. If the asphalt content varies more than +/- 1.0% from the baseline value, this material will not be added to the stockpile and further production should be halted or placed on a separate stockpile until material can be produced within this guideline. If the gradation of a sample results in a significant variation from the baseline aggregate gradation; production should be halted or placed on a separate pile until the production process has been corrected. Significant variation in gradation is defined as a sample gradation that would result in the completed Bituminous or Asphalt Mixture varying outside the Section 409, Table A, multiple sample (n ≥ 3) gradation tolerances if the processed RAP was incorporated into the completed mixture at 35%. Maintain an overall average and standard deviation of all samples for each standard sieve size, asphalt content, and the effective specific gravity (Gse) of the processed RAP stockpile.

5. Identify the RAP stockpile if being utilized in a wearing course for a Designated Project.

6. All RAP stockpiles designated for a specific project must be approved by the District before the material is utilized in the production of an approved JMF. This is to ensure that the designated stockpile complies with the projects aggregate and SRL requirements.
GUIDANCE FOR MITIGATING PERMANENT CONCRETE MIXTURES TO PREVENT DELETERIOUS ASR

Scope:

This POM Section is intended to provide several examples of developing a mix design that will be compliant with Section 704 to effectively mitigate Alkali Silica Reactivity (ASR). It is not intended to address all aspects of mixture proportioning or adjustments during trial batching.

The contractor and their concrete supplier are responsible in designing a mixture that meets all Department requirements. A copy of each mix design used for concrete delivered to the project must be submitted to the District Materials Engineer/District Materials Manager or Chief Structural Materials Engineer, as applicable, prior to its use in the work. In the future, concrete mix designs will have workflow for submittal and approval through eCAMMS, including the ability to print approved mix designs.

Mitigating ASR:

As indicated in Section 704 for permanent concrete, concrete mixtures containing one or more aggregates (Reactivity Class R1, R2 or R3) must be mitigated to prevent deleterious ASR. R0 aggregates are considered non-reactive and do not require mitigation, however, supplementary cementitious materials may be incorporated for other beneficial purposes such as improving permeability.

In order to determine how the mixture must be proportioned, and in some cases, based on the selected means of mitigation, the following must be known:

- **Prescriptive Mitigation**
  - Aggregate reactivity level of each aggregate
  - Type of cement
    - Blended cements may require additional mitigation if the percentage of SCM in the blended cement is less than that required by specification.
    - Alkalinity, when and if used as part of the mitigation process.
      - Low alkali cement (less than 0.70%), when used allows for the reduction of one prevention level except for R1 aggregates
  - Type or types of supplementary cementitious material (SCMs)
  - Alkalinity of flyash or fly ashes used, e.g. Class C and F can be combined or a flyash and ground granulated blast furnace slag etc..
  - Structure classification (defined in Section 704 based on asset type and service life).

Using the above, the prevention level is determined, and the mixture designed using the minimum amount of SCM(s) from Table G in Section 704.
- Preventive (Performance) Mitigation
  o Used when:
    ▪ Prescriptive measures, i.e. SCMs are not provided in the specification using a Bulletin 15 approved metakaolin or lithium admixture and the other specific mix components.
    ▪ Use of blended cements with an SCM (mass replacement) percentage less than that indicated for prescriptive mitigation.
    ▪ Use of lower levels of SCMs in the mixture than indicated in Section 704.
      • Preventive mitigation must be tested in accordance with ASTM C1293 and produce an expansion less than or equal to 0.04% at two years.
        o SCM and cement (type for type) substitutions are permitted. Aggregate substitutions are not permitted.

Mitigation Examples:

Prescriptive Approach:

Example 1. A contractor requires a mix design for cast in place plain cement concrete curb (Publication 408, Section 630). Class A concrete is required, and both the fine and coarse aggregates are Reactivity Class R1. Table A of Publication 408, Section 704 requires a cement factor of 564 to 752 lbs./cy. The mix design will utilize zero-slump concrete. From Table D, the Risk Level is Level 2 and the asset is Structure Class S2 from Table F. Therefore, from Table E, the minimum Prevention Level is Prevention Level W. Two options will be presented; however, other options may be available provided they meet the requirements from Section 704.

Option 1: Blended cement: A blended cement having a minimum of 15% Class F or C flyash with alkali level ≤ 3.0, 20% Class F or C flyash with alkali levels > 3.0 to ≤ 4.5 or 25% GGBFS will meet the minimum prevention level. The maximum alkali level for the SCM incorporated in the blended cement must be verified from Form TR-7015 to ensure the limit is not exceeded.

Option 2: A Type 1 cement is used with an alkali level above 0.70% and less than 1.25%. Any of the prescriptive percentages of SCMs from Table G for prevention Level W may be used. Example 2, Option 2 below and Note 8 from Table G describe how to calculate the minimum amount of silica fume required, if used to meet the minimum prescriptive mitigation level.

Summary of Options:
- Blended cement containing the minimum mass percentage of SCM from Table G, Prevention Level W based on the alkali level of the SCM.
- Cement with an alkali level less than 1.25% and the minimum mass percentage of SCM from Table G, Prevention Level W.
Example 2:  A prestressed concrete beam supplier wishes to produce a mixture using the prescriptive amount of SCM(s) as required in Table G of Section 704. For prestressed beams (Structure) class S3 is required and the supplier is using a fine aggregate with Reactivity Class R0 and a coarse aggregate with Reactivity Class R2. Two options will be examined, one with a blended cement Type 1P cement and additional SCM and the other using Type 1 Portland cement.

From Table D, because there is an R2 aggregate, the Risk Level is Level 3.

From Tables E and F, using a Structure classification of S3 for the beams and the Risk Level of 3, the Prevention Level is ‘Y’.

From Table G and Prevention Level Y, the base limits using single SCMs are defined.

If the supplier wishes to use a blended cement containing a known percentage of an SCM and/or combine SCMs such as Flyash and Silica fume, Note 3 from Table G must be followed when combining SCMs to ensure the minimum mass replacement percentages are used. Options 1 and 2 below will describe how these are calculated.

Option 1: Blended type 1P (20) with 20% Class F flyash having a flyash alkalinity less than or equal to 3.0%.
- Requirements:
  - The beam supplier knows from experience that 800 lbs of cement are required to meet the higher detensioning and 28-d strength requirements for prestressed beams. With 20% of the blended cement being contributed as flyash, the amount of cement is calculated as 800 x 0.80 = 640 lbs./cy. of cement of which the additional 160 lbs. within the blend is Class F flyash.
  - The 20% Class F flyash included in the blended cement does not meet Prevention Level Y as indicated in Table G, therefore, additional mitigation is required.
    - If additional Class C flyash were separately incorporated along with the blended cement, the additional amount of Class C flyash required would be calculated as follows:
      - Class C contribution: 20/25 x 100 = 80%. Therefore, the Class C contribution must be 20% of the required amount if used alone (20% minimum) or 0.20 x 30 or 6% additional Class C flyash by volume, e.g. 0.06 x 640 ~ 38 lbs/cy.
        - The CaO and alkalinity limits of Table G must not be exceeded. The CaO limit can be verified from Form TR-7012.
      - The required mass replacement if the additional SCM chosen was ground granulated blast furnace slag (GGBFS) were combined with the blended cement would be calculated as: 0.20 x 50 = 10% resulting in an additional 64 lbs./cy of GGBFS/cy (0.10 x 640 = 64).
    - If silica fume were added as the second SCM, Table G requires the percentage by mass of silica fume to be calculated based on the weight of the Portland cement and alkali level of the Silica Fume. The maximum alkalinity limit of the silica fume (1.0%) is used in this calculation. If a lower alkali level for the silica fume supplier is used for the material to be
trial batched and produced, the maximum alkali level must be indicated on the mix design form and cannot be exceeded during production. This example therefore assumes an alkali limit of 1.0% for the silica fume.

- The base minimum percentage of silica fume (if used alone) must first be calculated from the cement portion of the blended cement and silica fume alkalinity as follows: $640 \times \frac{1.0}{100} = 6.40$.
  - Now the minimum mass percentage can be calculated using the weighted factor of 1.8 from Table G and Prevention Level Y as: $1.8 \times 6.40 = 11.5\%$.
    - Since the blended cement contributes only 80% of the required SCM amount, the remaining 20% of flyash is calculated as $0.20 \times 13.5 = 2.3\%$ silica fume or $0.23 \times 640 \sim 15$ lbs./cy.

- Forms TR-7011, TR-7012, TR-7013, TR-7014 and TR-7015 must be reviewed during production to ensure the SCMs included in the blended cement and the additional SCM in the ternary mixture do not exceed the maximum alkali level.
  - If the supplier wishes to use less than the prescriptive amount of SCMs indicated in Table G, the mixture must be tested in accordance with the preventive approach using ASTM C1293 without exceeding 0.04% expansion after two years.

**Option 2:** The same asset type (S3) and one lower reactivity class aggregates (both R1’s) are used, however, a non-blended cement is used. From Tables E and F, using a structure classification of S3 and the Risk level of 2, the prevention level is X. Two scenarios will be addressed:

- Cement with alkali limit above 0.70% can be used along with one or more of the SCMs as indicated in Table G.
- If a cement with an alkali limit less than or equal to 0.70% is used, the prevention level can be reduced one level, i.e. to level W and again one or more SCMs used for mitigation as illustrated in Example 1 be used.
  - In this case the concrete supplier must indicate that the low alkali option and reduced prevention level are being used and indicate so on the concrete mix design. Form TR-7011 for cement received during production must indicate that the alkali level remains at or below 0.70%.

**Summary of Options:**

**Example 2, Option 1:**
- Blended Type 1 cement (20% Class F flyash) and 6% Class C flyash combined as a percentage of the Portland cement within the blend.
- Blended Type 1 cement (20% Class F flyash) and 10% GGBFS
- Blended Type 1 cement (20% Class F flyash) and 2.3% Silica Fume
- Blended Type 1 cement only: 2 year ASTM C1293 concrete prism testing required with a maximum expansion of 0.04%.
Example 2, Option 2:
- Portland cement (alkali greater than 0.70%) with prescriptive amount of SCM(s) from Table G for prevention level X.
- Portland cement (alkali less than 0.70% with prescriptive amount of SCM(s) for prevention level W from Table G.

Example 3. A concrete supplier is required to supply a AAA-P bridge deck mix design using a non-reactive fine aggregate (R0) and two blended coarse aggregates (both R2’s) to meet the aggregate optimization criteria. Neither blended cements nor low alkali cements are available to the supplier and concerns exist with high SCM replacement levels. The DMMDME has approved a higher cement factor (660 lbs.) can be used in the mixture due to the higher SCMs needed and concerns with strength gain as the project will involve a late season placement.

From Table E, the required level of prevention is Level Y. Concerned about the potential for scaling, the district, contractor and supplier have agreed to develop a mixture that would avoid the use of GGBFS at a 50% replacement level. The supplier elects to produce two mixes. One with 25% Class F flyash and one with silica fume only.

Option 1: 660 lbs. of Type 1 cement along with 25% flyash are used. No further calculations are required. Contract provisions for other mixture qualifications however, such as aggregate optimization, shrinkage and rapid chloride permeability testing must be performed. Form TR-7012 should be reviewed during production to ensure the 3.0% maximum alkali limit for the Class F flyash is not exceeded.

Option 2: 660 lbs. of Type 1 cement are used in combination with Silica fume. Table G requires a minimum of 7% silica fume or 1.8 x LBA, whichever is greater. The Bulletin 15 silica fume provider indicated that they will guarantee a maximum alkali content of 0.55%.

- The base minimum amount of Silica fume is first calculated as follows: 660 x 0.55/100 = 3.63.
  - Now the minimum mass percentage can be calculated using the weighted factor of 1.8 from Table G and Prevention Level Y as: 1.8 x 3.63 = 6.5%. (6.5% < 7%) which is the minimum required amount.
  - The minimum amount of silica fume required, therefore, is 7.0%. Because the calculated amount is based on a maximum alkali content of 0.55%, this must be indicated on the mix design and quality control test results supplied by the silica fume manufacturer during production to ensure this value is not exceeded. This is a somewhat high amount of silica fume for a bridge deck application that may result in finishability issues. The District has indicated that the contractor must assess finishability prior to placement.
    - Form TR-7014 must be reviewed during production to ensure the 0.55% alkalinity limit is not exceeded

Summary of Options:
- Type 1 cement and 25% Class F flyash
- Type 1 cement and 7.0% silica fume
Please note that these are only three examples with several options provided solely for guidance as to how the ASR mitigation or remediation requirements can be met. Any and all of the options provided in Section 704 may be used at the contractor or supplier’s discretion.

In addition, please note that mix designs approved for a particular prevention level can be substituted for use where a lower prevention level is required provided minimum/maximum cement factors and any other applicable specification requirements are met.
eCAMMS is a web-based application that manages the material quality assurance program for PennDOT’s highway construction and maintenance programs, including activities performed by the Bureau of Project Delivery, and both District Quality Assurance and Acceptance Testing.

eCAMMS tracks material samples and their test results for materials collected from bridge and roadway construction projects; maintenance projects and stockpiles; aggregate, concrete, and asphalt suppliers; and other material suppliers seeking PennDOT qualification.

The system is a database that receives, generates and distributes information and reports in a timely manner.

The benefits of this system are:

1. Reduced Testing Turnaround time.
2. Immediate access to information and management reports.
3. An enhanced Quality Assurance System.
4. To provide data for:
   - Redirection of Resources.
   - Prompt Presentation and Comparison of Data.
   - Study and Statistical Analysis.
   - Modification or Revision of Specifications, Standards, methods and Processes.
   - Training Needs.
   - Future Planning.

An integral part of eCAMMS requires that District and Central Office Construction Quality Assurance Section (CQAS) personnel be responsible for setup of their samples. Failure to have samples setup prior to receipt at the Laboratory Testing Section (LTS) creates a number of logistical and administrative problems since LTS cannot test and input results into the system without the setups.

It is important that Project/CQAS personnel who are sampling materials and entering them in the system have available all necessary information and codes to properly complete Form TR-447.
A TR-447 Form is completed for every material sample.

When a sample is collected, the Inspector or Engineer is responsible for completion of a TR-447 form. It is a three-part form; one copy is sent to the Laboratory Testing Section (LTS) with the sample; one copy is sent to the District office or is kept by the CQAS Representative; one copy is filed with the project documentation. Form TR-447 also contains peel-off bar codes which are attached to the sample for identification purposes. Each peel-off bar code contains the TR-447 number and an increment number. Caution is urged in the placement of these bar code stickers, lessening the difficulty of scanning by LTS.

Direct any questions to the District Materials Engineer/Manager Staff regarding the completion of Form TR-447.

Filling out a TR-447:

The following information is to be included on the TR-447 form:

Format Codes:

L = Alpha character
# = Numeric character
@ = Alpha or numeric character
( ) = Number of characters

Matl Code:

Material Code.

Enter the appropriate Material Code for the sample. See POM Appendix A for Material Code listing per Publication 408 Sections.

Format:     ###
Example:    203
Material Class:

Enter the appropriate Material Classification for the sample. See POM Appendix A for Material Class listing per Publication 408 Sections.

Format:  @@@@@@@@@@@@@
Example:  A8

S Class:

Sample Classification.

Enter the Sample Classification for the sample. See the backside of Form TR-447 for Sample Class listing.

Format:  @@
Example:  QA

Aggregate Usage by Sect 703 Table D:

Format:  @ (100)
Example:  Bit. Seal Coat w Precoated Agg

Lot/Batch Number:

Enter the Lot/Batch Number for the sample being tested.

Format:  @ (30)
Example:  00000006A

Lot/Batch Size & Units:

Enter the size of the lot/batch associated with the material, including the units.

Format:  Size and Units: @ (30)
Example:  300 LF
Location Code:

Reserved for Plant inspections only.

Format:  @@@@@@@@  
Example:  BEA14A14  (Supplier Code. For Report distribution, add Supplier Code to Associated Parties during eCAMMS Sample Setup)  
          05  (For a District, only enter a two-digit District number in first two blocks. For Report distribution, add District to the Associated Parties during eCAMMS Sample Setup.)

Place Collected:

Enter a description of the place where the sample was collected, if it was not collected on a project.

Format:  @ (30)  
Example:  CIC48A

Date Collected:

Enter the date that the sample was collected or if the sample increments were collected over several dates, enter the last collection date from the increments.

Format:  MM/DD/YYYY  
Example:  03/26/2018

# of Inc:

Number of Increments.

Enter the total number of increments for the sample.

Format:  # #  
Example:  03
Related Sample:

Enter the cross-reference number used to tie a bituminous Density and Extraction sample together or to relate an Investigation (IV) Sample Class sample to a previously collected sample.

Format:  L # # # # # #
Example:  A002915

Tank #:

Enter the Tank # for liquid samples (Tank # is typically associated with a liquid asphalt cement sample or emulsified asphalt sample and the Tank # is usually identified on the Bill-of-Lading of the asphalt cement or emulsified asphalt).

Format:  @ (10)
Example:  2

Construction Item #:

Enter the construction item number from the project contract that the material sample falls under.

Format:  # # # - # # # #
Example:  0409-0582

PE/PEQ:

Product Evaluation/Product Evaluation Qualification.

Enter the PE Number (for new materials) or PEQ Number (for materials with an existing specification) for the sample [Typically, this number is in a Year-Number-Letter format (YY-###L)]. This field is for cost accounting purposes.

Format:  @@-@@@@@@
Example:  14-156A
Product Name:

Enter the Product Name for the sample materials as applicable. Typically, Publication 35 (Bulletin 15) lists materials by a Product Name.

Format: @ (100)
Example: Eucon-Air-Mix

Contract Number:

Enter a valid ECMS Contract Number. The eCAMMS system requires that an ECMS Contract Number or an Organization Code Number be entered for cost accounting purposes. If an ECMS Contract Number is entered, eCAMMS will automatically retrieve the list of available Work Breakdown Structure (WBS) Number(s) that can be selected for the ECMS project. If an Organization Code Number is entered, eCAMMS will automatically retrieve the list of available WBS numbers that can be selected from the Organization Code. An Organization Code Number is typically used for samples that are not associated with an ECMS Contract Number.

Format: E@@@@@@
Example: E11688 (Do not add leading zeroes after the “E”. When entering the Contract Number in eCAMMS, enter the “E” and numbers).

Work Breakdown Structure (WBS):

Enter the appropriate WBS number for the project the material sample represents. The WBS number is broken down into the MPMS or Non-MPMS (MP), System (S), State Route or Work Order (SR or WO), Sub Project (Sp), Phase (P), Section (Sec), Organization Code (Org), Program (Program), and Participation Code (PC).

Format: @-@#####@#@@@-####-@@@-#
Example: P-C5412908POC-0540-701-2

Supplier (Party) Code:

Enter the Supplier (Party) Code for the sample.

For Epoxy coated reinforcing bars, the Supplier Code field should always contain the last supplier in the manufacturing chain that handled, added value or further processed the item. For samples taken from projects, the Supplier Code would typically be the fabrication shop. The Supplier Codes for the bar manufacturer, epoxy powder manufacturer, and epoxy coating
company must be entered in the Remarks section of the TR-447. Refer to POM Section B.8.7 for more detailed instruction on completion of the TR-447 for epoxy coated reinforcement.

Format:  @@@@@@@@
Example:  BEA14A14

Pub 408 Year:

Enter the Year of the project’s governing specification used to test the material from Publication 408.

Format:  # # # #
Example:  2016

Ver:

Enter either “IE” for Initial Edition or the Version (Change No.) of the Publication 408 specification.

Format:  @@
Example:  2   (for Change No. 2)

Section:

Enter the Section Number of the specification used to test the material from Publication 408.

Special Provision:

Check "Yes" to indicate that a special provision exempts the sample from being tested against a Publication 408 specification Year and Version (Change No.). In addition, enter the special provision’s Index (C = Changes to Specifications Related, D = Design/Build Related, G = General Provisions Related, I = Item Related, N = Non-Pay Item Related, P = Provisional Specification Related, or S = Section Related), and the Provision Number.

Format:  □ Yes @ (15)
Example:  ✓ Yes G-a00002
PO Number:

Purchase Order Number.

For Maintenance samples, enter the Purchase Order Number associated with the material.

Format:  @ (20)
Example:  00011688

Sampled By:

Enter the following ‘Sampled By’ information of the person who actually physically collected the sample.

Sampled By – Title:

Enter the title (Dr., Miss, Mr., Mrs., or Ms.) of the person who actually physically collected the sample.

Format:  @ (4)
Example:    Mr.

Sampled By – First Name:

Enter the First Name of the person who actually physically collected the sample.

Format:  @ (60)
Example:  John

Sampled By – Middle Name:

Enter the Middle Name or Middle Initial of the person who actually physically collected the sample.

Format:  @ (15)
Example:    P.
Sampled By – Last Name/Suffix:

Enter the Last Name and, if applicable, the Suffix (Sr., Jr., III, etc.) of the person who actually physically collected the sample.

Format:  @ (60)
Example: Richards, Jr.

Sampled By – Phone Number:

Enter the telephone or mobile phone number where the person who actually physically collected the sample can be contacted or voice-mailed during daytime working hours.

Format:  # # # - # # # - # # # #
Example: 814-867-4951

Sampled By – Ext.:

Enter the telephone number extension, if applicable, of the person who actually physically collected the sample.

Format:  @ (5)
Example: 100

Sampled By – Certification ID:

Enter the technician certification number of the person who actually physically collected the sample.

Format:  @ (30)
Example: 555001

Sampled By – Email Address:

Enter the e-mail address, if available, of the person who actually physically collected the sample.

Format:  @ (275)
Example: jrichards@xyz.com
Sampled By – Consultant, Contractor, Manufacturer, PennDOT Employee, Producer, Other:

Check the appropriate box for Consultant, Contractor, Manufacturer, PennDOT Employee, or Producer, or enter the appropriate type under ‘Other’ of the person who actually physically collected the sample.

Consultant, Contractor, Manufacturer, PennDOT Employee, or Producer Format: @ (checkbox)
Other Format: @ (15)
Checkbox Example: ✓
Other Example: Municipality

Inspected By:

Enter the following ‘Inspected By’ information of the person who directed or inspected another person physically collecting the sample. This person should not have actually physically collected the sample.

Inspected By – Title:

Enter the title (Dr., Miss, Mr., Mrs., or Ms.) of the person who directed or inspected another person physically collecting the sample.

Format: @ (4)
Example: Mr.

Inspected By – First Name:

Enter the First Name of the person who directed or inspected another person physically collecting the sample.

Format: @ (60)
Example: Matthew
Inspected By – Middle Name:

Enter the Middle Name or Middle Initial of the person who directed or inspected another person physically collecting the sample.

Format:  @ (15)
Example:  R.

Inspected By – Last Name/Suffix:

Enter the Last Name and Suffix (Sr., Jr., III) of the person who directed or inspected another person physically collecting the sample.

Format:  @ (60)
Example:  Johnson, Sr.

Inspected By – Phone Number:

Enter the telephone or mobile phone number where the person who directed or inspected another person physically collecting the sample can be contacted or voice-mailed during normal daytime working hours.

Format:  # # # - # # # - # # # #
Example:  814-867-4951

Inspected By – Ext.:

Enter the telephone number extension, if applicable, of the person who directed or inspected another person physically collecting the sample.

Format:  @ (5)
Example:  100

Inspected By – Certification ID:

Enter the technician certification number of the person who directed or inspected another person physically collecting the sample.

Format:  @ (30)
Example:  555111
Inspected By – Email Address:

Enter the e-mail address, if available, of the person who directed or inspected another person physically collecting the sample.

Format:  @ (275)
Example: mjohnson@consultant.com

Inspected By – PennDOT Employee, Consultant, Other:

Check the appropriate box for PennDOT Employee or Consultant, or enter the appropriate type under Other of the person who directed or inspected another person physically collecting the sample.

PennDOT Employee or Consultant Format:  @ (checkbox)
Other Format:  @ (15)
Checkbox Example:  ✔
Other Example:  Municipal

County:

County Code.

Enter the code for the county in which the sample was collected.

Format:  # #
Example:  07

SR:

State Route.

Enter the State Route number as assigned and maintained by RMS.

Format:  # # # #
Example:  0022
Segment:

Segment.

Enter the code for the State Route Segment where the sample was collected (not applicable for construction projects in progress).

Format:  ###
Example:  0010

Offset:

Enter the measurement of the offset from the segment line of a highway which indicates the exact location where a material sample was collected (not applicable for construction projects in progress).

Format:  ###
Example:  0212

Section:

Enter the Section location of where a sample was collected or the general location of where a QA review took place. Section numbers are only applicable for samples collected from construction projects in progress.

Format:  @@@
Example:  M04

Station:

Enter the Station location where a sample was collected or the general location of where a QA review took place. Station locations are only applicable for samples collected from sites under construction.

Format:  @ (10)
Example:  4214+87.2
CTR Offset:

Center Offset.

Enter the measurement of the offset from the centerline of a highway which indicates the exact location where the sample was collected.

Format:  # #. #
Example:  12.5

L/R:

Left/Right Indicator.

Enter "L"eft, "R"ight, Station ahead, or leave the field blank to indicate the location from which the sample was collected, relative to the center line.

Format:  L
Example:  R

Placement Date:

Enter the actual placement date of the material represented by the Increment number (Increments may have been actually constructed or actually placed over several dates)

Format:  ##/##/##  (MM/DD/YY)
Example:  05/23/18

AASHTO T 209:

For Bituminous samples, enter the daily Theoretical Maximum Specific Gravity (Gmm) value as determined by the Bituminous Mixture Producer according to AASHTO T 209 for the Increment Placement Date.

Format:  #.# # #
Example:  2.397
JMF Year:

Enter the JMF Year number identifying the sample's Job Mix Formula.

Format:  ###
Example:  2018

JMF Number:

Enter the specific mix number of the supplier's Job Mix Formula for a bituminous material or the Master Mix Design for cement concrete.

Format:  @@@@@@@@@@
Example:  W125221H1

Design Thickness:

Enter the bituminous concrete or cement concrete pavement thickness specified in the contract.

Format:  ##.##
Example:  1.500

Concrete Air:

Plastic Air Content.

For concrete samples, enter the results of the plastic air content test performed in the field.

Format:  ##.##
Example:  7.2

Concrete Slump:

For concrete samples, enter the results from the slump test performed in the field.

Format:  ##.##
Example:  1.25  (Metric entries ignore decimal location)
Concrete Temp:

For concrete samples, enter the temperature (°F) of the plastic cement concrete determined in the field.

Format:  # # #. #  
Example:  74.5

Self-Consolidating Concrete J-Ring:

For Self-Consolidating Concrete (SCC) samples, enter results of the J-Ring test performed in the field.

Format:  # #. # #  
Example:  11.25

Self-Consolidating Concrete Slump Flow:

For Self-Consolidating Concrete (SCC) samples, enter results of the slump flow test performed in the field.

Format:  # #. # #  
Example:  15.50

Self-Consolidating Concrete VSI:

For Self-Consolidating Concrete (SCC) samples, enter results of the Visual Stability Index (VSI) test performed in the field.

Format:  ##  
Example:  1

Remarks:

Enter any special instructions for the sample. For example, "Perform a Sodium Sulfate Soundness Test."

For epoxy coated reinforcement, the Supplier Codes for the bar manufacturer, epoxy powder manufacturer, epoxy coating company, and fabrication company must be entered in the
Remarks section of the TR-447. Refer to POM Section B.8.7 for more detailed instruction on completion of the TR-447 for epoxy coated reinforcement.

For bituminous mixtures accepted under PWT-LTS or PWT-HOLA Special Provisions, enter “Terminated Lot” when the lot is a Contractor elected terminated lot as defined by the applicable PWT-LTS or PWT-HOLA special provision.

Format: Free-form Text
SAMPLE CLASSIFICATIONS

The following chart lists the sample classification codes used by CAMMS. These codes are defined on the back of the TR-447 form.

<table>
<thead>
<tr>
<th>Code</th>
<th>Sample Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS</td>
<td>Acceptance</td>
</tr>
<tr>
<td>DF</td>
<td>District Field Test</td>
</tr>
<tr>
<td>DQ</td>
<td>District Quality Assurance</td>
</tr>
<tr>
<td>DW</td>
<td>District Witnessed</td>
</tr>
<tr>
<td>ES</td>
<td>External</td>
</tr>
<tr>
<td>FV</td>
<td>Field Verification</td>
</tr>
<tr>
<td>IA</td>
<td>Independent Assurance</td>
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<tr>
<td>IF</td>
<td>Information</td>
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<tr>
<td>IV</td>
<td>Investigation</td>
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<tr>
<td>PE</td>
<td>Product Evaluation</td>
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<td>PS</td>
<td>Preliminary</td>
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<td>PV</td>
<td>Plant Verification</td>
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<td>QA</td>
<td>Quality Assurance</td>
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<td>QF</td>
<td>Quality Assurance Field Test</td>
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<td>QR</td>
<td>Quality Review</td>
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<td>Research</td>
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<tr>
<td>RS</td>
<td>Requalification</td>
</tr>
<tr>
<td>SR</td>
<td>Structural Review</td>
</tr>
</tbody>
</table>
### COUNTY CODES

The following chart lists the counties of Pennsylvania and their corresponding codes.

<table>
<thead>
<tr>
<th>County Code</th>
<th>Name</th>
<th>County Code</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adams</td>
<td>35</td>
<td>Lackawanna</td>
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<tr>
<td>2</td>
<td>Allegheny</td>
<td>36</td>
<td>Lancaster</td>
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<tr>
<td>3</td>
<td>Armstrong</td>
<td>37</td>
<td>Lawrence</td>
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<tr>
<td>4</td>
<td>Beaver</td>
<td>38</td>
<td>Lebanon</td>
</tr>
<tr>
<td>5</td>
<td>Bedford</td>
<td>39</td>
<td>Lehigh</td>
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<tr>
<td>6</td>
<td>Berks</td>
<td>40</td>
<td>Luzerne</td>
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<td>7</td>
<td>Blair</td>
<td>41</td>
<td>Lycoming</td>
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<td>8</td>
<td>Bradford</td>
<td>42</td>
<td>McKean</td>
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<td>Bucks</td>
<td>43</td>
<td>Mercer</td>
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<td>Butler</td>
<td>44</td>
<td>Mifflin</td>
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<td>11</td>
<td>Cambria</td>
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<td>Monroe</td>
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<td>Montgomery</td>
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<td>Montour</td>
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<td>14</td>
<td>Centre</td>
<td>48</td>
<td>Northampton</td>
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<td>Chester</td>
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<td>Pike</td>
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<td>Clinton</td>
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<td>Potter</td>
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<td>19</td>
<td>Columbia</td>
<td>53</td>
<td>Schuylkill</td>
</tr>
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Included within the Electronic Construction and Materials Management System (eCAMMS) are programs and databases that enable the Department to obtain reimbursement for the cost of testing materials for construction projects. Form TR-447, Sample Identification, is the required form.

As part of completing Form TR-447, the Field Inspector must fill in the appropriate project Work Breakdown Structure (WBS) number along with the Material Code and Class representing the material sample. eCAMMS will automatically assign the Laboratory Test Cost Function 9-9998 when electronically transferring test costs to the Department’s SAP system.

Information from the Form TR-447 is entered into eCAMMS and is used to charge material testing costs to the proper project. As material tests are completed and samples are released, eCAMMS automatically calculates the test cost and charges the appropriate project for reimbursement. Final charges and reimbursements are processed through a batch interface with SAP.

Additional information on the cost reimbursement for material testing can be obtained by contacting the Systems Management Section, Bureau of Project Delivery at (717) 787-1037.
District or Bureau requests for correction of eCAMMS Final Testing Reports for material samples tested by the Bureau of Project Delivery, Construction and Materials Division, Laboratory Testing Section (LTS) (i.e., eCAMMS Owning Lab = LTS), other than Bituminous Hot-Mix Asphalt (HMA) or Warm Mix Asphalt (WMA) acceptance samples, will be considered only upon presentation of factual evidence that an error exists on the test report. See POM, Section B.8.8 for requests for correction of eCAMMS Final Testing Reports for Bituminous Hot-Mix Asphalt (HMA) or Warm-Mix Asphalt (WMA) acceptance samples.

For District requests, the documentation for the request shall be presented in a memorandum or in an e-mail message from the District Materials Engineer/Manager or a District Materials Unit designate. For Bureau requests, the documentation for the request shall be presented in a memorandum or in an e-mail message from the appropriate Bureau Representative most familiar with the sample information. All requests shall include the following documentation:

- Sample Reference Number containing the data error
- Specific data field containing the data error
- Correct data for the specific data field containing the data error
- Factual evidence of the data error and/or justification for the request for an amended eCAMMS Testing Report
- District Materials Unit contact name and phone number

The District or Bureau memorandum or e-mail message shall be addressed and sent to the appropriate LTS Lab Manager. The appropriate LTS Lab Manager can be identified by the statement at the bottom of each eCAMMS Final Testing Report that indicates who authorized the report (e.g., “This report is authorized by [Name of Lab Manager].”). The Lab Manager’s e-mail address can be obtained from the Department’s e-mail system address book or by calling the Materials Testing Laboratory’s main phone number located at the top of page 1 of the eCAMMS Final Testing Report and then asking to be transferred to the appropriate Lab Manager.

For correction of information on eCAMMS Final Testing Reports for material samples tested by Asphalt Local Acceptance (i.e., eCAMMS Owning Lab = ALA), contact the appropriate District Materials Unit who generated the ALA Final Testing Report.
SAMPLE ID (TR-447) FOR EPOXY COATED OR GALVANIZED REINFORCEMENT STEEL BARS

In order to identify the responsible party in the event of an epoxy coated or galvanized reinforcement steel bar sample failure, during eCAMMS TR-447 Sample Setup, up to four (4) Associated Party: Supplier Party Codes may be required to be added to the eCAMMS Sample. These four (4) Supplier Party Codes are intended to provide supplemental information about the various manufacturers involved in producing epoxy coated or galvanized reinforcement steel bar samples, the Laboratory Testing Section (LTS) can properly identify the responsible party in the event of a sample failure. These four (4) Supplier Party Codes on the eCAMMS TR-447 Sample Setup page are also to be identified by their appropriate Party Purpose. Up to three or four Party Purpose types may be required to be edited for each Supplier Party Code. When the four (4) Associated Supplier Party Codes are added to the eCAMMS epoxy coated or galvanized reinforcement steel bar sample, each Supplier Party Code will need edited to add in the required Party Purpose(s) for each Supplier Party Code. During eCAMMS Sample Setup under the Associated Party section and for each Supplier Party Code added, after adding the Supplier Party Code, click the edit pencil and select the Party Purpose(s) for each Supplier from the Party Purpose field dropdown by clicking the checkbox(es) for the appropriate Party Purpose(s) for each Supplier Party Code. Some Supplier Party Codes may serve two or more Party Purpose types (e.g., reinforcement steel manufacturer and epoxy coater). The appropriate Party Purposes required for epoxy coated and galvanized reinforcement steel bar samples are identified below:

- Reinf. Steel Manufacturer
- Powder Manufacturer (Epoxy Powder Manufacturer)
- Epoxy Coater or Galvanizer
- Fabricator (Reinforcement Steel Bar Fabricator)

These four (4) Party Purposes supplement the existing “Supplier Code” field found on Form TR-447, Sample Identification. The “Supplier Code” field should always contain the last supplier in the manufacturing chain that handled, added value or further processed the item. The last supplier is also responsible for completing and providing Form CS-4171 "Certificate of Compliance". For reinforcement steel bar samples collected from projects, the “Supplier Code” would typically be the fabricator. The fabricator would, therefore, complete and provide to the contractor Forms CS-4171 and CS-4171F. Supplemental Form CS-4171F is only required when any epoxy coated or galvanized reinforcement steel is supplied to the project. All of the Supplier Party Codes required for reinforcement steel bar samples are found in Section 709.1 of Bulletin 15.

POM Section B.6.5, Materials Accepted by Project Sampling, requires one (1) reinforcement steel bar sample be comprised of three (3) increments (n=3) approximately four (4) feet in length. Obtain a sample (n=3) of each bar size for the project. Although the chart is not specific, only one
(1) increment should be collected from each of three (3) separate reinforcement steel bars of the same size and should be selected from a bundle bearing the same bar mark indicated on the plan. All sampled increments should include a section of the reinforcement steel bar that includes the mill mark that is rolled into the bar at the time of manufacturing, when possible.

Some suppliers and fabricators will supply pre-selected bars with each shipment and bundled specifically for testing samples. Do not submit pre-selected bars provided by the supplier or fabricator for testing.

Listed below are causes for rejection in the field of epoxy coated or galvanized reinforcement steel bars unless they can be repaired by the contractor before use. Visually and physically, examine each bundle for:

- Any signs of rust appearing under the epoxy coating or galvanized coating.
- Damage that might have occurred through mishandling.
- Uncured epoxy patching material.
- Any uncoated or partially coated areas or ends.
- Bundles with excessive epoxy patching end repair material that bonds the bars together.
- Flaking of the galvanized coating particularly at bends.
- Galvanized reinforcing bars that are “frozen” together.
- The presence of tears or sharp spikes, which make the bar hazardous to handle.

Inform the contractor that coating repairs must be made prior to placing or replacement bars must be provided. Whether the contractor or the fabricator performs the field repairs is of no concern. Guidance is provided in POM Section C.7.3 for repairing epoxy coated rebar.

Inform LTS by documenting in the "Remarks" area of the TR-447 if all the increments require routine testing regardless of test results. LTS tests according to ASTM A775, "Testing for Coating Thickness", and AASHTO M 31, "Testing for Strength, Elongation and Bending". In accordance with these procedures, if the first increment tested meets specification requirements, then additional testing is not required on the remaining increments.

The following are routine tests run by LTS on fabricated epoxy coated rebar:

- Tensile Strength
- Yield Strength
- Elongation
- Bend Test
- Coating Flexibility
- Check for Holidays
- Check for Amount of Damaged Area
- Check for Amount of Area Repaired
- Check for Thickness of Epoxy End Repair*
- Check for Coating Thickness over the Complete Rebar
- Check Bar Mill Markings

* April 2017 Edition
* Epoxy End Repair Thickness is a routine test for fabricated epoxy coated bars or 30" tie bars. When LTS receives a sample of straight rebar four (4) feet long, the lab manager has no way to know if it was cut from a fabricated bar or cut from an unfabricated steel bar. Thus, the inspector must request end repair testing in the TR-447 remarks.

The following are routine tests run by LTS on fabricated galvanized rebar:
- Tensile Strength
- Yield Strength
- Elongation
- Bend Test (Check for embrittlement)
- Check for Galvanizing Thickness (Weight)
- Check Bar Mill Markings

Any single or combination of routine test(s) can be requested in the "Remarks" area of the TR-447. If, for example, three (3) increments were sent to LTS as an investigation due to a previous failure for End Repair Thickness and Tensile Strength, the inspector would write: "Test Fabricator's End Repair and Tensile Strength - all increments" in the "Remarks".

Regarding the matter of rebar samples, epoxy coated bars cut for the purpose of sampling should not have the ends repaired on the sample increment portion with epoxy patching material in the field. Do not direct the contractor to perform any end repair to the cut end of epoxy coated or galvanized reinforcement steel bar sample portions nor allow the contractor to modify any end repairs made by the fabricator. This also holds true for epoxy coated mechanical rebar splices.

When the end repairs fail to meet the specification for coating repair thickness, reject all bars of the same size from the shipment represented by the sample.

- The contractor may perform bar end repairs with epoxy patching material that is approved in Bulletin 15, Section 709.1 for the specific epoxy powder used to coat the bar or, they may request to call a fabricator's representative to the field to administer end repair. Whether the contractor or the fabricator performs the repairs is of no concern.

- Normally the contractor should only have to perform repairs to a minor amount of rebar.

- Bars should be re-sampled and sent to LTS as Sample Class "IV" (Investigation) to verify that the field end repair with epoxy patching material is acceptable. Document the action taken on Form TR-455, "Disposition of Failed Material".

- LTS will test fabricated bar end repairs on all the sample increments only if it is specifically requested on the TR-447 as an evaluation of the fabricator’s factory repairs or of the contractor’s field end repairs.

- LTS needs a minimum of three (3) representative ends for proper evaluation.

April 2017 Edition
• Only if test results from a single increment fall outside the specification range will all the increments be tested for end repair thickness. To have all the increments evaluated for end repair regardless of passing results, write in the "Remarks" area of the TR-447 either of the following applicable examples:
  o Test fabricator's end repairs plus all routine tests - all increments.
  o Test contractor's end repairs plus all routine tests - all increments.

To summarize:
• Take samples from three (3) different bars from the same bundle, with the same mill mark.
• Do not repair cut or sheared ends with epoxy patching material on the sample portion to be submitted to LTS.

• Testing of end repairs on epoxy coated rebar must be requested on the TR-447 and written in the "Remarks" area. Write one (1) of the following:
  o Test fabricator's end repairs plus all routine tests.**
  o Test fabricator's end repairs (no other tests).**
  o Test contractor's end repairs plus all routine tests.**
  o Test contractor's end repairs (no other tests).**
  o Test fabricator's end repairs plus all routine tests - all increments.
  o Test contractor's end repairs - all increments.

** Written like this, only one (1) increment will have the end repair tested and if the test meets the minimum specification then no other end repair will be tested on other remaining increments.

• If end repairs fail to meet the specification for coating repair thickness, reject all bars of the same size from the shipment represented by the sample.

• Epoxy coated or galvanized rebar should be rejected at the project site for any of the following:
  o Any signs of rust appearing under the epoxy coating or galvanizing.
  o Damage that might have occurred through mishandling.
  o Uncured epoxy patching material.
  o Any uncoated or partially coated areas or ends.
  o Bundles with excessive epoxy patching end repair material that bonds the bars together.
  o Flaking of the galvanized coating particularly at bends.
  o Galvanized reinforcing bars that are “frozen” together.
  o The presence of tears or sharp spikes, which make the bar hazardous to handle.

Limit a TR-447 to a single bar size, coater, fabricator and steel manufacturer. The Material Code for reinforcement steel bar samples (epoxy coated or galvanized) is 231. The Material Class is EPOXY for epoxy coated reinforcement steel bar and GALV for galvanized reinforcement steel.
bar. All samples of certified material should be submitted with a Sample Class of Field Verification (FV) unless the samples are taken to investigate a failure. Refer to POM Section B.9.3 for investigation samples.

When preparing coated reinforcement steel bar samples for shipment, take measures to protect the coated surfaces and factory end repairs from damage during transport. A piece of newspaper wrapped and folded over the bar end and affixed with masking tape should be sufficient to protect the fabricator's end repairs.

The following example has been included to illustrate where the supplemental information listed above is obtained from Form CS-4171F, "Supplemental Certification for Epoxy Coated or Galvanized Reinforcement Steel - Fabrication Facility", and documented on Form TR-447.

1) Reinforcement Steel Bar Manufacturer (all reinforcement steel bar samples)
   a. Match the reinforcement steel bar's mill mark with a mark found in the Rebar Mill Symbols document in Bulletin 15, Section 709.1. Verify that the mill company and mill location identified by the mill mark on the bar corresponds to the same bar manufacturer Bulletin 15 Supplier Code company and location provided on the CS-4171F. If the mill mark does not correspond to the same information provided on the CS-4171F, immediately notify the Contractor to resubmit the CS-4171F with the correct Bulletin 15 Supplier Code that corresponds to the actual mill mark (company and mill location) on the shipped bar.
   b. On the TR-447 and in the "Remarks" area, write the Bulletin 15 Supplier Code (company and mill location) that corresponds to the actual mill markings (company and mill location) found on the collected bar sample or found on the full length of bar from where sample is collected. Identify this Supplier Code as the "Reinf. Steel Manufacturer" or "Bar Manufacturer". See ①
c. On the TR-447 and in the “Product Name” field, write the Bar Size and Grade of steel.

2) Epoxy Powder Manufacturer (epoxy coated reinforcement bar samples)
   a. Obtain the Supplier Code to identify the manufacturer and location of the epoxy powder used to coat epoxy coated reinforcement bars from Form CS-4171F.
   b. Write the “Epoxy Powder Manufacturer Supplier Code” information in the “Remarks” area of the TR-447. See ②

3) Epoxy Coater or Galvanizer (epoxy coated or galvanized reinforcement bar samples)
   a. Obtain the Supplier Code for the company and location that epoxy coated or galvanized the reinforcement bars from Form CS-4171F.
   b. Place the “Supplier Code” for the epoxy coater or galvanizer and identify it as the “Epoxy Coater” or “Galvanizer” in the “Remarks” area of the TR-447. See ③
4) Reinforcement Steel Bar Fabricator (all reinforcement steel bar samples)
   a. Obtain the Supplier Code for the company and location that fabricated the
      reinforcement bars from Line 2 of the CS-4171 or from the CS-4171F. For coated
      bars, the Supplier Code from Line 2 of the CS-4171 and the Fabricator's Supplier
      Code from the CS-4171F should be identical.
      i. If these Supplier Codes differ, use the fabricator's supplier code from the
         CS-4171F and investigate the reason for the discrepancy.
   b. Place the "Supplier Code" for the fabricator in the supplier code field on Form TR-
      447 in two (2) places. See 4

5) In the “Product Name” field of Form TR-447, document the Bar Size, and the required
   Grade of steel for the reinforcement steel sample. Share this information with the
   contractor so that replacement reinforcement steel bars can be obtained. The more
   information documented on Form TR-447 allows LTS to complete the required testing with
   minimal delays. Enclose additional information, such as any specific tests or additional
   testing, on a separate sheet along with Form TR-447 in the sample ID envelope if necessary
   or as an Attachment during the eCAMMS TR-447 Sample Setup.

6) Copy the CS-4171F and place in the sample ID envelope or electronically attach it as an
   Attachment during the eCAMMS TR-447 Sample Setup.

   **Note that the following illustration of a CS-4171F and TR-447 is for epoxy coated rebar. The TR-447 does not include actual project specific information such as the Date Collected, ECMS Contract Number, WBS, Sampled By, Inspected By, etc. that is required to fully complete the TR-447 for sample setup.**

   A TR-447 would be completed with similar data for galvanized rebar but would not require remarks for end repair or epoxy powder related data.
The Supplier Code for the epoxy powder company is found in Section 709 of Bulletin 15. This column and the EPOXY POWDER LOT NUMBER column will not be completed for galvanized rebar. Document this Supplier Code in the “Remarks” area of the TR-447, “Sample Identification” form with "Powder:"

The Supplier Code for the company that applied the epoxy coating is found in Section 709 of Bulletin 15 or the company that applied the galvanizing is found in Section 1105.02(s) of Bulletin 15. Document this Supplier Code in the “Remarks” area of the TR-447, “Sample Identification” form with "Coater:"

The Supplier Code for the fabricating company is on this line for coated bars. Document this in the “Remarks” area of the TR-447, “Sample Identification” form with "Fabricator:”. This is also found on Line 2 of Form CS-4171. If this Supplier Code differs from Line 2 on the CS-4171, use the Fabricator's Supplier Code from this line of the CS-4171F in the "Remarks" area. Investigate the cause for the difference.

The Supplier Code for the bar manufacturer company is found in Section 709 of Bulletin 15. Document this Supplier Code in the “Remarks” area of the TR-447, “Sample Identification” form with "Bar Manf:”. The documented bar manufacturer here should correspond to the Mill Mark rolled onto the selected test bar samples. Also, document the steel grade in the “Remarks” area of the TR-447, “Sample Identification” form with "Grade:"
## SAMPLE IDENTIFICATION

- **Material Number:** 231
- **Material:** EPOXY
- **Class:** FV
- **Lot Number:** 2000596
- **Quantity:** 1758 lbs

## WORKER/DOWN STRUCTURE (WDS)
- **Contract Number:** E
- **Pub. Year:** 2007
- **Section:** 709.1(c)
- **Inspector:** J. E. M. W. Inspectors

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## Additional Information
- **Remarks:**
  - Bar Manf: CMCSC
  - Powder Manf: VALSP
  - Coater: REST2
  - Fabricator: REST2
  - Test factor end repair by fabricator + all routine tests - all increments.

*April 2017 Edition*
District requests for revision/correction of eCAMMS testing reports for Bituminous or Asphalt Mixture and/or Density acceptance samples tested by the LTS will be considered only upon presentation of factual evidence that an error exists on the eCAMMS testing report.

When released Bituminous or Asphalt Mixture or Density acceptance sample (Sample Class = AS) LTS test results are incorrect due to an erroneous eCAMMS Sample Set-Up data entry for:

- Sample Class,
- AASHTO T 209 Value (Theoretical Maximum Specific Gravity Value), or
- 408 Year, Version, or Section,

The District Materials Engineer/Manager may submit a written request (memorandum or e-mail message) for an amended test report to the LTS Engineer of Tests and copy the LTS Bituminous Unit Manager and copy the LTS Bituminous Testing Lab Manager. The appropriate LTS Bituminous Testing Lab Manager can be identified by the statement at the bottom of each eCAMMS Final Testing Report that indicates who authorized the report (e.g., “This report is authorized by [Name of Lab Manager].”). All requests shall include the following documentation with the request:

- Sample Reference Number containing the data error
- Specific data field containing the data error
- Correct data for the specific data field containing the data error
- Factual evidence of the data error and/or justification for the request for an amended eCAMMS LTS testing report
- Related TR-447 Sample Reference Number
- District Materials Engineer/Manager contact name and phone number

The LTS will process the above type of request and issue an Amended eCAMMS LTS Testing Report upon satisfaction that a data error exists based on the factual evidence and/or justification provided. The LTS may contact the District Materials Engineer/Manager to provide further justification on a case-by-case basis.

When released Bituminous or Asphalt Mixture and/or Density acceptance sample (Sample Class = AS) LTS test results are incorrect due to an erroneous eCAMMS Sample Set-Up data entry for any other data item not specifically listed above, the District Materials Engineer/Manager or their District Materials Unit designate may submit a written request (memorandum or e-mail message) for an amended LTS test report to the LTS Bituminous Testing Lab Manager and copy...
the LTS Bituminous Unit Manager. The appropriate LTS Bituminous Testing Lab Manager can be identified by the statement at the bottom of each eCAMMS Final Testing Report that indicates who authorized the report (e.g., “This report is authorized by [Name of Lab Manager].”). All requests shall include the same documentation listed above with the request, except the contact name and phone number may be the District Materials Unit designate. The LTS will process these requests and issue an amended eCAMMS LTS Testing Report based on the documentation provided. The LTS may contact the District on a case-by-case basis if the request and the other eCAMMS data information do not seem to match based on experience of the LTS Bituminous Testing Lab Manager.

For revision/correction of information on eCAMMS Final Testing Reports for Bituminous or Asphalt Mixture acceptance samples tested by an Asphalt Local Acceptance laboratory (i.e., eCAMMS Owning Lab = ALA), contact the appropriate District Materials Unit who released the eCAMMS ALA Final Testing Report.
MATERIAL DEVIATIONS

As each project progresses, materials are continuously incorporated into the work, and occasionally, materials fail tests which are performed to evaluate compliance with specifications. When this occurs, there is a need to document, in the project records, the actions taken to either accept the material with reduced payment or other acceptable method or to reject and remove the material. It is the Department's policy to reject all non-specification material unless there is a valid justification to accept the material. In accordance with the requirements outlined in Section B.9.2, project personnel are to ensure that FHWA is contacted and advised of major decisions that will be made concerning the acceptance/rejection of deficient materials on non-exempt Federal-Aid projects.

It is critical to document the disposition for all material deviations. The documentation guidelines are listed in the table below.

For all material failures, the District should submit the appropriate failure response as to the disposition of the material through eCAMMS. Disposition of failed materials for District samples (sample class AS, DQ, FV, IV) must be provided in eCAMMS within 60 days of the sample release date. For defective lots of bituminous or concrete material (“Remove and Replace” test results), the District may submit the appropriate failure response in eCAMMS up until the time Form TR-4238A, District's Letter of Project Materials Certification, is submitted. Written responses for a failed QA/IA sample or TR-200 report (QA project or source review) must be provided in eCAMMS within 30 days from the date the sample was released or from the date the TR-200 Report was approved. This information will be included in the project material documentation file.

The eCAMMS response for a material failure should include any supporting documentation. It is not necessary to attach the eCAMMS Client Report because there is a link to it on the Sample Deviation Maintenance page in eCAMMS. Supporting documentation for materials accepted at reduced payment should include penalty calculations and reference the electronic work order adjustment in ECMS for payment. Supporting documentation for materials accepted without payment must show Office of Chief Counsel involvement required as part of a negotiated settlement with the Contractor. Documentation requirements for defective bituminous lots accepted at 50% payment or 70% payment for PWT are explained in POM Section B.9.9 and include the District’s determination letter to the Contractor, Form CS-7, and the contractor’s request to leave the material in place at 50% (70% for PWT) payment. Documentation requirements for deficient concrete lots accepted at 5% payment are explained in POM Section C.1.13 and include the District’s determination letter to the Contractor, the contractor’s detailed structural analysis, PE certification, and the contractor’s request to leave the material in place at 5% payment.
### Sample Class | Failures Requiring Response | Response Format
--- | --- | ---
QA-IA (Quality Assurance-Independent Assurance) | QA-IA Major Sample Failures | Written Response (Letter) with supporting documentation submitted in eCAMMS. Exception: Bulletin 15 material failures and concrete hardened air content failures can be addressed with the Disposition of failed material entered in eCAMMS and submitted by the DMM/DME.

DQ (District Quality Assurance) | All | Disposition of failed material entered in eCAMMS and submitted by the DMM/DME.

FV (Field Verification) | All | Disposition of failed material entered in eCAMMS and submitted by the DMM/DME.

IV (Investigation) | Only if the cross referenced original failure is of a class that requires a response | Same response format as that is required for the sample class of original failure.

AS (Acceptance) | All | For outliers, see POM Section C.4.5 For defective bituminous lots accepted at 50% (70% for PWT) payment, see POM Section B.9.9. For deficient concrete lots accepted at 5% payment, see POM Section C.1.13. All other failures can be addressed with the Disposition of failed material entered in eCAMMS and submitted by the DMM/DME.

QR* (Quality Review) | All | Disposition of failed material entered in eCAMMS and submitted by the Chief Structural Materials Engineer.

*Responses to QR Sample Class failures are provided by the BOPD Bridge Design and Technology, Structural Materials Section.
For defective concrete lots being accepted at 5% payment, documentation submitted must include the Professional Engineer’s (PE) certification as outlined on Section C.1.13. A PE is required to check the contractor’s structural calculations in detail and concur with the contractor’s recommendation.

The District Materials Engineer/Manager and the appropriate Assistant Construction Engineer/Manager must certify at the completion of each project, that all materials incorporated in the construction work and the construction operations controlled by sampling and testing either met the specifications and approved plans, or that appropriate action was taken for all deviations.

There must be documentation in the project files to support all actions taken to resolve each material deviation. Additionally, if inadequate sampling and/or testing occurred, then exceptions must be noted in the project records.

Material which is paid at less than or more than 100% of the contract price requires the preparation of a work order in accordance with Section 110, Publication 408, to pay the price adjustment.
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The rejection of material that does not meet the specification requirements is the responsibility of Department personnel when testing confirms the material is not in compliance. However, declaring the material deficient after it has been placed is much more difficult and likely to be challenged. It is extremely important that FHWA be advised so they can become involved in the decision-making process on Federal Oversight Projects.

Project personnel are to assure that FHWA is contacted and advised of major decisions that will be made concerning the acceptance/rejection of deficient materials.
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Whenever materials, tested by the Laboratory Testing Section (LTS), are found to be outside specifications, an investigation is required. If the investigation determines an additional sample is required, submit a sample with at least three to five sample increments to the LTS. Submitting a sample with a single sample increment (only one sample increment) is statistically invalid, and unacceptable.

Select sample locations in accordance with PTM No. 1 as approved by the District Materials Engineer/Manager.

Form TR-455, Disposition of Failed Materials, should be filled out in eCAMMS, including a report of the investigation, test results and appropriate remarks on the "Material Deviation and Disposition Form", to complete the records.
Acceptance and price adjustment of paving completed under Section 409, Publication 408 is governed by Sections 409.2(f) and 409.3(j) and Section 409.4(a)4. The District Executive may direct in writing to leave a deficient lot in place and pay 50% of the contract unit price. When the PWT of two or more characteristics are 64 or less, the material must be removed and replaced. Refer to POM Section B.9.9 for step-by-step guidelines for handling defective bituminous lots.

Acceptance and price adjustment of paving completed under either the Standard Special Provisions (SSPs) for PWT-LTS or PWT Hands On Local Acceptance (PWT-HOLA) are governed by those SSP’s modifications and additions to Sections 409.2(f) and 409.3(j) and Sections 409.4(a)3 and 409.4(a)4. The District Executive may direct in writing to leave a defective PWT-LTS or PWT-HOLA lot in place and pay 70% of the contract unit price. When the PWT of two or more parameters for Density, Asphalt Content, or Percent Passing the No. 200 sieve (and the average percent passing the No. 200 sieve is greater than ± 2.0% from the JMF target value) are less than 50, the material must be removed and replaced. Refer to POM Section B.9.9 for step-by-step guidelines for handling defective bituminous lots.

Recent approvals have contained a stipulation requiring the continued monitoring of lots left in place at either 50% or 70% lot payment on an annual basis to demonstrate that the lots are providing adequate long term service. Each affected lot should be compared to the lots that met the specification requirements, to assure our decision to allow the lots to remain in place was in fact correct and in the best interest of the Department.

The Department's policy for bituminous pavement deviations of non-payment parameters (material gradation) is that District Action Points will be identified on LTS test reports whenever non-payment sieve deviations occur; these will require follow-up action to be taken by the District. To assist identification of such deviations, the LTS lab report will denote each deviation with an * or plus or minus sign along with the wording "Cause for Review by District Materials" when gradation deviations are encountered.

The District Materials Unit will be responsible for keeping a file of the documentation for follow-up reviews conducted and corrective action taken, if deemed necessary. The documentation must be on file within one month of the receipt of the report identifying the deviation. This file will be subject to random review by Central Office Quality Assurance personnel.

On all Federal Oversight projects, written documentation must be submitted for "Cause for Review by District Materials". The written documentation must be submitted to the Chief of the BOPD Construction and Materials Division, Attention: Construction Quality Assurance Section Chief, within six (6) weeks of the receipt of the lab report identifying the deviations.
Documentation must include, but is not limited to, review of plant and contractor process or quality control plans, review of construction procedures, review of material handling procedures, comparison of companion samples or tests, including Quality Assurance and District Quality Assurance samples, and the utilization of such procedures as outlined in PTM No. 5.

Failure to comply with this policy will result in all follow-up reviews requiring written response to the Chief, BOPD Construction and Materials Division. In order to prevent unnecessary "Cause for Reviews", it is imperative that correct JMF is provided with sample submission.

**Action Points - Cause for Review**

A. Deviation on Multiple Sieves (3 or more) for any Single Sample Increment (as determined by box samples).
   1. Pavement Types - FJ, 9.5 mm, 12.5 mm, 19 mm, 25 mm, 37.5 mm, SMA 95, SMA 125
      
      (+) / (-) Cause for Review by District Materials

B. Deviation on Same Sieve Size for Multiple (3 or more) Sample Increments (as determined by box samples)
   1. Pavement Types - FJ, 9.5 mm, 12.5 mm, 19 mm, 25 mm, 37.5 mm, SMA 95, SMA 125
      
      (+) / (-) Cause for Review by District Materials

District Personnel are reminded that control of non-payment sieves, as well as pay parameters, should be required by a plant's QC Plan. If you have any questions regarding this policy, please contact the Chief Materials Engineer at (717) 705-3841.
The Department will accept Superpave Mixture Design Bituminous or Asphalt Mixture pavement courses by producer certification according to Publication 408, Section 409.2(f). For bituminous mixtures accepted by certification, the Bituminous or Asphalt Mixture producer will daily certify that the mixture has been tested and conforms to the appropriate Publication 408, Section 409 requirements, or when the Standard Special Provisions (SSPs) for PWT-LTS or PWT Hands On Local Acceptance (PWT-HOLA) are included in the project, the Publication 408, Section 409 requirements as modified by the SSPs.

To daily certify bituminous mixtures, the QC test results must indicate that the asphalt content, percent passing the 2.36 mm (No. 8) sieve, and percent passing the 0.75 µm (No. 200) sieve meet the single sample (n=1) and multiple sample (n ≥ 3) tolerances of Publication 408, Section 409, Table A. If the Bituminous or Asphalt Mixture producer’s QC plan indicates that they are determining asphalt content by plant printed tickets for QC, 90% of the plant’s daily printed ticket asphalt content results must be within ± 0.2% of the JMF to certify the bituminous mixture according to Publication 408, Section 409.2(f)2.b.

If the QC test results indicate failure to meet the Publication 408, Section 409, Table A requirements for asphalt content, percent passing the 2.36 mm (No. 8) sieve, and percent passing the 0.75 µm (No. 200) sieve, the Bituminous or Asphalt Mixture producer cannot certify the mixture, but must provide the QC test results to the Inspector-in-Charge (IIC). If the Bituminous or Asphalt Mixture producer’s QC plan indicates that they are determining asphalt content by plant printed tickets for QC and less than 90% of the plant’s daily printed ticket asphalt content results are within ± 0.2% of the JMF, the Bituminous or Asphalt Mixture producer cannot certify the mixture and must provide the percentage of the plant’s daily printed ticket asphalt content results that were within ± 0.2% of the JMF to the IIC.

The Department will immediately apply the contract unit price adjustments for mixture acceptance by certification according to Publication 408, Section 409, Table H, or when the SSPs for PWT-LTS or PWT-HOLA are included in the project, the modified requirements for Publication 408, Section 409, Table H as specified in the SSPs.

The Bituminous or Asphalt Mixture producer must maintain approval to certify mixtures according to Publication 408, Section 409.2(f)2.c. If the Bituminous or Asphalt Mixture producer fails to meet the requirements of Section 409.2(f)2.c, the Department may immediately suspend the Bituminous or Asphalt Mixture producer from supplying and shipping mixtures accepted by certification to the project. The District notification to the Bituminous or Asphalt Mixture producer that they are suspended from supplying or shipping mixtures by certification to the project can be by any method deemed appropriate by the District, but must include or be followed by some form of written notification of the suspension either by letter, e-mail, or the District
Materials Unit staff writing the suspension in the remarks of the Bituminous or Asphalt Mixture producer’s plant book. Any Bituminous or Asphalt Mixture plant suspension must be in concurrence with the District Materials Engineer/Manager. The District Materials Engineer/Manager should also ensure the Bituminous or Asphalt Mixture producer takes immediate corrective action to correct the issue that resulted in the suspension.

The resumption of supplying or shipping bituminous mixtures by certification to the project by the Bituminous or Asphalt Mixture producer will be according to Publication 408, Section 409.2(f)2.c. Section 409.2(f)2.c requires that the Bituminous or Asphalt Mixture producer take corrective actions and then perform QC testing to verify that the mixture conforms to the tolerances specified in Publication 408, Section 409, Tables A and B. If the QC testing verifies conformance of the mixture to Section 409, Tables A and B, the Bituminous or Asphalt Mixture producer is then to perform JMF verification according to the QC plan in the presence of a PennDOT Representative, on a date(s) coordinated with the PennDOT representative. After successful completion of JMF verification, the District will allow the Bituminous or Asphalt Mixture producer to resume supplying and shipping bituminous mixtures accepted by certification. The District notification to the Bituminous or Asphalt Mixture producer that they can resume supplying and shipping mixtures by certification to the project can be by any method deemed appropriate by the District, but must include or be followed by some form of written notification to remove the suspension either by letter, e-mail, or the District Materials Unit staff writing the suspension removal in the remarks of the Bituminous or Asphalt Mixture producer’s plant book.

Mixture verification and JMF verification can be on the bituminous mixture produced for commercial projects or produced for Department projects where the bituminous mixture is being produced by lot acceptance. If project delivery schedules dictate that the Bituminous or Asphalt Mixture producer must continue to ship materials to the project to maintain the project schedule, bituminous mixtures that normally would be accepted by certification may be accepted by lot acceptance according to Section 409.2(f).
This policy describes the assignment of material deviations to results of Quality Assurance and Independent Assurance samples, the assignment of required responses to Quality Assurance and Independent Assurance operational reviews, and the resulting actions required by the District.

The following descriptions and actions for Quality Assurance (QA) samples and reviews apply to Independent Assurance (IA) samples and reviews, except no deviations will be assigned to results of IA aggregate samples.

Construction Quality Assurance Section (CQAS) representatives will discuss any operational findings with a member of the inspection staff or the source technician at the time of the review. The Quality Assurance report will contain written recommendations for all findings and deviations found during the review. The CQAS representative will inform the Assistant District Engineer for Construction, the Assistant Construction Engineer/Manager (ACE/ACM), or the District Materials Engineer/Manager (DME/DMM) of findings requiring written responses within two (2) working days of the review.

Assignment of Deviations and Required Responses

I. Major Deviations for Material Samples

Major deviations are assigned to quality assurance material samples for the following conditions:

A. Plant-mixed Bituminous Concrete

An individual test result or the sample average ($\bar{x}$) exceeds the tolerances of Section 409.2(e)1.d, Table A for Binder, Wearing, and Base Courses.

B. Aggregates

1. Samples with $n = 3$

   a. The sample average ($\bar{x}$) of aggregate passing the 75 μm (No. 200) sieve for the coarse aggregate used in Portland cement concrete exceeds 1%.

   b. When specified, the sample average ($\bar{x}$) of aggregate passing the 75 μm (No. 200) sieve for the coarse aggregate used in Bituminous Surface Treatment/Seal Coats exceeds 1.0%
c. The sample average ($\bar{x}$) of aggregate passing the 75 μm (No. 200) sieve for the fine aggregate used in Portland Cement Concrete exceeds 3%.

d. The sample average ($\bar{x}$) of aggregate passing the 75 μm (No. 200) sieve for subbase aggregate usages exceeds 10%.

e. The sample average ($\bar{x}$) of aggregate passing the 75 μm (No. 200) sieve for open graded subbase (OGS) exceeds 5%.

f. The average coefficient of uniformity is less than 4.0 or an individual coefficient of uniformity test result is less than 3.5, for OGS.

g. When the total sample average percent within limits (PWL) is less than 90%, all non-specification test values will be evaluated in accordance with Section 106.03(a)3 to determine the PWL.

h. All specification test values will be determined at 100% PWL and averaged with the PWL for non-specification values to determine the total PWL of the material.

i. The average test result for an individual sieve deviates more than 5% outside the specification limits.

j. The average quality test result (not gradation or wash test) that is outside or does not meet the specified quality parameter requirements (e.g., Minimum, Maximum, and/or range).

2. Samples with $n < 3$

a. Any test result for an individual sieve deviates outside the specification limits.

b. Any individual quality test result (not gradation or wash test) that is outside the specification tolerance range.

C. Cement Concrete

1. The sample average ($\bar{x}$) is less than the 28-day minimum mix design compressive strength of Section 704, Table A.

2. An individual test result exceeds the tolerances of Section 704.1(c)1 for entrained air content in the hardened concrete.

D. Bulletin 15 Material

Test results exceeding the tolerances of the applicable specification.

April 2017 Edition
II. Minor Deviations for Material Samples

Minor deviations are assigned to Quality Assurance material samples for the following conditions:

A. Plant-mixed Bituminous Concrete

1. The sample average ($\bar{x}$) for asphalt content for 19.0 mm NMAS mixtures and smaller falls between $\pm 0.2$ and $\pm 0.4$ percentage points of the job-mix formula and no individual test result deviates more than $\pm 0.7$ percentage points from the job-mix formula.

2. The sample average ($\bar{x}$) for asphalt content for 25.0 mm NMAS mixtures and larger falls between $\pm 0.3$ and $\pm 0.5$ percentage points of the job-mix formula and no individual test result deviates more than $\pm 0.8$ percentage points from the job-mix formula.

3. The sample average ($\bar{x}$) for percent aggregate passing the 75 μm (No. 200) sieve falls between $\pm 1.0$ and $\pm 2.0$ percentage points of the job-mix formula and no individual test results deviate more than $\pm 3.0$ percentage points from the job-mix formula.

B. Aggregates

1. Samples with $n = 3$

   a. Aggregate reports which show a total sample average percent within limits between 90% and 99%, as evaluated in I.B.1.g above.

   b. The average test result for an individual sieve deviates outside the specification limits by 5% or less.

III. Findings in Quality Assurance Reports with Written Response Required

Findings in Quality Assurance reports requiring a written response will be issued for the following conditions:

A. The discovery of a deceptive or fraudulent practice

B. Fundamental violation, the oversight of which creates a significant unsafe condition to the public or project workers.
C. Failure of a contractor, producer, District, or project personnel to correct a repeated violation that is correctable within a reasonable time period.

D. Apparent unwillingness of contractor, producer, District, or project personnel to comply with procedures or current specification requirements.

E. Construction or material practices which result in deficient or defective products.

F. Staffing inadequacies that result in unsafe conditions, the acceptance of defective material, or the construction of a defective product.

CQAS representatives can recommend that an operation be shut down if they determine that the seriousness of one or more of the above items, A through F, is of sufficient magnitude to warrant such action. They also have the authority to shut down the operation on a project or at a material production facility if appropriate corrective action is not immediately initiated. The CQAS representative will consult with their Section Chief prior to recommending that an operation be shut down.

IV. Findings in Quality Assurance Reports Not Requiring a Written Response

Findings in Quality Assurance reports not requiring a written response will be issued for the following conditions:

A. Situations where the findings indicate the operation were well performed or exceptionally well performed.

B. Situations which do not create a significant unsafe condition to the public or project workers and do not result in deficient or defective products.

C. Situations where immediate corrective action was initiated to eliminate the specification or procedural deficiency. The reduction from a written response required is at the discretion of the CQAS representative performing the report and/or the supervisor.

CQAS representatives are not limited to the above conditions and will apply judgment to ensure that a fair, objective report of the reviewed operation is provided.
Responses

I. Material Sample Reports with Major Deviations and Quality Assurance Reports Requiring a Written Response

Written responses are required for Major Deviations on Material Sample Reports and for Quality Assurance Reports identifying such.

Upon receipt of a Material Sample Report of a QA Sample which contains a Major Deviation, an investigation by the District Materials Unit is required to complete the documentation for these items. If requested, the Inspector-in-Charge will assist the DME/DMM in the investigation of the problem and in providing data in support of the District's required response.

In addition, the Inspector-in-Charge will document the disposition of the failed material in the project records.

When a Major Deviation is assigned to a Bulletin 15 material or to concrete hardened air content, the District will have the option to prepare and submit the Disposition of Failed Materials in eCAMMS, to address the lot of material that did not pass the lab test. In addition, the Bureau of Project Delivery’s Bulletin 15 Review Committee will review all material failures that occur. Depending on the nature of the failures, plant investigations with additional sampling and quality control plan reviews may be performed by the CQAS representatives. If additional failures occur, appropriate action will be pursued in accordance with the applicable procedures by the Bulletin 15 Review Committee.

Upon receipt of a Quality Assurance Report of an operational review which contains a Written Response Required, an investigation by the District Construction Unit is required to complete the documentation for these items. The Inspector-in-Charge will assist the ACE in the investigation of the problem and in providing data in support of the District's required response.

The investigation and written response should identify the cause of the problem, its effect on the item of construction, and the corrective action implemented.

The District's written response letter and supporting documentation are to be submitted in eCAMMS to the Chief, Construction and Materials Division. The District Office is to submit written response documentation in eCAMMS within 30 days as to the disposition of the material. This information will be included in the project material documentation file.
II. Material Sample Reports with Minor Deviations and Witness Reports Not Requiring a Written Response

No written response is required to be submitted to the Chief, Construction and Materials Division, for Minor Deviations. However, appropriate action is to be promptly implemented by project personnel and/or the DME/DMM staff and documented in the project or plant records.
Manufacturers will be notified by the Bureau of Project Delivery, Construction and Materials Division, of each Bulletin 15 material sample which fails to meet the certification/specification. This notification will include a copy of the lab results identifying the failing parameter.

The District Office will be notified of the failure of a certified material by the Bureau of Project Delivery. The District Office is required to submit an appropriate failure response through eCAMMS, within 60 days of the sample release date, as to the disposition of the material in accordance with procedures outlined in POM Section B.9.1. This information will be included in the project material documentation file.

The Bureau of Project Delivery’s Bulletin 15 Review Committee will review all material failures that occur. Depending on the nature of the failures, plant investigations with additional sampling and quality control plan reviews may be performed by the Construction Quality Assurance Section (CQAS) representatives. If additional failures occur, appropriate action will be pursued in accordance with applicable procedures and Publication 408, Section 106.03(b)3.

Rock salt samples, material code and class 429 RSALT, which fail to meet specifications, will be reviewed and acted upon by the Bureau of Maintenance and Operations in cooperation with the Districts.
Fabricated Structural Materials are inspected by a consultant inspection agency contracted to perform this service on the Department’s behalf. Most precast concrete, prestressed concrete, and structural steel products are subject to an in-plant Quality Assurance inspection which is managed and overseen by the Bureau of Project Delivery, Structural Materials Section.

Occasionally, these products are delivered to the project and found to contain specification deviations or non-conformances despite being reviewed by the plant’s quality control and our quality assurance inspection personnel.

For these situations, Form TR-800, “Structural Materials Quality Comment Sheet”, should be completed by the Project Engineer and forwarded to the Chief Structural Materials Engineer, Bureau of Project Delivery by mail or email (mailto:ra-pdstructmats@pa.gov).

The final disposition of the material should be resolved (i.e. whether to reject, repair, or use as-is) collectively between the District and the Structural Materials Section.
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This procedure establishes a consistent Department policy for Districts to follow after receiving initial failing test results indicating a defective lot on bituminous pavements. Districts must follow the steps in determining a course of action to address the failure.

**Step 1: Initial Review:**

Review the failed eCAMMS report. Verify the items below to validate there is failure.

1) Sampling was in accordance with the specifications
2) Lot acceptance was appropriately applied  
   a) pavement cores, see 409.3(j)4 
   b) mixture samples, see 409.2(f) and 409.3(h)2 
3) TR-447/eCAMMS information is accurate  
   a) JMF/plant source 
   b) AASHTO T 209 maximum specific gravity value 
   c) Correction factors 
4) Potential outliers have been reviewed and a determination made in accordance with PTM No. 4 and Project Office Manual, Section C.4.5.

If an error is identified, submit a request to BOPD-Laboratory Testing Section (LTS) to issue a corrected copy of the eCAMMS report. Supply sufficient supporting details to justify the request. BOPD-LTS must agree with the District’s assessment in order to issue a corrected copy.

If the eCAMMS report has been verified and the lot has been determined to be defective, process a Contract Adjustment using ECMS to recoup 100% of the lot payment on the next estimate. When creating the Contract Adjustment, select "Adjustment for Deficiency" as the adjustment type." If the contractor has requested a retest within three weeks as required, follow the procedures outlined in POM Section B.9.10. If no retest occurs or the results of a retest fail, write the contractor a letter directing the contractor to remove and replace the defective lot or request 50% payment (70% for PWT) with justification within 15 days. If the contractor fails to respond to the letter with either a plan for removing and replacing the material or a 50% payment (70% for PWT) request with justification, send the contractor a letter warning default under Section 108.08 for failure to respond.

If the contractor makes a request for 50% payment (70% for PWT) of the lot, proceed to Step 2.
Step 2: Defective Pavement Review:

The District will field view and evaluate the defective pavement. A Quality Assurance representative will participate in the field view if requested by the District. Form CS-7 should be completed by the person who conducted the field review.

Field view items to be reviewed:

1) Construction Workmanship
   a) Segregation (end of load, streaks in the mat, etc.) - check when road is drying
   b) Flushing, rutting, fat spots – check after hottest part of summer
   c) Joint construction quality (holding water at the joint, etc.) - check when road is drying
   d) Ride quality (rippling, wash boarding, etc.) - should be apparent soon after placement
   e) Cracking (mat tears, checking, etc.) – should be apparent immediately after placement
   f) Loss of fines – check after winter in early springtime

Depending on the failure type (e.g. High AC, #200 or density – rutting/flushing, low density loss of fines, etc), schedule the review at the best time to adequately assess the pavement condition. Suggested best review times are shown above as general guidance to assist the reviewer(s).

2) Severity of failure:
   a) Mix quality - Lots with average results within single sample tolerances are candidates for 50% pay (70% for PWT). Averages which fall outside single sample tolerances should be removed and replaced (R&R), unless other considerations dictate leaving the material in place.
   b) Density – Wearing/Binder lots with average results of ≥90% and base lots averaging ≥88% are candidates for 50% pay (70% for PWT). Averages which fall below these values should be R&R, unless other considerations dictate leaving the material in place. Over compaction should be evaluated on a case by case basis with a focus on rutting/flushing.

Other items that may be considered include: QC test results, mix performance history, etc.

Step 3: Consideration of Design/Construction Factors:

1) Roadway Characteristics:
   a) Classification (Interstates vs. 4 digit SR) and ADT – For low volume routes, 50% payment (70% for PWT) is recommended unless serious mat deficiencies are present.
   b) Location (Mainline, ramps, shoulders, widening that has been overlaid, etc.)

2) Impacts of Removing Pavement:
   a) Weigh impact of removal vs. allowing the pavement to remain (factors: projected life of defective pavement, inconvenience to motorists, new joints, removal of overlay to get to failure, etc.)
Step 4: Department Responsibilities

Districts will weigh all the above considerations before making a determination whether to recommend the pavement remain in place at 50% payment (70% for PWT).

If the District Executive determines that the lot must be removed and replaced, provide a letter to the contractor denying their request for 50% payment (70% for PWT) and identify the defective material as R&R. Once the work has been satisfactorily performed, full payment will be made to the contractor for the work based on specification compliance. Provide a copy of the completed Form CS-7 from Step 2 to the BOPD, CMD within 10 days to document the District Executive’s determination of remove and replace.

If the District’s determination is that the pavement should remain in place at 50% payment (70% for PWT), supply a letter to the contractor outlining the final determination of the lot. Return 50% (70% for PWT) of the lot payment to the contractor which had been withheld in Step 1. Provide a copy of the District’s determination letter and all supporting documentation to the BOPD, CMD Construction Quality Assurance Section Chief, in eCAMMS, within 10 days as justification of the District Executive’s determination. Minimum supporting documentation must include Form CS-7, test results, and contractor’s request to leave the material in place at 50% payment (70% for PWT).

Approval authority for granting 50% payment (70% for PWT) rests solely with the District Executive and may not be delegated to any level below the DE.

Substandard materials for which the Department makes a reduced payment or which by their removal and replacement reduce the overall quality of the project should be factored into the Contractor Evaluation.
DEFECTIVE BITUMINOUS PAVEMENT REVIEW
TO BE COMPLETED IN ACCORDANCE WITH POM B/9/9

ECMS# ___________________ SF/SEC- COUNTY: ___________________________ LOT# ___________

ADT: ______________ %TRUCKS: ___________ TR-447 REF# ______________ JMF: ______________

MAT'L SUPPLIER CODE: _______________ CONTRACTOR: ____________________________

MIX SIZE: ___________________ PG BINDER GRADE: _______________

COURSE: □ WEARING □ BINDER □ BASE □ LEVELING □ OTHER: _________________________

FIELD VIEW ITEMS:

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SEVERITY OF FAILURE:

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*requires explanation below

OVERALL DETERMINATION JUSTIFICATION REMARKS:

REVIEWED BY: ___________________________ PRINT NAME ___________________________ SIGNATURE DATE ___________________________

April 2017 Edition
Department criteria, responsibilities and required actions when a Prime Contractor requests a retest of a failed Bituminous or Asphalt mixture acceptance sample or requests a retest of a failed Bituminous or Asphalt density acceptance sample are as follows:

District Responsibilities & Required Actions for Retest Requests

Upon receipt of a Prime Contractor’s written request for a retest of Bituminous or Asphalt mixture acceptance samples or density acceptance samples, the District will review the Contractor’s retest request and all information provided by the Contractor to justify the retest request. In addition, the District will review LTS test results for the failing sample (lot) and other lots of the same JMF from the same project, and visually inspect the area of the roadway where the failing sample(s) and sample increments were collected. During the visual inspections, the District will check the roadway for visible segregation especially when the eCAMMS test report shows single or multiple sieve deviations. If the sample was collected in a Base or Binder Course and the Base or Binder Course has been overlaid, the District will need to consider information from the construction project records or construction inspection staff for any indications of segregation observed during construction. In general, when the original LTS test results indicate single or multiple sieve deviations on increments with failing test results for asphalt content or percent passing the 75 µm (No. 200) sieve, retests should only be granted if there was no segregation noted during visual inspections of the roadway or noted during construction and the Bituminous or Asphalt Mixture Producer’s quality control sieve test results are not beyond their action limits.

If after reviewing the Contractor’s justifying information the District concludes that the failing sample results do not represent the in-place material, the District shall submit a written request to LTS to perform a retest of the failed material sample. All District retest requests must be submitted by U.S. mail, interoffice mail or e-mail to the LTS Engineer of Tests with a copy sent to the LTS Bituminous Unit Manager. All District retest requests sent to LTS must include the following information (See Attachment 1 for example memorandum):

1. Identification of the original failed acceptance sample by ECMS Project No. and TR-447 Sample Reference Number,
2. The project’s governing specifications year and version (ex., Pub. 408/2016, Change No. 1) or governing General Standard Special Provision (e.g., Ga07005 Changes to Specifications: Section 409) or a District or Project Special Provision,
3. Copy of the Contractor’s original retest request letter and justifying information,
4. Indication that the District is approving or granting the retest and a summary of the District’s reasons/justification for granting the retest,
5. Name of the person from the Contractor/Producer to contact to schedule the retest.

If after reviewing all the Contractor’s justifying information the District concludes that the failing sample results represent the in-place material, the District will send a letter to the Prime Contractor denying the Contractor’s retest request and send copies of the letter to the LTS Engineer of Tests and the LTS Bituminous Unit Manager. The letter is to include reasons for denying the retest request. Attachment 2 is an example of a letter that Districts may reference or use to send retest denial letters to the Prime Contractor.

The District will make the final decision to grant or deny the retest request.

LTS Responsibilities and Required Actions for Retest Requests

Upon receipt of a District retest request memorandum or e-mail concurring with a Contractor’s request for a retest, the LTS will review the District retest request and attached information to ensure that it includes all items as required above. If all items are not included, LTS will return the request to the District.

If all items are included, LTS will perform the following:

1. For mixture acceptance sample retests, the LTS will contact the District to have the retest pavement cores drilled, packaged and sent to the LTS. (The District may proceed with drilling the retest pavement cores at their convenience and before being contacted by LTS; however, the District shall not set-up the retest sample in eCAMMS or send the retest sample to LTS until contacted by LTS).
2. After receipt of the retest pavement cores, LTS will contact the person from the Contractor/Producer identified to witness the retest and schedule the retest.
3. For density acceptance sample retests, the LTS will contact the person indicated from the Contractor/Producer to witness the retest and schedule the retest.
4. The LTS will notify the appropriate District Materials Engineer/Manager of the scheduled retest date by e-mail message. If LTS and the Contractor/Producer cannot mutually agree on a date to perform the retest within an appropriate time period, the LTS may schedule the retest date at its convenience.

Condition and Identification Requirements of Retest Cores

All pavement cores for mixture acceptance sample retests must be 6-inch diameter pavement cores. Smaller or larger diameter pavement cores are not acceptable.

All pavement cores for mixture acceptance retests must be thoroughly rinsed with water immediately after drilling and extracting the pavement core and while the core is still wet from the
drilling operation. The purpose of the rinsing is to remove any fine debris resulting from the drilling operation.

Pavement cores collected for the purpose of mixture acceptance sample retesting shall be properly labeled and identified by the District. Pavement cores that include material other than the material or pavement course to be retested, must clearly be marked to show the section of each pavement core to be tested and the section(s) of the pavement core to be discarded. Pavement cores not clearly showing the portion to test will be considered Non-Conforming samples and will not be tested by LTS until the portion to test is identified by the District.

Pavement cores submitted for mixture acceptance sample retests must include enough material to be tested in accordance with the minimum sample size requirements in either PTM No. 757 or PTM No. 702, Modified Method D. If samples are received by LTS that do not meet the required minimum sample size for the appropriate test method, the samples will be considered Non-Conforming samples and will not be tested by the LTS.

To ensure each pavement core has the minimum amount of material to be properly tested, the portion of the 6-inch diameter pavement core to be tested must meet the minimum depths in Table A. If the portion of the pavement core to be tested does not meet these minimum depths, the Contractor and District must collect two 6-inch diameter pavement cores for each sample increment. When two pavement cores are required for one sample increment, drill the two pavement cores within a maximum of 12 inches of each other on center. When two pavement cores are required for one sample increment, ensure that each pavement core is identified by the proper sample increment number and that the TR-447 Remarks section includes comments that two cores were collected for specific sample increments. Do not use and submit two TR-447’s for retest samples requiring two pavement cores per increment. Only submit one TR-447 for retest samples requiring two pavement cores per increment and just identify one of the increment cores with the appropriate TR-447 increment sticker and clearly mark the second pavement core with the appropriate increment number using either keel or masking tape and a marker. Districts are to ensure that the two pavement cores for each increment number are clearly marked with the correct increment number. The minimum depths in Table A also ensure that each pavement core has enough material for the LTS to trim some material away from the edges of the core to eliminate cut and exposed aggregate surfaces before testing.
Table A
Minimum Layer Depths for Material to be Retested
Take Two (2) Pavement Cores per Sample Increment if Minimum Depths Not Met

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5 mm</td>
<td>2 inch depth</td>
<td>1 inch depth</td>
</tr>
<tr>
<td>12.5 mm</td>
<td>2 inch depth</td>
<td>1.5 inch depth</td>
</tr>
<tr>
<td>19 mm</td>
<td>2 inch depth</td>
<td>1.5 inch depth</td>
</tr>
<tr>
<td>25 mm</td>
<td>2.5 inch depth</td>
<td>2 inch depth</td>
</tr>
<tr>
<td>37.5 mm</td>
<td>2.5 inch depth</td>
<td>2 inch depth</td>
</tr>
</tbody>
</table>

The TR-447 identifying the retest pavement cores must be properly completed and include the following information:

1. The TR-447 reference number of the original sample failure must by entered in the Related Sample field on the TR-447 Form and entered during eCAMMS Sample Setup as a Related Sample with the Related Sample Type selected as ‘Retested’.
2. The TR-447 Remarks section must include comments clearly identifying the material as pavement cores for a retest and include the Sample Reference Number of the original sample failure. Example Remark: “These cores are for retest of failing Sample Ref. No. A######”
4. The TR-447 and eCAMMS Sample Class must be “AS”.
5. Add “R” following the lot number on the TR-447 and the eCAMMS TR-447 Sample Setup page. Example: Original Sample Lot Number = 01, Retest Sample Lot Number = 01R.
ATTACHMENT 1
EXAMPLE REQUEST FOR RETEST MEMORANDUM FROM DISTRICT TO LTS

July 1, 2015

Request for Bituminous Retest
ECMS No. #####, Sample Reference No. A#####

Timothy L. Ramirez, P.E., Engineer of Tests
Laboratory Testing Section
Bureau of Project Delivery

Sid Viscous
District Materials Manager
Engineering District ##-0

We received a bituminous retest request from Prime Contractor, Inc. for the subject project and sample reference number. This project’s governing specifications are Pub. 408/2011, Change 6.

Attached is the contractor’s request for retest letter, the eCAMMS Testing Report indicating a failure and the quality control test (QC) test results submitted with the request for retest.

The District has evaluated the QC documentation provided by the prime contractor and performed a site view. The District is approving this retest request for the following reasons:

• The QC test results were all within the action limits and indicate the producer was producing the material in close conformance with the JMF target values.
• There was no apparent segregation noted during the site view or during project construction
• eCAMMS Testing Reports for other lots of the same JMF on this project do not indicate similar test results

Mr. Bradley Pitt, QC Manager, is the contact person for Prime Contractor, Inc. to witness the retest. Mr. Pitt can be contacted at the following phone number (###)-###-####.

Should you have any questions concerning this matter or need any additional documentation, please contact me at (###)-###-####.

Attachments
cc: Troy A. Lehigh, Bituminous Unit Manager
    Jeffrey L. Smith, Bituminous Testing Lab Manager
ATTACHMENT 2
EXAMPLE RETEST DENIAL LETTER FROM DISTRICT TO CONTRACTOR

ABC Prime Contractor
222 Smith Ave
Anytown, PA, 00000

RE: ECMS No. 11111
   Request for Retest of Sample Ref. No. A####

Dear Mr. Contractor,

In response to your request for a retest of the referenced sample, the District has reviewed your request and the justifying information supplied with your request. Based on the District’s review, the eCAMMS Testing Report represents the in-place material and the District is denying your request for a retest of the referenced sample for the following reasons:

1. A visual review of the project resulted in observations of segregation within the locations where the sample increments were collected and is consistent with the test results.
2. The Producer’s QC test results indicate that production was not targeting the JMF. The upper sieves show a trend of test results below the JMF target values consistent with the multiple sieve deviations indicated on the eCAMMS Testing Report.
3. The Producer’s QC volumetric analysis test results show high air voids near the specification limit and low VFA

If there are any questions, please contact Tony Bagodons at (555) 555-5555.

Sincerely,

Rico Suave
Project Manager

cc: Project Manager
DME/DMM
   T. L. Ramirez, P.E., BOPD/LTS
   T. A. Lehigh, BOPD/LTS
The District Labor and Contract Compliance Agent (DLCCA) is responsible for implementing and monitoring the District Labor Compliance program for all construction contracts. The DLCCA should be familiar with all provisions, regulations and requirements in the Pennsylvania Prevailing Wage Act 442 and the US Department of Labor (USDOL) Field Operation Handbook, Chapter 15.

The DLCCA is to assist the Inspector-in-Charge in ensuring compliance on all construction contracts and inform the Assistant District Executive - Construction of a contractor's failure to comply with contract. The Bureau of Project Delivery (BOPD) should be informed when the contractor repeatedly fails to comply with the contract.


Predetermined minimum wage rates for specific work classifications are included in most contracts. The U.S. Department of Labor establishes the rates for Federal projects and the PA Department of Labor and Industry establishes the rates for State funded projects. Appropriate required contract and special provisions are included in each Federal-aid contract for guidance in administering these wage rates.

For Federally funded projects bid after May 1, 2007, any and all work performed on bridges spanning a watercourse (wet or dry) is determined bridge construction, and heavy construction rates applies to that work. This only includes the actual bridge items (S or T families of prequalification codes including abutments, wing walls, and causeways). All other normal highway work on such projects, including bridge approaches, retaining walls, noise walls, and culverts, will have highway construction wage rates apply. Also, for bridges that do not span a watercourse, highway construction wage rates apply. Districts 2 (Juniata County), 3, 4, 5, and 8 (except Franklin County) are to include special provision “N-a10550-A” in the bid packages for Federally funded projects identifying the specific bridge structures (by structure number) that heavy construction rates apply (bridges spanning a watercourse, wet or dry).

The Contract Management Section, Bureau of Project Delivery is to assure that all work classifications, used on all State or Federal projects, are noted or requested in the bid proposal.
2. Preconstruction Conference.

Section A.3.1 outlines the labor compliance items which were to be discussed at the preconstruction conference.

In projects where Appalachian Funds apply, Standard Special Provision a01701 Employment Preference for Appalachian Contracts is to be included. This is in reference to Designated Special Provision 8 (DSP8) in Appendix C of Publication 408 entitled F.A.R. REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS which is physically attached to the contract. The Assistant Construction Engineer/Manager and/or DLCCA should make it known at the preconstruction meeting that the project is Appalachian Funded and that the provision will be implemented and enforced. In addition, the Inspector-in-Charge and project personnel are to be made aware of these requirements prior to the start of the project.

3. Project Review

The DLCCA is to review projects as needed to assure labor requirements are fulfilled, including wage rate spot-checks, follow-up on wage complaints, and payroll and certification procedures. It is recommended that the DLCCA develop a project review schedule for each construction season and perform a labor review on each project at least once a year. Random reviews should be conducted dependent on the length of the project (ex: multi-year projects).

Each field review shall be documented with information regarding the review and retained in the Labor Compliance file and project records.

4. Wage Rate Spot-Check Procedure

The Inspector-in-Charge is responsible for weekly wage rate spot-checks of approximately ten percent of the total workforce (prime and subcontractors). The intent of these checks is to possibly review every employee who participates on the project. Wage rate spot-checks are to include the subcontractor's employees as they are engaged. Different work classifications are to be spot-checked. If the total workforce (prime and subcontractor) or any project is ten or less, and the employees remain constant, then spot-checks are required every three weeks and not every week.

Each wage rate spot-check is to be recorded in a bound book, or a section of a bound book, that contains a record of all the checks and corrective actions. The entries are to include the signature of the inspector who performed the check.

Mark the book so that it can be identified in the documentation trail for the project. It shall also be available for routine inspections by the DLCCA, Central Office Labor and Contract Compliance Coordinator, Quality Assurance Teams and FHWA representatives.
All wage rate spot-checks are to be conducted privately, and are to include the following information:

- Employee Name and Individual Identifying Number (e.g. Last 4 Digits of Social Security Number)
- Employee Classification (Compare to Actual Work Activities at time of review)
- Interviewee’s Wage Rate, Predetermined Wage Rate and Certified Payroll Rate
- Name of Employer
- Wage or Hour Complaint - (yes or no) Record in detail and refer to DLCCA immediately for an investigation.
- Date of Wage Check - (Inspector's Name)
- Signature of Employee Checked
- Initials of Inspector Checking

If a classification is not listed in the contract, the DLCCA needs to initiate a Department of Labor Standard Form 1444 - Request for Authorization of Additional Classifications and Rates - and establish a rate for this classification. The form is to be forwarded to the Prequalification Officer in the Bureau of Project Delivery for coordination with the Department of Labor.

5. Payrolls and Certifications Methodology

Payrolls and certifications should be submitted using the PennDOT Project Collaboration Center (PPCC). This includes certified payrolls for demonstrating compliance with the Pennsylvania Prevailing Wage Act and the federal Davis-Bacon Prevailing Wage Act. The acceptance of electronic records has been vetted through the PennDOT Office of Chief Counsel as well as the Pennsylvania Department of Labor and Industry, Bureau of Labor Law Compliance. For state prevailing wage projects in which the first and last payrolls require notarization, on-line electronic notaries are acceptable in Pennsylvania per the Electronic Transactions Act (Act 69 of 1999).

a. The correct certified payroll form submittal is selected by the project’s prevailing rates not by the type of project (federal or 100% state).

- For projects with a federal prevailing rate, use the WH-347 form.
  - The Inspector-in-Charge must receive the Contractor's and all Subcontractor's payrolls and certifications by the seventh day after each payday. This is not to be construed as seven days from the end of the pay period. The certified payroll must identify each employee's pay date. The Inspector-in-Charge must randomly review each payroll and certification for classification and wage rate errors.
  - When there is a complaint, the Inspector-in-Charge is to deliver all payrolls and certifications within five working days to the DLCCA.
  - In accordance with federal regulation 29 CFR 5.5(3)(ii)(A), the Department will not accept certified payrolls that contain the employee’s full social security number.
security number and full home address. Certified payroll records submitted to the Department shall only include an individual identifying number (e.g. the last four digits of the employee’s social security number).

• For projects with PA Department of Labor and Industry prevailing rates or no prevailing rates, use the LLC-25 form.
  - The Inspector-in-Charge is to receive all Form LLC-25 Payroll Certification for Public Works Projects by the tenth day after each pay date. Computerized payroll submissions may supplement Form LLC-25 as long as all information contained on the form is included. Information not on the computerized payroll must be in the proper block on the form. The Inspector-in-Charge is to review and promptly forward the certification to the DLCCA. The first and last payrolls must be notarized.
  - On contracts which do not contain the prevailing wage attachment, the Department will request payroll records at the discretion of the Inspector-in-Charge at least three times throughout the duration of the project.

b. There are two (2) Submittal Types in PPCC for payrolls: Payroll Prime Contractor (PP) and Payroll Subcontractor (PSUB).

c. The title for the Prime Contractor payrolls should consist of the Prime Contractor’s name and the payroll week ending date (MMDDYYYY). The title for Sub-Contractor payrolls should consist of the Sub-Contractor’s name and the payroll week ending date (MMDDYYYY). For example, the title for Prime Contractor ABC for payroll week ending January 30, 2016 is “ABC01302016”. The title for Subcontractor XYZ for the same week is “XYZ01302016”.

d. To review the payroll, the Inspector in Charge (IIC) opens the document in the submittal. The IIC should document the names of the employees included in the 10% wage check in the Approval Notes prior to accepting the submittal. If the IIC determines there are deficiencies with the payroll, they should note the deficiencies in the “Approval Notes” field and select “Revise and Resubmit” from the Action dropdown window. It is not necessary to resave payrolls in the Project Files. All submittals are retained in the permanent electronic records in the submittal location.

e. The IIC must complete Form CS-2121, Record of Contractor’s Payroll Submissions which should be stored in the Project Files.

f. Add the District Labor Compliance Coordinator (DLCC) to the Final Acceptance Notification (FAN) to the submittal types so they can spot check to ensure the payrolls are being adequately reviewed.
6. Payroll Reviews.

The following information is to be checked on payroll reviews.

a. Employee's Full Name.

b. Individual Identifying number (e.g. Last 4 Digits of Employee's Social Security Number).

c. Employee's Contract - Classification and Predetermined Rate - Work activity should be described adequately to determine proper classification.

d. Employee's Daily Hours Worked at Straight Time.

e. Employee's Hours Worked at overtime (one and one-half times the basic contract rate).

f. A copy of the Contractor's and all Subcontractors' fringe benefit programs is required (how much per hour is deducted, for what purpose, and where the money is deposited). Copies of the Prime Contractor’s and all Subcontractors’ fringe benefit letters, addressing all applicable work classifications, are to be received and on file. An employee is to be compensated for both the hourly base and the hourly fringe benefit rate as defined by the prevailing wage rates of the contract. The fringe benefits can be paid all in cash, a combination of cash plus partial fringe benefits paid to an approved plan, or all the fringe benefits paid to an approved plan(s). Plans and payments should be verified. Payments to employees for board, lodge and travel do not constitute an authorized payroll deduction.

g. Standard (taxes, social security) and additional (work clothes, loan payments) deductions require authorization by the employee. Deductions should not be noted as "other" or "miscellaneous" or combined into one dollar figure on the weekly payroll. The Contractor may correct errors like these by attaching a letter to each payroll explaining these deductions. Payrolls are not to be returned to the Contractor for any reason.

7. Contractor Employee Complaints.

Advise the DLCCA immediately of a complaint regarding labor compliance by an employee of the Contractor or Subcontractor.

An employee with a minor complaint - one attributed to typographical or arithmetical errors - is to be adjusted by the next pay period with supplemental certifications and payrolls.
An employee with a major complaint - flagrant violations of the Davis-Bacon or Copeland Anti-Kickback Acts, the Contract Work Hours Safety Standard Act or the Pennsylvania Prevailing Wage Act - shall be immediately referred to the DLCCA. The DLCCA is to investigate and submit a written report with recommendations to the Assistant District Executive - Construction. The District is to forward the report with its recommendations to the Bureau for review and approval.


All labor compliance issues are the responsibility of the Contractor. Coordination to resolve any problems is to be done with the Contractor.

a. Major Violations - payrolls not submitted, payroll certifications not submitted, fringe benefit information missing on payrolls, fringe benefits or wages not being paid, failure to correct minor problems, etc.

i. Upon identifying the problem, notify the Contractor in writing to correct the situation in two weeks.

ii. If the problem is not rectified in two weeks, hold payment of the cost of the item of work performed by the laborers in question, from the next estimate to the Contractor. Use the contract component item schedule on large lump sum items; i.e. lump sum structure.

iii. If the problem is not resolved in five weeks from notifying the Contractor (step i above), stop all estimate payments until the problem is satisfactorily addressed. Also, notify the Chief of the Construction Quality Assurance Section at (717) 787-5610 that all payments are being withheld.

b. Minor Violations - Random occurrences of: employee classified incorrectly, hours worked incorrect, employee missing on payroll, etc.

i. Notify the Contractor of deviations and identify that correction is necessary within two weeks.

ii. If corrections are not made in two weeks from notification, the minor violation is to be considered a major violation and proceed as directed in Item 8.a above.

c. Significance of violation unclear or interpretation needed – Notify the DLCCA who is then to contact the Chief of the Construction Quality Assurance Section at (717) 787-5610 for clarification or direction.


Regardless of any contractual agreements between the Contractor, subcontractors and their employees, time and one-half will be based on hours worked over forty in a week. This applies to Federal and 100% State-Funded projects.
10. Semi-annual Labor Compliance.

The DLCCA is to prepare and submit a semi-annual Labor Compliance Enforcement Report (Form FHWA-1494) to the BOPD by October 5 and April 5 of each year.

The report is to include all enforcement proceedings for the period covered. In the remarks section, the DLCCA is to report the total of wage spot-checks by project personnel and a separate total of wage spot-checks by the DLCCA.

The report is to list any investigations of Federal violations not concluded at the time of submissions.

The DLCCA and Assistant District Executive - Construction or the District Executive should sign the reports.

The reports will be subject to verification by the BOPD and/or the FHWA.


Contractor:

The Contractor and all Subcontractors are to keep payroll records for three years after the work is completed. The FHWA, the Secretary of Labor or the Pennsylvania Department of Transportation may request to see these records at any time during this period.

Contracting Agency:

The contracting agency is to keep payroll records for Federal-aid projects for three years from the final FHWA Voucher.

District Labor and Contract Compliance Agent:

Project files are to be stored in PPCC.
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Any service or work associated with Maintenance and Protection of Traffic, not performed by the Prime Contractor, must be performed either by an approved rental service/supplier or by a prequalified Subcontractor. For non-ECMS projects, Form CS-4339R must be completed and approved for a DBE/SBE/DB rental service/supplier, as well as for any prequalified Subcontractors. For ECMS projects, an electronic subcontractor request must be submitted and approved for the same as previously listed.

A firm that rents Traffic Control devices to the Contractor or Subcontractor sometimes functions primarily as a supplier. However, under certain circumstances, the federal Davis-Bacon requirements apply to such a firm’s workers employed on the jobsite (“site of the work”), and the Davis-Bacon labor standards may apply to workers on an individual basis. As discussed below, it is important to consider (a) whether duties being performed by laborers and mechanics are only duties that are functionally incidental to the supply and delivery of traffic control devices (either owned or rented by the supplier), and (b) whether particular workers spend a substantial amount of time (more than 20 percent of a workweek) on the Davis-Bacon covered job site(s).

**Federal-aid (Davis-Bacon) Projects:**

As stated in the U.S. Department of Labor, Wage and Hour Division Field Operations Handbook (FOH, Chapter 15, section 15e10(b)):

Employees of traffic service companies which operate as subcontractors on Davis-Bacon and related Acts (DBRA) projects to set up and service traffic control devices (e.g., barricades, directional signs, lights, arrow boards, etc.) are generally covered by DBRA. However, traffic service companies which rent equipment to the prime contractor and perform only incidental functions at the site in connection with delivery of the equipment are regarded as material suppliers whose employees would not be subject to DBRA unless particular employees spend a substantial amount of time (20% or more) in the workweek on the covered site or sites. [Emphasis added.]

Appendix C provides more detailed guidance from the U.S. Department of Labor (USDOL) regarding application of the federal Davis-Bacon labor standards on Federal-aid (Davis-Bacon) projects to employees who work for traffic control companies. Included is information regarding relevant “Coverage Principles,” a focus on Davis-Bacon applicability to workers on the “site of the work” and the U.S. Department of Labor policy regarding “material delivery truck drivers.”

The following listings of “Duties Often Performed As Incidental To Material Supply/Equipment Delivery” and “Covered Contractor Or Sub Contractor Duties” distinguish between duties often carried out by a material supplier as functionally incidental to the supply/delivery of traffic control devices to a job site, and activities that generally indicate that a
company is performing part of the construction contract rather than being simply a material supplier.

**Duties Often Performed as Incidental to Material Supply/Equipment Delivery:**

The Davis-Bacon labor standards generally would not apply to employees of bona fide “Material Suppliers” whose duties are limited to supply, delivery to the job site and routine maintenance (once a week) of barricades, cones, flashers, arrow boards, temporary traffic signals, etc. on the job site, so long as such workers do not spend more than 20% of any given workweek performing these duties on covered job sites. If an employee spends more than 20% of a workweek performing the above duties on a Davis-Bacon (Federal-Aid) project (or combined with other Davis-Bacon (Federal-Aid) projects), the Davis-Bacon prevailing wage rates would apply for the time such workers spent on the project site(s).

The following functions generally would not come under the federal prevailing wage requirements of the contracts, except as noted above:

1. Initial supply/delivery of traffic control devices such as barricades, cones, barrels, flashers, signs, arrow boards, etc. to the project site (“site of the work”).

2. Routine and periodic maintenance service (usually once a week).

3. Removal of equipment from job site.

4. When performed in conjunction with initial delivery of traffic control devices such as those noted in item 1, above to the site of the work, the material supplier’s personnel may drop the equipment at a central stockpile or various stockpile locations along the project. Employees of the company may perform initial set-up of equipment by dropping barrels and cones from the back of a moving truck. The same would apply for removal.

5. Routine and periodic maintenance may consist of inspecting, cleaning, and fueling the equipment, replacing broken or lost equipment, replacing barricades knocked down or out of line, and changing light bulbs and batteries.

**Covered Contractor or Subcontractor Duties:**

If a traffic control company performs duties other than those described in the preceding discussion as **Duties Often Performed as Incidental to Material Supply/Equipment Delivery**, then it is likely that the company is performing part of the construction contract and the Davis-Bacon requirements would apply to all of the hours worked on the site by the company’s employees. Thus, the following continuing traffic control services and safety provision activities are examples of activities normally covered under the Davis-Bacon contract labor provisions as they are not functionally incidental to the delivery of the traffic control devices, but rather comprise
construction work the company performs in the role of a subcontractor. Any contractor performing these duties will need to be listed on a Subcontractor Request and their employees performing the duties will need to be listed on a Certified Payroll form and submitted following the appropriate procedures.

1. Setting up barricades, cones, barrels, flashers, signs, arrow boards, etc. after initial delivery.
2. Erecting temporary advance warning signs, portable traffic signals, speed display signs, message boards, arrow panels, temporary bituminous rumble strips, etc.
3. Placing temporary sign boards.
4. Moving barricades, cones, barrels, flashers, signs, arrow boards, etc. as construction work progresses or for lane closures and changes.
6. Any other work performed on Maintenance and Protection of Traffic is considered to be subcontract work, therefore Davis-Bacon wages apply.

Driving time to and from the project:

- Travel time to and from a project “site of the work” is not covered by Davis-Bacon.
- Appendix C contains guidance from the U.S. Department of Labor and provides further information and references regarding the “Applicability of Davis-Bacon to workers on the “site of the work” and U.S. Department of Labor policy regarding material delivery truck drivers”

Projects Governed by the Pennsylvania Prevailing Wage Act:

The Pennsylvania Department of Labor and Industry requires the payment of prevailing minimum wage rates on all public works projects covered under the Pennsylvania Prevailing Wage Act. 43 P.S. §§ 165-2(5), 165-5. Material suppliers and their employees that deliver products to a project, but do not engage in on-site services beyond the unloading of their vehicles to a stock pile are not classified as workmen requiring prevailing wages. Delivery or unloading for locations other than the general drop area or stockpile and any other services performed on the project requires Pennsylvania prevailing wages 43 P.S. § 165-2(7).

If there are questions regarding these items, contact the District Labor and Contract Compliance Agent for assistance.

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Federal-Aid Projects governed by the Davis-Bacon Act:

This is to provide criteria for evaluating the classification of a truck driver as an owner-operator when the truck is not registered in the name of the operator, but is being leased to the operator.

In accordance with regulations, Section 15E 16 of the U.S. Department of Labor's Field Operations Handbook, owner-operators are not subject to the wage rates prescribed by the U.S. Department of Labor. Such owner-operators are to be listed on payrolls with the notation "owner-operator" after each name. Neither hours worked nor wages paid need be shown.

FHWA provided an interpretation of the regulations with respect to truck drivers who lease or rent the truck they drive, rather than owning the vehicle. Their interpretation is to serve as the basis for considering eligibility for owner-operator status as follows:

I. The owner-operator status may apply to those owner-operators who have a bona fide lease or rental agreement.

II. The determination of a bona fide lease or rental agreement is to consider the following as a minimum:

A. A bona fide lease should contain the following conditions as a minimum:

1. Names and addresses of the lessor and lessee.

2. Specific information regarding the truck leased.

   a. Make of vehicle
   b. Model of vehicle
   c. Year
   d. VIN number
   e. Capacity
   f. Other identifying information

3. Period of lease.

4. Cost to lease plus any additional charges beyond lessee's expected usage.

5. Option to purchase at end of lease period with cost established or to be established.

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7. Insurance requirements.

8. Registration of the vehicle could be either joint (lessor and lessee) or singular (lessor) according to the type of lease.

9. Conditions relating to cancellation or non-payment.

B. A bona fide company would be considered one that operates a business of this nature on a daily basis with no subsidiary relationship with the Contractor or Subcontractor. The second criteria would be registration of business with the Secretary of the Commonwealth. Further, such a business would offer its service or product to anyone with the same conditions.

C. Overall, the basic intent of the U.S. Department of Labor regulation must not be overlooked, i.e., truck owner-operators are not subject to the prevailing wage rates. This provision is directed to true owners or those seeking to own. A bona fide lease as described above as well as the intent of the contractual parties are the primary considerations. Simply stated, a determination must be made that the lease legitimately satisfies the intent of DOL regulations as opposed to merely being a "front" to avoid the prevailing wage rate.

Since each situation is different, subjective judgment must be applied when determining if the owner-operator requirements have been met.

D. A certification should be executed by each driver who cannot show ownership by registration asserting their status as an owner-operator as well as having no business interest in the Contractor's or Subcontractor's operations. The lessor should also provide a similar certification. Each certification should acknowledge the penalties for intentional violation. The Contract Work Hours and Safety Standards Act states that an intentional violation constitutes a Federal misdemeanor ($1,000 fine and/or 10 years in prison).

It is also important to note that even if it is determined that owner-operator status is warranted, this status applies only to the determined owner – not to whomever physically operates the vehicle.

E. Since the Contractor is responsible for violations of labor provisions by the Subcontractors, the Contractor is responsible for assuring that all lower tier parties are complying with the Federal requirements, and subject to the same penalties.

Please assure that these criteria are applied in the evaluation of truck drivers who are renting or leasing their trucks and are claiming owner-operator status for work at the project site or off-
site locations in proximity to the actual construction site, which are dedicated exclusively to the performance of work for the project.

100% State Funded Projects or Projects Governed by the Pennsylvania Prevailing Wage Act (PWA):

Under the PWA, workers entitled to Pennsylvania prevailing wages are those workers who perform work directly upon the public works project. Owner-Operators acting as material suppliers that deliver products to the project in on-site services and do not work beyond unloading of their vehicles are not classified as workmen entitled to the Pennsylvania prevailing wages.

However, these employees are workmen and must be paid the Pennsylvania prevailing wage if they engage in any of the following activities on the public works project: 1) transport of materials on the public works project (i.e. the transport of material from one location on the project to a different location); 2) transport of materials from a batch plant to the project (the batch plant does not have to be on the job site, but must be dedicated solely to the public works project at issue), or 3) after delivery of materials, the driver performs the on-site transportation and distribution of the materials to specific locations identified to the material supplier by the contractor/subcontractor. Certified payrolls are also required.

Since the Contractor is responsible for violations of labor provisions by the Subcontractors, the Contractor is responsible for assuring that all lower tier parties are complying with the requirements.
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The following sample letter is to be used by the District to notify a Contractor when it has been determined that the Contractor has failed to pay proper overtime rates. A copy of the letter is to be sent to the Bureau of Project Delivery, Contract Management Section who will coordinate the matter with the Federal Highway Administration. Upon receipt of the Contractor's written reply, the District is to send a copy thereof to the Contract Management Section together with completed Form DOT F4220.6, Summary of Labor Standards Investigation Report. If nonassessment of liquidated damages is recommended by the District, it must be fully justified in the report.

LETTER

Pennsylvania Federal-aid Project No.

PDQ Construction Corporation
110 Union Avenue
Kosekburg, Pennsylvania 88888

Gentlemen:

Use for contractor violation

An examination of your certified payrolls and payroll-related records for the weekly payroll periods ending January 6, 1995, and January 13, 1995, has revealed the failure to pay proper (straight time and overtime) wage rates to (number of) laborers and mechanics engaged in performance of contract work on the project cited above. A list is attached of the names of the workers whose wages were affected, together with the amounts due each.

Use for subcontractor violation

An examination of the certified payrolls and payroll-related records of your subcontractor, Hare and Tortoise Electric Company, for the weekly payroll periods ending January 6, 1995, and January 13, 1995, has revealed the subcontractor's failure to pay proper (straight time and overtime) wage rates to (number of) its laborers and mechanics engaged in performance of contract work on the project cited above. A list is attached of the names of the workers whose wages were affected, together with the amounts due each. This list is furnished to you because, as the contractor, you have the primary responsibility to this Department for proper wage payment in accordance with the terms of the contract. However, a complete copy of this letter is also being directed to Hare and Tortoise Electric Company.

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Use for either Contractor or Subcontractor violation

You are requested to take prompt action to the end that each of the employees listed in the attachment will receive the full amount due. As proof of payment, please submit an amended certified payroll for each weekly period involved. (If the Commonwealth so desires, it may also ask for a machine copy of both sides of any check issued in payment, or a machine copy of any cash receipt voucher signed by an employee).

The attachment also shows a schedule of liquidated damages computed at $10 for each calendar day for which an employee did not for any reason receive proper overtime pay in accordance with the requirements on the construction contract, the Work Hours and Safety Act of 1962, as amended, and regulations and instructions issued by the U.S. Secretary of Labor pursuant to the Act.

This letter of notice is being sent by certified (or registered) mail, return receipt requested. The assessment of liquidated damages in the amount computed will be considered final, subject to the concurrence of the Federal Highway Administrator, unless a written appeal, addressed to the Federal Highway Administrator, but directed to the FHWA Administrator through this Department, is received within 60 calendar days of the date whereon you received this letter of notice. The written appeal should show all reasons why it is believed that the sums computed should not be assessed.

If no appeal is filed within the time period set forth above, the sums computed as liquidated damages will become finally assessed and will be withheld, for the use and benefit of the United States, from the sums otherwise due you under the construction contract.

In the event an appeal is filed within the time period set forth above, you will be advised by this office of the decision of the Federal Highway Administrator. If such a decision is adverse to your interests, it will settle the matter insofar as the contract is concerned. The liquidated damages will become finally assessed and will be withheld, for the use and benefit of the United States, from the sums otherwise due you under the construction contract. You will, in such event, receive the notice by certified (or registered) mail, return receipt requested. However, in accordance with the provisions of the Act, you will then be provided a period of 60 calendar days within which to file a claim for the sums assessed in the U.S. Court of Claims.

If an appeal is filed within the time period set forth above and the Federal Highway Administration agrees, with the concurrence of the U.S. Secretary of Labor in appropriate instances, that the sums computed as liquidated damages should not be assessed, you will be advised by ordinary mail that no further liability exists for the assessment of liquidated damages in connection with the violations noted.

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Normally, the Department does not release Contractor Payroll information to others except for Federal and State agencies. However, pursuant to 65 P.S. §§ 66.1 et seq. (as amended) and Commonwealth of Pennsylvania Management Directive 205.36, the Department of Transportation (DOT) shall process all Right to Know Law (RTKL) requests according to the following policy.

All RTKL requests must be submitted in writing to DOT's RTKL Office and must be addressed to the RTKL Official as follows:

PennDOT Open Records Officer
Bureau of Office Services
Pennsylvania Department of Transportation
400 North Street
PO Box 3451
Harrisburg, PA 17105-3451
FAX: 717-787-8779
E-MAIL: PENNDOT-RightToKnow@state.pa.us

All RTKL requests must be submitted in writing and must:

- Identify a name and address to which the agency should address its response;
- State that the request is being made pursuant to the RTKL;
- Be submitted in person, by e-mail or by facsimile;
- Be sufficiently specific to enable the Agency to ascertain which records are being requested;
- Be from a person that is a legal resident of the United States.

RTKL requests may be made using PennDOT Form OS-100 or the form available at the website of the Office of Open Records openrecords.pa.gov.

The following fees shall be applicable to all RTKL requests:

- Photocopies – a photocopy is a single-sided copy or one side of a double-sided copy 8.5" x 11" page - $0.25
- Refer to http://www.dot.state.pa.us/public/bureaus/BOS/PennDOTRTKLAgencyPolicy.pdf for comprehensive Fee schedule.
- Charges for other services and materials will be determined on a case-by-case basis based upon the applicable cost to the Department, including PC diskettes copies,

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microfilm/microfiche copies, postage, redaction, user fees for use of Department computers for access to public records, and certification.

The RTKL Official may require a requester to prepay seventy-five percent (75%) of the total fees if the fees required to fulfill the request are expected to exceed one hundred ($100) dollars.

Do not make any information available to any non-government party without approval from the Department’s RTKL Official.
The Department of Labor and Industry has determined that survey crews are covered by the Prevailing Wage Act (Act) whenever these individuals are employees of a construction company, a general contractor or sub-contractor, and perform "new construction layout". This would include all new layout work, stake out for a bridge footer, or a small bridge replacement project on existing alignment. Please note that "new construction layout" does not include preconstruction design layout work.
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RESPONSIBILITY FOR EEO CONTRACT COMPLIANCE ACTIVITIES - GUIDELINES FOR THE INSPECTOR-IN-CHARGE

The District's responsibility for construction related Equal Employment Opportunity matters rests with the Assistant District Engineers for Construction and their staff.

1. The Bureau of Equal Opportunity (BEO), Contract Compliance Section and the Assistant District Engineer for Construction are jointly responsible for the enforcement of all contract provisions pertaining to EEO.

2. The BEO Contract Compliance Section has the prime responsibility for monitoring and conducting EEO compliance reviews. (Desk Audits, Field Audits, and On-Site).

3. The BEO Field Agent shall provide training and monitor the Inspectors-in-Charge in EEO matters, discuss EEO provisions at required preconstruction conferences, coordinate the submission of EEO reports, facilitate training programs for the District, and act as liaison with the Central Office Contract Compliance Section.

4. The Assistant District Engineer for Construction through their staff is responsible for conducting required employee interviews when deemed necessary or appropriate by the BEO Field Agent, performing onsite bulletin board inspections, submitting required EO reports, and ensuring that the Contractor is complying with all EEO contractual obligations.

5. The BEO Field Agent shall assist the project Inspector-in-Charge in monitoring and reporting External Discrimination Complaints. When the Department is made aware of complaints filed by employees of contractors or subcontractors, not PENNDOT employees, the affected contractor, not the Bureau of Equal Opportunity, should be prompted by the District Project Manager to launch an investigation and keep the respective Project Manager informed. The affected contractor is generally the prime contractor. When two or more prime contractors are involved in the complaint, escalate through channels to the Office of Chief Counsel (OCC) for guidance.

6. The project Inspector-in-Charge's responsibilities include, but are not limited to:

   a. Ensuring that EEO special provisions are inserted in all subcontracts.

   b. Enforcing the contract EEO special provisions and monitoring the compliance status of the Contractor on a day-to-day basis.

   c. Informing the Assistant District Engineer for Construction of any discrepancies or problems that require resolution at a higher level.

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d. Attending all meetings and reviews pertaining to their projects when possible.

e. Collecting and reviewing all applicable EEO reports for accuracy/completeness; denoting approval by signature, retaining one copy for their files, and submitting the original and one copy to the District Construction Unit by the prescribed due date(s).

f. Maintaining control records for the receipt of applicable EEO Forms, i.e., EO-363, EO-364, and EO-365 (Training Program, Enrollment Form and Monthly Training Report). Control records can be obtained from the BEO.

g. Reviewing Contractor's bulletin board frequently for content and appearance. Notices and posters setting forth the Contractor's EEO policy should be placed on a bulletin board in an area readily accessible to employees and applicants for employment. A review checklist is included in Section B.11.5.

h. Maintaining records and documentation of all EEO matters pertaining to the project as a permanent part of the project records (i.e., EEO reports, discussions, sub-contract approvals, alleged discrimination complaints, etc.).

A review checklist is included in Section B.11.5.

7. The submission of EEO report forms shall be in accordance with the required due dates.

Contractors are to be advised that failure to submit the reports as required may result in an unsatisfactory EEO performance evaluation and/or the withholding of current estimates until the requirements are met. The prequalification of habitual offenders could be adversely affected.

8. The District EEO compliance activities will be reviewed from time to time by the Bureau of Project Delivery as part of the Quality Assurance Program.

9. When experiencing problems, contact the District Labor Contract Compliance Agents, BEO Field Agents, and/or the Chief of the Contract Compliance Section, BEO at (717) 787-5891.
EEO FORM REQUIREMENTS

On Federal/Federal-aid Projects, all Contractors and Subcontractors with contracts of $10,000 or more are required to submit annually, for the work force on project during the last active payroll period preceding July 31, Federal Form FHWA-1391, Federal-aid Highway Construction Contractors Annual EEO Report Form. Log in using your ECMS user name and password. Complete and submit the FHWA-1391 electronically at https://www.dot18.pa.gov/fhwa1391 by August 15 of each year.

For all DBEs, complete Form EO-354, DBE Commercially Useful Function (CUF) Report, within five (5) business days from the date the DBE begins work or five (5) business days from the date material that is to be used for DBE credit is received on the project. A new Commercially Useful Function Report must be completed once in a construction season; and anytime a DBE performs a new or different scope of work. You may maintain completed CUF reports in the project files when they cannot be work-flowed through the Pennsylvania Project Collaboration Center (PPCC) system. Please continue to monitor the DBE firm throughout the life of the project to ensure that Commercially Useful Function requirements are being met. If DBE credit is being claimed for any material costs included in a DBE subcontract or agreement, ensure that purchase orders for the materials are being submitted monthly. Compliance with Commercially Useful Function requirements must be monitored throughout the life of the project.

The EO-354 is now work-flowed through the Pennsylvania Project Collaboration Center (PPCC) for processing. Every Commercially Useful Function Report is reviewed when received. If, at any time, you should have questions regarding the process, procedures or review results, please contact the Bureau of Equal Opportunity. The Bureau of Equal Opportunity will determine if corrective action is warranted and advise the District accordingly. The Inspector-in-Charge may be contacted for the request of information and/or supporting documentation.

If the Federal/Federal-aid/State project includes trainees, the Contractor must submit the original Form EO-363, Contractor’s On-The-Job Training Program Classifications to the PennDOT Project Inspector-in-Charge (IIC), no later than 10 days after the Notice To Proceed date. The IIC will submit a copy of the form to the District Labor Contract Compliance Agent (DLCCA). The DLCCA will forward a copy of the form to the Bureau of Equal Opportunity for approval by the OJT Program Administrator.

If the Federal/Federal-aid/State project includes trainees, the Contractor must submit the original Form EO-364, Trainee Enrollment Form, to the PennDOT Project Inspector-in-Charge (IIC), PRIOR to each training candidate starting work on the project. The IIC will review the form for correctness and completeness, sign and forward the form to the District Labor Contract Compliance Agent (DLCCA), with signatures from the Contractor’s Training Candidate and the Contractor’s Project Manager, no later than one day after receipt of the forms. The DLCCA will
submit the form to the Bureau of Equal Opportunity for approval by the OJT Program Administrator.

If the Federal/Federal-aid/State project includes trainees, the Contractor must submit the original Form EO-365, Monthly Training Report. The Contractor is to submit the original EO-365 to the Project Office for review, with signatures from the Contractor’s Representative and Training Candidate, no later than the 5th day following the end of the pay period prior to the 30th of the month. A signed copy will be sent to the DLCCA no later than the 5th of the following month and to the Bureau of Equal Opportunity for verification by the OJT Program Administrator, no later than the 10th of the following month.

The EO-363/364/365 (Training Program Reports) are now work-flowed through the Pennsylvania Project Collaboration Center (PPCC) for processing, reviewing and approval from the contractor, district personnel and BEO personnel. However, the original paper copy of the forms must be signed by the IIC, before being scanned and submitted through PPCC. The paper submission timeframes must also be adhered to when submitting forms for approval through PPCC. Example, the EO-363 must still be submitted, to the Department 10 days after the “Notice To Proceed” has been issued. If the EO-363 has not been received, documentation must accompany the submission addressing why the form is late and what progressive steps the contractor will take to ensure timely submissions in the future. That documentation must be posted at the same time the EO-363 is being submitted to avoid any delay in approving the training program. Any documentation that needs to be submitted with the EO-364 i.e., good faith efforts, apprentice indentured/RAPID papers, etc. needs to be posted and submitted at the time the EO-364 is submitted to avoid a delay in approving the form. If, at any time, you should have questions regarding the process, procedures or review results, please contact the OJT Program Administrator. The Inspector-in-Charge is responsible to ensure that the request of information and/or supporting documentation is attached in the PPCC system by the contractor prior to accepting and forwarding the report to Central Office for approval.

Each Contractor and Subcontractor with a contract in excess of $10,000 for any Federal/Federal-aid, 100% State or Municipal project must complete Form EO-400, or the Highway Construction Contractors Monthly EEO Report. This report must be kept on file by the contractor and presented to the Department, BEO or FHWA upon request.
When construction contracts include a training item and the corresponding special provision, the following procedure is to be followed in the processing and review of the training program submitted by the Contractor to the District for approval:

1. Within ten (10) days following the Notice to Proceed, the Contractor is to submit through the Pennsylvania Project Collaboration Center (PPCC) system to the Assistant Construction Engineer (ACE) or Inspector-in-Charge (IIC), a completed EO-363 that identifies the number of trainees to be trained in each selected classification and the corresponding training programs (if applicable) to be used. The distinction between Apprentices and On-The-Job Trainees (OJT) must be understood.

2. The Contractor's EO-363 submission will first be reviewed by the Inspector-in-Charge (IIC), then the District Labor Contract Compliance Agent (DLCCA) or the Assistant District Engineer (ADE) for Construction designee for the following:
   a. The Contractor's training program (EO-363) must contain original signature and the date it was completed.
   b. The number of trainees submitted must comply with the number designated in the contract. (1000 HOURS = 1 TRAINEE)
   c. Approximate start date for each trainee (at minimum Month & Year)
   d. Contractor is to keep records and submit monthly reports (EO-365)
   e. A copy of a Professional Completion Certificate is to be included with the submission of the EO-363.
   f. Apprentices are permitted when they are individually registered under a bona fide apprenticeship program registered with a state apprenticeship agency, which is the PENNSYLVANIA APPRENTICESHIP AND TRAINING COUNCIL. The Contractor is to provide a copy of the apprenticeship agreement from the Registered Apprenticeship Information System (RAPIDS) and/or a cover letter from the apprenticeship agency outlining the apprentice's present status toward completion of their apprenticeship program and their skill level % wage rate.

   (1) Trainees coming into the program from approved Apprenticeship programs should be called Apprentices not OJT Trainees. Both Apprentices and OJT
Trainees are to be persons of the targeted group (i.e., minority, women or economically disadvantaged person).

(2) If the Contractor's training program is to be a PennDOT Approved On-the-Job training program, the program number must be identified on the EO-363 submission.

3. If the Contractor's EO-363 submission is not acceptable, or if in the opinion of construction personnel ADE designee, IIC and/or District Labor Contract Compliance Agent, the character, duration or nature of the project operations cannot support the proposed training classification, the training program will not be conditionally approved. The Contractor's submission will be returned for correction and resubmission.

4. If the Contractor's submission is satisfactory, the ADE or their designee will forward through PPCC, a scanned copy of the Contractor's ORIGINAL submission to the OJT Program Administrator (Bureau of Equal Opportunity) along with a cover letter and any attachments addressing that the contractor has been given conditional approval to proceed. The Contractor will proceed to move forward with their good faith efforts to locate, recruit, and hire a program eligible candidate for enrollment to complete the training program. Every effort shall be made to provide this conditional approval or the return of an unsatisfactory program within ten (10) days of the receipt of the program in the District Office.

5. The Bureau of Equal Opportunity will review and approve or disapprove the submission, consulting with the Bureau of Project Delivery, when necessary, to evaluate unusual or questionable situations.

6. The OJT Program Administrator will notify the District Engineer or their designee of approval or disapproval.

   a. Disapproval will be denoted by the return of a copy of the original training program EO-363 with a cover letter of explanation. The District will return the training program to the Contractor for correction. Upon receipt in the District of the corrected program from the Contractor, the District will follow the same procedures outlined in paragraph 4.

   b. Approval will be denoted by a copy of the training program form (EO-363) duly signed and dated by the OJT Program Administrator.

   c. The approved copy of the training program form (EO-363) will be returned to the District for distribution as follows:

      ✓ 1 for District Construction Unit
      ✓ 1 for Inspector-in-Charge (project)
1 for Prime Contractor

The Contractor is to provide each trainee with a copy of the training program for the applicable classification. If the trainee is the employee of an approved Subcontractor, the Subcontractor must also be provided a copy of the training program.

7. Changes in classification will be considered during construction provided sufficient time remains to complete the proposed classification. The Inspector-in-Charge should always be consulted when revisions are submitted to review the remaining time and scope of work. The previously approved EO-363 should be amended, then signed and date by the Prime’s designee; then submitted to the ADE (or their Designee) for review in accordance with paragraph 4. If the review concurs with the revision made, a copy of the revised EO-363 is to be forwarded to the OJT Program Administrator with the acknowledgement of the results of the Inspector-in-Charge’s review, requesting the OJT Program Administrator’s concurrence in the approval of the revised EO-363.

Trainees proposed as a result of revised programs must not start work prior to the conditional approval of their enrollment (EO-364) granted by the Inspector-in-Charge.

8. Should a trainee be unable to return to a project to complete a training program following a layoff or for other reasons, every good faith effort (documented) is to be made by the Contractor to replace that trainee with another target group candidate. This situation may cause a revision in the original program as the new trainee would begin a new program or the existing program with zero hours completed. The Inspector-in-Charge should always be consulted when changes to an approved program are contemplated.

9. Proposed Training program outlines will be approved only if they are formatted in a similar format as the PennDOT Approved training program outlines and they meet the standards set forth with regard to the training and upgrading of minorities, women and the economically disadvantaged toward journeyman status.

a. The primary objective of the on-the-job training program is the upgrading of minority group workers, women, and economically disadvantaged persons

b. Their development toward journeyman status or upward mobility in skill development.

c. The minimum length and type of effective and meaningful training is clearly identified.

d. A copy of the proposed training program outline must be submitted to the OJT Program Administrator for review and approval prior to it being approved to satisfy a training obligation.
e. When the OJT Program Administrator’s review of the proposed training program outline results in their concurrence that it meets the standards set forth in the Trainee-Special Provision, a copy of it is to be submitted to PennDOT’s Bureau of Project Delivery requesting a PennDOT Engineer’s concurrence in the determination. Upon receipt of their concurrence, the proposed training program outline will be submitted to FHWA requesting certification and approval.

f. The classification(s) proposed must be appropriate for the specific project, (i.e., the character, duration and nature of the project operations must readily support the proposed training program).

g. The training program must be completed within the time required to perform the contract items of work involved. FormD-476, Distribution of Contract Time, and related information should be used for this analysis.

h. The proposed hourly wage rate to be paid to the OJT Trainee (Non Union) must also be identified.

(1) No Less Than the Common Labor Rate for the project is to be paid throughout the “Core” training. Upon completion of the Core training the successful trainee should receive the “project’s prevailing wage rate for the duties being performed.”

(2) For apprentices, their percentage rate is dictated by the year they are enrolled in their program. For example, 1st year apprentices usually get paid 60% of the journeyman rate.
GUIDELINES FOR IMPLEMENTATION OF TRAINING PROGRAMS/REPORTS

The following guidelines are to be used for monitoring Training Programs on Federal-aid Projects which include trainees:

1. Payments for hours worked in a training position will not be paid until the District has received concurrence with the Inspector-in-Charge’s conditional approval of the proposed enrollment for training from the OJT Program Administrator. Final approval is demonstrated by a stamp dated BEO approved EO-364, acknowledging the approved start date.

2. Form EO-364, Trainee Enrollment Form, must be completed by the Contractor prior to filling any training position. This report is to ensure the Contractor has taken "Positive Steps" to recruit for a minority/women/economically disadvantaged person and the selected trainee has not previously completed training or been successfully employed in the same classification. Proposed enrollment will be approved only if they meet the standards set forth with regard to:
   
   a. The primary objectives of training and upgrading minority group workers, women and economically disadvantaged persons.
   
   b. The development toward journeyman status or upward mobility in skill development.

3. The Contractor must submit the completed original Form EO-364 to the project Inspector-in-Charge prior to the employee starting training in any classification. The project Inspector-in-Charge (IIC) or their designee will review the form to ensure that it has been completed accurately, and the required supporting documentation, as identified in the instructions, has been included with the submission, and that the proposed enrollment appears to meet the intent of the Trainee Special Provision. The Inspector-in-Charge dated signature, on the EO-364, acknowledges that they have conditionally approved the proposed enrollment. The EO-364 form should be scanned and forward to the District Labor Contract Compliance Agent, and a copy of the original is to be filed in the project file folder. After the District Labor Contract Compliance Agent has reviewed the EO-364 for completeness and ensured that the required supporting documentation has been included, when appropriate, it is logged in as having been received and a copy is to be emailed to the OJT Program Administrator within five (5) days of the Inspector-in-Charge’s conditional approval date, requesting concurrence and the conditional approval granted.

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a. The supporting documentation required (but not limited to) for the enrollment of an apprentice:
   i. A copy of the Union’s referral documentation such as a copy of the apprentice’s indenture (or registration) papers, or a copy of a print out from the Registered Apprenticeship Information Program System (RAPIDS). Documentation that identifies (but is not limited to) the apprentice’s current skill level, the wage rate for their skill level and benefits package; the journeyman rate for their apprentice classification; the total hours of their apprenticeship’s on-the-job training hours completed to date; and the date the apprentice is scheduled to achieve journeyman status. This information is to be provided by the training provider with their submission of a completed Form EO-364 to the IIC prior to beginning any training.

b. The supporting documentation required (but not limited to) for the enrollment of a Nonunion Trainee:
   i. If the candidate has been successfully employed in the highway construction industry, their work history and the earnings level they achieved to date should be acknowledged especially if they have been previously employed in the proposed training classification, in an effort to help to demonstrate how their successful completion of the proposed training would provide an effective and meaningful training and be in compliance with the Training Special Provisions. If the Prime is proposing to progressively train their candidate in a laborer classification, they should be identifying that in an effort to ensure they have selected the appropriate training program outline. (The skill level for the duties to be trained to perform as identified in the project’s prevailing wage rate listing should be referenced to help determine the accurate entry level laborer training to be provided).

c. The supporting documentation required (but not limited to) for the enrollment for of a current employee:
   i. When the Prime is not hiring new employees to work on their project that has been assigned Training Special Provisions, they may propose to enroll a current employee to upgrade their skill level and earning’s potential. When this is proposed, the current employee’s work history and current earnings level achieved working in the industry must be acknowledged, in an effort to demonstrate how the proposed enrollment would provide an effective and meaningful training and be in compliance with the Training Special Provisions. The Prime should also acknowledge whether or not the proposed training will lead to a career opportunity and/or an upgraded position with their company.
4. Written documentation of "Good Faith Efforts" to recruit a minority or women must accompany any initial report reflecting the hiring of an economically disadvantaged white male to fill a training slot. Documentation supporting the white male’s economically disadvantaged status must be provided; if the white male in question is an apprentice, documentation must be provided by their union. It is expected that sources other than unions be contacted that are likely to yield individuals of the targeted groups.

5. Hours completed by a trainee working on-site prior to the Inspector-in-Charge granting conditional approval of the proposed enrollment will not be counted toward the training programs hours and will not be eligible for payment under the bid item for training. Appeals will be reviewed by the District ADE-Construction, the District Labor Contract Compliance Agent, and the OJT Program Administrator.

6. Payment for trainees will be made as the hours completed are reported and verified. Payment may be deleted at a later date if it is determined that the individual has previously been trained in the same class, that the work assigned is not within the training program, or the trainee has been terminated without ample opportunity to complete the program. (Contractor's default)

7. A trainee will not be started or placed in a classification if ample time is not available for the trainee to complete hours assigned to that classification. Apprentices must be able to complete at least 800 hours of the assigned program prior to attaining Journeyman status.

8. If the OJT Program Administrator’s review of the Form EO-364 finds that supporting documentation is missing and/or there is question regarding the validity of the proposed enrollment, an email will be sent back to the District OJT Designee, identifying the deficiencies and the need for them to be addressed so that the Form EO-364 can be resubmitted for processing. After the OJT Program Administrator has received the amended EO-364, a final review of the EO-364 can be completed. Then if the OJT Program Administrator concurs with the IIC’s conditional approval, the EO-364 will be stamp dated “BEO Approved” as of the same date that the IIC conditionally approved the EO-364. A copy of the BEO Approved EO-364 will be scanned and emailed back to the District OJT Designee for dissemination to the IIC, who will disseminate a copy of it to the Prime. The Prime will make sure that an approved copy is given to the approved trainee and if the training is being provided by a subcontractor, a copy will be given to them as well. The training provider is to make sure that an approved copy of the EO-364 is given to the Trainee.

9. If a trainee is terminated as a result of injury, resignation, firing or accepting employment elsewhere prior to being recalled, a replacement must be obtained as soon as possible. If there are insufficient hours of work remaining for that classification, the Contractor, IIC, and the District Labor Contract Compliance Agent must review the remaining scope of work for the possibility of selecting another training class. Subsequent to this review, if the Contractor and the District Personnel conditionally concur that there are no other
possible training classifications (due to no fault of the Contractor), a summary of the determination is to be submitted to the OJT Program Administrator requesting their concurrence in the District’s conditional determination. When concurrence is granted, the training classification will be determined to be closed and hours of training completed paid for.

10. Trainees should not receive preferential treatment when administering work rules, but we would expect counseling be given prior to termination. The Inspector-in-Charge and the Department's Supportive Services’ Field Counselor are to be informed of problems with the trainee's work performance and/or other contributing issues.

11. The Inspector-in-Charge must insure all applicable items on the training report (See Form EO-365) have been addressed by the Contractor prior to forwarding the original to the District Labor Contract Compliance Agent.

**NOTE:** The "hours of training" reported during the month must be broken down in the “Summary of Specific Tasks Performed” box on the report. The Contractor should utilize the back of the form if more space is necessary.

Signatures must be on the original. If a trainee cannot sign the report due to absence, layoff, working on another project, etc., it must be noted on the report "Trainee unavailable to sign due to ...". The Company Representative identifying that should at minimum, initial and date their acknowledgement. Signature by the Inspector-in-Charge (or their designee) indicates concurrence with the hours worked in the program class and that the Form EO-365 is accurate.

12. Due Dates are to be adhered to by the Contractor regarding the following reports. The EO-364, Trainee Enrollment Form, should be submitted immediately to the project office who in turn should submit the form to the District Labor Contract Compliance Agent immediately. The EO-365, Monthly Training Report is due to the project Inspector-in-Charge by the 30th of the month being reported. It is due to the District Labor Contract Compliance Agent by the 5th of the following month, and it is due to the OJT Report Inbox by the 10th of the following month.

13. If a Contractor fails to complete the required number of trainees and it is determined by the District and the Bureau of Equal Opportunity (BEO) that the Contractor did not demonstrate a "Good Faith Effort" to comply, a memo regarding the same will be placed in the Contractor's performance file and so noted on the past performance record of the Contractor. BEO will issue a “show cause” notice to the Contractor to determine if other contract administrative remedies are warranted. The Prequalification Office, Contract Management Section, Bureau of Project Delivery, is also to be notified of these determinations.
14. The Department has a contract with the Prime Contractor. It is the responsibility of the
Prime Contractor to comply with all provisions. If training is assigned to a Subcontractor,
it is still the responsibility of the Prime Contractor to ensure compliance with the
provision.

Project Inspector-in-Charge should ensure that the Contractor has provided the trainee(s) a
copy of their training program outline and all reports, (EO-364, EO-365). When applicable, if a
trainee successfully completes their training on the project, the project Inspector-in-Charge should
verify that the trainee(s) was provided a copy of a professional completion certificate showing the
type and length of training satisfactorily completed. The District is to notify the Contractor and
inform the Bureau of Equal Opportunity, who will provide the necessary follow up for this item.
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NAME OF CONTRACTOR:__________________________________________________________

PROJECT ID: (SR, CONTRACT NO./COUNTY)__________________________________________

*Denotes posters available in Spanish

1. Are the following notices and posters posted on each Project bulletin board?

   _____ *OSHA-3165 JOB SAFETY AND HEALTH - IT’S THE LAW (All Projects)

   _____ CONTRACTOR/SUBCONTRACTOR’S EMERGENCY PHONE NUMBER (AFTER HOURS CONTACT PERSONNEL) (All Projects)

   _____ CONTRACTOR/SUBCONTRACTOR’S SAFETY OFFICER’S NAME AND PHONE NUMBER (All Projects)

   _____ LISTING OF HAZARDOUS MATERIALS FOUND IN THE WORKPLACE (All Projects)

   _____ *FHWA-1022 NOTICE FEDERAL AID PROJECT (Federal Funds)

   _____ *WH-1321 EMPLOYEES RIGHTS UNDER DAVIS-BACON ACT (Federal Funds)

   _____ USERRA APRIL 2017 THE UNIFORMED SERVICES EMPLOYMENT AND REEMPLOYMENT RIGHTS ACT (Federal Funds)

   _____ PREDETERMINED WAGE RATES (All Projects with Contract Wage Rates)

   _____ *UC-700 UNEMPLOYMENT COMPENSATION & CLAIM FACT SHEET (100% State Funds)

   _____ *WH-1088 & LLC-1 EMPLOYEES RIGHTS UNDER THE FAIR LABOR STANDARDS ACT (All Projects with No Contract Wage Rates)

   _____ *LLC-8 ABSTRACT OF EQUAL PAY LAW (100% State Funds)

   _____ *WH-1462 EMPLOYEE POLYGRAPH PROTECTION ACT (Federal Funds)

   _____ *LIBC-262 PENNSYLVANIA RIGHT TO KNOW LAW (All Projects)

   _____ LIBC-500 WORKERS COMPENSATION INSURANCE POSTING (All Projects)

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2. Are the following EEO clauses physically included in all applicable subcontracts?

_____ ITEM 3999-9999 (1999-9999)/ITEM 1999-0000 TRAINING (Federal-aid/100% State)
(DSP12) EXECUTIVE ORDER 11246 AS AMENDED (APPENDIX A & B) (Federal-aid)

(DSP10) COMMONWEALTH NONDISCRIMINATION CLAUSE (All Contracts)

(DSP8) REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA-1273)

(DSP8) ATTACHMENT A - EMPLOYMENT PREFERENCE FOR APPALACHIAN CONTRACTS (FORM FHWA-1273A) (Applicable to Appalachian Contracts only)

(DSP3) PROVISIONS CONCERNING THE AMERICANS WITH DISABILITIES ACT (ADA) (MGMT. DIR. 215.12) (All Contracts)

3. Are you aware of Contractor's minority and female composition of the work force?
   __ YES (If yes, document minority and female representation in the classifications they are working, along with total workforce in the PSA or field diary and discuss as an agenda at project progress meetings.)
   __ NO (If no, request contractor to provide the number of minorities and females working in each classification. If low or no representation exists, inform Contractor that efforts to recruit for the targeted group individuals must be made and documented when hiring and/or increasing the existing workforce. Again, discuss as an agenda item at project progress meeting. If conditions persist, inform Contractor that you will have to notify the Bureau of Equal Opportunity.)

4. Are you aware of the U.S. DOL/OFCCP's minority and female work hour goals?
   __ YES (Discuss as an item at preconstruction meetings and project progress meetings. However, PennDOT monitors but does not enforce workhour goals)
   __ NO (Secure information from District Labor Contract Compliance Agent or see DSP12 - Executive Order 11246, Appendix A and B.)

5. Do you have a Monitoring form to ensure receipt of reports?
   __ YES
   __ NO (If no, check “The Labor & Contract Compliance Manual for Inspector In-Charge” and/or contact District or Central Office for monitoring form.)
6. Have you received and reviewed applicable EEO reports (such as those required by PennDOT’s OJT Program) to ensure completeness; for signature by Contractor and Trainees? Have you signed off, dated reports and forwarded to District office?

   ____ YES
   ____ NO

(If reports are incomplete, return to Contractor immediately for correction, with a due date of return and notify the District Labor Contract Compliance Agent that the reports have been returned to the Contractor.)

7. Ensure the following form(s) are received by respective due dates. (Check off applicable forms.)

   ____ EO-363 CONTRACTOR’S OJT TRAINING PROGRAM CLASSIFICATIONS FOR PENNDOT APPROVAL FORM (Required submission to District OJT Designee within 10 calendar days of project’s NTP date.)

   ____ EO-364 TRAINEE ENROLLMENT FORM (Required prior to Trainee starting.)

   ____ EO-365 MONTHLY TRAINING REPORT (By the 5th day following the end of the pay period prior to or by the 30th of the month.)

   ____ FHWA-1391 FEDERAL-AID HIGHWAY CONSTRUCTION CONTRACTOR'S ANNUAL EEO REPORT (Due to BEO electronically by August 15th)

   (If not, inform Contractor that if reports are not submitted by due date, progress payment will be withheld and/or comments made on Contractor's past performance report.)

8. Have you received a copy of the approved “Contractor’s On-The-Job Training Program Classifications for PennDOT Approval” Form EO-363?

   ____ YES
   ____ NO (If no, contact District OJT Designee)

9. Are you aware if Trainees are being trained according to the approved Training Program?

   ____ YES
   ____ NO (If no, verify. If Trainee is performing other than approved training task, Trainee must be paid applicable rate, and hours are not to be counted toward training or paid from the training item.)
10. Has a Representative of the OJT Supportive Services Consultant visited your Project and met with the “trainees”? (Applicable with special training provisions)

____ YES (If yes, indicate who and date(s).)
____ NO
____ NOT SURE

11. Are you monitoring the DBE firms being utilized on the project to ensure that Commercially Useful Function requirements are being met?

____ YES
____ NO (If NO, begin doing so immediately.)

(To perform a Commercially Useful Function a DBE firm must be responsible for execution of the work of the contract and carry out its responsibilities by actually performing, managing, and supervising the work involved; or, with respect to materials and supplies used on the contract, be responsible for negotiating price, determining quality and quantity, ordering the material, and installing (where applicable) and paying for the material itself.)

12. Are you receiving copies of material purchase orders on a monthly basis when DBE credit is being claimed for material costs included in a DBE subcontract or agreement?

____ YES
____ NO (If NO, complete Form EO-354 for the applicable DBE firm and notify the Prime Contractor immediately that corrective action is required.)

13. Are you verifying whether the DBE, DB and/or SBE monthly progress payments are being entered into the ECMS system, even if the payment is $0.00?

____ YES
____ NO (If NO, begin doing so immediately.)

14. Have you informed the District and/or Bureau of Equal Opportunity, (717) 787-5891, if you are experiencing extreme difficulty with Contractor not complying with EEO/ADA Contractual obligations (i.e., late or not submitting reports, no efforts to recruit and hire minorities and/or women, discrimination complaints, failure to submit DBE payments or meet DBE goals, etc.)

____ YES (If yes, whom did you notify and when?)
____ NO (If no, do so immediately.)
____ NO PROBLEMS
15. Are you aware of the procedures the Contractor must follow for making any changes involving DBE participation?

_____ YES

_____ NO (If NO, see Publication 408, Appendix C, DSP7 and Section B.11.6 of this manual)
Each District must designate a person who will be the primary contact for DBE matters with Central Office. This person is the primary contact regarding DBE matters and serves as a liaison between the Project and Central Office.

The following procedures are for administering the Designated Special Provision (DSP-7) – Disadvantaged Business Enterprise Requirements:

I. Pre-construction Meetings

A. The Minority Participation and Commitment must be thoroughly reviewed to ensure the following:

1. The DBEs listed on the Minority Commitment are being used;
2. The items of work on the Minority Participation and Commitment Detail screen are a reflection of the work to be performed by the DBEs; and
3. Confirm the amount shown on Minority Participation and Commitment screen in ECMS is at least the amount awarded to be completed by the DBE.

B. The Minority Participation and Commitment must be reviewed for conditional approvals and the potential impact to meeting the DBE goal.

NOTE: These conditions will alert the Inspector-in-Charge to potential Commercially Useful Function (CUF) issues.

C. The Contractor is to be reminded to submit a Subcontractor Request for all DBEs (including Services and Suppliers) listed on the Minority Participation and Commitment screen.

Subcontractor Requests for DBE firms listed on the Minority Participation and Commitment must be accompanied by three pages from the executed agreement:

1. A copy of the executed signature page,
2. A copy of the description of the scope of work, and
3. A copy of the unit prices as they appear in the DBE’s/DB’s subcontract or agreement.

Please note: Prior to actual performance the Prime Contractor must provide the Inspector-in-Charge a copy of the complete subcontract or agreement for each DBE firm participating on the project. Electronic copies of subcontracts are acceptable provided they incorporate all applicable contract provisions.

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D. The Contractor is to be reminded to prohibit the start of work by a Subcontractor until a Subcontractor Request has been approved and a copy of the executed subcontract is available on the project for the Department's review; and until the Department has reviewed and acknowledged that the subcontract physically incorporates the provisions of the prime contract that contain statements of self-inclusion (including the wage rates). Electronic copies of subcontracts are acceptable provided they incorporate all applicable contract provisions.

E. The actual or estimated starting dates for all DBEs/SBEs must be established.

F. The type of work to be performed by the DBEs/SBEs must be established (Subcontractor, Regular Dealer, Manufacturer, Service, Broker, Consultant, etc.).

G. Manufacturers or producers of construction materials must be checked for approval as listed in either Bulletins 14, 15, 41, or 42.

H. Assure that the Contractor meets its responsibility for ensuring that all suppliers approved on the Minority Participation and Commitment screen, supply material in accordance with Department specifications.

I. The Contractor must be advised that failure to meet the DBE goal by the project's completion could result in sanctions including prequalification suspension or debarment for up to three years. The Contractor must be reminded that they have a continual obligation to make a Good Faith Effort (GFE) for the life of the project.

J. The Bureau of Project Delivery, Prequalification Office must be contacted immediately if the DBE work is imminent and a DBE’s sufficient prequalification status is not established.

K. Reporting responsibilities (DBEs/SBEs payments, Good Faith Effort documentation, etc.) are to be reviewed with the Contractor.

L. Mobilization payments to DBEs shall be discussed.

II. Reporting Procedures/Reports

A. The District is responsible for monitoring the Contractor's goal according to the approved Minority Participation and Commitment, including any revisions.

The District is to prepare the District DBE Monthly Monitoring Report and analyze the report for DBE payments and progress made toward attaining the DBE goal. The District is to update the report indicating whether the DBE goal attainment is on-track. The District should also identify potential CUF or other DBE issues being experienced on the project. The District is to submit the report to BEO, updated with
“On Track”/"Off Track" designations and appropriate comments by the 10th of each month.

If the DBE goal attainment is not on-track, the District is to discuss the matter with the appropriate District staff and the Contractor to ascertain whether the Contractor is able to meet the DBE goal. As a result of these discussions, the District is to update subsequent monthly reports to reflect current status. Comments should indicate the action to be taken to ensure that the DBE goal is met, or request assistance from the Bureau of Equal Opportunity (BEO) and the Contract Awards Unit of the Bureau of Project Delivery.

B. The BEO will review the District DBE Monthly Monitoring Report submitted by the Districts. BEO may discuss the project where the DBE Goal is “Off-Track” or other DBE issues are being experienced with the appropriate District.

C. When the Contractor submits a request for final payment, the DBE goal attainment is reviewed using the Engineering and Construction Management System (ECMS). If a shortfall exists, but the District determines that it was caused through “no fault” of the contractor, then the Contractor shall not be required to submit a shortfall justification. The District must, however, submit an email to the Interdisciplinary Review Team (IRT) via the resource account minorityparticipation@pa.gov explaining the “no fault” determination and obtain an email concurrence before authorizing final payment. An example of a “no fault” reason for a shortfall includes, but is not limited to “the District authorized the elimination of work item(s) or quantity reductions.” Other “no fault” determinations will be reviewed on a case-by-case basis.

If the District determines that the Contractor must submit a “shortfall justification” with the final payment request because it has been unable to determine the shortfall was through “no fault” of the contractor, the following procedures must be followed before final payment request is granted. The District must obtain a “shortfall justification” from the contractor. The shortfall justification must include a summation of the project DBE participation and/or the Contractor’s good faith efforts. The District should forward the GFE documentation to the IRT via email (minorityparticipation@pa.gov). The District should include with the contractors GFE documentation any information that it has that supports or refutes the contractor’s justification. The IRT will determine whether it is the type of shortfall that needs to be handled through the good faith effort administrative process or a shortfall that can be handled by simple notation (form letter) to the project.

If the IRT determines that the shortfall can be handled by simple notation, then it will attach the notation in ECMS and notify the District accordingly. If not, the shortfall will proceed through the formal GFE process for further action, including a detailed
review and analysis of the DBE “shortfall justification” to determine whether the Contractor’s justification was adequate and properly documented.

If IRT determines that a Contractor documented a good faith effort, then it will submit that recommendation to the Director of the Bureau of Equal Opportunity for concurrence. If the Director concurs then the approved recommendation will be attached in ECMS by the IRT. The IRT will also notify the impacted District that the Good Faith Effort has been approved. If the Director disagrees with the IRT’s recommendation, then the matter will be referred to the “Good Faith Efforts” Committee.

If IRT determines that a “shortfall justification” is insufficient, the DBE goal shortfall information will be presented to the Director of the Bureau of Equal Opportunity who in turn will determine whether or not to request a review by the Good Faith Effort Review Committee. Upon the Good Faith Effort Review Committee reaching a decision, the final payment request and “shortfall justification” will be approved or disapproved in ECMS and, if disapproved, action shall be taken to address the non-attainment.

III. Field Monitoring by Project Inspector-in-Charge

A. The Inspector-in-Charge must assure that the Contractor does not allow a DBE to start work on the project until the DBE is properly certified and/or prequalified, if required, and until a copy of the executed subcontract and approved Subcontractor Request are available on the project and have been acknowledged by the Inspector-in-Charge to contain the provisions required by the prime contract. DBE subcontract agreements are to be reviewed to ensure that they match the DBE commitments on the Minority Participation and Commitment Screen in ECMS. The Subcontractor Request must be equal to or greater than the committed amount. A Subcontractor Request must be entered for all DBEs performing on the project regardless as to whether or not they are listed on the approved DBE Minority Participation and Commitment.

B. The Inspector-in-Charge must continually monitor conditional approval of DBE subcontractors. Examples of these conditional approvals may include prequalification requirements and distinction between regular dealers and brokers.

C. If, for any reason during the life of the contract, it is necessary to replace a DBE that fails to perform successfully, or is not properly certified/prequalified, the Contractor must first request written approval from the Department prior to making the change. If the Department concurs with the revision request, the Contractor must make a good faith effort to re-contract the work with another DBE or subcontract other work items to DBE firms to make up the DBE shortfall.
The Contractor must comply with the following procedures to be in compliance with the above:

Substitution. Obtain written approval before substituting a DBE or making any change to the DBE participation listed on the approved DBE Minority Participation and Commitment or an approved DBE subcontractor. Immediately request substitution authorization from the District in writing who will contact the Bureau of Project Delivery, Contract Awards Unit for approval. The request must include documentation supporting the substitution and written agreement from the DBE agreeing to the change. Include proof that a certified letter giving the DBE five (5) days to respond with acceptance or to notify the Department of non-acceptance. Demonstrate that every effort has been made to allow the DBE to perform.

1. If the arrangement to be replaced is agreeable between the Contractor and the DBE, the following procedures are required.

   • Make a Good Faith Effort to subcontract the work with another DBE or subcontract other work items to DBEs to make up the DBE shortfall.

   • When the substitution results in meeting the DBE goal, complete a revised DBE Minority Participation and Commitment with DBE acknowledgement and/or a revised subcontractor approval request within seven (7) days of a revision being opened in ECMS. If the DBE performed on the project, the Revised DBE Minority Participation and Commitment and/or subcontractor approval request should include the total amount paid to the DBE before the DBE substitution.

   • When the substitution does not result in meeting the DBE goal, complete a revised DBE Minority Participation and Commitment with DBE acknowledgement and/or a revised subcontractor approval request within seven (7) days of a revision being opened in ECMS and provide additional Good Faith Effort documentation. If the DBE performed on the project, the Revised DBE Minority Participation and Commitment and/or subcontractor approval request should include the total amount paid to the DBE before the DBE substitution.

**Good Faith Effort Review.** The Department will review the Good Faith Effort documentation for substitution. If, during the review of the Contractor’s Good Faith Effort information, the reviewers have questions, the Contractor may be contacted for clarification. The Good Faith Effort steps are as follows:
a. Contract Awards reviews and, if acceptable, approves the Good Faith Effort and DBE revision or recommends that the IRT make the determination.

b. The IRT either
   • Approves recommendation that the Good Faith Effort was met and the Minority Participation substitution will be approved, or
   • Disapproves the Good Faith Effort resulting in a shortfall requiring the contractor to continue Good Faith Effort.

c. If forwarded to them, the IRT makes a final determination.

Do not perform any of the DBE work included in the substitution request without prior approval from the Department and an “Approved” Subcontractor Request.

If the projected DBE participation on an approved DBE Minority Participation and Commitment meets or exceeds the DBE goal amount for the contract without replacing the DBE, then no contract shortfall exists. A Revised DBE Minority Participation and Commitment and/or subcontractor approval request must still be submitted to reflect the decreased dollar amount.

2. If the arrangement to be replaced is not agreeable between the Contractor and the DBE, the following procedures are required:
   • Until a determination is made, do not perform the DBE work without prior approval.
   • The IRT will review and make a determination, and the District will notify both the Contractor and the DBE.
   • The Contractor or the DBE may request a meeting with the Department by contacting the District Office.

Failure to make Good Faith Effort as determined by the Committee, or failure to comply with the provision of this section for substitution of a DBE, will constitute a breach of contract and, after notification to the U.S. Department of Transportation, may result in termination of the contract, being barred from bidding on Department contracts for up to 3 years, withholding progress payments, assessing sanctions, assessing liquidated damages, or any other remedy that the Department deems appropriate.

D. Work that is contracted to a DBE must not be performed by others. If this occurs, it must be reported to the District DBE Coordinator immediately.

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E. The Commercially Useful Function analysis must be performed during the contract, whether or not a DBE is listed on the approved Minority Participation and Commitment screen.

According to Title 49 Code of Federal Regulations (CFR) Part 26, the Department is to count DBE expenditures toward the DBE goal only if the DBE is performing a “Commercially Useful Function.” As stated in Section 26.55(c) of Part 26, “a Disadvantaged Business Enterprise (DBE) performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by performing, managing, and supervising the work involved. To perform a Commercially Useful Function with respect to materials and supplies used on the contract, a DBE must also be responsible for negotiating price, determining quality and quantity, ordering the material, and installing (where applicable) and paying for the material itself.” (Emphasis added)

The following examples illustrate situations where a Commercially Useful Function is not being performed, if the Prime Contractor is requesting DBE credit for these specific activities. The examples provided are for illustrative purposes and are not intended to constitute the only situations when a Commercially Useful Function issue may arise. Issues will be evaluated on a case-by-case basis:

- A DBE subcontractor purchases or leases supplies or equipment from the Prime Contractor.
- A DBE subcontractor uses equipment obtained from another subcontractor on the project without a long-term lease agreement.
- A DBE subcontractor’s workforce is made up of individuals employed by the Prime Contractor or another subcontractor. The exceptions are: 1) where collective bargaining agreements are in place to provide (union) workers, or 2) where workers previously employed by the Prime Contractor or another subcontractor change companies to the DBE firm and there is adequate documentation provided by the prime of work force supply and demands of such employees to justify the employee changes. It is the prime’s responsibility to provide the documentation to PennDOT for themselves and any subcontractors working on the project.
- A DBE subcontractor is using supervisors employed by the Prime Contractor or another subcontractor. The exceptions are: 1) where collective bargaining agreements are in place to provide (union) foremen and workers. However, the DBE firm must manage and supervise the work of the project.; or 2) where workers previously employed by the Prime Contractor or another subcontractor change companies to the DBE firm and there is adequate documentation provided.
by the prime of work force supply and demands of such employees to justify the employee changes.

- Work being counted toward the DBE goal is performed by the Prime Contractor or a non-DBE subcontractor. However, the prime or sub can perform de minimis activities, as warranted, not to exceed 6 hours or $500 value, whichever is less and the cost of that activity cannot be calculated toward meeting the DBE goal. In addition, if a DBE fails to perform, or fails to correct substandard performance, the prime must have documentation that the DBE is unwilling or unable to perform the work before alternate solutions can be pursued. Then alternate DBE subcontractors are to be sought and maintain documentation of this effort to rectify the situation prior to the prime or a non-DBE subcontractor completing the work. The documentation of the performance shortcoming and a request to replace the original DBE must be submitted to PennDOT and be approved before a substitution occurs. In addition, liquidated damages caused by the DBE’s unacceptable or untimely performance and rework costs are allowed to be back charged by the Prime Contractor, only if such provisions are included in the DBE subcontract agreement.

- When the prime contractor chooses to co-mingle DBE credit and non-credit items in the same subcontract, the prime must identify this at the time of DBE commitment submission and must maintain accurate records of DBE credit and non-DBE credit items as items are performed.

The Department is making a concerted effort to ensure that every DBE performs a Commercially Useful Function. Since the Prime Contractor is ultimately responsible for ensuring that the project’s DBE goal is satisfied, it must also ensure that the DBE firms being utilized are performing a Commercially Useful Function.

Contractors should be aware that engaging in any of the above referenced practices will result in the following action by the Department:

- Scheduling of a meeting at which the Prime Contractor will be called upon to provide documented evidence that its DBE subcontractors are performing a Commercially Useful Function;

- Immediate suspension of the work;

- Loss of DBE project goal credit; and/or

- Investigation by the U.S. DOT, Office of Inspector General, and/or the Pennsylvania Office of Inspector General.
Furthermore, in certain situations, the Department may:

- Revoke DBE Certification; and/or
- Pursue debarment of the DBE firm, the Prime Contractor, and/or any subcontractor(s) involved.

To ensure that the above Commercially Useful Function requirements are being met by all DBEs on Federal-aid projects, Form EO-354, DBE Commercially Useful Function (CUF) Report (copy attached), must be completed by the Inspector-in-Charge (IIC), within five (5) business days from the date a DBE begins work or five (5) business days from the date material that is to be used for DBE credit is received on the project. A new Commercially Useful Function Report must be completed once in a twelve (12) month period on every DBE; if their scope of work has not changed. If the scope of work has changed, please complete a new Commercially Useful Function Report immediately upon receiving knowledge of that change. You must complete an EO-354 for all DBE firms participating on the project, including those not being used to meet a DBE goal. All completed EO-354s must be submitted through the Pennsylvania Project Collaboration Center (PPCC). You may maintain completed forms in the project files when they cannot be work-flowed through the PPCC. Compliance with Commercially Useful Function requirements should continue to be monitored throughout the life of the project. Additionally, if DBE credit is being claimed for any material costs included in a DBE subcontract or agreement, the IIC is to ensure that purchase orders for the material are being submitted monthly.

If, at any time, any of the questions on Form EO-354 are answered in a manner that suggests potential non-compliance, a copy of the completed form must be submitted to the Assistant Construction Engineer (ACE) or their designee. Once the ACE has reviewed and completed their portion of the EO-354, it should be submitted to the Bureau of Equal Opportunity via the PPCC or when that is not possible via the email resource account, penndotcuf@pa.gov. The Bureau of Equal Opportunity will determine if corrective action is warranted and advise the District accordingly. The Inspector-in-Charge and/or ACE may be contacted for additional information and/or supporting documentation.

IV. Revisions to Minority Participation and Commitment

A. Any and all revisions to the approved Minority Participation and Commitment must be processed in accordance with III.C, above.

B. The Inspector-in-Charge must not allow the substitute DBE to perform any work until the Revised Minority Participation and Commitment is approved.

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C. If DBE work is deleted by an approved work order, a replacement is not required. However, the Contractor must make a Good Faith Effort to utilize DBEs for any additional work that remains on the project where no subcontract agreement exists.

V. Effects of Major Change Orders

When additional or extra work is required for any item of work which is identified on the Minority Participation and Commitment to be performed by the DBE, at least 50% of this additional or extra work will be performed by the same DBE unless the DBE gives in writing, notice that it cannot perform the work due to its own limitations. If the prime performs or has another subcontractor perform the additional work without offering to the DBE, it may be sanctioned as noted in III.D, above. If the DBE cannot perform this additional/extra work, the prime may take necessary measures to complete the work.

VI. Goal Credit for DBE Suppliers and Contractors Employed by Non-DBE Subcontractors

A. The DBEs must be named on the Minority Participation and Commitment screen.

B. The named DBEs will be presumed to be engaged directly by the Contractor unless it is specifically noted. See special provision – Use of Second Tier Subcontractors for DBE Credit.

C. If the proposed subcontract (first tier) does not materialize or it is not approved by the Department, the responsibility for employing the named DBE (second tier) will revert to the Contractor.

D. The Prime Contractor is responsible for entering all DBE/SBE payments into ECMS.

E. Revisions to Minority Participation and Commitment are to be in accordance with the terms of the contract documents and should be done in accordance with III.C, above.

F. Subcontractors and providers of services are approved using the Subcontractor Approval in accordance with established procedures, i.e.,
   - First tier approvals by District.
   - Second tier approvals by District.
   - All provisional approvals by Central Office.

G. Manufacturers and Producers are approved in accordance with established procedures and the provisions of Section 106, Publication 408.

H. A subcontractor request must be submitted and approved for all DBE Suppliers for payment tracking and reporting purposes. The District must assure that the Contractor
performs its responsibility of ensuring that all Suppliers approved on the Minority Participation and Commitment and/or via an ‘Approved’ Subcontractor Request, supply material in accordance with Department specifications. Questions as to whether a DBE performs in a regular dealer capacity should be directed to the Bureau of Opportunity or noted on the EO-354 completed for the DBE firm.

I. All DBE arrangements must be evidenced in writing by a Subcontract, Agreement, or Purchase Order, as applicable, and shall be presented for Department review upon request and/or as provided by the contract documents.

J. The Contractor is not relieved of any of its contractual duties and responsibilities by the Department's approval of first and subsequent-tier DBE's proposed by the Contractor.
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DIVERSE BUSINESS CONTRACT PROVISIONS FOR NON-FEDERALLY FUNDED PROJECTS

Non-Federally funded projects contain Good Faith provisions for Diverse Business participation.

The following monitoring procedures are applicable:

1. Diverse Business Special Provisions are to be discussed at the pre-construction conference. Good Faith efforts must be made to ensure that diverse businesses have the opportunity to compete and perform contracts.

2. Approval, Conditional Approval or Rejection of Bid is based on determination on Good Faith efforts to engage and use diverse businesses in the proposal for bid.

3. The Inspector-in-Charge (IIC) must assure that the Contractor does not allow the diverse business to start work on the project until the diverse business is properly certified and/or prequalified, if required, has an approved subcontractor request, and a copy of the executed subcontract or agreement is received. In lieu of obtaining the entire subcontract or agreement, the IIC must at a minimum receive a copy of the executed signature page, a copy of the description of the scope of work, and a copy of the unit prices as they appear in the subcontract or agreement.

4. If for any reason during the life of the contract, it is necessary to replace a diverse business that fails to perform successfully, the Contractor is expected to make a good faith effort to recontract the work to another diverse business firm.

5. Contractors must submit through ECMS, the Good Faith efforts summary of use of diverse businesses, within 30 days of completion of project.
Publication 408 Section 106, the Pennsylvania Steel Products Procurement Act (Act 3), and FHWA Buy America provide the requirements for the acceptance and certification of steel products on PennDOT construction projects. Contractors and suppliers are required to provide documentation in the form of mill certifications, bills of lading and any other documentation required to demonstrate that any and all steel products supplied to the Department for permanent incorporation into a project were melted and manufactured in the United States. These requirements apply to all steel products, including incidental and miscellaneous steel products. Additionally, these requirements apply to steel products placed/incorporated into a Department project by a utility company or their contractor on every project.

The acceptance of products containing foreign steel is subject to the FHWA Buy America minimal use provision and to the Act 3 exception and is based on the foreign steel cost. The Project Engineer shall review the Contractor's price submissions for any products which contain foreign steel. The Contractor is responsible for supplying the original invoices to the Project Engineer and for complying with the Pennsylvania Steel Products Procurement Act (Act 3) and FHWA Buy America requirements of Sections 106.01 and 106.10(a), Publication 408.

On all PennDOT projects, a steel product containing both foreign and United States steel is defined in Section 6, Act 3, as a United States Steel product if at least 75% of the cost of the articles, materials and supplies have been mined, produced or manufactured in the United States. To determine the 75% rule, the cost of the product or materials shall be based upon the price of both the foreign steel and the total price or cost of all the steel in the product as delivered to the project with accompanying invoices. Construction labor cannot be included in the cost; therefore, do not use the contract item cost. When the cost of the foreign steel included in a product exceeds 25% of the total cost of all the steel in the product, a waiver request must be submitted by the Contractor, through the District Executive. Justification by the Contractor must be provided to substantiate that that the steel product is not produced in the United States in sufficient quantity to meet the contract requirements. The justification must include, but may not be limited to, the sources of supply which were contacted, including names and contact information for verification by the Department.

If the District Executive is satisfied that a good faith effort was made after verification of the information provided, the District will forward the information to the Bureau of Project Delivery requesting that the Secretary of Transportation be petitioned for a waiver.

On Federal-aid projects or any projects eligible for NEPA assistance, the cumulative cost of the foreign steel or iron products, as delivered to the project must be evaluated. Buy America’s minimal use provision states that the cumulative cost of the foreign steel or iron products cannot
exceed 0.1% of the contract amount or $2,500, whichever is greater. Documentation of the value of foreign steel components in the form of receipts or invoices must be provided. If this limit is exceeded, the Contractor must submit justification for a waiver and supporting information, as described above. The Bureau of Project Delivery will determine whether a national waiver is available. If not, FHWA will publish the information on their website for review and response by the producing industry. In addition, the District, based on circumstance and schedule, may petition FHWA to provide a project specific waiver.

Refer to the webpage entitled ‘PENNSYLVANIA STEEL PRODUCTS PROCUREMENT ACT / FHWA BUY AMERICA’ on the PennDOT website for frequently asked questions and answers and for clarification on the acceptance and certification of steel products on PennDOT construction projects. Use the following link to access the webpage: http://www.penndot.gov/ProjectAndPrograms/Construction/PA_Act3/Pages/default.aspx
Reference is made to Section 107.02(c), Publication 408, as it relates to vehicles bearing out-of-state tags.

The Vehicle Code requires Pennsylvania registration or apportionment of any vehicle regularly operated in carrying on business within the Commonwealth. Although "regularly" is not legally defined, the Department and the State Police have agreed that "regularly operated" will apply when a vehicle is present on one or more active projects for a cumulative time of more than 30 days within a calendar year.

Travel between a Commonwealth project and the out-of-state principle place of business, and travel between projects is excluded from the 30-day period. Time accrued while a vehicle is used off an established highway - for example, a project on new location - is also excluded.

Personal vehicles of non-resident workers duly registered in their state of permanent residence need not obtain Pennsylvania registration, unless they are being rented by the Contractor for work on the project (i.e., Foreman's personal pickup).

Since the contract time of most contracts exceeds 30 days, we anticipate that nearly all vehicles used in performance of the work will be registered and licensed in accordance with the provisions of the Vehicle Code.

Out-of-State Contractors that refuse or purposely delay registration of their vehicles in accordance with the above shall be reported to the State Police and the unauthorized vehicle(s) ordered removed from the project.

In addition, the exact documentation requirements are as follows:

Registration -

Pennsylvania is one of fifty-two jurisdictions in North America who are members of the International Registration Plan (IRP). The IRP Program applies to vehicles that operate through (interstate) or within (intrastate) any of the member jurisdictions and are used for the transportation of persons for hire or are designed, used, or maintained for the transportation of property.

An IRP member vehicle must have a current apportionment on its registration documents or an apportionment plate, or the vehicle must have dual registration, namely in Pennsylvania and at least one other state.
Tax -

The vehicle must have a current IFTA (Interstate Fuel Tax Agreement) decal or a temporary permit covering the time frame the vehicle will be utilized in Pennsylvania.

It is not the intent of these instructions to require our inspectors to keep detailed time records of vehicles with out-of-state tags but to establish a guideline to clarify our position regarding this issue.

Please advise all out-of-state Contractors working in your District of this guideline. In addition, out-of-state Contractors should have been provided a copy of Publication 194, Trucker's Handbook at the preconstruction conference.
When addressing issues involving "responsibility for completed work" under actual field conditions, an effort should be made to ensure that all aspects of the situation have been considered before a decision is made.

Section 105.13, Publication 408 is intended to protect the Department against liability for damages caused by the Contractor in the course of construction operations by assigning responsibility for the maintenance of performed work to the Contractor until the date of physical work completion.

Section 105.13 also provides protection to the Contractor when removals, renewals and restorations of any part of the work are required due to unforeseeable causes beyond the control of the Contractor and occur despite satisfactory maintenance precautions taken. In such cases, when the Contractor has exhausted all claims to seek reimbursement from the responsible third parties and their liability insurers, the Department will pay for the unrecovered portion of the costs.

Questions or concerns should be directed to the Contract Management Section Chief, Bureau of Project Delivery at (717) 787-7894.
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This directive is issued to provide sample letters to be used for the different cases involved in opening portions of a project to traffic.

Case 1 - Normal Highway Construction Project:

A. Where all items of work on a portion of the project are completed and that portion is to be opened to traffic, the Contractor will be relieved of further responsibility.

B. Where the portion of the project is determined to be substantially completed, the Contractor will be directed to open that portion to traffic but will not be relieved of further responsibility until all items of work on that portion are completed.

Case 2 - Highway Construction Project Let with Phase Construction:

A. Where all items of work on a portion of the project designated as Phase Construction are completed and that portion is to be opened to traffic, the Contractor will be relieved of further responsibility.

B. Where the portion of the project designated as Phase Construction is determined to be substantially completed, the Contractor will be directed to open that portion to traffic but will not be relieved of further responsibility until all items of work on that portion are completed.

The letter to the Contractor shall contain one of the following applicable statements:

For Case 1-A and Case 2-A:

Dear Sirs:

You are hereby directed to open a portion of the highway construction project located as follows:

Station _______________________ to Station _______________________.

The portion to be opened has been inspected and, there being no apparent defects, you are relieved of further responsibility for this portion of the project, except for defective materials and/or workmanship which may later be discovered.
For Case 1-B and Case 2-B:

Dear Sirs:

You are hereby directed to open a portion of the highway construction project located as follows:

Station __________________ to Station __________________.

The portion to be opened has been inspected and found to be substantially completed. Upon satisfactory completion of all items of work in this portion another inspection will be made.

This action is taken in accordance with the requirements of Section 107.15, Publication 408.
The Department requires that the Contractor perform work amounting to at least 50 percent of the original total contract price.

The total cost of "Specialty Items" performed by subcontract may be deducted from the original total contract price before computing the amount of work permitted to be subcontracted.

Disadvantaged Business Enterprise work is identified and approved on the Minority Participation and Commitment Screen in ECMS (Attachment A for non-ECMS projects) for Federal-aid projects and for Diverse Business work on 100% State projects. The total dollar amount approved on the approved Minority Participation and Commitment Screen in ECMS or Attachment A for non-ECMS projects (subcontracts, services, and DBE/DB suppliers) may be deducted from the original total contract price before computing the amount of work permitted to be subcontracted.

All reassignment of work by the prime contractor (including services) as specified in Section 108.01(a) and (e), Publication 408 requires approval by the Department. For non-ECMS projects the Contractor must submit a Request For Subcontractor Approval (Form CS-4339R) to the appropriate District each time a subcontractor, service, or DBE/SBE/DB supplier is to be utilized. For ECMS projects the contractor must submit a request in the Subcontractor Requests screen each time a subcontractor, service or DBE/SBE/DB supplier is to be utilized.

The District is responsible for reviewing the following items prior to approving subcontract work with Form CS-4339, Subcontractor Approval:

- Contractor Responsibility Program;
- Public Works Employment Verification Form (Not required for Suppliers);
- Prequalification, when required; and
- DBE/SBE Certification or DB Verification, when required.

For ECMS projects, the District is responsible for reviewing the following items prior to approving subcontract work in the ECMS Subcontractor Request screen:

- Contractor Responsibility Program;
- Public Works Employment Verification Form (Not Required for Suppliers);
- Prequalification, when required; and
- DBE/SBE Certification or DB Verification, when required.

The Contractor Responsibility Program is considered confidential; therefore, this information is restricted to appropriate District Personnel.
The majority of work items require prequalification. See Section B.3.2 for the listing of required prequalification codes.

The Contractor is to be reminded to submit a Subcontractor Request for all DBE/DB firms (including Services and Suppliers) listed on the Minority Participation and Commitment screen. Subcontractor Requests for DBE/DB firms listed on the Minority Participation and Commitment must be accompanied by three pages from the executed agreement:

1. A copy of the executed signature page,
2. A copy of the description of the scope of work, and
3. A copy of the unit prices as they appear in the DBE’s/DB’s subcontract or agreement.

Please note: Prior to actual performance the Prime Contractor must provide the Inspector-in-Charge a copy of the complete subcontract or agreement for each DBE/DB firm participating on the project. Electronic copies of subcontracts are acceptable provided they incorporate all applicable contract provisions.
When a Subcontractor is to perform part of a contract item on a non-ECMS project, the unit price on Form \textit{CS-4339R} is to be the Subcontractor's price to the Contractor, as found in the subcontract. The item description must denote the work as partial and give enough detail to indicate the applicable prequalification work classification.

When a Subcontractor is to perform part of a contract item on an ECMS project, the Contractor must designate the item as partial and enter the Subcontractor’s unit price into the Subcontractor Request screen. This unit price must reflect cost to the contractor indicated in the subcontract. The item description must denote the work as partial and give enough detail to indicate the applicable prequalification work classification.

When a Subcontractor is to perform an entire contract item on a non-ECMS project, the unit price on Form CS-4339R is to be the Subcontractor's price to the Contractor, as found in the subcontract.

When a Subcontractor is to perform an entire contract item on an ECMS project, the Contractor must enter the Subcontractor’s unit price into the Subcontractor Request screen. This unit price must reflect cost to the Contractor indicated in the subcontract.

This approval procedure applies to all subcontract approvals.
The following describes actions and procedures to assure that contractors insert into subcontracts and lower tier agreements provisions from the prime contracts that contain statements of self-inclusion:

1. Districts are to review Electronic Subcontractor Requests (ECMS Projects) or Form CS-4339R (non-ECMS Projects) and issue Subcontractor Approval in accordance with procedures. The contractors are allowed the option of not having to furnish an actual copy of the subcontract as a requisite for receiving approval of the Form. Subcontractor Approvals continue to serve the purpose for establishing prequalification eligibility and to monitor the amount of work performed by the Contractor with its own forces.

The Request for Subcontract Approval shall be used to record the subletting of all firms (Subcontractors, Service firms, Trucking firms, Specialty equipment rental firms (with operators), and DBE/SBE/DB Suppliers).

In accordance with Section 108.01, Publication 408, Subletting or Assignment of Contracts, only the work item amounts assigned to firms classified as prequalified Subcontractors will be counted in determining the allowable fifty percent (50%) portion of a contract to be sublet.

The attached chart on Page C.1.7-5 summarizes requirements for subletting of contracts to Subcontractors, Service firms, Trucking firms, Specialty equipment rental firms (with operators), and Suppliers. The summarized requirements note when prequalification, Subcontractor Approvals, Contractor Responsibility Program, past performance reports, purchase orders/agreements, and prevailing wage rates are to be done.

Generally, if a firm is performing labor intensive type work on a project, the firm should be considered to be a Subcontractor and subject to the requirements listed on the table.

If a firm has been identified to perform non-labor intensive type work items on a project, the firm should be considered to be a Service firm, and subject to the requirements listed on the table.

Equipment rental with operator (other than trucks) is considered subcontracting with prequalification not required. However, work performed by and/or equipment utilized by employees other than those belonging to the DBE firm cannot be counted towards the project’s DBE goal. Such activity may be a violation of Commercially Useful Function...
requirements. In lieu of prequalification, the following guidelines are in effect (see Table on page C.1.7-5).

a. When manned specialty equipment is required to complete a portion of a work item, and the equipment with operator is leased from a firm whose business is generally derived from rental of equipment, the following is required:

1) A signed Lease Agreement or Purchase Order, with Subcontractor Request.

2) The Lease Agreement or Purchase Order shall include the following:

   • type of equipment rented
   • dollar amount of rental agreement
   • required contract wage provisions

3) Subcontractor Request shall include the following:

   • type of work
   • contract price
   • notation (service)

The above documents (Lease Agreement or Purchase Order and Subcontractor Request) shall be submitted to the Department by the Contractor. If a Subcontractor is the overseer, the information shall be submitted to the Contractor by the Subcontractor who shall submit the same to the Department.

b. Contractors/Subcontractors who lease the manned specialty equipment to perform on-site work must be prequalified to perform the work for which the equipment is to be utilized. Operations are permitted with the understanding that direct control will be the responsibility of the party leasing the equipment. [Section 105.05-Responsibility of the Contractor, Publication 408].

c. The equipment rental firm will be required to submit certified payrolls for their employees to the Contractor/Subcontractor leasing their equipment in the same manner that all Contractors/Subcontractors are presently required to submit certified payrolls.

d. Specialty equipment (with or without operator) is generally required to complete a portion of a contract work item or items. It is equipment that a Contractor normally would not require in routine operations to accommodate and perform prequalification classifications. Backhoes, rollers, pavers, etc., are examples of equipment that should not be considered to be specialty equipment.
Equipment rental (without operator) and truck rental or leasing (with or without driver) is considered a service and prequalification is not presently required. A DBE firm must utilize a long-term lease agreement in order to supplement its equipment. The DBE firm may not enter into a lease agreement for a specific project.

The Department will not make approval of a Subcontractor Request contingent upon an examination of the subcontract. For non-ECMS Projects and in deference to the statement on Form CS-4339R relating to the inclusion in the subcontract of all of the pertinent provisions of the prime contract, Form CS-4339R can be approved without examining the subcontract.

The Contractor is to be reminded to submit a Subcontractor Request for all DBE’s/DB’s (including Services and Suppliers) listed on the Minority Participation and Commitment screen. Subcontractor Requests for DBE firms listed on the Minority Participation and Commitment must be accompanied by three pages from the executed agreement:

- A copy of the executed signature page,
- A copy of the description of the scope of work, and
- A copy of the unit prices as they appear in the DBE’s/DB’s subcontract or agreement.

Please note: Prior to actual performance the Prime Contractor must provide the Inspector-in-Charge a copy of the complete subcontract or agreement for each DBE firm participating on the project. Electronic copies of subcontracts are acceptable provided they incorporate all applicable contract provisions.

2. District project field staff must assure that the subcontracted work does not start until the Subcontractor Request has been approved and until a copy of the executed subcontract or agreement is available on the job and contains the provisions required by the prime contract. (Publication 408, Section 108.01 (e))

District project field staff should closely examine Subcontractor Requests for DBE/DB firms listed on the approved Minority Participation and Commitment. The subcontract amount for the DBE/DB firm must be equal to or greater than the amount listed on the Commitment. Additionally, any approval conditions related to the commitment must be satisfied.

Provisions required by the prime contract vary according to the nature of the funding such as, 100% State, Federal-aid or Appalachia. The prime contracts must be examined to determine which provisions are required to be inserted into the subcontracts or lower tier agreements (referencing, alone, is insufficient).
3. Districts must document the examination of the subcontract or agreement and its adequacy with respect to containing the required provisions prior to the start of the subcontracted work or covered service by providing a signed and dated statement by the examiner.

4. Districts are to review this procedure with the Contractor at the pre-construction conference. The Contractor is to be reminded of its responsibility to assure that:
   a. adequate lead time is afforded the District for performing the required reviews.
   b. the District's project field staff is notified of the time and place that subcontractors are scheduled to begin work.
   c. the afore described subcontract requirements have been satisfied before permitting Subcontractors or Sub-Subcontractors to begin work.

Note that this procedure is not requiring the taking or possession of a copy of the subcontract. The Contractor retains possession on the project so that it is available for Department review and monitoring. However, if a pattern of delays to the performance of contact work develops as a result of insufficient Contractor cooperation with this procedure, then this procedure will have to be reviewed by the Bureau of Project Delivery for appropriate modification. To this end, the Districts are to note inadequate response by Contractors to District warnings in the "Remarks" section of the Past Performance Reports filed for the projects.

5. These procedures also apply to Federal-aid Municipal Projects.

6. The Bureau of Project Delivery will monitor compliance through quality assurance reviews.
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<th>REQUIREMENTS/ References</th>
<th>SUBCONTRACTORS</th>
<th>TRUCKING</th>
<th>EQUIPMENT RENTAL FIRMS (WITH OPERATOR)</th>
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Notes:
(1) NOT REQUIRED FOR TRUCKING OWNER OPERATORS EMPLOYED BY A BROKER.
(2) TO BE COMPLETED IF WORK PERFORMANCE IS POOR OR UNSATISFACTORY.
(3) AGREEMENT AND PURCHASE ORDERS MUST BE ON FILE AT CONTRACTOR'S FIELD OFFICE.
(4) REQUIRED UNLESS TRUCKING IS A BONAFIDE OWNER OPERATOR OR MATERIAL SUPPLIER.
(5) COMPLY WITH THE PREVAILING WAGE PREDETERMINATION AS SPECIFIED IN THE CONTRACT.
(Some Exceptions do not require Prevailing Wages)

***** Please note that clearance certificates are needed for Obligations in CRP only. Performance issues and Commonwealth Offset Program (COP) issues should not preclude performing work.

April 2017 Edition
I. Purpose:

The following is a description of the procedures for accepting and monitoring the Contractor’s Construction Schedule and for processing an adjustment to contract time so that adequate justification and documentation are provided for executing the contract change consistent with the terms of the contract and current policy.

II. Background:

During the Design Phase, a Pre-Bid Schedule is created in Asta Powerproject utilizing the PennDOT Pre-Bid Template in order to establish the Contract Completion Date and any applicable Milestone Dates for the contract. This schedule is attached to the bid proposal and is for informational purposes only and not for use as an actual or implied Construction Schedule.

The Department requires the Contractor to furnish a Construction Schedule that shows how the work is to be performed within the contract time in accordance with Publication 408, Section 108.03(b) and Section 689. The schedule provides the Department a means for monitoring the Contractor's progress on the project, for projecting cash flow and manpower needs, and for evaluating the need for and the extent of contract time adjustments.

Once the Contractor has submitted the Construction Schedule in accordance with Publication 408, Section 689, it must be reviewed and accepted by the Department before it can be utilized to monitor the Contractor's progress, to anticipate scheduling issues, and to document the progress and issues related to the use of time for the project.

III. Acceptance of the Contractor’s Schedule:

The Department utilizes Critical Path Method Scheduling (CPM) techniques to communicate the schedule. Information on CPM Scheduling techniques and uses can be found in Publication 615, Scheduling Manual for PennDOT schedules.

In order for the schedule submitted by the Contractor to become the project Construction Schedule, it must be reviewed and accepted by the Department. By accepting the schedule, the Department is stating that the submitted schedule meets the requirements of the specifications or special provisions and will be used to monitor the contractor's progress. Review of the schedule should consist of verifying that the requirements for format and deliverable materials based upon Publication 408, Sections 108 and 689 and that all work is
shown to be performed within any specified time frames. Checklists for review and acceptance for each type of schedule have been provided on page C.1.8-7 through C.1.8-12 in order to help ensure a thorough review is performed. Once it has been determined that the submitted schedule meets the format requirements of the specifications, all of the required materials have been submitted and that all work is shown being performed in accordance to the specifications, the Contractor is to be notified that the schedule has been accepted through the PennDOT Project Collaboration Center (PPCC). If the format of the submission meets the contract requirements, but there appear to be issues related to production rates, the sequence of activities or other minor schedule related concerns, these are to be noted in the acceptance through PennDOT Project Collaboration Center (PPCC). Examples of schedule submission responses have been provided on pages C.1.8-13.

Make sure that all materials required by the specifications have been submitted before accepting the schedule. This shall include, but is not limited to, an electronic Asta Powerproject (.pp) file including all required activities, columns, and constraints.

It is vital that the submission, review and approval be performed within the times specified by Publication 408, Sections 108 and 689. The approved Construction Schedule requires continuous monitoring and updating throughout construction.

The contractor is responsible for uploading and submitting the Asta Powerproject (.pp) schedule and .pdf of their baseline schedule and monthly updates into PPCC for tracking and review. The Department will then review the Contractor’s submitted schedule and will either accept or reject the schedule. Once the schedule is accepted by the Department, the Asta Powerproject (.pp) file will be the governing schedule on record. After the schedule is accepted, the Department will download the accepted schedule from PPCC and upload to the Asta Web Portal. Any subsequent changes to the baseline schedule through the submission of any updates, revisions or recovery schedules shall also be uploaded to the project within PPCC and the Asta Web Portal in the same way in order to maintain a record of schedule versions.

NOTE: Contract time charges are to continue until all physical work has been performed. Neither time charges nor extensions of contract time are to be made for periods of time following the completion of the physical work simply to account for time taken by the Contractor to submit required documentation, such as that required for acceptance, payment or other information. If there is a determination subsequent to the completion of all physical work that modification, replacement, Extra or Additional Work must be performed, time charges shall resume from the day that the original physical work had been completed.

IV. Monitoring Contract Schedule:

Once a submitted schedule has been accepted as the project Construction Schedule, it is
important that the Contractor’s progress be monitored against the accepted schedule. Schedule monitoring should be performed on a daily basis to be the most effective. Schedule monitoring provides the following benefits:

1) Ensures documentation of the Contractor's actual performance compared to planned performance

2) Helps identify possible delays

3) Provides time related information for Authorizations for Contract Work and Work Orders

4) Helps to plan project staff for upcoming inspection duties

5) Creates an "As-built" schedule that can be used to:
   a) Verify any submitted documentation related to changes in contract time
   b) Provide information for dispute resolution
   c) Provide information for use in a Delay Claim if necessary

All projects that require a CPM or CPM with Resource Loaded Schedule must be monitored.

Monitoring of the Contractor’s progress involves collecting a limited amount of data for each activity contained in the Contractor’s accepted schedule including:

- Activity ID
- Activity description
- Activity duration, in working days
- Early start date
- Early finish date
- Late start date
- Late finish date
- Contract imposed date(s) (if applicable)
- Total float

This data should be kept up to date and lag no more than one week behind the actual progress and maintained throughout the life of the project.

Data must be in a format that can be easily accessed and available for the creation of a graphical representation of the “As Built” project if necessary. Recommended method of monitoring is the usage of the Monitoring Chart View which can be plotted from Asta
Powerproject. If the District chooses to transfer the marked-up information from the Monitoring Chart to the Asta Powerproject file, that is the sole discretion of the District.

Information regarding monitoring contractor’s schedules can be found in Publication 615, Scheduling Manual for PennDOT Schedules. Additional assistance can be found by contacting the Project Specifications, Scheduling and Constructability Section in the Bureau of Project Delivery. The Construction Schedule Manager can provide guidance on ASTA Powerproject and assist in obtaining a Monitoring Chart.

V. Recovery Schedule:

If, as a result of monitoring the accepted schedule, it is found that the Contractor is substantially behind schedule, or if the Contractor is working activities out of sequence sufficiently to make this determination reasonably difficult, a recovery schedule may be requested as described in Publication 408, Section 108.03(b) 5. The intention of the recovery schedule is to provide documentation as to how the Contractor will complete the project (or meet any specified Milestone(s)). The revision to the schedule must include the Asta Powerproject (.pp) recovery schedule, a narrative recovery plan including what has changed and an explanation as to why it has changed along with a description of how the Contractor intends on performing the work. The narrative recovery plan should include information related to crew sizes, equipment usage, additional material availability, etc.

VI. Justifications for Revisions to the Contract Time:

The Department will consider extensions and reductions of contract time in accordance with Publication 408, Section 108.06. The following is a summary of the acceptable events or occurrences that qualify for changes to contract time, provided that the critical path is affected:

1. Actual Notice to Proceed is before or after the Anticipated Notice to Proceed
2. Utility delays (as specified in Publication 408, Section 105.06)
3. Work requires Item quantities greater than or less than those indicated in the contract
4. Work is eliminated
5. Additional/Extra Work
6. Strike or Labor dispute
7. Delayed action or failure to act by an agency other than the Department
8. Act or omission by the Department

9. Contractor submits a schedule showing work completed prior to the Contract Completion Date and/or specified Milestone Date(s)

In addition, under certain conditions specified in Publication 408, Section 108.06(a), the Department will consider requests for Time Extensions related to weather.

Only the Department can process a reduction in contact time and only the Contractor can request an extension of contact time.

Justification and documentation that accompanies any request for a change in contract time must include a Supporting Schedule, defined as the accepted schedule in place at the time of the event or occurrence for which the adjustment is being requested showing the impact of the event. An adjustment in Contract Time will not be processed without a combined pdf of the Supporting Schedules included. In addition, the documentation should also include a schedule illustrating the Contractor’s schedule status at the time of the event or occurrence. All submitted information should be compared to the updated project monitoring chart to determine the applicability of the request and the accuracy of the submitted information.

Requests for extensions in contract time must be submitted for each event or occurrence separately and not combined. Also, each request must be submitted and approved within the time frames specified in Publication 408, Section 108.06. Timely submission and approval of requests for changes in contract time allows both the Contractor and the Department to make any necessary changes to their resources in order to meet the new schedule requirements. Any attempt to delay the processing of changes in contract time will leave both parties unsure of the final schedule requirements and could cause undo acceleration on the part of the Contractor. Such acceleration could result in contract disputes that may potentially result in a Claim situation.

It should be noted that Time Extensions should not be approved for reasons other than those listed in Publication 408, Section 108.06. For instance:

Plantings and Seeding. The Contractor’s failure to allow an adequate period of time in the Construction Schedule for the establishment of plantings and seeded areas should not be viewed as a reason to grant a Time Extension. It is a requirement of the contract that all work be performed in the specified time frames.

Final Inspections. The Contractor’s failure to complete work identified during the Final Inspection (i.e. Punch List items) by the Contract Completion Date does not qualify for a Time Extension. Consideration should be given to holding the Final Inspection at a point when 90% of the contact work has been completed as required by the Specifications in order to provide the Contactor sufficient time to complete the Punch List.
Preconstruction Conference. If work cannot begin until the preconstruction conference has been held, these meetings should be held prior to the Notice to Proceed.

VII. Time Extensions requests related to Disputes/Claims

Taking action on a time extension that also involves a dispute/claim issue, before the dispute/claim issue is resolved, may not be appropriate in all cases and should be done only after consultation with the Office of Chief Counsel and, if the project is Federally funded, with the Federal Highway Administration.
### NARRATIVE BASELINE SCHEDULE REVIEW CHECKLIST

#### Project Information
- **ECMS #:**
- **Prime Contractor:**
- **Contractor Scheduler:**
- **Anticipated Notice to Proceed:**
- **Original Contract Completion:**

#### Schedule Information
- **Date Submitted:**
- **Review Date:**
- **Reviewer:**
- **Actual Notice to Proceed:**

#### 1. Submission Requirements

A. Contractor submitted the Narrative Schedule within 15 days after the actual Notice to Proceed Date  
   - For yes: \( \square \)  
   - For no: \( \square \)  
   
   *If no, estimate payment will not be released and the Contractor is required to attend a scheduling workshop.*

b. Submitted Schedule is based upon the Notice to Proceed Date as the first day of work  
   - For yes: \( \square \)  
   - For no: \( \square \)  

c. If actual Notice to Proceed was issued after the anticipated Notice to Proceed Date in the proposal:  
   - Initial Schedule submission is based upon the anticipated Notice to Proceed Date  
     - For yes: \( \square \)  
     - For no: \( \square \)  
   
   Or  
   - Schedule submitted is based upon the actual Notice to Proceed Date  
     - For yes: \( \square \)  
     - For no: \( \square \)  

*Note: A Schedule submitted based upon the actual Notice to Proceed Date should not be considered without prior or concurrent submission of the Schedule based upon the anticipated Notice to Proceed Date in the Proposal.*

#### 2. Format Requirements

a. Schedule includes enough activities to demonstrate the necessary interdependencies  
   - For yes: \( \square \)  
   - For no: \( \square \)  

b. Schedule includes the following information regarding activities:
   - Activity Description: \( \square \)  
   - Activity Duration, in working days: \( \square \)  
   - Start and Finish calendar dates of activities: \( \square \)  

c. Workday Calendar has been submitted showing the following:
   - Working Days: \( \square \)  
   - Non-working Days: \( \square \)  
   - Number of shifts per day: \( \square \)  
   - Number of hours per shift: \( \square \)  

*April 2017 Edition*
### 3. Content Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a. Activities reflect Specification / Special Provision Requirements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>b. Materials (Check all that apply)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bituminous Concrete Base Course</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Bituminous Binder Course</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Bituminous Wearing Course</td>
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<td>Plain Cement curing (can include Non-work days)</td>
<td>Yes</td>
<td>No</td>
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<td>Structural Concrete loading</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Pavement Markings</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Seeding / Plantings</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Bridge Painting</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Testing Period(s)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>c. Imposed Restrictions (Check all that apply)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M &amp; P Restrictions</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Detours</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Lane restrictions</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>Road closures</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Stream restrictions</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
CRITICAL PATH METHOD BASELINE SCHEDULE REVIEW CHECKLIST

<table>
<thead>
<tr>
<th>Project Information</th>
<th>Schedule Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECMS #:</td>
<td>Date Submitted:</td>
</tr>
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<td>Prime Contractor:</td>
<td>Review Date:</td>
</tr>
<tr>
<td>Contractor Scheduler:</td>
<td>Reviewer:</td>
</tr>
<tr>
<td>Anticipated Notice to Proceed:</td>
<td>Resource Loaded CPM?: Yes No</td>
</tr>
<tr>
<td>Original Contract Completion:</td>
<td>Actual Notice to Proceed:</td>
</tr>
</tbody>
</table>

1. Submission Requirements

a. 60 Calendar Day Work Plan at the Preconstruction Conference
   Yes □ No □

b. Schedule used to prepare contract bid submitted within 30 calendar days after the actual Notice to Proceed Date
   Yes □ No □

c. CPM Schedule submitted within 30 calendar days after the actual Notice to Proceed Date
   Yes □ No □
   If no, estimate payment will not be released and the Contractor is required to attend a scheduling workshop.

d. Submitted CPM Schedule is based upon the Notice to Proceed Date as the first day of work
   Yes □ No □

e. If actual Notice to Proceed was issued after the anticipated Notice to Proceed Date in the proposal:
   Initial Schedule submission is based upon the anticipated Notice to Proceed Date
   Yes □ No □
   Or
   Schedule submitted is based upon the actual Notice to Proceed Date
   Yes □ No □
   Note: A Schedule submitted based upon the actual Notice to Proceed Date should not be considered without prior or concurrent submission of the Schedule based upon the anticipated Notice to Proceed Date in the Proposal.

f. Schedule shows Original Contract Completion Date being met and properly constrained
   Yes □ No □
   If not, Contractor must revise schedule to show completion of work on the Contract Completion Date, or request a time reduction to change the Contract Completion Date to the date that work is shown to be completed on submitted schedule.

g. Schedule shows all Milestone Dates being met and properly constrained
   Yes □ No □

h. Schedule shows all Construction restrictions and association RULD restrictions
   Yes □ No □

i. Electronic project file provided in Asta Powerproject (.pp) format?
   Yes □ No □

j. PDF file of the Asta Powerproject (.pp) schedule provided?
   Yes □ No □
2. Format Requirements

a. Schedule submitted in Asta Powerproject (.pp) format that shows logical relationships between activities:  
   Yes ☐ No ☐

b. Activities have at least one predecessor (except ANTP):  
   Yes ☐ No ☐

c. Activities have at least one successor (except Project Completion):  
   Yes ☐ No ☐

d. Activities utilize only finish-to-start relationships:  
   Yes ☐ No ☐

e. Leads and Lags are identified as separate activities:  
   Yes ☐ No ☐

f. Schedule is of sufficient detail to communicate the interdependencies:  
   Yes ☐ No ☐

g. Activities with durations greater than 15 days kept to a minimum:  
   Yes ☐ No ☐

h. The following information shown for each activity in the schedule and on PDF:
   - Activity ID: ☐
   - Activity Description: ☐
   - Activity Duration, in working days: ☐
   - Early Start Date: ☐
   - Early Finish Date: ☐
   - Late Start Date: ☐
   - Late Finish Date: ☐
   - Constraint Date: ☐
   - Constraint Type: ☐
   - Total Float: ☐
   - Predecessor: ☐
   - Successor: ☐
   - Calendar: ☐
   - Resource Allocation: ☐
   - Resource Effort: ☐

i. Required Activity Descriptions:
   - Notice to Proceed: ☐
   - Physical Work Start: ☐
   - Remove Detour: ☐
   - Open to Traffic: ☐
   - Physical Work Complete: ☐
   - Project Completion: ☐

j. Calendars defined (days worked, shifts per day, hours per shift):  
   Yes ☐ No ☐

k. Holidays shown in Calendars (except for 7 day Calendars):  
   Yes ☐ No ☐

l. Schedule does not include negative float:  
   Yes ☐ No ☐

m. Spreadsheet submitted or Allocation Groups within Asta identifying Business Partner ID(s), Labor Crews, and Proposed Equipment Name and Number:  
   N/A ☐ Yes ☐ No ☐
### 3. Content Requirements

<table>
<thead>
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<td>Testing Period(s)</td>
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</tr>
</tbody>
</table>

### 4. Comment Section

*The following information will be used to comment on submitted schedules, but CANNOT be a basis for rejection.*

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a. Separate activities for develop / submit and review / approve steps for each submittal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>b. Adequate time provided for Department review of submittals</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>c. Below is a list of items that could be within the contract documents, if within the contract are they accounted for in the schedule</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADA Curb Ramp Designs</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Design Build Submittals</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Shop Drawings (including time for fabrication and delivery)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>ITS and Electrical Testing</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Temporary Shoring / Jacking Plan / Temporary Support System</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Permit Applications (NPDES)</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Railroad Insurance</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Railroad Temporary Right of Entry Permit</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Utility Relocations and coordination (per D-419)</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>
### 4. Comment Section Continued

d. Activities provided for the following Calendar Day Lag Times with associated interrelationships

<table>
<thead>
<tr>
<th>Activity</th>
<th>N/A</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Pavement Curing</td>
<td></td>
<td></td>
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<tr>
<td>Concrete Structure / Bridge Deck Curing</td>
<td></td>
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<tr>
<td>Sealer (Penetrating, Epoxy Resin) Lag Time prior to application</td>
<td></td>
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<tr>
<td>Dead Load Lag Time prior to backfilling, placing beams, etc</td>
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<tr>
<td>Removal of E&amp;S Controls (70% growth achieved - 6 weeks after seeding)</td>
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<tr>
<td>30 Day Traffic Signal Test Period</td>
<td></td>
<td></td>
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<tr>
<td>Other not mentioned</td>
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<td></td>
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</tr>
</tbody>
</table>

e. Date & Weather / Temperature Restrictions and Deadlines taken into account for the following activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>N/A</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt paving (based on PG oil used)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural Steel Painting</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Permanent Pavement Marking application</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeding (formula dependent)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental SP (trout stream, endangered species)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cool or Cold Weather Concrete Placements</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Tree Trimming and Cutting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree and Plant Species Planting and Transplanting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other not mentioned</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

f. Activities provided for the following miscellaneous items

<table>
<thead>
<tr>
<th>Activity</th>
<th>N/A</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilization and Demobilization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation of E&amp;S Controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Inspection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time to Address Punch list Items</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 5. Additional Comments

April 2017 Edition
Schedule Review Response Examples

Ex. #1: Schedule as submitted does not meet the format requirements of the Contract:

Your Schedule submitted for the above project does not meet the format requirements of the contract. Please make the necessary changes according to Publication 408 Sec 689 and resubmit.

Ex. #2: Schedule as submitted meets the format requirements, but contains some minor issues:

Your Schedule submitted for the above project appears to meet the format requirement of the contract and is therefore accepted. There are, however, several issues that need to be addressed:

- Your schedule shows concrete curing for only 3 days prior to loading. Be advised that 7 day strengths will be required on all concrete prior to loading.
- Your schedule shows bituminous materials being placed in November. Be advised that all material specified dates will be observed. Bituminous wearing on this project must be placed on or before October 15th.
- Your schedule does not appear to include adequate time to achieve germination of the seeding mixture prior to the contract completion date. Be advised that proper germination is necessary to remove the temporary E&S measures which are included in the contact work. Removal of these measures after the completion date may result in the collection of Liquidated Damages as specified in Publication 408 Sec 108.07.
- Your schedule indicates work being performed on Main Street between June 15th and June 23rd. The contract requires that this area be open to unrestricted traffic during that period to accommodate the local Fire Co. Fair traffic. Please adjust your plans as necessary to ensure this requirement.

Ex. #3: Schedule as submitted meets the format requirements, but shows an early completion:

Your Schedule as submitted appears to meet the format required by the contract; however, you indicate completion 90 days prior to the completion date listed in the contract. Please revise your schedule to show completion on the date indicated in the contract or request, or, if your intention is to complete early, the Department will process a Time Reduction in accordance with Publication 408, Section 108.06 (b).
<table>
<thead>
<tr>
<th>SPECIFIED EVENT OR OCCURRENCE</th>
<th>“TERMINATION OF EVENT” MILESTONE</th>
<th>REQUESTED SUPPORTING DOCUMENTATION</th>
</tr>
</thead>
</table>
| The Notice to Proceed indicates that the actual NTP Date will be after the anticipated NTP Date in the proposal. | Within 30 calendar days after the date of Department acceptance of the initial Construction Schedule. | • Anticipated NTP Date  
• Actual NTP Date  
• Explain how late NTP Date impacted Completion Date and/or specified Milestone Date(s) |
| Utility Infrastructure and Utility Adjustment delay. | Within 30 calendar days after the date all utility infrastructure and utility adjustments impacting the Contractor’s operations are completed. | • Describe the circumstances of the delay.  
• Provide the date that all infrastructure and adjustments impacting contract operations were completed.  
• Explain how controlling operations were adversely affected. |
| Project completion requires work in greater quantities than indicated in the contract (i.e. plan quantity overruns). | Within 30 calendar days after the date the overrun quantity of work under the applicable contract item(s) is completed. | • Identify the specific contract item(s)  
• Provide the date that the overrun quantity of work under each applicable contract item was completed.  
• Reference applicable Work Order(s), if available (by No.).  
• Explain how controlling operations were adversely affected. |
| District Executive authorizes elimination of item(s) or reduction in quantity for item(s). | Within 30 calendar days after date of receipt of initial itemized written Authorization for the item quantity elimination(s) / reduction(s). | • Reference initial, itemized Authorization(s) for Contract Work (by No. and Receipt Date).  
• Reference associated Work Order(s), if available (by No.).  
• Address any difference between the number of days requested and estimate of impact on contract time in referenced Authorization(s) and Work Order(s).  
• Explain how controlling operations were adversely affected. |
| District Executive authorizes Additional and/or Extra Work. | Within 30 calendar days after:  
- the date prices to be paid for authorized Additional Work and/or Extra Work at a Negotiated Price are agreed upon and, when applicable, accepted by the Department; or  
- the date authorized Extra Work on a Force Account Basis is completed. | • Reference Authorization(s) for Contract Work (by No.).  
• Reference associated Work Order(s), if available (by No.).  
• Provide the date that prices to be paid for authorized AW/EW at a Negotiated Price were agreed upon and, when applicable, accepted by the Department; or the date authorized EW on a Force Account Basis was completed.  
• Address any difference between the number of days requested and estimate of impact on contract time in referenced Authorization(s) and Work Order(s).  
• Explain how controlling operations were adversely affected. |
| Strike or labor dispute causes shutdown. | Within 30 calendar days after the date the strike or labor dispute ends. | • Provide Start Date and End Date of strike or labor dispute.  
• Describe the circumstances of the strike or labor dispute.  
• Identify controlling operations shutdown as a result of the strike or labor dispute (if not entire project). |
| Delayed action or failure to act of an agency other than the Department. | Within 30 calendar days after the date all issues involving the agency’s delayed action or failure to act were resolved. | • Provide the name of the agency and describe the specific delayed action or failure to act.  
• Provide the date that all delay issues were resolved.  
• Explain how controlling operations were adversely affected. |
| Act or omission of the Department. | Within 30 calendar days after the date all issues involving the Department’s act or omission are resolved. | • Describe the specific act or omission of the Department.  
• Provide the date that all delay issues were resolved.  
• Explain how controlling operations were adversely affected. |
| Weather-related event warranting emergency declaration and having a direct, adverse impact on active construction project(s). | | • Describe the specific weather-related event.  
• Explain how controlling operations scheduled to occur during the time of the event were adversely affected. |
<table>
<thead>
<tr>
<th>SPECIFIED EVENT OR OCCURRENCE</th>
<th>“TERMINATION OF EVENT” MILESTONE</th>
<th>REQUESTED SUPPORTING DOCUMENTATION</th>
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</table>
| The Notice to Proceed indicates that the actual NTP Date will be before the anticipated NTP Date in the proposal. | Within 30 calendar days after the date of Department acceptance of the initial Construction Schedule. | • Anticipated NTP Date  
• Actual NTP Date  
• Explain how early NTP Date impacted Completion Date and/or specified Milestone Date(s). |
| Project completion requires work in lesser quantities than indicated in the contract (i.e. plan quantity underruns). | Within 30 calendar days after the date the underrun quantity of work under the applicable contract item(s) is completed. | • Identify the specific contract item(s)  
• Provide the date that the underrun quantity of work under the applicable contract item(s) was completed.  
• Reference applicable Work Order(s), if available (by No.).  
• Explain how controlling operations were favorably affected. |
| District Executive authorizes elimination of item(s) or reduction in quantity for item(s). | Within 30 calendar days after date of submission of initial itemized written Authorization for the item quantity elimination(s) / reduction(s). | • Reference initial, itemized Authorization(s) for Contract Work (by No. and Submission Date).  
• Reference associated Work Order(s), if available (by No.).  
• Address any difference between the number of days requested and estimate of impact on contract time in referenced Authorization(s) and Work Order(s).  
• Explain how controlling operations were favorably affected. |
| Contractor submits an initial Schedule that shows Completion Date and/or specified Milestone Date(s) will be earlier than the date(s) indicated in the contract. | Within 30 calendar days after the date of Department acceptance of the initial Construction Schedule. | • Provide the date the Department accepted the initial Construction Schedule. |
| Act of the Department. | Within 30 calendar days after the date notification of the act is submitted to the Contractor. | • Describe the specific act of the Department.  
• Provide the date that notification of the act was submitted to Contractor.  
• Explain how controlling operations were favorably affected. |
Extension of contract time in accordance with Section 108.06, Publication 408 will be granted on calendar day or calendar date completion contracts which are adversely affected by industry-wide labor strikes.

The following procedure is to be used when resolving the subject problem:

1. The Notice to Proceed was given as specified in Section 108.02.

2. The work is temporarily suspended in accordance with Section 107.16(c).

3. Within 30 days of the resolution of the strike, the Contractor is to submit a request for additional contract time as per Section 108.06
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The following will govern the actions to be taken in the event it becomes necessary to declare a Contractor in default as provided by Section 108.08(a), Publication 408.

1. The District notifies the Office of Chief Counsel prior to taking any action.

2. The District Executive is to notify the Contractor of the intent to recommend to the Secretary that the Contractor be declared in default. The notification will make specific reference to the applicable reason(s) listed in Section 108.08(a), together with supporting justification as documented by project records. The Contractor will be directed to provide a response within 5 working days showing cause to why the proposed default action should not be taken. The notification will be sent by certified mail and email. Copies of the notification will be sent to the contractor's surety and to the Chief, Construction and Materials Division.

3. Upon expiration of the 5-day response time, the District Executive will re-evaluate the proposed default recommendation and if default is still deemed appropriate, the District Executive is to notify the Deputy Secretary for Highway Administration in writing of the recommendation to hold the Contractor in default. A copy of the District Executive's notification to the Contractor and the Contractor's response, if any, will be attached to the District Executive's notification to the Deputy Secretary. Copies of the District Executive's recommendation will be sent to the Director of the Bureau of Project Delivery, the Chief of the Construction and Materials Division, and the Office of Chief Counsel.

4. The Director of the Bureau of Project Delivery will direct the Chief, Construction and Materials Division to coordinate the action and prepare the necessary correspondence for the Deputy Secretary's signature.

5. The Chief, Construction and Materials Division, through the Contract Management Section Chief will: (1) coordinate the action with the District, the Office of Chief Counsel and the Federal Highway Administration, if applicable; (2) prepare the Deputy Secretary's letter to both the Contractor and the surety declaring the Contractor in default and notifying the surety to complete the contract according to its terms; and (3) take action to suspend the Contractor or impose other sanctions as appropriate under the Specifications and/or Prequalification Regulations.

Under no circumstances can the District unilaterally declare a Contractor in default.
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RETENTION TIME FOR STORAGE OF TEST BORING SAMPLES

Test boring samples from the Soils Investigation may be discarded after six (6) months have elapsed following the acceptance of the “Notification of Final Quantities and Contract Settlement Amount” by the Contractor, provided the Contractor has not notified the Department of any rejection, exception, or intention to file a claim relating to any matter.

In the event of a claim, intent to file a claim, rejection, or exception either by the Contractor or the Department, the samples must be kept until authorization is received from the Office of Chief Counsel to discard.
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Publication 408, Section 110.10, "Evaluation, Disposition, and Adjusted Payment of Low Strength Concrete", outlines the specification procedure to be followed when the compressive strength of concrete cylinders fails to meet the 28-Day Minimum Mix Design Compressive Strength (F’c 28-day) from Section 704, Table A.

In accordance with this procedure, when the compressive strength of either the 28-Day Quality Control or Acceptance cylinders falls below the 28-Day Structural Design Compressive Strength (F’c) from Table A, resolution will be determined based on cores obtained from the concrete lot in question.

If the concrete lot is considered deficient, the lot is to be removed and replaced at no additional cost to the Department, unless otherwise directed, in writing, by the District Executive. This specification was developed to establish a uniform and consistent method to address the acceptability and adjusted payment of low strength concrete on a statewide basis. Therefore, it is the intent of the specification to remove and replace all concrete falling into this category.

However, under certain specific circumstances, it may be in the Department's or public's general interest to allow concrete meeting the remove and replace condition to remain in place. This will only be considered when the Contractor submits a written request to the District. The contractor must include a signed document waiving the right to pursue a claim for the reduced payment of the concrete. If District concurrence is granted, the Contractor must perform a detailed structural analysis to verify that all design assumptions have been satisfied using the lower compressive strength value. The structural analysis will be reviewed by a Professional Engineer (PE) in the District and a determination made. The PE responsible for checking the contractor’s structural calculations will be required to certify that they have reviewed the calculations in detail and concur with the recommendation. It will be the District's responsibility to assure that all specification and design requirements have been satisfied before granting approval. If approval is granted by the District Executive, deficient concrete meeting the remove and replace criteria will be permitted to remain in place. Approval of the District Executive may not be delegated to a lower level.

Provide a copy of the District’s determination letter and all supporting documentation to the BOPD, CMD, Construction Quality Assurance Section Chief, within 10 days as justification of the District Executive’s determination. Minimum supporting documentation must include the PE certification, test results, contractor’s detailed structural analysis, and the contractor’s request to leave the material in place at 5% payment.
In every case, the payment is to be 5% x CUP x lot (as in Section 110.10(d)2) for deficient lots of concrete where the lot is deficient and the material is left in place. This needs to be uniformly applied throughout the Department, so payments for these situations are not arbitrary.

Substandard materials for which the Department makes a reduced payment or which by their removal and replacement reduce the overall quality of the project should be factored into the Contractor Evaluation.
Districts shall staff bituminous paving projects with at least one person who is a certified bituminous field technician. District personnel who inspect aggregate sources shall be certified aggregate technicians. District personnel who inspect concrete plants and who perform or witness concrete testing shall be certified concrete technicians.

If a District is unable to provide certified technicians in accordance with these guidelines, the District must notify the bituminous paving contractor at the beginning of the project, that a certified technician is not available. The District must also identify the certified technician to contact in the event of issues that may arise on the job. In addition to the above, the District must identify to aggregate and concrete producers the certified technician to handle issues that arise during plant inspections.
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Purpose

To establish Department policy for ensuring compliance with Federal requirements related to project supervision, as set forth in Parts a & b of 23 CFR 635.105.

Background

Reference 23 CFR 635.105, Supervising Agency

The State Transportation Department (STD) has responsibility for the construction of all Federal-aid projects, and is not relieved of such responsibility by authorizing performance of the work by a local public agency or other Federal agency. The STD shall be responsible for insuring that such projects receive adequate supervision and inspection to ensure that projects are completed in conformance with approved plans and specifications.

Although the STD may employ a consultant to provide construction engineering services, such as inspection or survey work on a project, the STD shall provide a full-time employed State engineer to be in responsible charge of the project.

Procedures

The Districts rely heavily on consultant personnel to supplement their inspection work force. This reliance on consultant personnel includes inspectors, as well as supervisors and managers. Each District should investigate upcoming projects to determine its staffing needs and assess whether consultant staffing will be necessary. The Districts should use Department Job Descriptions as a guide to determine the classification(s) of consultant personnel to be assigned to a given project. Consultant personnel are considered an extension of the Department. Consultant supervisors and managers will generally perform the same functions as a Department Inspector-in-Charge (IIC) or a Department Assistant Construction Engineer / Manager (ACE / ACM); however, certain duties and functions must be performed by an engineer employed by the Department.

Department Responsibilities

The Assistant District Executive for Construction must assign a full-time PennDOT employed engineer to be in responsible charge of the District’s Federal-aid projects at all times. The person in responsible charge (PRC) is normally the PennDOT Assistant Construction Engineer (ACE) or Assistant Construction Manager (ACM).

The person in "responsible charge" is expected to perform the following duties and functions:

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Administer all inherently governmental project activities, including those dealing with cost, time, adherence to contract requirements, construction quality, and scope;

Maintain familiarity with the day-to-day operations on the project, including project safety issues;

Make or participate in decisions about changed conditions or scope changes that require change orders or supplemental agreements;

Be aware of the qualifications, assignments, and on-the-job performance of the PennDOT and consultant staff at all stages of the project;

Review financial processes, transactions, and documentation to ensure that safeguards are in place to minimize fraud, waste, and abuse;

Direct project staff, PennDOT or consultant, to carry out project administration and contract oversight, including proper documentation; and

Visit and review each project on a frequency that is commensurate with its magnitude and complexity.

Assignment of Responsibilities to Consultants

In general, a full time PennDOT employed engineer must be assigned to federally funded projects to serve as the person in responsible charge.

As appropriate, in consideration of District workload and the size and complexity of a given project, the District may assign a consultant to be the Inspector-in-Charge (IIC) with day-to-day responsibility for project supervision. However, even when a Consultant IIC is responsible for day to day project supervision, the District is not relieved of its “responsible charge” obligations, as defined herein.

The following conditions/process applies:

Consultant IIC’s may perform project supervision duties, including the assignment of duties to subordinate inspectors and other Department-selected consultants.

Consultant IIC’s may authorize Additional / Extra work on a construction contract valued at up to $30,000 per occurrence. The responsible ACE / ACM must review all authorizations for Additional / Extra work in excess of $30,000 per occurrence before they are submitted to the Contractor. **NOTE**: ECMS workflow does not support the transmission of an Authorization for Contract Work to the responsible ACE / ACM before it is submitted to the Contractor. As a result, the Consultant IIC must notify the responsible ACE / ACM outside of ECMS whenever an authorization requiring review has been created and saved, but not yet submitted.

The Consultant IIC may not approve work orders or time extension requests in ECMS.

The District must approve estimate payments.
Before assigning a Consultant IIC, the District must demonstrate a need by showing that its project workload has significantly increased and that the increase has critically limited its ability to provide an IIC for every project. The District’s supporting information should cite the current project workload vs. previous years, the number of IICs required vs. the number of available PennDOT IICs, the estimated cost savings from reduced overtime vs. the estimated cost increase associated with assigning consultant IICs, as well as any additional relevant supporting data.

The District must evaluate the qualifications of the consultant personnel and the firm’s past performance to determine any limitations on the size, scope, and/or complexity of projects that consultant IICs may be assigned to manage.

**Submittal of Consultant IIC for Approval**

The District Executive will approve, in writing, all requests by the Assistant District Executive for Construction to utilize a Consultant Inspector-in-Charge on a Federal aid project. The District Executive’s written approval is to be included in the project files. Federal Highway Administration approval is not required.

**Submittal of Consultant ACE for Approval**

In accordance with 23 CFR 172.9(d), Consultant Services in Management Roles, Federal Highway Administration approval is required when a Consultant is to assume the project supervisory / management responsibilities of a PennDOT ACE or ACM. The FHWA will review such requests on a well justified, case-by-case basis only. The State employed PRC must be named in the request and must perform the duties and functions of that role, as outlined above.

The District must submit approval requests, in writing, to the Bureau of Project Delivery (BOPD).

The Contract Management Section (CMS), BOPD, will coordinate the appropriate reviews and provide comments or recommend concurrence / rejection within five (5) days of receipt of the District’s request.

The BOPD will request approval, in writing, from the Pennsylvania Division Administrator, Federal Highway Administration, and notify the District regarding FHWA’s approval / disapproval of its request to assign the selected candidate as the Consultant ACE for the applicable project.
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This policy is intended to provide a decision-making process with guidelines for the management of construction inspection forces based on factors of risk and cost to the Department as well as the potential impact to the success of the project. Some of the basic issues to be considered include safety, environmental impact, quality of construction to ensure durability and performance, and the cost of reworking an item or failure of the item in the future.

It is important to have everyone involved in managing projects/resources thinking in terms of these factors when assigning Department and/or consultant inspection staff to projects and/or specific operations. This approach is intended to maximize resources while allowing each District the flexibility to address all factors that have an impact on inspection management.

The Department is charged with the responsibility of overseeing construction projects using Federal funds. This includes local projects that are constructed using Federal funds. This responsibility is defined by regulation in 23 CFR 635 quoted below:

“Sec. 635.105 Supervising agency.

a) The STD has responsibility for the construction of all Federal-aid projects, and is not relieved of such responsibility by authorizing performance of the work by a local public agency or other Federal agency. The STD shall be responsible for insuring that such projects receive adequate supervision and inspection to ensure that projects are completed in conformance with approved plans and specifications.

(b) Although the STD may employ a consultant to provide construction engineering services, such as inspection or survey work on a project, the STD shall provide a full-time employed State engineer to be in responsible charge of the project.”

It is not the intent of this policy to eliminate inspection on a project but to provide a tool for evaluating specific project factors to best use inspection resources. In addition, this policy is not all inclusive in terms of factors to be considered but should be used as a baseline to begin the process.
Process for Project/Operation Evaluation

The diagram below illustrates how operations should be considered when assigning inspection staff to operations. Consideration for cost and risk are addressed from Low Cost - Low Risk through High Cost - High Risk. Low Cost – Low Risk operations are potential candidates for reduced or spot-inspection, while High Cost – High Risk operations require full-time inspection.

RISK

Fig. 1 – Risk Assessment Categories

- Operations that fall in the shaded quadrant of Low Cost, Low Risk are potential opportunities to reduce or eliminate the need for full-time inspection.
- Operations that fall in the two “hatched” quadrants of High Cost – Low Risk and High Risk – Low Cost are possible candidates as well, however care and discretion should be used as they both may adversely impact the project.
- Operations that fall in “white” quadrant are not recommended for consideration as they are High Risk – High Cost and would have the most potential to impact the project.
Guidelines for Considering Factors Other than Cost or Risk

Since each District and every project is influenced by specific, unique factors, consideration must be given for elements that may potentially impact delivery of the project. After considering these factors, an operation may move from one category to another after the initial evaluation. While it is not practical to address all situations, below is a list of items that should be considered as a baseline for this part of the analysis:

Possible Factors for re-categorization of low risk items to high risk items:

- Items that can not be effectively inspected in-place following construction
- Experimental Features
- Environmental Commitments
- Items covered by new or revised specifications
- Items that require project sampling or materials testing for acceptance
- Projects or operations being constructed at night
- Traffic Control/Traffic Management Plan requirements
- Possible regulatory issues such as NPDES permit compliance
- Specialty Items
- Any item which requires temporary traffic patterns for installation
- Operations with safety issues such as deep excavations
- Controlling Operations on the Critical Path of the project schedule
- Past experience with a particular contractor or sub-contractor
- Cost/Impact of Rework or Failure
- Type of highway/project for example: Local, Urban, Rural, Interstate
- ADT and % Trucks
- Safety of Workers
Typical Operation Cost/Risk Categorization

Below is a table of operations and the typical category in which they would be placed. This table is intended to be a guide only and is not all-inclusive.

Table 1 – Items with Typical Cost/Risk Categorization

<table>
<thead>
<tr>
<th>LOW RISK - LOW COST</th>
<th>HIGH RISK - LOW COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Clearing &amp; Grubbing</td>
<td>• Embankment</td>
</tr>
<tr>
<td>• Bulk Excavation</td>
<td>• Sub grade</td>
</tr>
<tr>
<td>• Gabions</td>
<td>• Slab Stabilization</td>
</tr>
<tr>
<td>• Misc. E &amp; S Items not associated with NPDES</td>
<td>• Flowable Fill</td>
</tr>
<tr>
<td>• Misc. Seeding, Mulching, Planting</td>
<td></td>
</tr>
<tr>
<td>• Office Trailer &amp; Equipment Package</td>
<td>• Geo-textiles</td>
</tr>
<tr>
<td>• Waterproofing</td>
<td>• Drainage</td>
</tr>
<tr>
<td>• Down-spouting</td>
<td>• Individual E &amp; S Items which are part of the NPDES</td>
</tr>
<tr>
<td></td>
<td>• Sidewalks</td>
</tr>
<tr>
<td></td>
<td>• Survey</td>
</tr>
<tr>
<td></td>
<td>• Delineation Devices</td>
</tr>
<tr>
<td></td>
<td>• Pavement Markings</td>
</tr>
<tr>
<td></td>
<td>• Basic M &amp; P of T and associated devices</td>
</tr>
<tr>
<td></td>
<td>• Guiderail</td>
</tr>
<tr>
<td></td>
<td>• Scarification of Existing Bridge Decks</td>
</tr>
<tr>
<td></td>
<td>• Rebar</td>
</tr>
</tbody>
</table>
Table 1 – Items with Typical Cost/Risk Categorization - Continued

<table>
<thead>
<tr>
<th>HIGH COST - LOW RISK</th>
<th>HIGH RISK - HIGH COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Rebuilt Misc. Structures</td>
<td>• Drainage Items Under Roadway</td>
</tr>
<tr>
<td>• Random Stone slope walls</td>
<td>• Base Courses</td>
</tr>
<tr>
<td>• Temporary Concrete Barrier</td>
<td>• Flexible Pavement</td>
</tr>
<tr>
<td></td>
<td>• Rigid Pavement</td>
</tr>
<tr>
<td></td>
<td>• Curb Ramps/ADA associated items</td>
</tr>
<tr>
<td></td>
<td>• Impact Attenuating Devices</td>
</tr>
<tr>
<td></td>
<td>• Concrete Median Barrier</td>
</tr>
<tr>
<td></td>
<td>• Blasting</td>
</tr>
<tr>
<td></td>
<td>• Lead Paint Removal</td>
</tr>
<tr>
<td></td>
<td>• Bridge Demo</td>
</tr>
<tr>
<td></td>
<td>• Beam Erection</td>
</tr>
<tr>
<td></td>
<td>• Structural Concrete</td>
</tr>
<tr>
<td></td>
<td>• Piling</td>
</tr>
<tr>
<td></td>
<td>• Retaining Walls</td>
</tr>
<tr>
<td></td>
<td>• Sound Walls</td>
</tr>
<tr>
<td></td>
<td>• Box Culverts</td>
</tr>
<tr>
<td></td>
<td>• Bridge Painting</td>
</tr>
<tr>
<td></td>
<td>• Spot Zone Maintenance Painting of Existing Structural Steel</td>
</tr>
<tr>
<td></td>
<td>• Complicated M &amp; P of T and associated devices</td>
</tr>
<tr>
<td></td>
<td>• Highway Signing and Lighting</td>
</tr>
<tr>
<td></td>
<td>• Permanent Traffic Control Items</td>
</tr>
<tr>
<td></td>
<td>• Overhead Sign Structures</td>
</tr>
<tr>
<td></td>
<td>• Environmental Commitments</td>
</tr>
</tbody>
</table>

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Additional Guidelines

Guidelines for Project Staffing

- Staffing for each project should be developed by Inspector-in-Charge (IIC), Managers, and Assistant Construction Engineer/Assistant Construction Manager (ACE/ACM).

- Consider travel time and avoid unnecessary travel where possible.

- Consider number of operations that can be covered by one inspector.

- Initial staffing should be based on long term needs and supplemented for short term requirements such as paving.

Guidelines for Consultant Inspection Agreements

- Develop consultant agreements to maximize efficient use of consultant inspectors between projects
  
  o Project-specific agreement with multiple construction projects per agreement.
  o Concentrate open end agreements to benefit each Assistant’s area.

- Project staffing projections should be based on long term needs and be supplemented from other areas to satisfy short term needs such as paving operations. This will eliminate over encumbering agreements for project staffing.

- IIC must be aware of funding available for inspection. If additional funding is required for inspection, IIC must provide justification.
Chapter 7 of Publication 740, Local Project Delivery Manual, states "the Assistant Construction Engineer (ACE) or a designee is to visit the project as frequently as needed to maintain an intimate knowledge of current activities and ensure that the work is being inspected and the contract administered in accordance with the terms of the agreement, the requirements of FHWA, and the procedures outlined herein. During each visit to the project or at least quarterly when the project control meetings are being attended on a regular basis, the ACE or designee is to document, in writing, the project status and any outstanding issues."

To assist the Districts with oversight responsibility, the checklist contained on the following pages has been developed. This checklist must be utilized when visiting Locally Sponsored Federal Aid Projects to provide uniformity in reviews as well as documentation that oversight is being performed.
### Project Schedule

<table>
<thead>
<tr>
<th>Type of Schedule</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrative</td>
<td></td>
</tr>
<tr>
<td>Critical Path Method</td>
<td></td>
</tr>
<tr>
<td>Network</td>
<td></td>
</tr>
</tbody>
</table>

### Preconstruction

<table>
<thead>
<tr>
<th>Preconstruction Meeting Held, Attended by ACE</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preconstruction Meeting Minutes on File</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Record of NTP on File</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Approved M &amp; P of T Plan on File</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

### Inspection Staff

<table>
<thead>
<tr>
<th>Local Project Sponsor’s Approved Staffing Letter on File</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspection Staff Adequate for Work Being Performed</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

### DBE Goal

<table>
<thead>
<tr>
<th>Required DBE Goal %</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Approved to Date</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Has DBE Goal Been Met?</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>If Not, Is a Continuing Good Faith Effort Being Made To Increase Participation So That Goal Is Met?</th>
<th>NA</th>
</tr>
</thead>
</table>

### Trainees

<table>
<thead>
<tr>
<th>Trainee Program(s) Contained in the Contract</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Trainee Program(s) Submitted &amp; Approved As Outlined in POM B.11.3 (Form EO-563 &amp; 365)</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

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### LABOR COMPLIANCE/EOE

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedures in effect to ensure contractor and subcontractor compliance with the labor standard provisions in the contract</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>A bulletin board with all required postings has been erected in a location which is visible to all project personnel and interested parties at all times</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>In place procedures regarding labor compliance are being properly administered</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Procedures in effect to ensure contractor and subcontractor compliance with the equal opportunity provisions in the contract</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>In place procedures regarding equal opportunity are being properly administered</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Deficiencies reported in writing by the ACE to the project manager</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

### CONSTRUCTION SAFETY

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved procedures established to ensure compliance with the safety and accident prevention provisions of the contract</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Visit by district safety officer during first week of construction documented</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

### SUBCONTRACTOR APPROVALS

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved subcontractor requests for all subcontractors on file prior to any work being performed (form CS-439R is to be utilized and on file for contracts not administered in ECMS)</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

### TIME EXTENSIONS

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time extensions submitted by the contractor per PUB 408 section 108.06</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Time extensions reviewed by approval authorities</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Time extensions approved or disapproved in a timely manner</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

### ESTIMATES & WORK ORDERS

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work flow and approval processes in place for estimates and work orders</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Authorization(s) for contract work in place prior to any additional/extra work performed</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Payments processed in a timely manner</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Deficiencies reported in writing by the ACE to the project manager</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

### DOCUMENTATION

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the local project sponsor agreed to adopt department procedures for documentation</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>If No: approved copy of the alternate documentation procedures on file</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Pay quantities computed correctly</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Inspection reports provide all pertinent information for daily operations performed</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Well defined audit trail established</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Deficiencies reported in writing by the ACE to the local sponsor project manager</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Documented checks of M &amp; P of T as required</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
### MATERIAL CONTROL & CERTIFICATION

<table>
<thead>
<tr>
<th>Description</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAS THE LOCAL PROJECT SPONSOR AGREED TO ADOPT DEPARTMENT PROCEDURES FOR MATERIAL CONTROL AS OUTLINED IN PUBLICATION 39</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>IF YES: DOCUMENTATION OF AGREEMENT ON FILE?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>IF NO: HAS THE LOCAL PROJECT SPONSOR SUBMITTED TO THE DEPARTMENT AN ALTERNATE METHOD FOR MATERIAL CONTROL INCLUDING TESTING &amp; SAMPLING PROCEDURES?</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>DEPARTMENT APPROVAL OF ALTERNATE MEANS OF MATERIAL CONTROL ON FILE</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>IS THE PROJECT FOLLOWING THE APPROVED ALTERNATE METHOD OF MATERIAL CONTROL</td>
<td>☐ NO</td>
<td>☐</td>
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<tr>
<td>SOURCE OF SUPPLY LETTER APPROVED BY ACE</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>NO PAYMENTS MADE WITHOUT PROPER CS-4171 ON FILE</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>FOR STEEL PRODUCTS, ARE BUY AMERICA AND THE PA STEEL PROCUREMENT ACT REQUIREMENTS BEING MET?</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>MATERIAL SUPPLIERS LISTED IN BULLETINS 14, 15, 41, 42</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>ALL MATERIALS INCORPORATED INTO PROJECT FROM APPROVED SOURCES</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>AGGREGATES SAMPLED AND TESTED AS REQUIRED</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>SUBBASE REQUIREMENTS ESTABLISHED AND DENSITY TEST RESULTS ON FILE</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>PIPE BACKFILL AND OR EMBANKMENT DENSITY TEST RESULTS ON FILE</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>APPROVED BITUMINOUS MIX DESIGNS ON FILE</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>APPROVED BITUMINOUS QC PLAN ON FILE</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>PRE-PAVEMENT MEETING</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>BITUMINOUS ACCEPTANCE SAMPLING &amp; TESTING PROPERLY PERFORMED</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>BITUMINOUS ACCEPTANCE SAMPLING &amp; TESTING PROPERLY DOCUMENTED</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>APPROVED CONCRETE MIX DESIGNS ON FILE</td>
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<tr>
<td>APPROVED CONCRETE QC PLAN ON FILE</td>
<td>☐ NA</td>
<td>☐</td>
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<td>PRE-PLACEMENT MEETING FOR CONCRETE PAVING AND OR BRIDGE DECK</td>
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<tr>
<td>CONCRETE ACCEPTANCE &amp; TESTING PROPERLY PERFORMED</td>
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</tr>
<tr>
<td>CONCRETE ACCEPTANCE &amp; TESTING PROPERLY DOCUMENTED</td>
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<tr>
<td>DEMOLITION PLAN SUBMITTED IN ACCORDANCE WITH PUB. 408 SECTION 1018</td>
<td>☐ NA</td>
<td>☐</td>
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<tr>
<td>ERECTION PLANS SUBMITTED IN ACCORDANCE WITH PUB. 408 SECTION 1050 AND/OR SECTION 1080</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>PRE-ERECTION MEETING</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>PILE HAMMER APPROVED BY BUREAU OF PROJECT DELIVERY</td>
<td>☐ NA</td>
<td>☐</td>
</tr>
<tr>
<td>APPROVED WELDING PROCEDURE ON FILE</td>
<td>☐ NA</td>
<td>☐</td>
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</table>
## Structural Steel Items Certified as Per Contract Requirements

<table>
<thead>
<tr>
<th>Approval Status</th>
<th>Yes</th>
<th>No</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Steel Items Certified as Per Contract Requirements</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
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</tbody>
</table>

## ADA Ramps

<table>
<thead>
<tr>
<th>Approval Status</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there any ramps which are technically infeasible?</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>If yes, have technically infeasible forms been filled out? (Copy to District, Co, and on file)</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Have CS 4401 forms been completed for all ADA ramps (Copy to District, Co, and on file)</td>
<td>[ ]</td>
<td>[ ]</td>
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</table>

## Erosion and Sedimentation

<table>
<thead>
<tr>
<th>Approval Status</th>
<th>Yes</th>
<th>No</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erosion and Sedimentation Control Approval Letter on File</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>If required, has an E and S Pre-Con Meeting been held with the appropriate agencies? County Conservation, Dep, Army Corp, etc?</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Does the project have an NPDES Permit?</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>If yes, are weekly and post storm reviews being performed as required?</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Does the project have a DEP water obstruction and encroachment permit?</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>If yes, are the requirements of the permit being met?</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Is a copy of the Mitigation Tracking Checklist on file?</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Is this checklist being kept current as checklist items and BMP's are completed?</td>
<td>[ ]</td>
<td>[ ]</td>
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## Miscellaneous Items

<table>
<thead>
<tr>
<th>Approval Status</th>
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<tr>
<td>Utility Issues</td>
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<td>[ ]</td>
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<td>Railroad Issues</td>
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<td>[ ]</td>
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<tr>
<td>Claims</td>
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<tr>
<td>Project Specific Permits</td>
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<td>[ ]</td>
</tr>
<tr>
<td>Project Specific Issues</td>
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<td>[ ]</td>
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</tbody>
</table>

*If yes, provide additional detailed information in review summary area

## Finalization

<table>
<thead>
<tr>
<th>Approval Status</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final inspection scheduled and attended by contractor, municipality, &amp; District ACE</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Acceptance Certificate recommended by ACE</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Contractor and Subcontractor evaluations have been completed by local project sponsor</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Final quantities determined by municipality</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Quantities forwarded to department for concurrence</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Final audit performed</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Form TR-4238A (Letter of Project Materials Certification) prepared and processed by the department</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

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*April 2017 Edition*
This section is to clarify the pay limits for Class 1 and Class 3 Excavation as shown in RC-11M details. The question is whether Class 1 Excavation is paid completely through the structure as shown in the cut section detail for "Typical Structure Section" or only up to the face of the wing wall as shown on the detail for "Wing Walls and Retaining Walls".

The interpretation of the standard is as follows:

The payment of Class 1 Excavation is limited to the front face of the wing wall and abutment wall as shown in the "Wing Walls and Retaining Walls" detail. The excavation behind the wing wall and abutment wall below the existing ground line, within the limits is Class 3 Excavation. The cut section of "Typical Structure Section" and "Wing Wall and Retaining Walls" details in RC-11M should be worked together.

NOTE: If the roadway excavation is completed prior to the excavation for abutments, wings, or piers similar to stage construction, the finished ground line of the completed roadway earthwork becomes existing ground line for the structural excavation. In such cases, Class 3 excavation should be measured down from the new existing ground line and not from the previous existing ground line.
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In accordance with Pub 408, Section 409.3(k), all longitudinal and transverse joints are to be painted with a uniform coating of bituminous material, the PG-binder used in the pavement course or PG 64-22, before placing plant-mixed bituminous concrete against them. If the joint becomes distorted, it should be sawed to line, as required, before painting.

When tandem pavers are used, the trailing paver must be operated so that the material from the lead paver does not fall below 175 °F. If the material falls below 175 °F, the joint must be painted or, if distorted, sawed and painted.

Some projects include a longitudinal joint density incentive/disincentive according to Publication 408, Section 405. Joints constructed with multiple pavers are to be included in the joint lots unless otherwise indicated.
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Publication 408, Section 409.3(b) prohibits the placing of bituminous concrete from November 1 to March 31 unless otherwise approved in writing by the District Executive. It is the District's responsibility to inform all concerned of this requirement and make arrangements to complete or discontinue the work by the terminating date. When it is necessary to accommodate traffic, a limited amount of binder and/or wearing course necessary to restore traffic safely may be placed at the direction of the District Executive. A copy of the approval to the Contractor shall be forwarded to the Chief, Innovation and Support Services Division.

If approval is given for placement of any bituminous material after October 31, final acceptance shall not be before May of the following year. It is the District’s responsibility to field view the pavement and determine its acceptability. Field view items to be reviewed include segregation, joint construction quality, ride quality, and loss of fines. Determinations of acceptability and impact on service life will be made on a case-by-case basis.

Warm Mix Asphalt (WMA) is required when paving is approved by the District Executive beyond the specified weather limitation calendar dates. WMA may be produced at temperatures up to the maximum master temperature in Section 411.2(e) Table A.

Reference is also made to Section 409.3(d), Publication 408, concerning truck covers and insulation. From October 1 to April 30 when air temperatures fall below 50°F, special attention must be given to maintaining proper temperature control of the material during delivery and placement.

From October 1 to April 30 when air temperatures fall below 50°F, trucks hauling hot bituminous mixture must be insulated on all surfaces. The insulation may be on the inside, outside, or a combination of both. Approved double walled or heated truck bodies may be used without insulation.

Truck covers must be of adequate size and quality to protect the entire load under all conditions. Mesh or screen tarps should not be used, as they would not protect the entire load under all conditions.

If the truck cannot be insulated for any reason, the paving operation should be restricted to temperatures of 50°F or higher.

There are additional weather and calendar restrictions for many items beyond the ones mentioned above (e.g., PG 76-22 >10 million ESALs wearing courses, Stone Matrix Asphalt, etc.) The inspector should be familiar with the specification for each item to ensure compliance.
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During cool weather paving (paving within the weather limitations but when air or surface temperatures are below 50°F) or during paving that has been approved by the District Executive to go beyond the weather limitation calendar dates, extra precautions should be taken in drying the aggregate, controlling the material's temperature, and compacting the mixture.

Weather and calendar date restrictions are found in Sections 309.3(b), 409.3(b), and 419.3(b). Truck insulation requirements are found in Section 409.3(d).

Bituminous mixture does not compact well when the mixture is below 175 °F. Therefore, the time to spread and compact the bituminous concrete decreases as the surface temperature drops below 50 °F. Since a thinner course cools faster than a thicker one, the bituminous mixture should be placed at least 1½ inches thick when the surface temperature is below 50 °F. Otherwise, there is not enough time to obtain compaction, and the probability of failure is greater. Field conferences should be held so that everyone concerned knows the importance of achieving compaction quickly.

Records are to be kept of bituminous mixture and ambient air and pavement surface temperatures.

The temperature of the mixture must be within the range specified in Publication 408, Sections 409.2(e) Table A, 411.2(e) Table A, and 419.2(e) Table D, and the Producer QC Plan, or as otherwise specified.

The following table, developed by the Quality Improvement Committee of the National Asphalt Paving Association, shows mixture laydown versus surface temperatures for various thicknesses of Hot Mix Asphalt. The last figure in each column is the time in minutes between mixture laydown and the point where the mat cannot be compacted. When these recommended parameters are exceeded, the Contractor should be informed that the Contractor is responsible for the quality of performed work until the work is accepted and, if applicable, for latent defects.

Warm Mix Asphalt (WMA) can be placed and compacted at lower temperatures than Hot Mix Asphalt (HMA). Minimum mixture laydown versus surface temperatures for various thicknesses should be established for each project in the Field QC Plan and at the Pre-Construction or pre-paving meeting in coordination with Department, Contractor, Producer, and WMA technology manufacturer technical representatives.

Note: There is a concern with waterborne pavement marking (traffic line striping) at 40- to 50-degree surface temperatures, since typical waterborne pavement marking material (traffic line paint) has a temperature restriction of 50 °F minimum ambient air and surface application.
temperature. It is recommended that sections of roadway striped with waterborne pavement markings at these temperatures be placed on the Maintenance pavement marking striping list for the following year.

When applying tack coat at 40- to 50-degree surface temperatures extra curing time may be needed before paving can begin so that the tack has cured to the point that tracking is minimized.

### RECOMMENDED MINIMUM MIXTURE LAYDOWN TEMPERATURE BY COMPACTED THICKNESS FOR HOT MIX ASPHALT* CONTAINING PG 64-22

<table>
<thead>
<tr>
<th>Surface Temperature</th>
<th>3/4&quot;</th>
<th>1&quot;</th>
<th>1½&quot;</th>
<th>2&quot;</th>
<th>3&quot; and greater</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 to 50 °F</td>
<td>-</td>
<td>310 °F</td>
<td>300 °F</td>
<td>285 °F</td>
<td>275 °F</td>
</tr>
<tr>
<td>50 to 60 °F</td>
<td>310 °F</td>
<td>300 °F</td>
<td>295 °F</td>
<td>280 °F</td>
<td>270 °F</td>
</tr>
<tr>
<td>60 to 70 °F</td>
<td>300 °F</td>
<td>290 °F</td>
<td>285 °F</td>
<td>275 °F</td>
<td></td>
</tr>
<tr>
<td>70 to 80 °F</td>
<td>290 °F</td>
<td>285 °F</td>
<td>280 °F</td>
<td>270 °F</td>
<td></td>
</tr>
<tr>
<td>80 to 90 °F</td>
<td>280 °F</td>
<td>275 °F</td>
<td>270 °F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90 °F</td>
<td>275 °F</td>
<td>270 °F</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rolling Time (min.) 6 8 12 15 15

CAUTION: The mixture temperature should never be outside the mixing temperature range shown on the asphalt acceptance card or affidavit.

* This table does not include the effects of warm mix asphalt technologies in the mixture. It is anticipated that the use of warm mix at similar surface and mixture temperatures will extend the rolling time, but to an unknown extent. The information contained in this table for WMA are conservative values.

April 2017 Edition
Motorized pavers should be used to place bituminous surface material on all shoulders over 4 feet wide, unless field conditions or traffic control plans make it impossible. Shoulders may be paved in conjunction with the mainline pavement with appropriate paver and screed breaks and extensions.
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Potential outliers (extreme values) of test results, when they occur, will be identified on the Laboratory Testing Section's laboratory report along with the wording "Cause for Review by District Construction". This does not mean the result is an outlier. However, evaluated statistically, it is identified as a potential outlier. When this occurs, the District must determine whether the result represents an outlier or can be associated with an assignable cause. PTM No. 4 provides guidance to the Districts in evaluating chance cause and assignable cause variation.

The District is to evaluate project records and plant records related to a potential outlier for a likely cause. The District is also to evaluate other similar eCAMMMS results of in-place construction or materials that may demonstrate poor construction or materials quality control problems.

When the outlier is determined to result from deviation from prescribed construction procedure or materials quality control, numerical calculation error, or error in recording numerical data, then an assignable cause can be determined. When the assignable cause is determined to be specifically poor construction or materials quality control practices, the outlier will be retained and processed in the same manner as the other test observations in the sample (lot, etc.). Calculation or recording errors are to be corrected and the sample observation reanalyzed based upon the corrections.

PTM No. 4 states that an outlier may occur due to random variability inherent in the data. In other words, no assignable reason can be determined to cause the variation. In such cases, the outlier should be discarded and when practical, another test determined. However, if it is not practical to obtain another test, the outlier should be discarded and the sample (lot, etc.) re-evaluated in accordance with the applicable specifications on the basis of the reduced number of tests.

The Bureau of Project Delivery is responsible for evaluating the disposition actions by the Districts regarding potential outliers. Therefore, the Districts are to submit documentation as to the disposition of outliers directly in eCAMMMS. The documentation should reference the appropriate specifications and include:

- A brief summary of the District’s evaluation of the identified potential outlier
- What disposition action the District employed in reference to the potential outlier and the applicable specifications
- When applicable, documentation/calculations to re-analyze the lot with the remaining results and include the new Lot Payment

The submitted documentation will be forwarded through eCAMMMS to the Construction Quality Assurance Section for review and approval. The Construction Quality Assurance Section
will review the documentation to ensure the District’s evaluation, resulting action, and applicable calculations follow the specifications.

When the documentation applies to a Federal Oversight Project, the Construction Quality Assurance Section will forward the submitted documentation to the Federal Highway Administration for concurrence, in accordance with POM, Section B.9.2.

After review of the documentation, the Construction Quality Assurance Section will approve or reject the outlier response or may request additional information.

The District should reference the approval from the Construction Quality Assurance Section in the electronic work order adjustment for payment in ECMS.
MEMO

DATE: Insert Date

SUBJECT: Bituminous Outlier Request
Project #NNNNN, SR NNNN, Section XXX
XXXX County, Lot N

TO: Name, Section Chief
Construction Quality Assurance Section
Bureau of Project Delivery

FROM: Name
Assistant District Executive for Construction
Engineering District XX-0

INSERT DETAILS OF OUTLIER REQUEST, INCLUDING:

- Reference the LTS Lab Report
- The location of the material in question and lot specifics
- The District's evaluation of the potential outlier
- The District's disposition action to the potential outlier and applicable specifications
- When applicable, the District's documentation/calculations to re-analyze the lot
  with the remaining results including the new Lot Payment
- Reference to and attach any documents that support the District's recommendation

If you have any questions on this matter or require any additional data, please contact,
(Name) District Materials Engineer/Manager at XXX-XXX-XXXX.

April 2017 Edition
CONVERSION FACTORS AND EXAMPLES FOR COMPUTING THEORETICAL LENGTH OF BITUMINOUS CONCRETE SUBLOTS

Method of computing theoretical length of Bituminous Concrete Sublots
For conversion of Ton to Square Yards

\[
\text{Square Yard (yd}^2) \times \text{Course Depth (in)} \times \text{Conversion Factor (0.75 ft}^3/\text{yd}^2\text{·in)} = \text{Cubic Feet (ft}^3)\]

<table>
<thead>
<tr>
<th>Course Depth</th>
<th>Conversion Factor</th>
<th>Cubic Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>0.75</td>
<td>0.3750</td>
</tr>
<tr>
<td>3/4</td>
<td>0.75</td>
<td>0.5625</td>
</tr>
<tr>
<td>1</td>
<td>0.75</td>
<td>0.7500</td>
</tr>
<tr>
<td>1 1/4</td>
<td>0.75</td>
<td>0.9375</td>
</tr>
<tr>
<td>1 1/2</td>
<td>0.75</td>
<td>1.1250</td>
</tr>
<tr>
<td>1 3/4</td>
<td>0.75</td>
<td>1.3125</td>
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<tr>
<td>2</td>
<td>0.75</td>
<td>1.5000</td>
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<tr>
<td>2 1/4</td>
<td>0.75</td>
<td>1.6875</td>
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<tr>
<td>2 1/2</td>
<td>0.75</td>
<td>1.8750</td>
</tr>
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<td>2 3/4</td>
<td>0.75</td>
<td>2.0625</td>
</tr>
<tr>
<td>3</td>
<td>0.75</td>
<td>2.2500</td>
</tr>
</tbody>
</table>

\[(\text{ft}^3) \times (62.245 \text{ lb/ft}^3) \times (\text{Theoretical Maximum Specific Gravity (Gmm)}) = \text{Weight/yd}^2\text{ of voidless mixture}\]
\[(\text{ft}^3) \times (62.245 \text{ lb/ft}^3) \times (\text{Ndes Bulk Specific Gravity (Gmb)}) = \text{Theoretical Weight/yd}^2\text{ as laid}\]

**Example**

Placing 9.5mm Wearing, 1 1/2” depth, paving 12 ft. in width
Mix Design Theoretical Maximum Specific Gravity (Gmm) = 2.450
Mix Design Ndes Bulk Specific Gravity (Gmb) = 2.352 @ 4.0% voids or 96% compaction
Lot size = 2,500 tons

\[(1.1250 \text{ ft}^3) \times (62.245 \text{ lb/ft}^3) \times (2.450) = 172 \text{ lbs/yd}^2\text{ of voidless mixture}\]
\[(1.1250 \text{ ft}^3) \times (62.245 \text{ lb/ft}^3) \times (2.352) = 165 \text{ lbs/yd}^2\text{ @ 96% compaction}\]

\[(2,500 \text{ ton}) \times (2,000 \text{ lbs/ton}) \div (165 \text{ lbs/yd}^2) = 30,303 \text{ yd}^2\text{ Lot size}\]
\[(30,303 \text{ yd}^2) \div (5 \text{ Sublots}) = 6,061 \text{ yd}^2\text{ Sublot size}\]
\[(6,061 \text{ yd}^2) \times (9 \text{ ft}^2/\text{yd}^2) \div (12 \text{ ft width}) = 4,545 \text{ linear ft/Sublot}\]

*April 2017 Edition*
The following checklist should be utilized in the inspection of bituminous paving.

Bituminous Paving Inspection Checklist

1. Check the traffic control set up against the traffic control plan.
2. Calculate the material testing locations for cores and loose boxes utilizing PTM 1 (Utilize the proper sampling process from the contract / specifications).
3. Check the existing pavement surface for cross slope, patches, wheel ruts, & soft spots. Discuss any questionable areas or areas of concern with the contractor prior to paving.
4. Ensure the pavement surface is clean, has a proper tack coat (see Pub 8 Section 400.3 and Pub 408 Section 460) and the paving joints are painted with the appropriate material.
5. Assure that fuel oil or other solvents that may damage the paving material are not carried on the paving equipment or used near the paving operation.
6. Verify the Mix Design and temperature of the material in the truck at the beginning of the paving operation.
7. Check the cross slope at the beginning of paving to ensure it conforms to the typical section.
8. Identify the density core sampling locations to the contractor from the previous day’s placement and witness the density cores being extracted from the identified locations. Take possession of the cores.
9. Measure the paving course thickness from the density cores.
10. Collect loose box samples from locations calculated utilizing PTM 1. Take possession of the loose box samples.
11. Regularly monitor yield on tonnage projects but only randomly monitor yield on square yard projects.
12. Randomly check for segregation, dust balls, mat cracking & uncoated aggregate.
13. Randomly monitor the rolling pattern for both breakdown and intermediate rolling and ensure aggregate is not being crushed.

April 2017 Edition
14. Randomly monitor the mat density determined by the contractor QC technician.

15. Randomly monitor asphalt material temperatures before and after the paver.

16. Randomly monitor the cross slope especially when it changes and loose depth checks performed by the contractor. Make corrections on the plan drawings, if the “as-built” cross slope changes.

17. Randomly observe equipment for proper operation such as: leaks, auger extensions, truck tarps, etc.

18. Document the above activities, when performed, and enter the information in the PSA with the other required data, daily.

19. Complete the 447 forms for the material samples, assure that samples are properly packaged and protected, labeled, and delivered to the pick-up location within 3 days.

All items must be completed for proper inspection. Items in **BOLD** are mandatory.
The Department's policy is as follows:

- The use of expansion anchor type systems will not be allowed.
- Deformed, epoxy-coated, reinforcing bars may be used as tie-bars in shoulder joints.
- Tie-bars must be epoxy coated, #5 bars, and 30 inches long.
- The bars are to be spaced 30 inches on center, maximum.
- Any visually loose bars must be rejected and replaced. If an epoxy system is used to reinstall the bar, follow the epoxy manufacturer's recommendations for installation, of sufficient embedment to withstand a pullout resistance of 12,000 lb. If there are multiple loose bars, the Representative may elect to test the bars following the procedure outlined in FHWA's "Technical Advisory - Concrete Pavements Joints", T 5040.30, Attachment 2.
- Bars must be inserted perpendicular to the centerline of the roadway. If bent tie-bars are used, the projecting leg must be bent to a perpendicular position prior to placing the adjacent lane of concrete pavement.
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Special attention is needed to assure that Section 501.3(i)2, Publication 408 and Standard Drawing RC-20M are strictly adhered to during the construction of pavement joints.

In order to assure that the Department obtains the required quality and performance of neoprene compression seals in concrete pavement joints, the following areas need to be closely monitored:

- The installation Contractor and the Inspector must carefully monitor and document the amount of stretch or elongation of the installed seal. See Section 501.3(n)2, Publication 408 for current specification limits for elongation.

- Documentation must show the locations of all material in a particular lot. If it is determined that a deficient lot of material must be removed and replaced, it is imperative that the documentation shows the locations where the lot was installed.

- Cleaning of the joint prior to seal installation includes thoroughly cleaning the initial saw cut and shrinkage crack. The easiest method of keeping this joint clean and free of sand and cement slurry is to prohibit the intrusion of material from subsequent sawing and cleaning operations. This may be accomplished by placing backer rod material at the bottom of the initial saw cut until all final sawing and cleaning is performed. Remove backer rod material prior to installing seal. Another method would be blasting the entire joint with high-pressure water. However, the joint must be allowed to dry before installing the seal.

- The equipment which is being used must meet the requirements of Section 501.3(i)2 and installation equipment must be capable of installing the seal in accordance with the requirements of Section 501.3(n) and RC-20M of the Standards for Roadway Construction. It is recommended that the installation Contractor demonstrate that the equipment and procedure which is to be used can in fact place seals within the specification limit prior to beginning production work. If this cannot be demonstrated satisfactorily, the operation should be stopped immediately.

Inspectors must provide the following documentation in their FID reports:

- Initial saw cut depth.
- Temperature of pavement surface at the time of sawing.
- Depth of reservoir saw cut.
- Width of reservoir saw cut.
• Seal installation depth; not to be less than ¼-inch nor more than 3/8-inch below the pavement surface.
• Actual pavement width measured along skew of saw cut and seal length; elongation or stretch is not to exceed 5%.

When corrective action is deemed appropriate, one of the following procedures is appropriate:

1. Remove failed neoprene seals and replace with new neoprene seals. Any joint > 9/16-inch-wide at pavement temperature between 60 to 80 °F or > 5/8 inch at pavement temperature less than 60 °F should have 1¼ inch seals installed, otherwise 1 inch seals are appropriate. Reuse of the existing 1 inch seals, if they rebound after removal to at least 92% of their original width, may be considered but should be discussed with the respective seal manufacturer. Consideration should be given to installing a closed-cell foam or appropriate backer rod material to install the neoprene seal at the appropriate depth to reduce chances of reoccurrence of the seals being pushed to the bottom of the joint reservoir.

2. Remove existing neoprene seals and replace with hot-pour rubberized joint material (ASTM D-3405). This will require selection of appropriate diameter backer rod material, sandblasting or water blasting of the joint faces and installation of the hot-pour material. Placement of the backer rod material to a correct elevation to provide approximately 1:1 width to depth ratio is necessary because joint material shape factor is important to performance. If this occurs, the Contractor must provide a rebate to the Department.
Some contractors have installed load transfer dowels with Bulletin 15 approved epoxy anchor materials in a manner inconsistent with the method under which they were evaluated by the Laboratory Testing Section (LTS) and approved, as recommended and submitted by the manufacturer.

Some contractors are applying the epoxy directly to the load transfer dowel before it is inserted in the predrilled hole. This method does not assure complete evacuation of air voids in the area between the dowel and the dowel hole. This can lead to future performance problems.

As per Pub. 408, Sec. 516.3(e)2, inject all the mixed anchoring material into the rear of the hole before inserting the dowel bar. Rotate the dowel three to five complete rotations while inserting the dowel to purge air voids as completely as possible. Immediately trowel all excess anchoring material flush with the vertical face of the patch until the anchoring material reaches its initial set. Do not leave voids in the anchoring material.

The contractor is responsible for assuring that the manufacturer's method is determined, documented, and employed by its crews. If the Construction Inspection force is not certain about what the manufacturer's approved method may be, the contractor should be required to produce a copy of the installation procedures from the respective anchor material supplier. The District Materials Engineer/Manager may also contact the Physical Testing Unit of LTS at (717) 787-4036 to obtain copies of the manufacturer's recommended procedure.
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All projects are to follow the plans and specifications. DO NOT USE SAND OR OTHER MATERIAL ON PERMEABLE BASES AS A BOND BREAKER.
DBE mobilization can only be paid when it is specifically identified for Subcontractors on the Contractor's Minority Participation and Commitment on Federal-aid contracts.

The intent is to assist individual DBE's project mobilization to provide timely work. Therefore, when requested, it can be paid one month prior to the scheduled start for each affected DBE.
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The Project Field Office Sign, C3-1, is to be used to identify the Department's Project Field Office on construction projects. A copy of the C3-1 sign standard may be obtained from the BOMO Highway Safety and Traffic Operations Division upon request.

Signs may be requisitioned from the Sign Shop as required. Signs which remain in good condition after completion of one project may be transferred and reused on another.
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Protective coatings are required to be applied to precast barrier and/or concrete glare screens at the precast plant. Therefore, the Contractor is not required to apply the coatings at the project site.
FINAL INSPECTION OF PIPE CULVERTS

FINAL INSPECTION OF ALL PIPES EXCEPT 100 YEAR DESIGN LIFE PIPES:

After installation and preliminary inspection, verify the Contractor’s final inspection by performing a Department inspection. Perform the Department inspection at a frequency of 10% of the number of pipe runs, but no less than 1, and not less than 10% of the total length of installed pipe on the project, as outlined in Publication 408, Section 601.3(n). If problems are identified, inspect all pipe runs. Form CS-601 is the pipe inspection form to be used on all projects. A copy of Form CS-601 is shown on C.6.5-2.

FINAL INSPECTION OF 100 YEAR DESIGN LIFE PIPES:

After installation and preliminary inspection, witness the Contractor perform their final inspection of these pipes as outlined in Publication 408, Section 601.3(o). Form CS-601 is the pipe inspection form to be used for documenting this type of inspection. The electronic .pdf version of Form CS-601 is form fillable and automatically calculates the allowable joint tolerance and the allowable deflection/manufacturing tolerance using information entered by the user. A copy of Form CS-601 is shown on C.6.5-2. Determine when defects or irregularities are observed during the crawler-mounted camera closed circuit television inspection that cannot be measured within acceptable tolerances. Accompany the Contractor during final inspection to verify measurements during the individual entry part of remote and manual inspections for pipes with diameters greater than 30-inches. Obtain the appropriate inspection reports and documentation from the Contractor according to PTM No. 450, review the information provided to determine specification compliance and complete those portions of Form CS-601 that were not able to be completed at the time of the inspection.

Retain all completed inspection forms (CS-601) along with documentation and inspection materials generated by the contractor/third party inspection provider in the project records.
CS-601 (4-17)

POST INSTALLATION PIPE INSPECTION REPORT

<table>
<thead>
<tr>
<th>PIPE TYPE:</th>
<th>CONCRETE</th>
<th>METAL</th>
<th>THERMOPLASTIC</th>
<th>50 YEAR</th>
<th>100 YEAR</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>ECMS #:</th>
<th>S.R.:</th>
<th>SECTION:</th>
<th>DATE:</th>
<th>TIME:</th>
</tr>
</thead>
</table>

| CONTRACTOR PERFORMING INSPECTION: | |
|-----------------------------------| |

| EQUIPMENT TYPE: | |
|-----------------| |

| ANALYSIS SOFTWARE & VERSION (100 YEAR ONLY): | |
|---------------------------------------------| |

<table>
<thead>
<tr>
<th>ITEM #:</th>
<th>DESCRIPTION:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOCATION: BEGINNING/ENDING STATION:</th>
<th>DATE PLACED:</th>
<th>PIPE LENGTH (FEET):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| WEATHER CONDITIONS AT TIME OF INSPECTION: | |
|-------------------------------------------| |

| PIPE CONDITIONS (i.e., STANDING WATER, DEBRIS, ETC.): | |
|--------------------------------------------------------| |

<table>
<thead>
<tr>
<th>INTERNAL DIAMETER (INCHES):</th>
<th>ALLOWABLE INSTALLATION JOINT TOLERANCE (INCH):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ALLOWABLE DEFLECTION / MANUFACTURING TOLERANCE (INCHES):</th>
<th>?</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Joints Exceed Installation Tolerance (Identify # of joints, dimensions and locations):</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

| Remarks: | |
|----------| |

<table>
<thead>
<tr>
<th>Cracks, Gouges or Holes (Lengths, widths, diameters and locations):</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

| Remarks: | |
|----------| |

<table>
<thead>
<tr>
<th>Spalls, Dents, Buckling or Seam Separation:</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

| Remarks: | |
|----------| |

<table>
<thead>
<tr>
<th>Evidence of Leakage or Soil Intrusion:</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

| Remarks: | |
|----------| |

<table>
<thead>
<tr>
<th>Loss of Coating/Oxidation:</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

| Remarks: | |
|----------| |

<table>
<thead>
<tr>
<th>Deflection and Ovality/Dimensional Tolerance:</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

| Remarks: | |
|----------| |

<table>
<thead>
<tr>
<th>Vertical Alignment (i.e., Ponded Water):</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

| Remarks: | |
|----------| |

<table>
<thead>
<tr>
<th>PTM No. 450 Inspection Report Provided to Department Representative (100 Year Pipe Only):</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Inspection Revealed Deficiencies Exceeding Specification Limits:</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Prime Contractor Notified a Pipe Remediation Plan is Required:</th>
<th>YES</th>
<th>N/A</th>
</tr>
</thead>
</table>

| Contractor Representative: | Signature: | |
|----------------------------|------------| |

| Department Representative: | Signature: | |
|-----------------------------|------------| |

April 2017 Edition
Publication 280, the manufacturing specification for Pennsylvania Installation Direct Design (PAIDD) pipe describes the markings which are required for reinforced concrete pipe.

Most concrete pipe manufacturers produce pipe which satisfy a broad range of installation conditions based on available increments of reinforcement steel areas rather than producing pipe for every installation type and range of fill heights.

Pipes which exceed the contract requirements, therefore, may be substituted in accordance with the provisions given below:

- Type A (heavy duty) pipe may be substituted for Type B (standard duty) pipe provided the contract fill height requirements are met by the Type A pipe.
  - Example: PA 18 A/S 15-1.5 pipe may be substituted in lieu of PA 18 B/S 15-1.5 pipe.

- Type B pipe may not be substituted when Type A pipe are required. Even if the Type B pipe design criteria exceeds the contract requirements, it is not the responsibility of the project personnel to verify this information. The pipe may, however, be dual stenciled with the corresponding Type A installation and allowable fill height criteria which apply. For example, if PA 18 A/S 15-1.5 pipe are required, PA B/S 20-1.5 pipe may not be substituted even though the Type B product exceeds the contract requirements. The pipe should be re-stenciled prior to being shipped to the project.

- Pipes which exceed the fill height range(s) for the same installation type may be substituted for lesser fill height pipes.
  - Example: PA 18 A/S 20-1.5 may be substituted for PA 18 A/S 7-3

- Pipes must be marked with the fill heights indicated for the actual installation type to be used. Shoring pipe (Sh) cannot be substituted for embankment (S) installation types and vice versa. The pipe may, however, contain dual markings for the range of fill heights approved for each installation type. Manufacturers must verify the installation type to be used by their contractor.

- The CS-4171 shipping certification form must be marked to indicate that a pipe substitution is being made. Refer to the example on the following page.

The above criteria must be applied without exception. Pipes which are not properly substituted as outlined above must not be accepted at the project.
CS-4171 (3-19)

CERTIFICATE OF COMPLIANCE

1. **COUNTY: Berks**
   **LR/SE: 00078**
   **SEC/SEG: 001**
   **ECMS#: E022222**
   (☐ - To be completed by the party that will ship the material to the project, otherwise leave blank.)

2. I / WE hereby certify that the material listed on line 5 was:
   -☐ Manufactured
   -☐ Fabricated
   -☐ Coated
   -☐ Precast
   -☒ Produced
   By A-1 Concrete Pipe Co.

3. The party listed above certifies that the material(s) on line 5 meets the requirements of
   Publication 408, Section(s) 501.2a(3a)
   AASHTO, ASTM, Federal or other designation

4. The material listed below is being shipped to:
   (Company Name)

5. **LOT NO:** 4-2-18
   **QUANTITY** 50 sections (400 LF)
   (Approved Material as Listed in PennDOT Bulletin PA18 A/S 29-1.5 in lieu of PA 18 A/S 10-7 and PA 18 A/S 7-3)

6. ☑ CHECK HERE IF YOUR PRODUCT CONTAINS IRON OR STEEL. I certify the material identified above conforms to Sections 106.01 and 106.10(a) of Publication 408.

   CHECK ONE OF THE TWO BOXES:
   ☑ Product is 100% US steel.
   ☐ Product contains minimal foreign steel in accordance with Act 3 and Buy America.
   Attach Form CS-4171S with receipts or invoices.

   CHECK THE BOX THAT APPLIES TO YOUR PRODUCT:
   ☐ "Identifiable Steel" - Steel products that contain permanent markings that identify that the material was melted and manufactured in the United States. Only Form CS-4171 is required.
   ☐ Steel Products and Products Containing Steel with In-Plant Inspection by the Department or a Department Representative - For 100% US steel products where in-plant inspection has verified that the steel was melted and manufactured in the United States, only Form CS-4171 is required. For products where in-plant inspection has verified minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.
   ☐ Unidentified Steel – Steel products that do not meet the definition of "Identifiable Steel" and do not receive in-plant inspection as defined above. For 100% US steel products, attach supporting documentation including invoices, bills of lading and mill test reports that positively identify that the steel was melted and manufactured in the United States. For products containing minimal foreign steel in accordance with Act 3 and Buy America, attach bills of lading or shipping documents for foreign steel, and attach Form CS-4171S with supporting documentation.

7. **VENDOR CLASSIFICATION (CHECK ONE BLOCK ONLY)**
   ☐ #1 Manufacturer, Fabricator, Coater, Precaster Listed in Bulletin # 15, or Producer Listed in Bulletin # 14, 41 or 42
   ☐ #2 Distributor, Supplier or Private Label Company Not Listed in Bulletin # 15.
   Also, complete line 9
   I certify that the above statements are true and to the best of my knowledge, fairly and accurately describe the product(s) listed.

8. **NAME (print):** John Doe
   **COMPANY NAME:** A-1 Concrete Pipe Co.
   **TITLE:** Quality Control Manager
   **SIGNATURE:**
   **DATE:** 09/17/2018
   By Responsible Company Official

9. List company that sold you the material(s) documented above:
   (Complete if you checked Block # 2 on line # 7, otherwise leave blank.)
   (Company Name)

April 2017 Edition
Standard design pipe produced by manufacturers who maintain either the American Concrete Pipe Association (ACPA) ‘Q-cast’ plant certification or the National Precast Concrete Association (NPCA) concrete pipe plant certification will not receive in-plant inspection during manufacturing and will not receive a Department inspection stamp. Pipe produced under these plant certifications which are delivered to Department projects will contain an identifying stamp or stencil to facilitate identification in the field.

All special design pipe will continue to receive in-plant inspection and an inspection stamp, irrespective of a manufacturer’s plant certification status. Special design pipe is defined as those pipe for which the Department has not provided a standard design in BD-636. Special design pipe is generally installed in ‘deep fill’ situations and is identified in BD-636 by a double asterisk ‘**’.

All pipe must meet the minimum quality standards established in Publication 145 "Inspection of Prestressed/Precast Concrete and Concrete Pipe" and Publication 280/280M "Manufacturing Specification (for concrete pipe)". A summary of the criteria found in these publications which can be verified by field personnel are listed below for your information. Inspection personnel should verify that the conditions listed under the "GENERAL" heading have been met at a minimum. For more specific information, refer to the Detailed Acceptance/Rejection Criteria or the publications directly.

I. General

- Pipe should be free from handling damage, usually evident at the pipe ends. Repairs made by the manufacturer must be sound and properly finished.
- Cement slurry is acceptable within the joint areas. Pipe barrels may not be covered with cement slurry beyond the limits of the joints.
- Reinforcement may not be exposed, except the tips of the longitudinal wires which may be visible at the bell end of the pipe, or spacer tips which may be visible on the outer barrel.
- Reinforcement must have ½ inch minimum cover as measured to the inner or outer barrel.
- Lift holes produced using a ‘punch through method’ may not be used on Department projects. Lift holes, when present, must be formed or cored. Do not use chains or other methods of lifting the pipe which may cause damage to the pipe.
- Each pipe section must contain the required markings described in Section II.C, Markings, below. Pipe designed to carry an equivalent or higher embankment fill height may be substituted in accordance with POM Section C.6.6.
- Stress cracks may not be repaired for acceptance of any section of pipe. Plastic 'tear' cracks formed during manufacturing prior to curing may be repaired by the
manufacturer after v-grooving along the length of the crack. Repaired plastic tear cracks may not exceed 12 inches in length.

Acceptance of pipe with cracks shall be in accordance with the criteria listed in Section II.B., below.

II. Detailed Acceptance/Rejection Criteria

A. Dimensional Tolerances (Publication 280/280M, Section 12)

<table>
<thead>
<tr>
<th>Internal Diameter</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Round: 12 inches to 24 inches</td>
<td>± 1.5%</td>
</tr>
<tr>
<td>27 inches and larger</td>
<td>± 1.0% or 3/8 inch, whichever is greater</td>
</tr>
<tr>
<td>Elliptical: All Sizes</td>
<td>± 2.0%</td>
</tr>
</tbody>
</table>

B. Appearance

Most manufacturers produce pipe using one of several available 'dry cast' processes. These processes utilize zero slump concrete allowing immediate reuse of the forming equipment. Some surface roughness and voids are expected with these processes.

Rejection Criteria (Publication 280/280M, Section 16)

- Reject pipe containing any 'through wall' crack, except for pipe having a single end crack that does not exceed the depth of the joint.
• Honeycombing or open texture which would adversely affect the function of the pipe.
• Damaged or cracked ends where such damage would prevent making a satisfactory joint.
• Any continuous non-through wall crack having an unloaded surface width of 0.003 inch or more and extending for a length of 12 inches or more, regardless of the position in the wall of the pipe.
• Any non-through wall continuous crack having an unloaded surface width of 0.002 inch or less will be accepted, regardless of length.
• Inspect pipes after the full embankment fill is placed. Installed pipes having a crack width greater than 0.007 inch require remediation.

Field verification of pipe having stress cracks shall be performed by measuring the width of the crack by means of a gage made from a leaf having the required thickness [0.003 inch for unloaded, uninstalled pipe; 0.007 inch for installed pipe] as in a set of standard machinist gages, ground to a point of 1/16 inch in width with corners rounded and with a taper of 1/4 in./in. as shown below. Measure the crack width relative to the gage width when the point of the measuring gage will, without forcing, penetrate 1/16 inch at close intervals along the length of the crack. Refer to AASHTO T 280 for more detailed procedures of measuring the cracks.

C. Required Markings (Publication 280/280M, Section 17)

Each section must be clearly labeled according to the following criteria:

**PA "d" "t" / S or SH Max-Min**

Where  
d = pipe diameter, millimeters (inches)  
t = installation type (A=heavy duty, B=standard duty)  
S = standard installation  
SH = shoring or trench box installation  
Max = maximum allowable fill height, meters (feet)  
Min = minimum allowable fill height, meters (feet)

In addition, the following markings are also required:

• Date of manufacture.

*April 2017 Edition*
• Identification of plant.
• For special design pipe with stirrup reinforcement, the word "TOP" must be stenciled on both the inner and outer barrels to assure correct placement during installation.

Note: *Pipe may contain more than one marking designation. For instance, pipe may be marked according to the criteria it meets for both the standard installation "S" and the shoring installation "SH". Pipe may also contain other markings used in specifications required by other approving agencies such as the AASHTO M 170 criteria.*

D. Repairs (Publication 280, Appendices)

Allowable repairs are found in the above referenced publication; however, its size prohibits a complete listing in this summary. Additional repair procedures can be found in Section C.6.11. The following is an abbreviated description:

• Pipe joints may be "slurried" to close off the voids formed during most manufacturing processes. The inner and outer barrels may not be "slurried".
• Reinforcement must be removed from the lift holes.
• End spalls may not exceed 50% of the depth of the joint. The total circumferential length of all spalls on a single joint may not exceed 10% of the total pipe circumference.
• Spalling to the inner barrel may be repaired provided the spall did not reveal reinforcement and the repair area does not extend beyond 150% of the joint depth.
• Plastic "tear" cracks located on the outer barrel, less than 12 inches in length and not exceeding the depth of the reinforcement, may be repaired by the manufacturer prior to shipping.
• Maximum surface area of individual repair areas is 120 in² and may not extend more than 12 inches in any direction.
• Maximum total surface area repaired per pipe section not to exceed 200 in².
The table shown on the following page is provided for project inspectors as a guide to help determine if guide rail may be warranted in embankment areas.

If the embankment height exceeds the maximum allowable unprotected height shown in the table (considering ADT and slope) and no guide rail is specified to be placed, then the Inspector-in-Charge should notify the Assistant Construction Engineer/Assistant Construction Manager (ACE/ACM) to contact the District Guide Rail Mentor to determine if guide rail should be installed. Likewise, if guide rail is specified to be placed but the embankment height does not exceed the maximum allowable unprotected height (considering ADT and slope), the Inspector-in-Charge should notify the ACE/ACM to contact the District Guide Rail Mentor to determine if the specified guide rail is indeed needed or if it should be modified or eliminated.

The length of need, roadside hazards, clear zones, type of end section to be used, as well as guide rail type required, should all be considered and addressed prior to making any changes.

The inspector should discuss with the ACE/ACM and consider using any extra excavated material, if available, to flatten out the slopes (planned or existing) whenever possible, to eliminate an entire guide rail run and/or reduce the length of the required guide rail. The existing drainage system should be taken into consideration when flattening out slopes. When flattening existing slopes, maintain existing swale inverts below the original sub grade or install additional subsurface drainage collection systems. All material must be kept within the Department right of way.

Do not modify any guide rail unless written approval is obtained from the ACE/ACM, through the District Guide Rail Mentor.
# Maximum Allowable Unprotected Embankment Height

<table>
<thead>
<tr>
<th>EMBANKMENT SLOPE (S = b1 : a1)</th>
<th>EMBANKMENT HEIGHT (h)</th>
<th>AVERAGE DAILY TRAFFIC (ADT)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; 5000</td>
<td>751 - 5000</td>
</tr>
<tr>
<td>1V:1.5H</td>
<td>4.0 ft</td>
<td>6.0 ft</td>
</tr>
<tr>
<td>1V:2H</td>
<td>8.0 ft</td>
<td>10.0 ft</td>
</tr>
<tr>
<td>1V:2.5H</td>
<td>12.0 ft</td>
<td>16.0 ft</td>
</tr>
<tr>
<td>1V:3H OR FLATTER</td>
<td>GUIDE RAIL NOT REQUIRED</td>
<td></td>
</tr>
</tbody>
</table>

*S = Slope  
*h = Embankment Height  
*V = Vertical Distance  
*H = Horizontal Distance

* Table is from Publication 13M Design Manual 2 Chapter 12
1. **Purpose:**

To establish the Department policy to ensure that requirements of Section 686.3, Construction Surveying are met. The Department’s representative will verify that the contractor’s Surveying Method will ensure that the project is constructed in accordance with the grade and alignment as required by the contract documents.

2. **Background:**

The Department has oversight responsibility to verify accurate construction of all Federal-aid projects.

Section 686.3 of Publication 408 provides that the Contractor is responsible for the construction stakeout of the project, using the horizontal and vertical control established by the Department. The Contractor is also responsible for relocation and/or preservation of all horizontal references of major control points and vertical benchmarks established by the Department.

Section 686.3 accommodates the use of electronic survey equipment and automated grade controls by reducing the requirements of construction staking. The Department representative must ensure that sufficient independent verification is performed.

3. **Procedures:**

The representative is responsible for assuring that the contractor’s project surveying responsibilities receive adequate verification that projects are completed in conformance with approved plans and specifications.

The representative will review the contractor’s stakeout schedule developed for the project. Verify that all major control points will be referenced and vertical benchmarks will be established at appropriate locations.

4. **Defined Responsibilities:**

The Assistant District Executive (ADE) for Construction shall coordinate with the ADE for Design, the District Chief of Surveys or their designees to ensure that qualified personnel and equipment are committed to perform verification of construction staking and finished grades. Verification may be performed by qualified Department personnel assigned to the project, consultants or the District survey crews.

*April 2017 Edition*
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The Curb Ramp Inspection Form (CS-4401) will be used for the inspection of all altered curb ramps within the project limits to ensure compliance to PennDOT standards or the contract documents. This includes newly constructed curb ramps and existing curb ramps not reconstructed. Refer to Publication 13M, Design Manual Part 2, Chapter 6 for additional information on “alterations.”

A thorough and rigorous inspection to ensure an ADA compliant curb ramp must be completed. All newly constructed curb ramps or curb ramps located within the project limits must be inspected/measured in the field for compliance to RC-67M Standards. The slopes indicated in RC-67M are absolute maximum slopes. Only slopes that are equal to or less than the indicated slopes are acceptable.

Where fully meeting the RC-67M standards is “Technically Infeasible”, access must be provided to the maximum extent possible. When this occurs, curb ramps or other pedestrian facilities must be constructed in accordance with the contract documents. See Publication 13M - Design Manual Part 2, Chapter 6 for additional information on Technically Infeasible.

The Curb Ramp Inspection Form (CS-4401) will record all measurements and serve as a record that PennDOT has constructed the curb ramps to current standards or provided access to the maximum extent feasible. The form will contain the field measurements, pictures of the constructed curb ramps, and images of the Technically Infeasible Form (if applicable).

The completed form must be submitted electronically, in EXCEL, to the ADA Coordinator upon completion and acceptance of the curb ramp construction. The data from the form will be extracted into a database for record keeping purposes.

**INSTRUCTIONS**

**Before you Begin:**
- When saving the file, use Excel Macro-Enabled Workbook format with a *.xlsm extension. Do not use a different file format.
- The following tabs are included in the form:
  - Tab 1. Inspection Form
  - Tab 2. Inspection Form Continued
  - Tab 3. Pictures
  - Tab 4. Tech. Infeasible Form
  - Tab 5. Scanned Forms
  - Tab 6. Instructions
TAB 1 - INSPECTION FORM

All “blue filled” cells require information to be entered. Many cells have a drop down selection with a header. The header is used for filling out a printed version. The header must be changed to the appropriate selection.

For example: “☐ No  ☐ Yes” would be the header. Either “No” or “Yes” must be selected.

Date of Investigation
Enter the year, month, and day of the investigation (format yyyy mm dd).

Field Investigators
Insert the name(s) of the investigator(s).

Engineering District Code
Insert the engineering district code.

County Name
Insert the appropriate county. (The county code will automatically fill in once the appropriate county is selected.)

Municipality Name
Insert the appropriate municipality name. (The municipality code will automatically fill in once the appropriate municipality name is entered.)

Construction Phase
Select the appropriate status of the curb ramp being investigated.

☐ Constructed. Select this phase for newly constructed curb ramps for inspection purposes.
☐ Existing-Survey. Select this phase for documenting existing curb ramps.
☐ Missing. Select this phase for documenting missing curb ramps.

Ramp Crosses
Select what type of roadway the ramp crosses or services.

Ramp Surface
Select ramp surface type (Brick, Concrete or Other). If “Other”, enter the surface type in the cell immediately to the right.

Surface Stable, Firm, and Slip Resistant
Indicate if the curb ramp surface is stable, firm, and slip resistant.
Elevation Differences > ¼”
Indicate if any vertical elevation differences between sections of sidewalk found anywhere on the curb ramp that are greater than 1/4” exist. If vertical elevation differences exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2” enter “8” (8/16) on the form, or if measured 2” enter 32 (32/16) in the form.

Grate Openings or Gaps > ½”
Indicate if any grate openings or gaps greater than 1/2” are located within the immediate pedestrian path. If horizontal gaps exist, measure to the nearest 1/16 of an inch. For example, if measured 1/2” enter “8” (8/16) on the form, or if measured 2” enter 32 (32/16) on the form.

Utilities in Path of Travel
Indicate if there are any utilities that obstruct the path of travel.

Water Ponding in Path of Travel
Indicate if any water ponding exists within the travel path of the curb ramp.

Detectable Warning Surface (DWS)
Indicate if a detectable warning surface is present.

DWS Type
If “Yes” is answered in previous question, indicate what type of DWS is present. If “Other”, fill in cell to the right to indicate what type of DWS is being used.

Pedestrian Crossings
Indicate if a pedestrian crossing exists. If a pedestrian crossing does not exist, a curb ramp is not needed. The crossing may be marked or unmarked. If “Yes”, the cell to the right will become highlighted with blue fill, requiring it to be completed. Select “Single Ramp with Single Cross Walk” or “Single Ramp with Double Cross Walk”.

Ramp at Stop or Yield Controlled Crosswalk
Indicate if the ramp serves a Stop or Yield Controlled crosswalk.

Ramp Leads to Accessible Path
Indicate if the ramp leads to an accessible path, such as a sidewalk or to a pedestrian pushbutton.

Longitudinal/Cross Slope in Front of Ramp
Enter the longitudinal and cross slope values (as a percentage) in the appropriate cells. The longitudinal slope is equal to the slope parallel to the direction of the ramp (in the street); the cross slope is equal to the slope perpendicular to the direction of the ramp (in the street).

Turning Maneuver in Street
Indicate if pedestrians must perform turning maneuvers in the street. If “Yes”, a landing is required in the street.
Turning Maneuver at Top of Ramp (Smax)
Indicate if pedestrians must perform turning maneuvers at the top of the ramp. If “Yes”, Smax is required.

ECMS #
Enter the ECMS # for the project that altered the curb ramp.

Algebraic Δ Grade (Algebraic Change in Grade)
Enter the maximum algebraic change between the ramp slope and roadway slope (as a percentage).

Intersection Ramp # of #
Enter the number for the ramp being investigated followed by the total number of ramps being investigated at the intersection. For example, if the ramp at the intersection of Ramp “X” of “Y” is being investigated, “Y” is the total number of the ramps at the intersection and “X” is the number assigned to the specific ramp being investigated.

Ramp Location
Using the intersection figure shown, select the appropriate button for which the investigated curb ramp is located.

North Leg/North Leg Description
Include the name of the roadway (if applicable) for the northbound roadway. Then directly below that cell, indicate the type of roadway (state route, boulevard, road, street, etc.). If the roadway is a state route number (format: 0000), also include the Segment # (format: 0000) and Offset # (format: 0000) of the intersection. If the roadway is a local road, include the name of the local road and description. Complete this for all legs of the intersection.

Curb Ramp Type
Indicate the type of ramp being investigated. Depending on curb ramp type, complete all of the required dimensions on Tab 2 – Inspection Form Continued. Each cell is color-coded to indicate whether the information entered meets RC-67M. If data is entered and the cell becomes highlighted with green fill, the data meets RC-67M. If the cell becomes highlighted with red fill, the data does not meet RC-67M. If the cell becomes highlighted with yellow fill, the data does not match RC-67M but this may be due to tie-ins with the existing site. The chart located to the right of the data entry form indicates the minimum measurement requirements (compliance check).

Accessible Pedestrian Push Buttons
Indicate if pedestrian push buttons are accessible.
Asset #
The Asset number will be automatically completed as information is entered into the data entry form.

Status
Select the status of the curb ramp.
☐ Current. The curb ramp is an active curb ramp.
☐ Archive. The curb ramp has been removed/replaced and is no longer in use.

Level of Service
Once the curb ramp is inspected and reviewed, indicate the level of service:
☐ Meets RC-67M (compliant)
☐ Constructed per contract documents (compliant)
☐ Ex - Provides Maximum Access (compliant)
☐ Non-Compliant

TAB 2 - INSPECTION FORM CONTINUED
Indicate the type of ramp being investigated using the curb ramp diagrams. Depending on curb ramp type, complete all of the required dimensions “A” through “CC”. Each cell is color-coded to indicate whether the information entered meets RC-67M. Use “999” or “-999” for measurements that are not applicable.

TAB 3 - PICTURES TAB
Click on the “Insert Picture #” button to insert the appropriate picture.

TAB 4 - TECH. INFEASIBLE FORM TAB (IF APPLICABLE)
If used, click on “Insert Tech Infeasible Form Sheet 1” button to insert the Technically Infeasible Form image. Repeat this process for the second image of the Technically Infeasible Form. Contact the PennDOT project manager to obtain image files of the Technically Infeasible Form.

TAB 5 – SCANNED FORMS TAB (IF APPLICABLE)
If the Inspection Form is printed and used to collect measurements, the form must be scanned as an image and inserted into the appropriate location. Click on the “Insert Scanned Inspection Form” button to insert the first page. Repeat this process for the second page. Scanning: It has been determined that a TIFF file format at 200 DPI produces a clear image at a reasonable file size.

TAB 6 - INSTRUCTIONS
Use this tab as a quick reference to the instructions.
SUBMISSION
Perform the following for submission.

Reduce Image Size
To keep file size to a minimum, select a picture:
1. Go to the Format tab
2. Select Compress Pictures
3. Uncheck “Apply only to this picture”
4. Select Print (200 ppi)
5. Click OK.

Save File
When saving, use Excel Macro-Enabled Workbook format with a *.xlsm extension. Do not use a different file format. If all the cells are not completed, a warning message will appear. The work has been saved, but the file is not complete. Fill in remaining cells and resave.
Send file to ADA Coordinator
Upon completion of the form, submit files in Excel Macro-Enabled Workbook format to the ADA Coordinator. Incomplete forms will be returned.
Tab 1 - Inspection Form

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Sheet 1 - Inspection Form
Tab 2 – Inspection Form Continued

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*Note: Crossing may be marked or unmarked.*
Tab 3 – Pictures
Tab 4 – Technically Infeasible Form
Tab 5 – Scanned Form

CS-4401 (6-17)

Scanned Inspection Form (TIFF set resolution to 200 DPI)

See the last tab of this workbook for instructions

SAMPLE
General
The remediation strategies shown were developed to provide general guidance for the repair of both 50 and 100 year service life pipes. Each project and pipe condition should be analyzed independently to determine whether the method is applicable or not. In some cases, the pipe size and condition may be a limiting factor in determining whether the repair methods shown can be accomplished or not, based on human entry, safety or other factors. The manufacturer of the pipe should be consulted for recommendations.

Rehabilitation Strategies for All Pipe
Where the pipe condition and defects warrant analysis, and when the analysis indicates that the pipe is structurally unsound, only two options should be considered – either removal and replacement or a relining of the pipe with another pipe to restore the structural capacity to the pipe. In the second case, a hydraulic analysis, which considers both inlet and outlet control conditions, must also be performed and submitted.

In addition, the contractor is responsible for developing and submitting a construction and installation procedure for review and approval by the Engineering District. The procedure must reference the materials and test methods to be used. Materials that are not Bulletin 15 approved must be submitted for evaluation in accordance with Section 106.02 (a) 2 along with any applicable component or finished product testing requirements for verification by the Department.

Design Requirements and Assumptions for Rehabilitation of All Pipe Deemed Not Structurally Adequate
- The existing pipe provides no strength and does not reduce loads to a new lining or pipe insert
- Design the new lining or pipe insert for full dead load, live load, and external water pressure
- Any reduction of the inside diameter of the existing pipe must be hydraulically acceptable
- Design is to be in accordance with Design Manual 4
- Pipe Analysis and rehabilitation strategy is to be submitted to the Department for approval

Cost Adjustments
The District should reference Table B to determine cost adjustment when repairs or remediation methods are unlikely to restore the full design service life of the pipe and/or result in future anticipated maintenance. Remediation procedures shall consider diameter/span and cover depth in determining repair methods.
Table B identifies remediation thresholds to consider for the appropriate rebate to the Department. The contractor must submit a remediation plan for approval when any pipe deficiency exceeds remediation allowance. Upon approval of the remediation plan, the contractor repairs the deficiencies AND provides the Department the specified rebate. If the contractor elects to replace the pipe, no rebate is necessary.

If the pipe deficiency exceeds remediation tolerances and there is soil infiltration, the contractor must submit a pipe analysis that shows structural adequacy of the in place pipe. If the analysis is not approved by the Department, the pipe must be replaced or relined in accordance with “Rehabilitation Strategies for all Pipe” indicated above. If the pipe analysis is approved, the contractor must submit a remediation plan for approval. Upon approval of the remediation plan, the contractor repairs the deficiencies AND provides the Department the specified rebate. If the contractor elects to replace the pipe, no rebate is necessary.
SUGGESTED REMEDIATION FOR PIPE DEFECTS IN INSTALLED CONCRETE PIPE

Cracking

Flexural Cracks (See Fig.1, Pg 9)
- Crack Width \( \leq 0.007" \)
  - No Action or Repair Required
- Crack Width > 0.007" and length > 12"
  - Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

Shear Cracks (See Fig. 2, Pg 9)
- No Action or Repair Required
- Crack Width \( \leq 0.007" \)
  - Monitor Crack Widths for a Minimum of 3 Months
- Crack Width > 0.007" and length >12"
  - Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

Radial Tension Cracks (See Fig. 3, Pg 9)
- Crack Width \( > 0.007" \)
  - Increase in Crack Width?
    - Yes: Continue Monitoring at minimum 1 month intervals to determine if crack width stabilizes. Monitor for 3 months
    - No: Crack Width \( \leq 0.125" \)
      - Adequate Capacity?
        - Yes: Pressure injection Epoxy Crack Repair (See pgs. 17-18, Technical Specification for the Epoxy Injection of Cracks From 0.008" to 0.125"). Reduce pay per Table B
        - No: Pipe analysis required, submit plan for repair, or remediation per 601.3(p) of Pub-408 (See attached Pg 1). Reduce pay per Table B
      - Crack Width \( > 0.007" \) and length >12"
        - No Action or Repair Required

Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B
SUGGESTED REMEDIATION FOR PIPE DEFECTS IN INSTALLED CONCRETE PIPE

Spalling

No

Exposed Reinforcement

Yes

“Non-Structural Repair” Repair as per Pub 145, Part 4 Appendices Non-Structural Repair Section

Joint Separation

No

Joint Separation installation allowance in Pub 408 Section 601 Table A & B

Yes

Maximum Joint Gap allowance in Pub 408 Section 601 Table A & B

Yes

Soil Infiltration visible?

No

Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

Yes

Accept

No

Accept with reduced pay per Table B

Single Spall Areas ≤ 150 sq.in. per section

“Structural Repair” Repair as per Pub 145, Part 4 Appendices Structural Repair Section. Reduce pay per Table B

Single Spall Areas > 150 sq.in. per section

Pipe Analysis Required

Adequate Capacity?

Yes

No

Submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

Soil Infiltration visible?

No

Yes

Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

Accept

No

No

Yes

Soil infiltration visible?

Submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

April 2017 Edition
SUGGESTED REMEDIATION FOR PIPE DEFECTS IN INSTALLED METAL PIPE

Coating Damage
- Pinholes, blisters, cracks in coating, lack of coating bond to surface; loss of galvanizing
  - Repair per AASHTO M 36 and AASHTO M 245 at no cost to the Department.

Hole
- Hole Size ≥ 3/8" Φ
  - No → Infiltration of soil or water visible?
    - No → Accept
    - Yes → pipe Φ > 30"
      - Yes → Install internal repair patch (see Fig 4, Pg 10). Reduce payment per Table B
      - No → Submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1).
  - Yes → Hole Size > width of 1.5 corrugations
    - No → pipe Φ > 30"
      - Yes → Submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B
      - No → Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B
SUGGESTED REMEDIATION FOR PIPE DEFECTS IN INSTALLED METAL PIPE

Joint Separation

Joint Separation > installation allowance in Pub 408 Section 601.3(n)2.a

Yes

Maximum Joint Gap allowance in Pub 408 Section 601 Table C

No

Yes

Soil Infiltration visible?

No

Soil infiltration visible?

Yes

Submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

No

Dents

Dents Exceeds 5% deflection of diameter or 1 sq. ft. or is greater than 10% of circumference

No

Accept

Deflection > 7.5% of diameter, + 1% or ½” whichever is greater

Buckling or Deflection

Yes

Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

No

Accept

Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

Accept with reduced pay per Table B
SUGGESTED REMEDIATION FOR DEFECTS IN INSTALLED THERMOPLASTIC PIPE

Buckling or Deflection

Deflection > 5% of diameter?

No

Accept

Yes

Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

Joint Separation

Joint Separation > ¼”

No

Leakage or Infiltration visible?

Yes

Accept

No

Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

Yes

Maximum Joint Gap allowance Greater than 1”

Yes

Leakage or infiltration visible?

Yes

Submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B

No

Accept with reduced pay per Table B
SUGGESTED REMEDIATION FOR PIPE DEFECTS IN INSTALLED THERMOPLASTIC PIPE

### Cracking

- **Crack ≥1/8” in width and Crack ≥6” in length**
  - Yes: Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1).
  - No: Infiltration soil or water visible?
    - No: Accept
    - Yes: Submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1).

### Hole

- **Hole Size ≥ ½”Φ**
  - No: Accept
  - Yes: Infiltration soil or water?
    - No: Accept
    - Yes:  
      - **Pipe Φ > 30”**
        - Yes: Install internal repair patch (see Fig 4, Pg 10 or 11). Reduce payment per Table B
        - No: Hole Size > Width of 1.5 corrugation?
          - Yes: Pipe analysis required, submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1).
          - No: Submit plan for repair or remediation per 601.3(p) of Pub 408 (See attached Pg 1). Reduce pay per Table B
CONCRETE PIPE

FIGURE NO.1 – FLEXURAL CRACKS

FIGURE NO.2 – SHEAR CRACKS

FIGURE NO.3 – RADIAL TENSION CRACKS (SLABBING)

PHOTO NO. 1, Example of Flexural Crack

PHOTO NO. 2, Example of Shear Crack

PHOTO NO. 3, Example of Radial Tension Cracks
Stainless Steel Screws @ 1 inch cc with caulking (see Pub 408 Section 705.8(b) ASTM C 920) all around under screw line.

For thermoplastic and CMP, 3/8” stainless steel or hot-dipped galvanized screws to be placed at each crest. Use repair plate that matches the existing material.
For High Density Polyethylene (HDPE), sheet reinforcement with a thickness at least the same as the pipe wall shall be welded in place. Before extrusion welding the sheet reinforcement to the pipe, the surface should be clean, dry, and free of debris. If necessary, sanding and/or grinding of the surface may be required to remove any oxidation or surface defects. Care should be taken to not structurally damage the pipe during preparation. Once centered, the spline or weld bead is centered over the edge of patch and pipe (Figure No. 4). Once the weld is complete, the weld should be air cooled.
Table A provides a sample of pipe repair methods. Contractors may provide other repair methods not included in the Table A as their remediation plan. Pipe repair methods will continue to be evaluated and added to Bulletin 15 if performance is acceptable.

Table A - Pipe Repair Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Whole or spot repair</th>
<th>Diameter*</th>
<th>Structural or non-structural</th>
<th>Estimated Service Life*</th>
<th>Pipe material can repair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spray-on Concrete</td>
<td>Whole</td>
<td>30” to 144”</td>
<td>Structural</td>
<td>50-75 years</td>
<td>All</td>
</tr>
<tr>
<td>Spray On Polyurethane-Rigid Hybrid</td>
<td>Whole</td>
<td>42” or greater</td>
<td>Structural or Non-Structural</td>
<td>At least 50 years</td>
<td>All</td>
</tr>
<tr>
<td>Spray On Polyurethane-Elastomeric</td>
<td>Whole</td>
<td>42” or greater</td>
<td>Non-Structural</td>
<td>At least 50 years</td>
<td>All</td>
</tr>
<tr>
<td>Cured in Place Pipe – Steam</td>
<td>Whole</td>
<td>4” to 108”</td>
<td>Structural</td>
<td>50-75 years</td>
<td>All</td>
</tr>
<tr>
<td>Cured in Place Pipe – UV</td>
<td>Whole</td>
<td>6” to 50”</td>
<td>Structural</td>
<td>50-75 years</td>
<td>All</td>
</tr>
<tr>
<td>Cured in Place Pipe – Spot Repair</td>
<td>Spot</td>
<td>3” to 48”</td>
<td>Structural</td>
<td>50-75 years</td>
<td>All</td>
</tr>
<tr>
<td>Slip liner – PVC, HDPE</td>
<td>Whole</td>
<td>4” to 158”</td>
<td>Structural</td>
<td>At least 50 years</td>
<td>All</td>
</tr>
<tr>
<td>Internal Joint Seal</td>
<td>Spot</td>
<td>18” to 122”</td>
<td>Non-Structural</td>
<td>50 years</td>
<td>All</td>
</tr>
<tr>
<td>Welding</td>
<td>Spot</td>
<td>36” or greater</td>
<td>Non-Structural</td>
<td>50 years</td>
<td>Metal, Thermoplastic</td>
</tr>
<tr>
<td>Mechanical Repair Sleeve</td>
<td>Spot</td>
<td>6” to 72”</td>
<td>Structural</td>
<td>50 years</td>
<td>All</td>
</tr>
<tr>
<td>Epoxy Injection</td>
<td>Spot</td>
<td>36” or greater</td>
<td>Non-Structural</td>
<td>50 years</td>
<td>Concrete</td>
</tr>
</tbody>
</table>

*This information may vary depending on manufacturer.
Table B - Rebates

<table>
<thead>
<tr>
<th>Concrete Pipe</th>
<th>Criteria</th>
<th>Correction Plan</th>
<th>Rebate</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOINTS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater than Section 601.3(n)1.a specification</td>
<td>No action</td>
<td>Reduce payment by one foot on each side of the joint (including excavation, pipe and backfill)</td>
<td></td>
</tr>
<tr>
<td>required joint gap installation allowance but less than the Maximum Joint Gap allowance and soil tight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater than the Maximum Joint Gap allowance without soil infiltration.</td>
<td>Submit a plan for repair or replacement as specified in Section 601.3(p).</td>
<td>Reduce payment by two foot on each side of the joint (including excavation, pipe and backfill)</td>
<td></td>
</tr>
<tr>
<td>Any soil infiltration</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>Reduce payment by 50% of the total cost for the length of each pipe section on both sides of the joint (including excavation, pipe and backfill).</td>
<td></td>
</tr>
<tr>
<td>CRACKS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cracks with a width less than or equal to 0.007 inches</td>
<td>Note in inspection report, No remedial action</td>
<td>No Rebate required</td>
<td></td>
</tr>
<tr>
<td>Cracks with a width greater than 0.007 inches and length greater than 12 inches</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>District shall negotiate a cost adjustment</td>
<td></td>
</tr>
<tr>
<td>SPALLS/CHIPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spalled area has no exposed reinforcement.</td>
<td>Repair according to Pub 145, Part 4 Appendices Non-Structural Repair Section</td>
<td>No Rebate required</td>
<td></td>
</tr>
<tr>
<td>Spalled area has exposed reinforcement with single spall area less than or equal to 150 sq. in.</td>
<td>Repair according to Pub 145, Part 4 Appendices Structural Repair Section</td>
<td>District shall negotiate a cost adjustment</td>
<td></td>
</tr>
<tr>
<td>Spalled area has exposed reinforcement with single spall area greater than 150 sq. in.</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>District shall negotiate a cost adjustment</td>
<td></td>
</tr>
</tbody>
</table>
### Metal Pipe

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Correction Plan</th>
<th>Rebate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>JOINTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater than Section 601.3(n)2.a specification required joint gap installation allowance but less than the Maximum Joint Gap allowance without soil infiltration.</td>
<td>No action</td>
<td>Reduce payment by 2.5 foot on each side of the joint (including excavation, pipe and backfill)</td>
</tr>
<tr>
<td>Greater than the Maximum Joint Gap allowance without remediation.</td>
<td>Submit a plan for repair or replacement as specified in Section 601.3(p).</td>
<td>Reduce payment by five foot on each side of the joint (including excavation, pipe and backfill)</td>
</tr>
<tr>
<td>Any soil infiltration</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>Reduce payment by 50% of the total cost for the length of each pipe section on both sides of the joint (including excavation, pipe and backfill).</td>
</tr>
<tr>
<td>Original coating has pinholes, blisters, cracks in coating, lack of coating bond to surface or loss of galvanizing</td>
<td>Coating damage noted in inspection report. Repairs shall be performed at no cost to the Department as specified in Section 601.3(n)2.b.</td>
<td>No rebate required</td>
</tr>
<tr>
<td><strong>DEFLECTION/BUCKLING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any deflection less than 7.5% of round pipe</td>
<td>Note in inspection report, No remedial action</td>
<td>No Rebate required</td>
</tr>
<tr>
<td>ROUND PIPE - Any deflection greater than 7.5% of diameter plus manufacturer tolerance of 1% or ½ inch undersize, whichever is greater.</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td>ARCH PIPE- Any deflection 7.5% decrease in rise and 7.5% increase in span from nominal dimension</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td>HOLEs</td>
<td>Note in inspection report, No remedial action</td>
<td>No Rebate required</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>----------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Holes with a diameter less than ½ inch without leakage or soil infiltration</td>
<td>Note in inspection report, No remedial action</td>
<td>No Rebate required</td>
</tr>
<tr>
<td>Holes with a diameter less than ½ inch with leakage or soil infiltration</td>
<td>Install internal repair patch for pipes with diameter larger than 30 inches</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td>Holes with a diameter less than ½ inch with leakage or soil infiltration</td>
<td>Pipes 30 inches and less in diameter submit a plan for repair or replacement as specified in Section 601.3(p)</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td>Holes with a diameter greater than or equal to ½ inch but less than the width of 1.5 of corrugation</td>
<td>Pipes 30 inches and less in diameter submit a plan for repair or replacement as specified in Section 601.3(p)</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td>Holes with a diameter greater than or equal to ½ inch but less than the width of 1.5 of corrugation</td>
<td>Install internal repair patch for pipes with diameter larger than 30 inches</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td>Holes with a diameter greater than or equal to the width of 1.5 of corrugation</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DENTS</th>
<th>Note in inspection report, No remedial action</th>
<th>No Rebate required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dents less than 5% deflection of diameter or 1 sq.ft. or less than 10% of circumference</td>
<td>Note in inspection report, No remedial action</td>
<td>No Rebate required</td>
</tr>
<tr>
<td>Dents greater than 5% deflection of diameter or 1 sq.ft. or greater than 10% of circumference</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td>Criteria</td>
<td>Correction Plan</td>
<td>Rebate</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>JOINTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greater than Section 601.3(n)3.a specification required joint gap installation allowance but less than the Maximum Joint Gap allowance without leakage or soil infiltration</td>
<td>No action</td>
<td>Reduce payment by 2.5 foot on each side of the joint (including excavation, pipe and backfill)</td>
</tr>
<tr>
<td>Greater than the Maximum Joint Gap allowance without remediation</td>
<td>Submit a plan for repair or replacement as specified in Section 601.3(p).</td>
<td>Reduce payment by five foot on each side of the joint (including excavation, pipe and backfill)</td>
</tr>
<tr>
<td>Any leakage or soil infiltration</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>Reduce payment by 50% of the total cost for the length of each pipe section on both sides of the joint (including excavation, pipe and backfill).</td>
</tr>
<tr>
<td><strong>CRACKS/RIPS/TEARS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cracks in the interior wall of pipe less than 1/8 inch in width and less than 6 inches in length without leakage or soil infiltration</td>
<td>Note in inspection report, No remedial action</td>
<td>No Rebate required</td>
</tr>
<tr>
<td>Cracks in the interior wall of pipe less than 1/8 inch in width and less than 6 inches in length with leakage or soil infiltration</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td>Cracks in the interior wall of pipe greater than and equal to 1/8 inch in width or greater than or equal to 6 inches in length</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td><strong>HOLES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holes with a diameter less than ½ inch without leakage or soil infiltration</td>
<td>Note in inspection report, No remedial action</td>
<td>No Rebate required</td>
</tr>
<tr>
<td>Holes with a diameter less than ½ inch with leakage or soil infiltration</td>
<td>Install internal repair patch for pipes with diameter larger than 30 inches</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td>Holes with a diameter less than ½ inch with leakage or soil infiltration</td>
<td>Pipes 30 inches and less in diameter submit a plan for repair or replacement as specified in Section 601.3(p)</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Holes with a diameter greater than or equal to ½ inch but less than the width of 1.5 of corrugation</td>
<td>Pipes 30 inches and less in diameter submit a plan for repair or replacement as specified in Section 601.3(p)</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
<tr>
<td>Install internal repair patch for pipes with diameter larger than 30 inches</td>
<td>District shall negotiate a cost adjustment</td>
<td></td>
</tr>
<tr>
<td>Holes with a diameter greater than or equal to the width of 1.5 of corrugation</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
</tbody>
</table>

**DEFLECTION/BUCKLING**

<table>
<thead>
<tr>
<th>Any deflection less than 5% of original pipe diameter</th>
<th>Note in inspection report, No remedial action</th>
<th>No Rebate required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any deflection greater than 5% of original pipe diameter</td>
<td>Submit a pipe analysis with the plan for repair or replacement as specified in Section 601.3(p).</td>
<td>District shall negotiate a cost adjustment</td>
</tr>
</tbody>
</table>
Technical Specification
for the Epoxy Injection of Cracks from 0.008” to 0.125” in Concrete Pipe
Not in Shear or Radial Tension

General Description
This is a guide specification for the injection of epoxy resin into cracks of 0.008” to 0.125” in surface width in reinforced concrete pipe to prevent water intrusion into the crack and prevent corrosion of the reinforcement for pipe sizes that allow for individual entry. This guide specification is not considered a structural repair and therefore is intended only for those applications where through evaluation and analysis the pipe is considered to retain its original structural capacity. Modification of this guide specification may be required based on the individual condition of the pipe and should be evaluated on a case by case basis.

Materials
1) Epoxy Injection Resin
   ASTM – C881, Type 1, Grade 3 – from a manufacturer listed in Bulletin 15.
2) Epoxy Injection Gel
   ASTM – C881, Type 1, Grade 3 – from a manufacturer listed in Bulletin 15.
3) Surface Sealer and Port Adhesive
   As recommended by the manufacturer, and of adequate strength to hold injection fittings firmly in place and to resist injection pressures to prevent leakage during injection.
4) Injection Fittings. As recommended by the manufacturer.
5) Certification. Section 106.03(b)3.

Construction
1) General. Perform injection using trained personnel supervised by an experienced person skilled in the use of epoxy injection equipment and injection resins.
2) Equipment. Use a portable epoxy injection unit equipped with positive displacement type pumps which provide positive ration control of epoxy injection resin compounds. Pumps are to be air or electric powered providing in line mixing and metering for two component epoxies. Conform to the manufacturer recommended tolerances for mixing volume and discharge pressures.
3) Application Limitations. Do not apply or inject materials if ambient or concrete temperature is below 40°F.
4) Water Control. Perform work when invert water level prior to damming is 6 inches or less to eliminate the possibility of hydrostatic pressure. Construct a sandbag dam above the work area which prevents water flow through the pipe. Divert water below work area with a sump pump and hose. Remove sandbag dam each night.
5) Preliminary Work. Cracks and limits of repair to be sealed will be marked by the Engineer.
6) Preparation for Sealing. Prior to setting the ports, air blast the crack to remove excess water. Thoroughly clean the surfaces of rust, scale, grease, loose and disintegrated articles of material. Place ports in the bottom and top inside cracks as required by crack width and manufacturer’s recommendations. Bottom ports are to be set the day of resin injection. Place ports at a 6 inch maximum spacing for radial cracks and pipe section ends. Place ports at a 6 inch maximum spacing for the end 12 inches of longitudinal cracks. Seal the surface and areas surrounding the entry ports with the surface seal. Apply the seal in such a manner that the epoxy injection resin is sealed until initially cured.

7) Mixing. Mix injection resin or injection gel in a clean container in accordance with manufacturer recommendations with a minimum 3 minute mixing time.

8) Injection of Epoxy Gel. Do not inject crack until after the surface sealer has hardened. Inject the epoxy gel with a one piston pump, either hand or motor driven which is capable of developing the pressure required to obtain gel penetration. Inject radial cracks at ends of the pipe sections and at the end 6 inches of longitudinal cracks with injection gel to create a dam for the injection resin. Use injection gel within the stated pot life or dispose of the gel. Complete injection of pipe sections the same day that work is begun. Do not expose epoxy gel to moisture until the epoxy gel has cured for the time specified by the manufacturer of the epoxy gel.

9) Injection of Epoxy Resin. Do not inject until after the surface sealer has hardened. Working from the low end of the pipe, inject bottom cracks first. Attach injection gun to the first port and inject epoxy resin until it overflows the second port. Insert a plug into the first port which is capable of resisting pressures without popping. Move the gun to the second port and repeat the process. Continue in this manner until all ports have been injected with epoxy resin. Additional epoxy resin may be injected with ports capped to ensure further penetration of epoxy into the crack. Inject top cracks in a similar manner. Select pressures for resin injection which provide a uniform flow of material and maintain uniform material flow rates. Recommended starting pressure is 40 to 50 psi. Do not exceed 150 psi of pressure. Complete injection of pipe sections the same day that work is begun. Do not expose the epoxy resin to moisture until the epoxy resin has cured for the time specified by the manufacturer of the epoxy resin.

10) Grinding. After the epoxy has cured, cut off ports and grind flush. Retain surface seal.

Measurement and Payment
No payment will be made for this work.
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The following procedures are recommended to be followed during Cool and Cold weather:

1. When mat or foam insulation is used for concrete curing and protection in cold weather, keep the forms in place for the period specified for the concrete type.

2. To ensure favorable curing conditions, make sure the concrete is properly insulated and covered to retain heat and moisture. Check atmospheric and curing temperatures constantly during this time. Heat from hydration may cause the concrete's temperature to rise as high as 140 °F to 160 °F; the temperature will peak and gradually decrease. The temperature rise may be influenced by the concrete volume and atmospheric temperature. As long as moisture is retained, the concrete curing is acceptable.
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Joint inspection is essential to assure proper control and satisfactory performance of the joint material.

The following is a guide for more effective control:

1. Before sealing make sure the joint is cleaned and prepared as specified.

2. Check heating equipment to ensure that the material is heated properly.
   a. Use indirect heating constructed as a double boiler with the space between the inner and outer shells filled with oil, asphalt or other material for heat transfer.
   b. Positive temperature control and mechanical agitation are required.
   c. The Inspector should calibrate the heat gauge or thermometers with an accurate thermometer for heat control. Document the calibration method and results in the project records.

3. Obtain the "Safe-Heating Temperature" and the "Pour Temperature" from the manufacturer's instructions on the shipping container.

   Never heat the material above the "Safe-Heating Temperature"; this will cause serious damage to the material.

   Take periodic readings of material temperature and document in daily report; include time, station, location, etc.

   Avoid prolonged heating (four-hour maximum) of the same material at the "Pour Temperature" to prevent material damage.

   If pouring is delayed, reduce the kettle temperature to between 275 to 325 ºF until shortly before pouring begins. Discard any material left in the kettle at the end of the day.

4. The manufacturer's certification must accompany all material shipments. Take field samples whenever material quality is doubtful.
For Black Rebar and Mesh:

As required in Section 501.3(h) and 1002.3(a), Publication 408, all reinforcement should be free from frost, rust, dirt, oil, grease or other foreign substances which could impair the concrete-steel bond. A light, powdery rust coating, which may form during storage on a project, does not require cleaning.

If present, loose, scaly or thick rust should be removed by rubbing, brushing, blasting or other suitable method.

If loss of cross-sectional area because of rust is a concern, samples should be submitted to the Laboratory Testing Section (LTS) for confirmation. If the reinforcement meets the specifications, it will not be rejected unless the Contractor refuses to remove the loose, scaly or thick rust.

Reinforcement should be stored in an orderly manner which allows air circulation under the reinforcing pile. However, one week's supply may be stored on the project site as long as it is stored on boards or on a dry firm surface that will keep it clean and distortion free.

For Epoxy Coated Rebar and Mesh:

If epoxy coated rebar is delivered to a project site or a precast facility and the epoxy patching material is still uncured, wet or tacky to the touch, all of the affected bars are to be rejected and returned to the fabrication shop. These bars cannot be repaired in the field. The Construction Quality Assurance Section must be notified of any such occurrence. Details must be incorporated into the inspector’s F.I.D. or P.S.A.

Any repairs to the epoxy coating in the field should follow the instructions from the manufacturer of the epoxy patching material or patch kit. At a minimum:

- Remove any loose chips of epoxy coating
- Prepare the repair area by wire brushing, sanding, or grinding any existing rust from the bar
- Remove any oils, grease, moisture or other contaminants that would impair bond of the epoxy patching material
- Allow sufficient time for the patching material to dry according to the instructions from the manufacturer of the epoxy patching material or patch kit before handling, installation and embedment in concrete
Some manufacturers of epoxy patching material or patch kits supply both a normal (summer) kit and a winter/cool weather kit. The winter patching kit should be used during periods of cool/cold weather as the epoxy reaction time is accelerated so that set time is not unduly delayed. The epoxy patching kit must be a two (2) component epoxy patching material meeting the requirements of ASTM D 3963, Annex 1. Epoxy patching material from a spray can is not acceptable under any conditions.

Whenever there are a significant number of repairs to be made to the epoxy coated reinforcement, all repairs must be made prior to incorporating or placing the bars in the concrete forms as it is very difficult to make the repairs or inspect any repairs after it is tied into place. A minor amount of repairs from handling and placement is all that should be permitted after the reinforcement is placed.

Do not allow bars to be dragged over anything. Bars must be hand carried and placed. When off-loading epoxy coated rebar from haul vehicles/trailers, a stiff-back or multiple lift points must be used. Sagging of the bundles causes abrasion of the epoxy coating at the deformations.

For Galvanized Rebar and Mesh:

An inspection should be made of the galvanized reinforcement to look for signs of rust or of cracking/flaking of galvanized coating. Special attention should be made to bent bars in the areas of the bends as this area is most often the area where coating damage occurs.

Damage to the galvanized coating of reinforcement requires repairs to be made. Any repairs to galvanized rebar in the field should adhere to the following requirements as well as ASTM A 780.

- Remove any loose chips of galvanized coating
- Clean the repair area, to bare metal, by wire brushing, sanding or grinding any excess rust from the bar according to SSPC SP-11 and feather at least 1 inch of the surrounding undamaged galvanized coating
- Bars with excessive corrosion should be rejected
- Use only repair materials containing at least 92% zinc dust in the dry film
- Remove any oils, grease, moisture or other contaminants that would impair the bond of the zinc paint
- Apply multiple coats, if necessary to ensure a minimum final coating thickness of 3 mils (cured) is attained.
- Allow sufficient time for the repair to dry before handling, installation or embedment in concrete.
Publication 408, Section 1002 requires verification samples to be submitted to the Laboratory Testing Section (LTS) for all splice systems, even if the manufacturer is listed in Bulletin 15. These samples shall be constructed (assembled by the contractor) in the presence of the Representative. The Representative submits these samples to LTS for testing as soon as possible to avoid any project delay. These samples also include testing to verify the assembly procedure used by the contractor. The Representative will ensure that the same assembly procedure used to construct the verification samples will be used to assemble the remaining splice systems required to complete the project.

When a project requires mechanical splicing of reinforcing steel, every attempt should be made to utilize the approved products for mechanical splices listed in Bulletin 15. Requests to accept mechanical splice systems not listed in Bulletin 15 on a project by project basis may be submitted according to Publication 408, Section 106.02(a)2. This submission should be coordinated through the District Materials Unit. There will be no waiver of the requirement of Fatigue Resistance, Allowable Slip, as determined by California Test No. 670. This requirement will apply to all mechanical splice systems, whether being tested for listing in Bulletin 15 or for approval on a project by project basis.

The Sample Classification for the samples should always be identified as FV for Field Verification on the TR-447. Samples of four increments (n=4) for each size and type of mechanical splice must be submitted. Three samples are to be assembled for testing to verify the physical properties, and one sample is to remain unassembled for testing of coating thickness on an epoxy coated or galvanized coupler body. Clean, assemble and repair any visible damage to the coating with an acceptable repair material according to the manufacturer's recommendations. All samples shall have a minimum of thirty inches (30") of reinforcement bar extending from each end of the coupler body. If any assembled sample fails to meet the required physical properties, LTS will perform testing on both reinforcement bars from the unassembled sample to determine if the bar contributed to the assembled samples failure. A copy of the manufacturer’s assembly recommendations must accompany the TR-447 for all samples submitted to LTS.

A passing test result for all mechanical splices is required prior to incorporation into the work and is the inspector’s authorization to include payment for these items in an estimate.
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Contractors can use, at their discretion, supplemental sediment control devices at storm water inlets to reduce the amount of silt and debris that may enter the inlets.

These supplemental devices cannot be used as a substitute for the Department's existing sediment control guidelines defined in RC-70M; therefore, they should not be included as a part of the Erosion Control Plan and are not to be included as a pay item in any contract.
Section 808.2(a)10 of Publication 408 requires that no plant substitutions be permitted without authorization and approval of the Roadside Manager, Bureau of Maintenance and Operations.

If a Contractor requests any plant substitutions, Form CS-616 must be submitted to the District for action by the District Roadside Specialist. Questions on this are to be directed to the District Roadside Specialist.
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The Department is responsible for designing and maintaining work zones that limit the impact to road users, while maintaining safety for highway workers and the traveling public. The intent of the Department’s Work Zone Safety and Mobility Policy (Publication 46 Traffic Engineering Manual Chapter 6.3) is to provide safe work zones that minimize delay for the traveling public and reduce community impacts while maintaining fiscal responsibility. This policy complies with the Federal Highway Administration (FHWA) Work Zone Safety and Mobility Final Rule (23 CFR 630 Subpart J).

During the project development process a determination is made, in accordance with Publication 46 (Traffic Engineering Manual) and Publication 13M (Design Manual 2), if a project is considered a “Significant Project”. A “Significant Project” requires the preparation of a Transportation Management Plan (TMP) in addition to a Traffic Control Plan (TCP). If a TMP is prepared, a Transportation Operation Plan (TOP), possibly including an Incident Management Plan, and a Public Information Plan (PIP), is typically prepared for the project. Project designers use these plans to prepare the contract drawings, special provisions, and pay items for the bid package.

Construction managers and inspectors are required to enforce these contract drawings and special provisions to ensure the Department’s policy regarding Work Zone Safety and Mobility are met. Some of these provisions may include but are not limited to the following:

- Allowable working hours
- Maintenance and Protection of Traffic
- Transportation Operations Requirements
- Public Information Requirements
- Traffic Control Plan Requirements
- Performance data collection requirements
- Designation of a contractor representative (Work Zone Traffic Control Supervisor or similar designation) who has primary responsibility for implementing the contract requirements

Part C of this Project Office Manual will contain guidance on other specific requirements that construction managers/inspectors will need to know to ensure compliance with the Department’s Work Zone Safety and Mobility policy.
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1. **Traffic Control Plan (TCP)** - The Department representative is required to:

   a. Review and become knowledgeable of the approved work zone traffic control requirements and TCP for the project.

   b. Assure that normal traffic patterns are not affected or altered by work performed within the project limits until traffic control is provided in accordance with the Manual on Uniform Traffic Control Devices (MUTCD), Publication 46, Publication 212, Publication 213, Publication 408, and the approved TCP. In the case of a discrepancy among the publications listed above and the TCP, the following order of precedence will apply:

      1. Approved TCP
      2. Publication 213
      3. Publication 408
      4. Publication 212
      5. MUTCD
      6. Publication 46

   c. Provide proper maintenance and protection of traffic so the traveling public can proceed through work zones without incident.

   d. Monitor the performance of traffic control devices to ensure compliance with the Manual on Uniform Traffic Control Devices (MUTCD), Publication 46, Publication 212, Publication 213, Publication 408, and the approved TCP or a revised TCP approved by the District Traffic Engineer. [Section 901.3(a), Publication 408].

   e. Check maintenance of the devices and observe the flow of traffic as it is affected by the traffic control.

   f. Provide two-week advance notice to Assistant Construction Engineer/Manager (ACE/ACM) when a major change in traffic operations occurs.

2. **Initial Setups and Changes** - The initial setup of work zone traffic control and each change from the initial setup must be inspected in detail by the Department representative, and if the work involves daily setups of short-term work zone traffic control, the setup must be inspected each day to ensure that:
a. The traffic control has been installed in accordance with the Manual on Uniform Traffic Control Devices (MUTCD), Publication 46, Publication 212, Publication 213, Publication 408, and the approved TCP.

b. All traffic control devices utilized for the work zone traffic control are Bulletin 15 approved and in conformance with contract requirements. Signs and devices shall be placed within the legal right-of-way, or proper right-of-way releases have been obtained if the signs and/or devices must be placed outside the legal right-of-way or on existing utility poles.

c. All traffic control devices are functioning properly and are correctly positioned, clean, legible, operative and in a good state of repair. Traffic Control devices must meet the acceptable or marginal criteria described in the Pennsylvania Quality Guidelines for Temporary Traffic Control Devices. These quality guidelines are also located in Publication 213 – Appendix C.

d. All conflicting, inappropriate, or non-applicable traffic control devices are removed, and in the case of signs, covered entirely [Section 901.3(a), Publication 408], folded, or turned away from traffic so that they are not readable by drivers.

3. **Required Work Zone Traffic Control Compliance Inspections** - Inspections must be made of the work zone traffic control to ensure that all traffic control devices required by the Manual on Uniform Traffic Control Devices (MUTCD), Publication 46, Publication 212, Publication 213, Publication 408, and the approved TCP are functioning properly, correctly positioned, clean, legible, operative and in a good state of repair and effectively warning approaching motorists of the construction project and any required action. Particular attention should be given to all arrow panels and warning lights to be sure that the required number of devices are being used and properly placed and spaced, and that all potential hazards are properly identified and signed or otherwise shielded in accordance with the Manual on Uniform Traffic Control Devices (MUTCD), Publication 46, Publication 212, Publication 213, Publication 408, and the approved TCP.

Required inspections are as follows:

a. **Long-Term Traffic Control Compliance Inspections:**
   - Where traffic is maintained through the construction zone, all temporary traffic control devices shall be inspected at least twice a day - at the beginning and end of each workday.
b. Road Closed and Detour Traffic Control Compliance Inspections:

- Where the road is closed and traffic is detoured, all temporary traffic control devices, excluding the detour signs, shall be inspected at least once each work day to ensure that the road closing devices are in place and functioning properly. The remainder of the work zone traffic control, namely the detour signing, is to be inspected at least twice a week.

c. Night Time Traffic Control Compliance Inspections:

- If the work zone traffic control is to remain in place during hours of darkness, a night inspection of the initial setup and each change (phase/stage changes) from the initial setup must be conducted by the Department representative.

d. Phase/Stage Change Traffic Control Compliance Inspections:

- After any construction phase/stage change, a Traffic Control Compliance Inspection shall be performed.

e. Short-Term Traffic Control Compliance Inspections:

- Where traffic is being maintained through a short-term construction operation, all temporary traffic control devices shall be inspected during the initial setup and periodically throughout the short-term operation.

4. Documentation of Work Zone Traffic Control Compliance Inspections – Form CS-901 shall be used for documenting work zone traffic control device inspections. Form CS-901 can be saved in an electronic file and can be printed out when needed, such as when a deficiency needs to be reported formally to the contractor. It is an acceptable practice for the completed CS-901 forms to be stored electronically in the project field office. A Project Site Activity (PSA) entry shall be made noting that the work zone traffic control devices were checked, and the PSA is to refer to the CS-901 file for specifics on the inspections, unless otherwise noted below. The time (am or pm) that the Work Zone Traffic Control Compliance Inspection was performed must be noted on the CS-901 form and/or through a PSA entry. All findings of Work Zone Traffic Control Compliance must be adequately documented as follows:

a. Long-Term Traffic Control Compliance Inspections:

- The Department representative shall use the Department’s Work Zone Traffic Control Compliance Checklist and Notification Form CS-901 (See Section C.9.3) to document all long-term work zone traffic control compliance inspections.
b. Road Closed and Detour Traffic Control Compliance Inspections:

- The Department representative shall use the Department’s Work Zone Traffic Control Compliance Checklist and Notification Form CS-901 (See Section C.9.3) to document long-term road closed traffic control inspections. Detour devices shall be noted in the Department’s PSA as having been inspected and any deficiencies noted.

c. Night Time Traffic Control Compliance Inspections:

- The Department representative shall use the Department’s Work Zone Traffic Control Compliance Checklist and Notification Form CS-901 (See Section C.9.3) to document all long-term work zone traffic control compliance inspections.

d. Phase/Stage Change Traffic Control Compliance Inspections:

The Department representative shall use the Department’s Work Zone Traffic Control Compliance Checklist and Notification Form CS-901 (See Section C.9.3) to document all phase/stage change traffic control compliance inspections.

e. Short-Term Traffic Control Compliance Inspections:

- The Department representative is required to use the Department’s Work Zone Traffic Control Compliance Checklist and Notification Form CS-901 (See Section C.9.3) to document short-term work zone traffic control issues and conditions in situations where the contractor neglects or refuses to correct identified deficiencies. **Form CS-901 documentation is only required in the event assessment of liquidated damages is appropriate or becomes necessary.**

- In situations where short-term work zone traffic control measures are correct and in compliance with the Manual on Uniform Traffic Control Devices (MUTCD) Publication 46, Publication 212, Publication 213, Publication 408, and the approved TCP, the Department representative shall include a statement in their PSA for the operation they are inspecting, in lieu of using Form CS-901, stating that short-term traffic control devices were set up in accordance with contract requirements.
5. **Contractor Notification of Liquidated Damages** - Following Work Zone Traffic Control Compliance inspections, notify the contractor (the sub-contractor may be copied), in writing, of all deficiencies related to work zone traffic control compliance. A properly completed Form CS-901 will serve as written notification. Conduct follow-up inspections to determine when corrective action has been taken. In accordance with Publication 408, Section 901.3(t), if the contractor neglects or refuses to take corrective action, within the time frames permitted, liquidated damages may be assessed (See Section C.9.3 for Instructions to complete CS-901 and See Section C.9.4 for examples of assessing damages). Notify the ACE-Construction prior to liquidated damages being assessed. If the contractor remains in violation of these requirements, the District Executive has the authority to suspend work in accordance with Section 105.01(b), until the conditions are corrected, or direct Department forces to correct the deficiencies and charge the contractor for labor, equipment and material costs in accordance with Publication 408, Section 901.3(t).

6. **Removal or Covering of Warning and Work Zone Signs** - Review the project TCP to determine when signs should be covered or removed. Traffic control warning signs are to be covered entirely [Section 901.3(a), Publication 408] or removed when they are not needed.

   When the public continually encounters warning signs, only to determine that no work is being performed, the integrity of the Department's construction and traffic control operations are questioned. Drivers may then tend to ignore temporary traffic control signing which jeopardizes their safety as well as the safety of workers and project personnel.

7. **Additional items to be considered in the inspection of Work Zone Traffic Control:**
   a. Insufficient number, or improper positioning, or maintenance of traffic signs, drums, barricades, or barricade warning lights.
   b. Improperly striped or reflectorized drums or barricades.
   c. Flaggers not wearing a helmet and high-visibility apparel with retroreflective material, in accordance with Publication 213 and Publication 408, (e.g., fluorescent yellow-green or fluorescent orange attire, hard hats or not using proper flagging methods).
   d. Flagger not using proper flagging methods or not properly positioned in accordance with Publication 213 and Publication 234 (Flagging Handbook).
   e. The use of signs from an unapproved sign manufacturer, or the use of non-standard signs, word messages, lettering, or placement of signs.
   f. Conflicting messages from traffic signs and pavement markings.
g. The exposure of signs, which should be completely covered.

h. The improper eradication of conflicting pavement markings.

i. All barricade warning lights used on the project have the manufacturer's name and model number clearly marked thereon and only those lights currently approved by the Department are used. The approved lights are listed in Bulletin 15.

When it is desirable to delineate a travel path by installing barricade warning lights, Type C (Steady Burn) lights shall be used in lieu of either Type A or Type B lights, since an array of randomly flashing lights is very confusing to motorists.

When barricade warning lights are operated by a 120 V, 60 cycle power supply, extreme care must be exercised to provide safety. In these cases, the 120 V A.C. power source should be located so that an accident could not readily cause a motorist or the motorist’s vehicle to come into contact with the power source.

j. Arrow panel lights dim at night.

k. Contractor's equipment and material should be stored to prevent conflicts with traffic through work zones in accordance with Publication 213.

l. Shadow vehicles, when required, are properly positioned and equipped. Shadow vehicles shall be equipped with a truck mounted attenuator (TMA) on Expressways and Freeways.

m. Temporary concrete barrier not properly installed.

n. Damaged/missing impact attenuator.

o. Improper pedestrian protection.
8. **Work Zone Traffic Control Compliance Inspection Frequency Table**

<table>
<thead>
<tr>
<th>Type of Set-Up/Inspection</th>
<th>Frequency</th>
<th>Required Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-Term Traffic Control</td>
<td>2x / day-at the beginning and end of each workday.</td>
<td>CS-901</td>
</tr>
<tr>
<td>Short-Term Traffic Control</td>
<td>1x / day&lt;sup&gt;1&lt;/sup&gt;</td>
<td>CS-901 or PSA&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Road Closed Traffic Control (Temporary traffic control devices excluding detour signing.)</td>
<td>1x / day</td>
<td>CS-901</td>
</tr>
<tr>
<td>Road Closed and Detour Traffic Control (Detour signing only.)</td>
<td>2x / week</td>
<td>PSA</td>
</tr>
<tr>
<td>Nighttime Traffic Control&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Initial and each change (phase/stage changes)</td>
<td>CS-901</td>
</tr>
<tr>
<td>Phase/Stage Change Traffic Control</td>
<td>After any construction phase/stage change.</td>
<td>CS-901</td>
</tr>
</tbody>
</table>

<sup>1</sup> All temporary traffic control devices shall be inspected during the initial setup and periodically throughout the short-term operation.

<sup>2</sup> A statement in the PSA may be used in lieu of using Form CS-901, stating that short-term traffic control devices were set up in accordance with contract requirements. Form CS-901 documentation is only required in the event assessment of liquidated damages is appropriate or becomes necessary.

<sup>3</sup> Nighttime inspections of Long-Term Traffic Control.
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# WORK ZONE TRAFFIC CONTROL COMPLIANCE CHECKLIST AND NOTIFICATION

<table>
<thead>
<tr>
<th>Inspection</th>
<th>Time Reviewed</th>
<th>Inspector</th>
</tr>
</thead>
<tbody>
<tr>
<td>MONTH</td>
<td>DAY</td>
<td>YEAR</td>
</tr>
</tbody>
</table>

Delivered Hardcopy to Contractor?  
Yes  No  
Date Sent  
MONTH  DAY  YEAR  
Time Sent  
AM | PM  
Check Box if WZLD* will be assessed  
Recipient of Notification*  

<table>
<thead>
<tr>
<th>Traffic Control Devices</th>
<th>AM Deficiency</th>
<th>PM Deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
</tbody>
</table>

Comments  
Date/Time Corrected

* Work Zone Liquidated Damages will be assessed as per Publication 408 Section 901.3(t).

April 2017 Edition
INSTRUCTIONS FOR COMPLETING THE WORK ZONE TRAFFIC CONTROL COMPLIANCE CHECKLIST AND NOTIFICATION FORM CS-901

When to use Form CS-901:

1.) Long Term Work Zone Traffic Control Compliance Reviews:
   • The Department Representative shall use Form CS-901 to document all long-term work zone traffic control compliance reviews.

2.) Short Term Work Zone Traffic Control Compliance Reviews:
   • The Department Representative shall use Form CS-901 to document short term work zone traffic control issues and conditions in situations where the contractor neglects or refuses to correct identified deficiencies. This documentation is required in the event assessment of liquidated damages is appropriate or becomes necessary.

   In situations where short term work zone traffic control measures are correct and in compliance with Publication 213, PATA #, the Department Representative shall include a statement in their PSA, for the operation they are reviewing in lieu of using Form CS-901.

How to complete Form CS-901:

1.) Enter the Contract number on the form then begin by listing all the traffic control devices that you will need to review. Listing them in the order of how you will drive the traffic control route is recommended. On large projects your list can also be separated for the various stages of construction. Once the devices are listed save the form as a template so you can reuse it as many times as necessary without having to list all the devices again.

2.) When you are ready to do your daily traffic control review, print out a copy of the template and complete the month, day, year, time of review, and the Inspector’s name performing the review. Take this hardcopy with you and complete the required information shown on the form for each traffic control device.

3.) After completing your review you have two options:
   a. If no deficiencies were noted during the review, complete the box “Delivered Hardcopy to Contractor” by placing a check in the “NO” box. Unless the contractor has requested a copy of reviews with no deficiencies. Some contractors may want a copy of all completed reviews, which is permitted. Keep a hardcopy of the review in the project records or you may keep an electronic copy of the review on the project computer. Each review shall be available for inspection oversight purposes.

   b. If deficiencies are noted on the review, complete the box “Delivered Hardcopy to Contractor” by placing a check in the “YES” box. Also complete the month, date, year, and time the form was delivered to the contractor. The time the form was delivered to the contractor is important because the contractor has a specified amount of time, according to Section 901.3(t), to correct the deficiencies after this notification is delivered and before liquidated damages are assessed. Obtain the signature of the contractor’s field person in charge on the form, in the box “Recipient of Notification”, for proof of receipt and make a copy of it for the project records. If they refuse to sign the form, print the name of the person and note that they refused to sign, in the box “Recipient of Notification”.

   An electronic copy of Form CS-901 can be emailed to the contractor’s home office and a hardcopy of Form CS-901 can be given to the contractor’s field person in charge.

   Notify your Assistant Construction Engineer/Manager prior to actually assessing liquidated damages.

   NOTE: Good and timely communication with the contractor concerning deficiencies found during a work zone traffic control review is imperative. Form CS-901 is being used as a review checklist for Department Representatives and can also serve as written notification that liquidated damages will be assessed according to Publication 408, Section 901(t).
Publication 408, Section 901.3(t)  
Non-Compliance of Maintenance and Protection of Traffic  
Examples

Example: Long-term Operation - see Box A, except for the following conditions that fall under Urgent, Box B

- Inspector performs MPT review and finds deficiencies.
- The Work Zone Traffic Control Compliance Checklist and Notification form is emailed/hand delivered to the contractor at 9:00 am Tuesday which indicates the deficiencies.
- The contractor has **24 hours** to correct the deficiencies.
- At 9:01 am on Wednesday the deficiencies have not been corrected.
- The Department will apply a **$1000.00** base assessment.
- At 9:02 am on Thursday the deficiencies have not been corrected.
- The Department will apply an additional **$2400.00** assessment. ($100 additional for each hour or portion thereof)
- At 1:00 pm on Friday the contractor notifies the inspector that the deficiencies have been corrected. The inspector verifies that the deficiencies have been corrected.
- The Department will apply an additional **$2800.00** assessment. ($100 additional for each hour or portion thereof)

**A total amount of $1000.00 + $2400.00 + $2800.00 = $6200.00 will be assessed.**

Example: Long-term Operation (Urgent conditions) – (see 901.3 (t) second paragraph, second bullet)

**2 hours**

- Inspector performs MPT review and finds deficiency.
- The Work Zone Traffic Control Compliance Checklist and Notification form is emailed/hand delivered to the contractor at 9:00 am Tuesday which indicates the deficiencies.
- The contractor has **2 hours** to correct the deficiencies.
- At 11:00 am on Tuesday the deficiencies have not been corrected.
- The Department will apply a **$1000.00** base assessment.
At 11:30 pm on Tuesday the contractor notifies the inspector that the deficiencies have been corrected. The inspector verifies that the deficiencies have been corrected.

The Department will apply an additional $100.00 assessment. ($100 additional for each hour or portion thereof)

A total amount of $1000.00 + $100.00 = $1100.00 will be assessed.

4 hours (Attenuating devices)

• Inspector performs MPT review and finds deficiencies.
• The Work Zone Traffic Control Compliance Checklist and Notification form is emailed/hand delivered to the contractor at 9:00 am Monday which indicates the deficiencies.
• The contractor has **4 hours to respond** and **correct** the deficiency within **24 hours**.
• At 1:00 pm on Monday the deficiency has not been responded to for correction.
• The Department will apply a $1000.00 base assessment.
• At 4:00 pm on Monday the contractor responds and notifies the inspector that the deficiency has been corrected. The inspector verifies that the deficiency has been corrected.

A total amount of $1000.00 will be assessed.

Note: The total amount of $1000.00 being assessed is the base assessment because the contractor did not respond within 4 hours. An additional assessment of $100.00 for each additional hour or portion thereof was NOT assessed because the contractor corrected the deficiency within 24 hours.

Example: Short-term Operation

• Inspector performs MPT review and finds deficiencies.
• The Work Zone Traffic Control Compliance Checklist and Notification form is emailed/hand delivered to the contractor at 9:00 am Tuesday which indicates the deficiencies.
• The contractor has **2 hours** to correct the deficiencies.
• At 11:01 am on Tuesday the deficiencies have not been corrected.
• The Department will apply a $1000.00 base assessment.
• At 1:02 pm on Tuesday the deficiencies have not been corrected.
• The Department will apply an additional $200.00 assessment. ($100 additional for each hour or portion thereof)
• At 2:30 pm on Tuesday the contractor notifies the inspector that the deficiencies have been corrected. The inspector verifies that the deficiencies have been corrected.
• The Department will apply an additional $200.00 assessment. ($100 additional for each hour or portion thereof)

A total amount of $1000.00 + $200.00 + $200.00 = $1400.00 will be assessed.
Suppliers of permanent traffic control devices to Department construction projects must submit the necessary Certificate of Compliance, Form CS-4171, if the material or product is incorporated and/or retained as part of the project.

Temporary work area traffic control devices paid under the Lump Sum Item# 0901-0001, and/or paid for under a separate item do not require a CS-4171, unless otherwise specified in Publication 408 or the contract requires it for that particular item.

Temporary traffic control devices that will be permanently incorporated and/or retained as part of the project will require a CS-4171.

All traffic control devices, permanent and temporary, shall be from a manufacturer listed in Bulletin 15, and listed on an approved Source of Supply submission (CS-201).
FLAGGERS

The Department does not require flaggers to be certified. All flaggers at a minimum shall have training as specified in Publication 408, Section 901.3(y).

The Department representative shall document that all flaggers are carrying a valid wallet-sized training card containing the name of the flagger, training source, date of successful completion of training, and signature; or that the contractor provides a roster, to the Inspector-in-Charge, of all trained flaggers, containing the name of the flagger, training source, date of successful completion of training, prior to the start of any flagging operations.

A red flag shall be used at intersections where a single flagger is used within the intersection. Additional flaggers shall be used to control the traffic movements through each intersection in a work zone. At signalized intersections, signals should be placed in flash mode.

All flagger stations shall be illuminated at night as per Publication 213 – General Notes.
IMPACT ATTENUATORS

Impact attenuating devices approved for use in Pennsylvania are listed in Bulletin 15 and Publication 13M, Design Manual 2, Chapter 12. Crashworthy end treatments/crash cushions acceptable for use are listed by type for a particular application and are shown in Publication 13M, Design Manual 2, Chapter 12.

Publication 408, Section 619, Section 696, and Section 697 relate to impact attenuating devices and should be reviewed, as applicable, by the inspector before installation. Impact attenuators are generally bid by Types and not specific proprietary names. The Types are those shown in Publication 13M, Design Manual 2, Chapter 12. The contractor selects the specific device from those listed in Publication 35, Bulletin 15, under the Type specified in the contract documents.

If a specific proprietary device has been approved and is reflected in the contract documents, a project specific special provision is developed and included in the contract that must also be reviewed by the inspector before installation.

Before installing any impact attenuators, the manufacturer shall be required to submit shop drawings and, if necessary, design calculations for approval for each site on a project-by-project basis.

Impact attenuating devices shall be installed in accordance with the manufacturer's specifications and installation instructions, the contract documents, and Publication 408. Proper grading in advance of the terminal, adjacent to the terminal, and immediately downstream and behind the terminal is an important consideration regardless of the specific type of attenuating device being used. Publication 13M, Design Manual 2, Chapter 12 discusses site grading requirements. Grading requirements shall be as shown on Publication 72M, RC-54M and as indicated.

Permanent and temporary impact attenuating devices shall be certified in accordance with Publication 408, Section 106.03(b)3.

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Concrete barrier to be used in construction zones (MPT) must be visually inspected prior to its reuse and placement. This inspection is to be documented in the project records. Any element showing any one of the following discrepancies will not be installed (Refer to drawing below).

1. Cracked or destroyed slot and plate connection where more than 25% is missing or broken.

2. Crack on top which runs down either vertical face for more than 16 inches.

3. Chip on top or vertical face which is more than 1 square foot in area and/or 2 inches deep - smaller areas and depths can be field patched. Chips less than inches depth and reasonable area will not require attention.

4. Horizontal crack in web which is greater than L/2 or any length that forms a Y with arms greater than 12 inches.

5. Horizontal crack in sloping area that is greater than L/2 and/or intersects a vertical crack.

6. Chip on vertical curb greater than 1 square foot and/or 3 inches deep - smaller areas and depths can be field patched. Chips less than inch depth and reasonable area will not require attention.

7. Vertical crack across bottom and up curb into sloping face.

"Crack" is defined as an opening of at least 1/8-inch, measured with a feeler gauge when barrier is at rest or in place.
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The Inspector assigned to the lighting operation may be checking either highway or sign lighting. They should familiarize themselves with the Roadway Standard Drawings, Traffic Standard Drawings, and Publication 408 Specifications. They should review the lighting drawings to determine locations for the various items of this work and all details pertaining to the particular contract.

Procedures for material approvals are contained in Section B.6.13.

The Inspector should check for catalog cuts or shop drawings for all items furnished. The primary electrical items, lighting poles, sign structures, luminaires, cable, and enclosures should have been approved as proposed materials prior to shipment. If non-specified or non-approved materials are discovered, the Inspector should notify the Inspector-in-Charge and document the fact in the daily report.

Pole Foundations (910.3(d))

When the actual field locations are staked, the Inspector should check that the bases will not be in a swale line or positioned over a pipe or culvert.

In areas where guide rail is required, be sure to check the location of the foundation and underground conduit/cable to avoid conflict with guide rail posts and required deflection distance. Where conduit/cable crosses guide rail, check for the location of a buried cable and conduit marker.

Be sure to check the foundation material, and if it is unsuitable, report this to the Inspector-in-Charge.

The dimensions of the concrete foundations for poles should be verified by the Inspector. The location and elevation of these foundations is very important since the shaft length of the pole and arm length will be determined in part from this information.

The resistance to ground should be measured at each ground rod prior to the placement of the foundations. In this way, if additional ground rods are needed, they can be driven where it is more likely lower resistance can be acquired.

The ground wire should be completely isolated from all circuit conductors when making the resistance to ground measurement.

Location of Lighting Pole Foundations

The foundation location must be determined from the luminaire station, the required luminaire orientation, and the setback. The stations given on the drawings are the luminaire stations.
The axis of the light distribution pattern of the luminaire is perpendicular to the luminaire pole arm. It is important to place the luminaire at the location shown with the proper orientation.

In most cases, the pole arm will be oriented at right angles (perpendicular) to the edge of pavement in accordance with Publication 408, Section 910. When the baseline and edge of pavement are coincident or parallel with each other, the orientation is one and the same because the arm is at right angle and also perpendicular to both the edge of pavement and the baseline. The location of the foundation is a simple setback measurement since the luminaire station is also the foundation station.

However, sometimes the baseline and edge of pavement line are askew (not coincident or parallel) and the orientation of the pole arm and luminaire is specified to be at right angles to the baseline, rather than to the edge of pavement. When this occurs, the location of the foundation is not straightforward and the result can be a misplaced luminaire.

The information provided on the drawings to locate the pole foundation is the luminaire location and the foundation setback distance. In some instances, a detail or Note may be provided to clarify the foundation location. The foundation setback distance is the distance from the edge of pavement, along the line of the required pole arm orientation. The setback will be at a right angle to the edge of pavement in most cases, except where the pole arm orientation is to be at a right angle to the baseline and the baseline and edge of pavement are not coincident or parallel to each other.

The following example illustrates the conditions discussed:
Example 1- Luminaire arm is to be placed in standard way, right angle to edge of pavement.

Example 2- Luminaire arm is to be placed at right angle (perpendicular) to the baseline. Such installations are specified on the drawings.

Field staking should always be along the line of the pole arm or the setback line. It is necessary to use the drawings to determine the direction of the setback line – either perpendicular to the edge of pavement or perpendicular to the baseline.

In Example 1, the foundation station is not the same as the luminaire station; but if the baseline had been shown parallel to the edge of pavement and the arm is oriented perpendicular to either,
then the foundation station would be the same as the luminaire station. In Example 2, the foundation station is the same as the luminaire station.

The suggested survey procedure to determine the pole foundation location or field view staking is as follows:
1. Establish baseline station.
2. Carry the station to the edge of roadway on the appropriate side.
3. From drawings or other information, determine if the orientation of pole arm is to be at right angles to the edge of pavement (Standard Installation) or right angles to the baseline.
4. Establish setback line according to orientation specified and place stake at specified setback distance.

Lighting Poles and Accessories (910.3(e))
The Inspector should check the poles supplied to make sure they are the type specified.

Shims may be used to achieve proper installation of poles.

The mounting height, the distance of the luminaire above the pavement, should be checked at each pole. The measured mounting height should be within plus or minus one foot of the specified mounting height.

The pole tests described in the Specifications should be performed on a sampling of pole and arm combinations. All poles do not require testing, only one or two of each combination.

Conduits (910.3(g))
The Inspector should check the type of conduit being furnished to make sure it is an approved material. Sweep bends are required. All fittings and elbows must be from the same manufacturer as the conduit.

Cable Installation (910.3(h))
The Inspector should verify that the cables are color coded.

Verify that cable used in underground conduit is direct-burial and Rated RHH/RHW/USE.

When line splicing is done, it must be at pole bases or junction boxes. Splices are not permitted in conduits.

The electrical drawings show the guard rail locations, which should be avoided when placing cable to prevent damage to cable from driven guard posts.
Luminaires (910.3 (j))

Luminaires are shipped with the socket in a standard position which would provide for only one light distribution. The Inspector should be certain that the Contractor makes the necessary adjustments to the lamp socket to provide the required light distribution as indicated on the catalog cut and in the design.

Luminaires are normally furnished with internal ballasts. Check that the luminaires furnished have the specified ballasts and correct gaskets.

Excavation (910.3(b))

The inspector should check the location for trenching for underground circuits. In the past, guard posts have been driven through the underground cable by mistake. These problems can be avoided if the contractor uses temporary markers as specified in Pub 408, Section 910.3(h) to indicate cable location.

Service Pole Installation (910.3 (k))

The location shown on the drawings for the service pole typically has been confirmed with the local electric utility company. When the service pole or any circuits are moved appreciably from that shown on the drawings, the new location should be verified by Central Office Bureau of Maintenance and Operations – Maintenance and Technical Leadership Division – Highway Lighting group for a re-evaluation of the line voltage loss.

The service pole location must be satisfactory to the electric utility company and should be reaffirmed at the time of installation.

Grounding (910.3(q)) (920.3(k))

The Inspector should check the grounding of all lighting poles, service equipment, conduit, and structures. Ground rod sizes are listed in the Specifications.

Tests (910.3(u))

The inspector should verify that the lights are connected as shown on the schematic diagrams of the drawings by switching “off” each phase individually of each circuit.

The graphic record of the performance test should show not less than 228 line to neutral volts or more than 260 line to neutral volts for a 240/480-volt system and not less than 114 line to neutral volts or more than 130 line to neutral volts for a 120/240-volt system. When the recorded voltages are not within the above ranges, the matter should be discussed with the local electric utility company so they can make the necessary corrections.
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When traffic is not in its normal travel lanes or if substandard features create a safety concern, ALL signs are to remain in place and be maintained during the winter shut down.

When traffic is returned to normal travel lanes and there is no safety concern, signs may be covered in accordance with Publication 408, Section 901.3(a) and must be maintained or removed until work begins after the shut down period.

Signs damaged or knocked over from snow plow operations or winds must be uprighted and repaired if repairs are necessary. Signs that become uncovered must be corrected throughout the winter shut down period.
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<table>
<thead>
<tr>
<th>A. Notification. If oversize vehicles are to be prohibited from a construction area, the Construction Unit will forward a completed copy of Form M-937R, Construction Project Restriction Notification to the District Permit Office at least 10 work days in advance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Advance Warning Signs. A &quot;VEHICLES OVER (___) WIDE PROHIBITED&quot; sign (R-14-16-1) and appropriate supplemental plaques (such as &quot;Beyond Exit .....&quot;, &quot;Beyond Next Exit,&quot; &quot;Beyond Next Intersection&quot;) should, wherever possible, be installed in advance of all approaches to a restricted zone. Provisions should be made to allow overwide vehicles the opportunity to exit prior to the restricted area.</td>
</tr>
<tr>
<td>C. Moving Barriers. If an oversize vehicle enters the work zone and becomes lodged and it is necessary to remove concrete barriers to enable the vehicle to negotiate the construction area, proceed in accordance with the following:</td>
</tr>
<tr>
<td>1. If the problem is attributed to the driver, the Contractor must seek damages from the permittee.</td>
</tr>
<tr>
<td>2. If the problem is attributed to the Department, the Department will pay the contractor, by Work Order.</td>
</tr>
<tr>
<td>3. If the problem is attributed to the Contractor, no compensation will be made by the Department.</td>
</tr>
<tr>
<td>D. Lifting Restrictions. The Construction Unit must also notify the District Permit Office (via Form M-937R) 5 work days before a construction project will no longer be restricting permitted vehicles. Otherwise, permitted vehicles will be subject to unnecessary detours.</td>
</tr>
</tbody>
</table>
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Construction inspection forces and maintenance personnel are to report and document violations of weight limits by those making deliveries to Department construction or maintenance sites. The reporting and documentation is to enable the assessment of liquidated damages against the contractor [see Section 107.23(b), Publication 408] and to discourage contractors, vendors and haulers from exceeding weight limits. Refer to Publication 194, Truckers Handbook, for legal load limits.

If a weight slip shows that a vehicle is in excess of a registered gross weight limit or a limit posted by the Department, the driver will be advised of the finding, that the finding will be reported for the purpose of assessing liquidated damages against the contractor and that if repeated violations are discovered, a recommendation will be made to remove the approved status of the violator for supplying or for performing Department work. In all overweight situations, the driver, contractor and vendor are to be notified that such activity is not tolerable and must immediately stop.

**Reporting:**

The contractor is to be promptly notified in writing of the discovery of a violation, of the intention to assess the liquidated damages, and of the risk of adversely affecting prequalification if repeated violations are discovered.

The vendor, if other than the contractor, will be notified of the discovery and the risk of an adverse effect upon the status of approval if repeated violations are discovered.

When there is suspicion of violations of weight limits but an inability to personally confirm, a request for help is to be directed to the District Truck Weight Monitoring Team, if applicable, or to the Pennsylvania State Police.

**Documentation:**

Documentation is to be provided as part of the project documentation audit trail and is to include the District Weigh Team Report or the PA State Police Report or the weight slip information (Slip number, Weights, Name and Address of the vendor), the date and time of discovery, the truck license number, the date and time of the notifications and the name of the contractor/vendor/driver notified.

Liquidated damages are to be assessed in accordance with Section 107.23(b), Publication 408, and, in the event of repeated violations, recommendations affecting the prequalification or approved status of the offenders are to be made to the Bureau of Project Delivery (to the attention
of the Prequalification Officer). Violations are to be noted, also, under Remarks on the Past Performance Report filed for that project.
As a valuable aid in reducing construction zone accidents and to meet the reporting requirements of the Pennsylvania Vehicle Code (75 Pa. C. S. Chapter 37), the District Office must be informed as soon as possible of all accidents occurring within the limits of construction projects.

All accidents occurring on the project are to be reported, by the Inspector-in-Charge, to the District Construction Safety Officer; the District Traffic Engineer, the District Risk Management Engineer, or the Assistant Construction Engineer/Assistant Construction Manager; and the local or State Police.

Often, the Inspector-in-Charge may not be aware of construction zone accidents that have occurred during non-working hours. So that accident sites can be reviewed as soon as possible and required reporting and notification initiated, establish a cooperative procedure whereby the local police agency or the Pennsylvania State Police will systematically notify the District Construction Unit within a reasonably short period of time (24 hours or the next working day) after a traffic accident occurs within or near a construction project during non-working hours.

Cooperation from all sources in the accident reporting effort is necessary to have an efficient and effective method for obtaining complete and accurate work zone traffic accident statistics. Accident data is essential in evaluating our current work zone traffic control practices and in determining and developing new methods and procedures for accommodating traffic within construction zones.

All requests for accident information that cannot be met at the District level are to be directed to the Bureau of Maintenance and Operations, Highway Safety and Traffic Operations Division.

**Responsibilities of the District Construction Unit**

For all projects, a representative of the District Construction Unit should meet with the supervisor of the local police agency or the local State Police substation, as appropriate, to advise them of the upcoming construction project within their jurisdiction and arrange for them to contact a designated Project Representative whenever a traffic accident occurs within the specified limits of the project during non-working hours.
Responsibilities of the Inspector-in-Charge

1. Upon being made aware of the occurrence of a construction zone accident for which a report must be made as required by the PA Vehicle Code, a full report of the accident is to be obtained by the Inspector-in-Charge. A reportable accident, as defined in the Vehicle Code, is one that involves injury to or the death of any person, or damage to any vehicle involved to the extent that it cannot be driven under its own power and therefore requires towing. The Vehicle Code specifies that an initial written report is to be made available by the local police agency or the State Police within 15 days of the accident. The Inspector-in-Charge should be prepared to provide proof of Commonwealth employee status by presenting proper Department identification to the responsible police agency when requesting the accident report. Procedures should be established for obtaining crash reports electronically from the state or local police.

2. Upon being made aware of the occurrence of any construction zone accident, the Inspector-in-Charge should immediately notify the District Traffic Unit and then inspect the work zone to determine if changes or revisions are needed in the traffic control methods being employed. The Project Engineer can recommend changes or revisions to the Traffic Control Plan (TCP) as a result of an accident. The District Traffic Unit will review the suggested TCP changes. Minor field adjustments that are made to the TCP are to be noted in the Master Diary.

3. For each reportable work zone accident, the Inspector-in-Charge should complete the Construction Zone Vehicular Crash (Accident) Report Form (See Page C.9.13-4) to ensure that all pertinent information is recorded. Submit a copy of the completed form, along with a copy of the official police accident report, if available, to both the Construction Unit and the District Traffic Engineer. To expedite the distribution of crash report information, e-mail should be used.

4. Maintain any individual accident reports and project accident analysis done by the District Traffic Unit in a separate project file. This project file is to be labeled "CONFIDENTIAL" because the data and information contained in the file are part of a traffic engineering and safety study. The safety study documentation is only provided to those official agencies or persons who have responsibility in the highway transportation system and may only be used by such agencies or persons for traffic safety-related planning and research. Any requests for release of the documents in this file are to be referred to the District Risk Manager and/or Tort Coordinator.
Responsibilities of the District Traffic Unit

1. Review traffic accident reports submitted by the Inspector-in-Charge.

2. Review changes or revisions to the Traffic Control Plan (TCP) recommended by the Project Engineer and, if in agreement, sign and date the revised plan. If major changes are being made, the District Traffic Engineer must date and seal the revised plan. When changes to the TCP are necessary, work with the District Construction Unit to ensure that they are implemented as soon as possible.

3. When a recurring accident problem arises on a project, the District Traffic Unit should inspect the work zone traffic control to see if any additional changes are necessary.

4. Maintain a file of any individual accident reports and project accident analysis for each construction project. See the statement regarding confidentiality above in the Responsibilities of the Inspector-in-Charge section and refer to Publication 46, Traffic Engineering Manual, Chapter 11.1, Release of Studies to the General Public, for more specific details.

5. At the end of each construction season, meet jointly with the District Construction and Design Units to discuss work zone traffic control issues so that lessons learned can be incorporated into upcoming TCP designs. As a basis for discussion at this meeting, compile an accident summary for each project using the copies of individual Construction Zone Vehicular Crash (Accident) Report forms submitted by the Inspector-in-Charge throughout the construction season.
CONSTRUCTION ZONE VEHICULAR CRASH (ACCIDENT) REPORT

I. Project Information:

Engineering District County Municipality
State Route Contract No. WBS No.
Fed. Project No. Contractor
Type of Construction Length of Work Zone
Method of Traffic Control
Speed Limit through Work Zone (advisory, reduced regulatory, normal)

II. Crash (Accident) Information:

Type of Crash - Rear-end Hit Fixed Object Head-on Angle Side-swipe PED Non-Collision Unknown
Fatalities: Yes No
Injuries: Yes No
Property Damage: Yes No
Date Time Weather: Sunny Cloudy Rain Snow
Road Surface: Condition Type
Dry Wet Icy Snow Milled Leveling BCBC Wearing Binder

Did accident involve a construction vehicle? Yes No

III. Traffic Control Information:

Roadway Type: 2-Lane, 2-Way Intersections 3-Lane, 2-Way Other 4-Lane or more, Divided or One-Way 4-Lane or more, Undivided
Figure Number from Publication 213, or WZTC Plan (phase/stage),
Crash in Lane (number in circle from sketch)
Location of crash within work zone

Contribution Factors:

Note any changes or revisions that were made to the project's traffic control methods as a result of the accident and the date they were implemented.

Note damage to Department property and, if any, state whether District Maintenance Unit was notified.

This traffic engineering and safety study is confidential pursuant to 75 PA C.S. § 3754 and 23 U.S.C. § 409 and may not be disclosed or used in litigation without written permission from the Pennsylvania Department of Transportation.
ACCIDENT NOTIFICATION TO CONTRACTOR’S INSURANCE COMPANY

The Contractor's insurance company is to be notified of every reportable traffic accident that occurs within the construction zone. A reportable accident, as defined in the Pennsylvania Vehicle Code, is one that involves injury to or the death of any person; or damage to any vehicle involved to the extent that it cannot be driven under its own power and therefore requires towing. Notification should be made as soon as possible but in no case later than one week after receipt of the police accident report. Refer to page C.9.14-2 for a sample notification letter.

If the contract is covered by more than one insurance policy, each policy number should be identified. The sample notification letter (See Page C.9.14-2) permits the listing of up to six policy numbers.

The notification letter to the insurance company is to be sent by Certified Mail with Return Receipt Requested, and the copy to the Contractor may be sent through PPCC or by Certified Mail with Return Receipt Requested.

Attach a copy of the official police accident report to the letter of notification to the insurance company and the copy to the Contractor. As stated in the sample notification letter, the insurance company should be instructed to direct any questions pertaining to the accident to the investigating police agency listed on the report.

Police accident reports are considered confidential documents. They are obtained by the Department pursuant to our rights under the Vehicle Code (§3751) as an entity involved in the accident and as a Commonwealth agency. The Department provides the Contractor's insurance company and the Contractor with a copy of the accident report in order to facilitate the required notification of all concerned parties.

Copies of the insurance certificate can be obtained through ECMS or contact the ECMS Help Desk at (717) 783-7711.
Dear Sir / Madam:

On (Date), at about (Time), a traffic accident occurred within a construction site controlled by (Name of Contractor), a firm that is under contract to the Pennsylvania Department of Transportation. The construction site is located in (County) County on State Route (S.R.). The Commonwealth of Pennsylvania, Department of Transportation, is named as an additional insured on the referenced policy or policies issued by your company.

By provision of this letter, we are placing you and the insurance company that you represent on notice of a potential claim or lawsuit against the Commonwealth of Pennsylvania, Department of Transportation. If a claim or lawsuit is filed, we request that you provide defense and coverage to the Commonwealth in this matter.

Pursuant to our rights under Title 75 PA Consolidated Statutes, §3751(b), as an entity involved in the accident and as a Commonwealth agency, we have obtained a copy of the police accident report. Enclosed is a copy of that report for your information. If you have any questions pertaining to the accident report, contact the investigating police agency directly and in particular, the investigating officer listed on the report.

Should you have any questions regarding this letter, please contact the undersigned at (Phone No.).

Sincerely,

(ADE – Construction)

Attachment

cc: (Contractor), w/ attachment
    Department of General Services
    Bureau of Risk and Insurance Management

April 2017 Edition
Under the Pennsylvania State Police (PSP) Assistance Program, PSP troopers are used to alert motorists of traffic queues on freeway projects. The PSP Assistance program is explained in detail in Publication 46, Traffic Engineering Manual, Section 6.15.

It is necessary for the project office to document the daily operations of the Pennsylvania State Police (PSP) Assistance, when a trooper is authorized and assigned to a Department project.

Project offices should maintain a log in order to record the daily number of hours of assistance at the project office. Project offices are encouraged to use a spreadsheet such as the one at P:\bhste\shared\workzones\PSP Spreadsheet Template.xlsx (please copy and save to another file name).

The daily log for PSP Assistance should only include the hours a trooper is present on the project at the request of the Department. A trooper on the project as part of their core business does not qualify for the PSP Assistance reimbursement. PSP Assistance requests by the project’s contractor will not be authorized under the PSP Assistance program. This daily log will ensure that the budgeted funding is documented.
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HES Concrete for structures is only to be used with the written consent of the Representative as stated in Section 1001.2(a), Publication 408. It is not intended to relieve the contractor of the normal requirements for cool or cold weather curing protection or for heating.

When heating is required and after the concrete has been cured for the required time, gradually lower the concrete temperature to the outside temperature over a three-day period. This would require ten (10) days protection for other classes of concrete and, if approval is granted for use of HES, a minimum of six (6) days protection to meet specifications.

If strength is a problem, use a higher class of concrete or increase the cement factor for the specified class.

If you have any questions, contact the Construction QA Section Chief, Bureau of Project Delivery.
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Every contract for the construction of a bridge superstructure requires protective coating application to certain areas of a deck, depending on the type of forming and the amount of drying time the deck has experienced. Section 1019.3(c)2, Publication 408 is to be followed.

This coating is needed because concrete requires an initial drying period to develop its full resistance to freeze-thaw action and de-icing chemicals. The drying period depends upon time, temperature, and humidity, and is approximately ninety (90) days in warm weather.

Protective coatings for superstructures are composed of a minimum 40% silane or siloxane. These types of sealers are products that are absorbed into the surface of the concrete to form a hydrophobic (or water repelling) surface. No film is formed, therefore, pores in the concrete are not blocked. This prevents the absorption of chloride ions while allowing for internal drying of the concrete.

Protective coating applications are critical and are required following initial cure and drying time of the concrete, for decks placed between September 1 and March 1. Thus, eliminating the potential for the concrete to deteriorate when subjected to freezing and thawing.

ASTM D4263 (modified) may be utilized to determine surface dryness. Tape a segment of plastic sheet, approximately 18 by 18 inches, tightly to the concrete surface making sure that all edges are sealed. Allow the plastic sheet to remain in place a minimum of 2 hours. After the allowed time has elapsed, remove the plastic sheet and visually inspect the underside of the sheet and the concrete surface of the patch for the presence of moisture.

Require in the Concrete Quality Control plan that there are measures to assure the application of the protective coating will not affect the deck’s long term pavement markings. Follow the manufacturer’s recommendation for application.
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BEST PRACTICES - LATEX MODIFIED CONCRETE OVERLAYS ON BRIDGE DECKS

1. Cracks should be identified before scarification. If cracks extend through the entire depth of the bridge deck, report the findings to the Structure Control Engineer. Otherwise, the crack may be difficult to find and reappear later as a reflective crack in the overlay.

2. If the Structure Control Engineer deems the full depth cracks need repaired, the cracks may be saw cut 2 to 3 inches on each side and ½ to ¾-inch deep. If a crack over a rebar indicates corrosion, the area may be saw cut and the rebar exposed and blast cleaned. The area around the bar would then be filled with latex concrete during the normal overlay operation or as a part of a Type 2 Deck Repair.

3. Areas of existing decks, which have been contaminated by oil or other substance, must be scarified or chipped out to a minimum depth of ¼-inch. (Even new decks, not opened to traffic, would benefit from scarification to remove laitance and other airborne contaminants.)

4. The prepared deck surface must be clean and free from any dust, dirt, contamination, saw slurry or any other foreign material. The cleaning process, blast cleaning or water blasting and washing within 24 hours of the placement operation, is essential to assure proper bonding of the new overlay to the existing deck surface.

5. Make sure that the deck to be overlaid is clean and sound. Remove loose, or partially loose concrete chips, dust, blast medium or weak, fractured concrete. Latex concrete will bond to almost anything, but if the material it bonds to is weak, then a delamination will occur.

6. The deck surface should be damp for placement - not sloppy wet. Use a fogger/sprayer to mist any dry spots prior to the latex placement. Vacuum any free water from pits and depressions in the prepared surface prior to latex placement. Do not use the water hose from the mobile mixer to dampen any dry spots ahead of the placement. Excessive free water will compromise the bond between the existing bridge deck and the latex overlay.

7. "Brooming in" latex mortar or the paste portion of the concrete mix before placing the concrete is critical to the overlay's performance. The grout should be thoroughly brushed onto both horizontal and vertical surfaces. A stiff bristle push broom may be used to complete the brooming operation on the prepared deck surface and a hand brush should be used on all vertical surfaces, such as along barrier and expansion dam block outs. Care must be taken not to over extract the latex grout from the mixture when separating the grout and the aggregate during the brooming operation. Broom only a small area at one time. Do not allow concrete mix to become diluted. Areas that appear lighter in color
from the original grout color need to be rebroomed with fresh mortar or concrete. Promptly remove all aggregate separated from the mix. Ensure the contractor has a sufficient number of wheelbarrows to remove the spent aggregate and for use in obtaining sample material for testing purposes. Ideally, the contractor should provide a wheelbarrow on each side of the mobile mixer, where space permits, to remove the spent aggregate.

8. On surfaces prepared using Hydrodemolition, "brooming in" is not required. When the brooming operation is not performed, vibrate the entire deck surface area using pencil vibrators. Due to the limited effective area of a pencil vibrator, the contractor should provide a vibrator for each side of the mobile mixer.

9. Particular attention must be given to vibrating the concrete before finishing. The vibrating pan on the screed should visibly consolidate the concrete. Acceptable vibration can be determined using a pocket tachometer. Vibrations should be between 1500 and 2500 vibrations per minute. If the screed overlaps the side forms, the edges must be vibrated with a pencil vibrator. This is required due to the susceptibility of the concrete to have entrapped air migrate to the interface and weaken the bond.

10. Latex overlays will be tine finished similar to conventional bridge decks and pavements unless provisions are established in the contract for mechanical grooving.

11. The wet burlap cure should be applied as soon as practical. The cure should be placed early, rather than late, since incidental surface marring is far less detrimental than cracking or crazing. The burlap should be wet, but not dripping wet, because dry burlap draws ingredients from the overlay and compromises the quality of work. Cover the dampened burlap with white polyethylene sheeting as soon as possible, but no later than one (1) hour, to prevent any burlap moisture loss. Ensure that the watering system that is to be used to keep the burlap curing covers saturated during the curing period is operational prior to the placement operation.

12. Sections of latex concrete over 2 inches thick require a longer cure. If cool or cold weather curing temperatures are forecasted, cure the latex modified concrete using the curing procedures specified in Section 1001.3(p)4 and Section 1001.3(p)5 to maintain proper curing temperatures.

13. Verify that the compatibility of the mix components occurred during the mix design process.

14. Careful control of the sand and aggregate components is required. Gradation tests are required for the coarse and fine aggregates. Aggregate moisture tests are to be run immediately prior to any placements. Aggregate piles are to be tarped to shield from the sun and rain. Do not allow mobile mixers to be charged with aggregates for longer than the six (6) hour maximum prior to placement unless otherwise approved by the
Representative. All loaded mobile mixers are to be shielded from direct sun exposure prior to placement.

15. Mobile mixers that arrive from a project outside the District's limits and contain residual material, cement, latex or aggregates, require written documentation from the Department Representative who witnessed the actual loading of the material. This written documentation is required prior to permitting the use of any residual material contained in the mobile mixers. Purge all residual cement, latex or aggregates from the mobile mixers that cannot be specifically accounted for by certification or history.

16. Perform a yield test during calibration of the mobile mixers. Monitor yield tests to assure the material remains workable for a sufficient time to allow for proper placement and finishing. This is critical for the success of the placement and the quality of the finished surface.

17. The contractor must provide proper product certification for each latex tanker being used on the project prior to the use of the latex. Latex emulsion solids can settle out if allowed to set undisturbed for several days. Emulsion in the tankers must be circulated in accordance with the approved Quality Control Plan. Do not allow any agents to be added to the latex emulsion in the field under any circumstances.

18. The contractor is required to have the proper equipment to monitor surface evaporation on the project. Mitigation measures to be taken when the evaporation exceeds the allowable rates must be addressed in the approved QC plan and available for use on the project prior to any placement.

19. Conduct a pre-placement meeting to discuss the approved QC plan and any operational concerns. Consider latex placement during hours when the deck has lost the heat of the day and before any significant heat from direct sunlight occurs.

20. Do not allow Latex Modified Concrete to be used in Type 3 deck repair areas placed concurrently with the latex overlay. The additional depth of the Type 3 deck repairs causes differential cure rates and can contribute to surface cracking. Type 2 deck repairs can be placed concurrently with the latex overlay if they do not exceed 2 inches in depth. Separately fill and consolidate each Type 2 repair area prior to the advancement of the overlay placement operation.

21. Assure that the mobile mixer is as close as physically possible to the finishing machine while allowing space for the workers conducting brooming, removal of spent aggregate and vibration operations. Otherwise, assure that the time is no more than five (5) minutes from the time the latex is deposited on the deck to when the finishing operation begins.
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USE OF DIRECT TENSION INDICATING WASHERS (DTIs)
CONNECTIONS USING HIGH STRENGTH BOLTS

The following procedures are to be used on all projects submitted to Central Office with PS&E submittals after May 20, 2010 where direct tension indicating washers are being used to indicate tension.

Necessary action prior to use:

1. Each lot of DTIs provided to the steel fabricator, or supplied directly to the project, must be shipped in protective containers clearly marked with the washer type, lot number and quantity being shipped. Each shipment must also be accompanied by a copy of Form CS-4171 indicating that the lot conforms to Pub 408, Section 1105.02(d)6. Additionally, the Form CS-4171 must indicate the ‘target’ Rockwell hardness (HRC) for each DTI manufacturing lot represented on the form. Each container must identify the lot of washers, the total lot size, and the quantity from the respective lot in that container. If a shipment of DTIs is received without satisfactory certification, the shipment must be rejected and replaced with a new shipment with proper lot identification and the required certification.

2. Each lot of DTIs delivered to a Department project must be sampled and tested prior to use. Select at random in accordance with PTM No. 1 a minimum of sixteen (16) samples from each lot and forward these, along with Form TR-447 to the LTS for testing. If the DTIs have already been installed and failing compression results are obtained by LTS, the Contractor must be directed to replace the DTIs including bolts, nuts and washers at no cost to the Department.

3. If the samples submitted to LTS meet the ASTM F 959 results for the bolt tension and DTI compression requirements, but fail (fall outside) the manufacturing tolerance on hardness, the Contractor may be allowed to inspect each connection using the procedures in A.4.b below under the direction of a Department representative, for acceptance of the connections. If this procedure is used, the Department shall receive a rebate for the cost of the failed (hardness only) DTIs and the Contractor will be solely responsible for the cost of the inspection.

4. DTIs must be installed in accordance with the AASHTO Construction Specifications and Publication 408, Specifications. When lot testing at the LTS of DTIs shows that they are in compliance with the specifications, the DTIs are considered acceptable in the work if they meet the pre-installation tension/compression requirements of the AASHTO specifications (procedure below) and are installed on the structure to (0.005 inches) or less.
Installation of a DTI under the turned element may be permitted if a washer separates the turned element from the DTI.

a. Pre-installation verification: The purpose of the pre-installation verification testing is to ensure that the fastener will be at or above the desired installation tension shown in Table 1 of the previously referenced AASHTO specifications (herein referred to simply as Table 1) when the requisite number of spaces between the protrusions have a gap of 0.005” or less and that the bolt will not have excessive plastic deformation at the minimum gap allowed.

A representative sample of at least three bolt, nut and washer assemblies for each diameter, length, and grade of fastener to be used in the work shall be assembled in a calibration device (Skidmore-Wilhelm calibrator) capable of indicating bolt tension. The DTI position relative to the turned element (bolt head or nut) shall be the same as that to be used on the structure. The element not turned (bolt or nut) shall be restrained from rotation.

The verification testing shall be accomplished in two stages.

Pre-installation, Stage 1:

The bolt, nut and DTI assembly shall be installed in a manner so that at least three and preferably not more than five threads are located between the bearing face of the nut and the bolt head. The bolt shall be tensioned first to the load equal to that listed in Table 1 for the grade and diameter of bolt. If an impact wrench is used, the tension developed using the impact wrench shall be no more than two-thirds of the required tension. Subsequently, a manual wrench shall be used to attain the required tension. The number of refusals of a 0.005” tapered feeler gauge in the spaces between the protrusions shall be recorded. The number of refusals for uncoated DTIs under the stationary or turned element, or coated DTIs under the stationary element, shall not exceed the number listed under ‘Maximum Verification Refusals in Table 1 below for the grade and diameter of bolt used. The maximum number of verification refusals for galvanized DTIs, when used under the turned element shall be no more than the number of spaces on the DTI less one. The DTI lot is rejected if the number of refusals exceeds the values in the table or, for coated DTIs if the gauge is refused in all spaces.

Pre-installation, Stage 2:

After the number of refusals is recorded at the verification load, the bolt shall be further tensioned until the 0.005” tapered feeler gauge is refused at all the spaces and a visible gap exists in at least one space. The load at this condition shall be recorded and the bolt removed from the tension measuring device. The nut shall
be able to be rundown by hand for the complete thread length of the bolt excluding thread runout. If the nut cannot be run-down for this thread length, the DTI lot shall be rejected unless the load recorded is less than 95% of the average load measured in the rotational capacity test for the fastener lot.

If the bolt is too short to be tested in the calibration divide, the DTI lot shall be verified on a long bolt in a calibrator to determine the number of refusals at the pre-installation verification tension listed in Table 1. The number of refusals shall not exceed the values listed under ‘Maximum Verification Refusals’ in Table 1. Another DTI from the same lot shall then be verified with the short bolt in a convenient hole in the work/structure. The bolt shall be tensioned until the 0.005” tapered feeler gauge is refused in all spaces and a visible gap exists in at least one space. The bolt shall then be removed from the work/structure and the nut must be able to be run down by hand for the complete thread length of the bolt excluding thread runout. The DTI lot shall be rejected if the nut cannot be rundown for this thread length.

b. Installation. Installation of fastener assemblies using DTIs shall be performed in two stages. The stationary element shall be held against rotation during each stage of the installation.

Installation, Stage 1:

The connection shall be first snugged with bolts installed in all the holes of the connection and tensioned sufficiently to bring all the plies of the connection into firm contact. The number of spaces in which a 0.005” tapered feeler gauge is refused in the DTI after snuggling shall not exceed those listed under ‘Maximum Verification Refusals’ in Table 1. If the number exceeds the values in the table, the fastener assembly shall be removed and another DTI installed and snugged.

Installation, Stage 2:

For uncoated DTIs under the stationary or turned element, or coated DTIs under the stationary element, the bolts shall be further tensioned until the number of refusals of the 0.005” tapered feeler gauge is equal to or greater than the number listed under ‘Minimum Installation Refusals’ in Table 1. If the bolt is tensioned so that no visible gap in any space remains, the bolt and DTI shall be removed and replaced by a new properly tensioned bolt and DTI.

The feeler gauge shall be refused in all spaces when galvanized DTIs are used under the turned element.
### Table 1

<table>
<thead>
<tr>
<th>Bolt Dia. (in.)</th>
<th>Verification Tension (Kips)</th>
<th>Maximum Verification Refusals</th>
<th>DTI Spaces</th>
<th>Minimum Installation Refusals</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>A325</td>
<td>A490</td>
<td>A325</td>
<td>A490</td>
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<tr>
<td>½</td>
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<td>16</td>
<td>1</td>
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</tr>
<tr>
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<td>2</td>
</tr>
<tr>
<td>3/4</td>
<td>29</td>
<td>37</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
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<td>84</td>
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<td>3</td>
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<td>1-1/2</td>
<td>108</td>
<td>155</td>
<td>3</td>
<td>4</td>
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</table>

Note: Maximum Verification Refusals are for uncoated DTIs used under stationary or turned elements and for coated DTIs used under a stationary element. The maximum number of refusals for coated DTIs used under a turned element shall be no more than the number of spaces on the DTI less one. Additionally, Minimum Installation Refusals are for uncoated DTIs used under a turned element and for coated DTIs used under a stationary element. The gauge shall be refused in all spaces when coated DTIs are used under a turned element.

5. Project personnel must document all procedures for testing and inspection used to accept the connections on the project. It is important that these procedures are understood and followed by project personnel if problems with the use of DTIs are to be minimized. If there are any questions, contact the District Bridge Engineer for assistance.

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The inspection and documentation of field painting projects are defined by sub-areas of operations, each with specific check/hold points. These checkpoints are confirmed by the Department Inspector to PennDOT specific requirements and then recorded for project documentation purposes.

A pre-job conference should be conducted so that the Department, Contractor and Inspector can review the specifications and establish ground rules for performing the work and inspection points. After the pre-job conference, the following areas are the focus of hold-point inspection and documentation. Additionally, ambient environmental conditions such as air/steel temperatures, relative humidity and dew point are determined and recorded for both the surface preparation and application areas.

**Pre-surface Preparation**

- Edge preparation, removal of weld spatter, steel anomalies, etc.
- Grease/oil removal
- Abrasive quality and cleanliness
- Air pressure and cleanliness

**Surface Preparation**  * Ambient conditions recorded*

- Blast surface cleanliness
- Surface profile
- Type and size of abrasive
- Magnetic base reading

**Mixing**

- Manufacturer/Product
- Batch Number
- Thinner identity and amount
- Product specifics – pot life, temperatures/times of mixing, induction, etc.

**Application**  * Ambient conditions recorded*

- Record applicator, times and conditions for all application related factors
Inspection

- Visual
  No runs, sags, skips, thin areas, etc.
- Dry film thickness (DFT)
  As manufacturer tech sheet or default 1070-1071
- Cure MEK/MIBK solvent rub
  ASTM D4752
  Pencil Hardness
  ASTM D3363
  Sand paper test
  Residue in paper - powdery not tacky/uncured

Stenciling

- 2-3” black lettering
- Bridge ID
- Month/year completed
- Surface prep (as per SSPC)
- Paint system (NEPCOAT#)
### Daily Inspection Report

| Section: 10 | Page: 5-3 | Date: March 1, 2011 |

#### Summary of Work Performed:

<table>
<thead>
<tr>
<th>Condition of Edges, Weld Spatter, Etc.</th>
<th>Clean Dry Abrasive</th>
<th>Recycled Abrasive Test</th>
<th>Nozzle Air Pressure (Record)</th>
<th>Compressed Air Cleanliness (Record)</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

#### Surface Preparation

<table>
<thead>
<tr>
<th>Ambient Conditions (Record)</th>
<th>Degree of Cleanliness (Record)</th>
<th>Profile (Record)</th>
<th>Type and Size Abrasive (Record)</th>
<th>Dust and Abrasive Removal</th>
<th>Magnetic Base Reading (Record)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Mixing

<table>
<thead>
<tr>
<th>Mtgr/Product Name (Record)</th>
<th>Batch Numbers (Record)</th>
<th>Material Temperature/Temperature (Record)</th>
<th>Correct Thinner/Amount (Record)</th>
<th>Time of Mix (Record)</th>
<th>Mix Ratio (Record)</th>
<th>Induction Period (Record)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

#### Application

| Ambient Conditions (Record) | Applicator's Name (Record) | Surface Prep. to Appl. (Record Time) | Compressed Air Cleanliness | Time Application Began (Record) | Surrounding Air Cleanliness | Recoat Times Observed (Record Actual) | Intercoat Cleanliness | Proper Pot Agitation | Application Equipment (Record) | Time Application Complete (Record) | |
|----------------------------|---------------------------|-------------------------------------|---------------------------|-------------------------------|-----------------------------|-----------------------------------|------------------|------------------|---------------------------------|-------------------------------| |
|                            |                           |                                     |                           |                               |                             |                                   |                  |                  |                                 |                               | |

#### Inspection

<table>
<thead>
<tr>
<th>Visual Appearance</th>
<th>Dry Film Thickness (DFT)</th>
<th>Holiday Test (Record Method)</th>
<th>Cure Test (Record Method)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>See DFT Tables</td>
<td></td>
</tr>
</tbody>
</table>

#### Remarks:

Inspector: 
Date: /99 
Report No. 
Page of 1

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Department specifications require backfill materials intended for use in MSE walls to have a chloride content of less than one hundred parts per million (<100 ppm). Introduction of high chloride content materials (such as many dust palliatives) would likely increase the chloride content of the wall backfill, resulting in a possible detrimental effect on the wall.

The Bureau of Project Delivery cautions that construction personnel closely monitor the use of dust palliatives on or around MSE wall backfills. Palliatives containing chlorides, or any other materials that could adversely affect wall performance, shall not be used on MSE wall backfills. Note: the dust palliatives listed in Bulletin 15 in Section 901.3(b) are approved for use on unpaved roadways and have not been evaluated for chloride content. If there is question as to whether or not a palliative contains chlorides, then its use on MSE walls shall be discontinued until such time as the absence of chlorides is assured. Methods of determining whether a particular dust palliative or other material contains chlorides would be: 1) consultation with the supplier or manufacturer or 2) testing by a laboratory equipped to make such a determination.

Any questions related to the dust palliative containing chlorides or any other material (sulfates, nitrates, and ferrous ions) that could adversely affect wall performance as it relates to corrosion, should be directed to the Bureau of Project Delivery, Laboratory Testing Section, Chemistry Lab at (717) 787-3966. Any questions may result in the Chemistry Lab requesting manufacturer or private laboratory test results showing presence of chlorides, sulfates, nitrates, and ferrous ions in the dust palliative.
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FINISHING BEARING AREAS

The Department's policy for the finishing of bearing areas when neoprene bearing pads are utilized is as follows:

PREPARATION OF BEARING AREAS PRIOR TO BEAM PLACEMENT

Publication 408, Section 1001.3(k) 9 requires treatment of beam seats, if necessary, by grinding before beam and pad placement. Bearing area tolerances for deviation from specified elevations, flatness, surface irregularities and slope are also outlined in this section.

INSPECTION OF BEARING AREAS AFTER BEAM PLACEMENT

Determine if there is full contact between the bearing pad and bearing surfaces just after the beams are set in place. In order to inspect all sides of the bearing area for full contact, the waterproofing and or other material must be temporarily relocated to expose all sides of the pad.

If a gap between the pad and bearing surfaces is present after the beams have been set in place, proceed as directed in Publication 408, Section 1080.3(c) 2.

DO NOT PLACE A LEVELING BED OF MORTAR BEFORE THE INITIAL SETTING OF THE BEAMS.
The contractor must submit Form CS-704, Minimum Quality Control Plan for Field Placement Concrete Operations, for the placement of any Portland cement concrete bridge deck, as directed in the specifications, to the District Executive for review. The contractor is to address the following points with the listed minimums:

DECK PLACEMENT OPERATIONS

1. General Description of Placement Procedure
   - Anticipated placement date(s).
   - Contractor/subcontractor performing deck placement.
   - Method to seal holes in and around deck pans and deck forms.
   - Advancement rate and direction, pour sequence and dimensions of anticipated pours.
   - Method of concrete placement, i.e., crane and bucket, pump, conveyor, buggy. Note capacity of operation. For cranes and pumps utilizing booms, detail setup locations and reach.

2. Manpower
   - Name(s) of supervisor(s) responsible for placement and their experience level.
   - Numbers of Contractor's staff including supervisors, laborers, operators, carpenters, finishers/masons, and technicians.

3. Equipment Types and Tools
   - Type and model of specific finishing machine that will be used.
   - Method that will be used to check the finishing machine grades, depths, and reinforcement clearances in the "dry run" operation, i.e., frequency of checks, tolerances, expansion dam clearances, setup method (perpendicular or degree of skew).
   - Type and/or model of equipment that will be used to monitor the evaporation rate of the concrete.
   - Type of remediation equipment and/or material that will be used if the concrete evaporation rate is exceeded.
   - Number of work bridges and their use.
   - List of emergency/spare equipment, motors, and spare parts in the event of breakdowns.
• List of hand and power tools. Include drywall broadknife for checking re-bar cover depth. A minimum of two vibrators is required.

4. Material

• Concrete delivery plan, i.e., number of trucks, spacing, haul time, delivery capacity, etc.
• Intermediate bridge deck curing agent.

5. Reaction Plans

• Bulkhead of appropriate length and height. District should denote locations where no bulkhead will be permitted.
• Method of rain protection and how much area of protection will be provided.
• Plant breakdown.
• Field equipment breakdown.
• Foul water.

6. Texture

• Method to be used to determine when texturing is to be applied, by whom.
• Method (type of equipment) and orientation.
• Denote plastic surface texture or mechanical method.

7. Cure and Protection

• Curing method including water supply source, and cool/cold weather provisions when necessary. Include in detail, whether using blankets, heaters (type, size, number, location), enclosures, etc. If applicable, list the method for heating of the cure water.
• Monomolecular film curing agent manufacturer and method.
• High/low thermometers.
• If the water supply used for curing is from a body of water, comply with Section 720 of Publication 408.

TESTING

1. Deck

• Straight edge testing method and frequency. Furnish one straight edge a minimum of ten feet in length with suitable handles for the Department's use. Furnish all finishers with a straight edge when performing hand finishing.
• Frequency of overall concrete depth and reinforcement bar cover depth checks.
2. Concrete

A. General Description of Testing Operations

- Where testing will take place.
- Manpower
  - Number of technicians and their names.
  - Who authorizes changes to the mix based on field testing.
  - Who has the authority to reject material and/or suspend operations.
- How QC test results will be recorded. Where compression test specimens will be tested (plant or project).

B. Equipment

- Number and type of all concrete testing equipment.
- Communications.

C. Frequency of Tests and Molding of Cylinders

- How often QC tests will be performed after mandatory first three.
- Number of QC cylinders to be molded.
- Where cylinders will be molded.
- Identification of cylinder molds and cylinders
- Cylinder curing method/procedure.

D. Concrete Acceptability

- Action points and target values (slump, air, temperature).
- Procedure after action points reached.
The following policy is required to standardize the inspection and documentation procedures for measuring the total deck thickness and the concrete cover over the top mat of reinforcing steel when performing the inspection of bridge deck construction. The inspection measurements must be entered directly into an approved source document and included in the permanent project records. It is recommended that the "Wire Mesh Depth Check" section in the rear of Form CS-472, Concrete Inspectors Daily Record Book or a "black field book" be used to record all measurements in a format similar to the accompanying example.

Report all measurements in a table format (refer to attached examples). Identify the contract number, structure number, span, pour sequence, starting, ending and test stations, and the location of all pier and deck joints. For long or wide spans, the table can be continued on as many pages as required. On the left side of the table, indicate the test location stations.

A. "Dry Run" Inspection

The "dry run" inspection of the finishing machine shall be checked at longitudinal intervals not exceeding 10 feet along the length of the bridge deck. Place permanent test station markings on the vertical edge formwork to be used as reference points during the concrete placement operation. The stationing should be easily visible.

During the "dry run" check, measure the distance from the bottom of the finishing machine roller(s) to the top of the deck formwork to obtain the total deck thickness, and measure the distance from the bottom of the roller(s) to the top mat of reinforcing steel to obtain the depth of concrete cover.

As a minimum, perform "dry run" depth checks at each 10 feet test station, at each end of the transverse span between girders, at grade break points, and adjacent to the outside girder and gutter line of the overhang formwork. In addition, measure the total deck width at each test section.

During the "dry run" inspection, run the finishing machine transversely along the entire length of all expansion dams, bulkhead forms, etc., to check the grade and profile.

Record all measurements directly into the corresponding table location in the source document. Compare the "dry run" measurements against the contract drawings and specification tolerances. In accordance with Publication 408, Section 1001.3(b)1, "Place reinforcement so the indicated cover clearance does not deviate from position by more than +/- ¼ inch". The contractor must adjust the grade of the screed rail or bar supports (slab bolsters or re-bar chairs) as required to meet specification requirements.

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Recheck the entire area where grade adjustments are performed and enter the new depth check measurements in the table. Continue to perform the "dry run" inspection until no further adjustments are required.

B. Plastic Concrete Depth Checks

During the concrete placement operation, the inspector shall perform plastic concrete depth checks at each 10 feet test station. As a minimum, perform three depth checks at each station across the width of the deck placement. Measure the total deck thickness and reinforcing steel cover at the same location that was checked during the “dry run” inspection. The depth checks shall be performed at the location of the finishing machine. Record the measurements directly into the same table corresponding to the "dry run" inspection measurements.

A 3-inch-wide blade putty knife and a 1/8-inch diameter steel rod shall be used to perform the plastic concrete depth checks. Methods of marking these devices to accurately measure the concrete to +/- 6 mm (1/4 inch) should be exercised.

A 3-inch-wide blade putty knife works well to measure the concrete cover over the top mat of reinforcing steel. The knife blade should be turned perpendicular to the longitudinal direction of the upper reinforcing bar to obtain the concrete cover measurement.

A 1/8-inch diameter steel rod works well to measure the total concrete deck thickness. Carefully position the rod perpendicular to the deck formwork and slowly insert the rod with sufficient force until contacting the deck formwork. Slowly withdraw the steel rod so that no air pocket is left in the concrete deck and record the reading.

The purpose of performing the plastic concrete depth check is to check that the actual dead load camber deflection of all the girders is occurring as anticipated and in proper relationship to each other. The plastic concrete depth checks also assure that the top mat of reinforcing steel remains in proper position during the concrete placement operation.

If significant deficiencies are encountered, the placement operation shall be stopped and the situation must be investigated to determine possible causes. If corrective action cannot be taken, a bulkhead form shall be placed and the operation stopped. Significant deficiency defines as two consecutive sets of depth checks exceeding the +/- ¼ inch tolerance.

C. Hardened Concrete Testing

After the concrete has hardened and after the completion of the specified curing period, the depth of the top mat of reinforcing steel may be measured by use of a pachometer according to PTM No. 419.

Pachometer testing should be performed at deck locations where concrete cover deficiencies are identified by the plastic concrete depth check measurement, or as directed by the Engineer.
When required, the total depth of the hardened deck can be determined by obtaining full depth cores in areas suspected of having deficient deck thickness. Record all measurements directly into the corresponding area of the table.
<table>
<thead>
<tr>
<th>PART</th>
<th>SECTION</th>
<th>PAGE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>10</td>
<td>9-4</td>
<td>April 1, 2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTRACT:</th>
<th>STRUCTURE:</th>
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<td></td>
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<tr>
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<tr>
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<td></td>
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<td></td>
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<td>CH TOTAL DEPTH - HARDSNED - PACOMETER</td>
<td>2 1/2</td>
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</tr>
</tbody>
</table>

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION

STA 444+80
Dry Run Wet Pach

STA 444+90
Dry Run Wet Pach

STA 445+00
Dry Run Wet Pach

A Gutter Line

B

C

D Gutter Line

8¾ / 2¼

8¾ / 2¼

8¾ / 2¼

8¾ / 2¼

8½ / 2½

8½ / 2½

8½ / 2½

8¼ / 2¼

8¼ / 2½

8¼ / 2½

8¼ / 2¼

8¼ / 2¼

8¼ / 2¼

8½ / 2¼**

8¾ / 2¾

8½ / 2½

8½ / 2½

8½ / 2¼

** Total Plastic Depth to Deck Pan

** Depth of Plastic Concrete over Rebar

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At least two weeks prior to the actual placement operation, a deck pre-placement meeting is required. (1001.3(k) 6) The participants should include:

- Department and Consultant Project Inspection Staff
- District Structure Control Engineer
- Quality Assurance Representative
- Contractor’s Superintendent and Foreman
- Contractor’s Certified Concrete Technician
- Concrete Supplier’s Representative

The agenda of the deck pre-placement meeting shall include the following:

- **Review of the Specifications and/or Contract Special Provisions**: The applicable Publication 408 edition, Sections 1001 and 704 should be reviewed as well as any special provisions and any notes on the structure plans which relate to the deck placement.

- **Manpower**: A chain of command should be established for both the Department and the Contractor so that if unanticipated problems arise during the deck placement, quick decisions can be made that will not delay the concrete operations.

- **Equipment**: The method of concrete placement (pump, crane and bucket, conveyor), finishing machine type, and any proposed remediation equipment or materials, should be reviewed. The method the Contractor is using to determine the evaporation rate of the concrete should also be discussed (e.g., weather station or other acceptable method). Discuss concrete delivery with the Contractor and the Supplier to assure a sufficient number of trucks are scheduled in the queue to meet the advancement requirement of 20 L.F. per hour, and appropriate delay has been set between trucks.

- **Sequence of Deck Placement and Deck Placement Procedure**: The Contractor’s QC Plan for the deck placement should be reviewed. This QC plan should include the placement sequence, and should be submitted by the Contractor and reviewed by the District Structure Control Engineer.

- **Material**: A concrete mix design reviewed by the District Materials Engineer/Manager is on file at the project {704.1(c)}. The AAAP mix design must also meet the requirements of 704.1(c) 2 and 704.1(c) 4. If using HPC, the mix design must meet
the requirements of the Special Provision included in the contract. AAA is not allowed to be used for bridge decks. The type of admixtures shown on the approved design and the minimum dosage rate for each should be discussed. It is recommended that the manufacturer’s data sheets for each admixture are available at the meeting.

- Testing: A QC Plan for concrete testing and acceptance has been submitted by the Contractor, reviewed and signed by the District Construction Office, and is on file at the project. All aspects this QC plan and the testing procedures should be reviewed, including the frequency of QC and AT testing, and whether or not VT is required. The established target points and action points for temperature, slump, and air should also be discussed. It is a good idea to also talk about “material control,” which is defined in section 704.1(d). Material control is established when the test results for air, slump, and temperature for three consecutive trucks are determined to be within the established action points.

Discuss the locations of the testing, the number of QC, AT, and VT (if required) cylinders to be molded and the method of curing for the first 24 hours and also for the remainder of the curing period.

The concrete field technician(s) performing the testing must have a valid PennDOT certification. A copy of the certification(s) should be on file.

Review the requirements of PTM 611, Section 12. IDENTIFICATION AND SECURITY OF COMPRESSION TEST SPECIMEN MOLDS AND COMPRESSION TEST SPECIMENS MOLDED ON CONSTRUCTION PROJECTS

- Curing: Cure bridge decks for a minimum of 14 days. During day 1 through day 7, do not count as a curing day, a day on which the curing temperature drops below 50°F. During day 8 through day 14, do not count as a curing day, a day on which the curing temperature drops below 40°F.

Additional facets of the curing operation should be discussed including the following:

Monomolecular Curing Agent
Intermediate curing is required when placing concrete in bridge decks. (1001.3(p) 3.c) A Bulletin 15-approved monomolecular curing agent should be applied immediately after the final finishing operations. It can be reapplied as necessary. Do not attempt to finish the concrete after the intermediate cure has been applied.

Burlap
Place the burlap sooner rather than later. Slight marring of the concrete surface is acceptable. The burlap should be saturated prior to use and kept saturated for
the entire cure period. The burlap should be placed so that each strip overlaps one-half its width (double burlap), and the burlap must be in direct contact with the concrete at all times.

**Water**
If the source of the water used for curing the deck is not from public supply, (e.g., from a creek) a sample of the water must be sent to LTS to be tested per section 720.1.

**Cool/Cold Weather Curing**
If the deck is being placed during cool or cold weather, the method and/or materials being used (covers, blankets, tents, heaters, etc.) to maintain the curing temperature should also be discussed. \{(1001.3(p) 4, 1001.3(p) 5)\}

It is in everyone's interest to discuss these items and any anticipated problems at the deck pre-placement meeting rather than waiting until a couple hours or minutes before concrete arrives on the project or a problem develops. Specification section references are provided where appropriate.

**PRE-RELEASE**

Prior to the release of concrete for any bridge deck placement, the inspector should check and review the following items:

- Air meters have been calibrated within the past two weeks. 704.1(d)3., 1001.2(a), POM Section B.6.5

- All holes in the deck pans and forms have been patched properly. Any aluminum flashing used to patch holes has been properly coated to prevent reaction with the plastic concrete. 1001.3(a)2., 1001.3(k)1

- Certifications are available for reinforcement bars, expansion dams, S.I.P. forms, etc. 709.5, 1105.01(e), 1001.2(h)

- The deck is clean and beams are free of any contamination. 1001.3(a)1

A dry run has been performed by the Contractor and witnessed by inspection staff. The results should be documented and on file.

- The Contractor has all the necessary tools and equipment on the project including but not limited to:

  1. sufficient hoses and water supply. 1001.3(p)3.b
2. two functional vibrators of adequate size. 1001.3(k)2
3. concrete rakes and shovels (no garden rakes).
4. ten-foot straight edge and straight edge for each finisher. 1001.3(k)5
5. broad knife or other tool to check cover over reinforcement and overall depth. 1001.3(b)1
6. finishing tools. 1001.3(k)5
7. tine rake. 1001.3(k)5
8. cure materials including monomolecular spray cure. 1001.3(p)3.c
9. bulkhead. 1001.3(k)5
10. mason tools.
11. sufficient plastic is available to cover deck in the event of rain during placement.

- Burlap is wet but free of excess water. 1001.3(p)3.b
- All top mat and bridge barrier reinforcement is tied at all intersections. For other intersections, when bar spacing is greater than or equal to 12 inches, tie all intersections. If bar spacing is less than 12 inches, either tie all intersections or tie alternate intersections to provide a staggered tie layout and tie all perimeter intersections.
- The top mat is secured to the lower mat and sufficient chairs used to stabilize mats. Splice lengths are adequate. 1001.3(b)1
- Epoxy touch-up completed and cured as required. 709.1(d)
- Sufficient re-bar clearances available. 1001.3(b)1
- Contractor's planned pour sequence meets approved plan. 1001.3(k)5
- The Contractor has an operational water supply system. 1001.3(p)3.b
- Certification of falsework adequacy on file prior to placing loads on the falsework 105.03(c)
- The ambient air conditions are conducive for the deck placement operation.

PRE-PLACEMENT

After releasing the concrete for the deck, the Inspector should check for the following:

- Water system is operational.
• The Contractor has moistened the beams to prevent them from absorbing water. 1001.3(a)1
• Concrete technician has test equipment ready, and back up equipment is on site. 704.1(d) 3

DURING PLACEMENT

Once the Contractor has begun placing concrete, the Inspector should perform the following duties as a minimum level of inspection.

• If the concrete is being placed with a pump, witness the correlation testing which is to be performed per section 1001.3(k) 4 to determine the sampling locations (i.e., at the back of the truck or at the point of placement).

• Determine the evaporation rate of the concrete each hour during the placement 1001.3(k)6

• Check that concrete is being consolidated sufficiently to remove entrapped air and footprints in advance of finishing machine. 1001.3(k)5

• Ensure that finishers are straight edging their work in the gutter line, when coming off of bulkheads, and expansion dams. 1001.3(k)5

• Ensure that all finishing operations are performed from the work bridges or overhang falsework.

Witness the checks that the Contractor is making with ten-foot straight edge and that the Contractor is meeting the frequency of checks as established in the QC plan. 1001.3(k)5

• Check the overall depth of concrete in the deck and the depth of cover over the top mat of reinforcement. The latter test is easily performed using a drywall broad knife to locate the top of the re-bar and then measure the mortar on the blade surface. Test results may be recorded in the Concrete Inspectors Daily Record Book (See Form CS-472) in the "Wire Mesh Depth Check" section. A check should be made for every 50 S.F. of bridge deck placed. 1001.3(b)1 These checks should be made at the same locations as the dry run.

Witness the required QC and AT tests and perform the Verification tests on concrete if required.

• Contractor is maintaining the beams’ surfaces in moist condition. 1001.3(k)5
• Minimum advancement rate of 20 L.F. per hour is being achieved. If not, Contractor is taking appropriate corrective action or proceeding to bulkhead, 1001.3(k)5

• After surface is floated and finished, appropriate texture is applied. 1001.3(k)5

• After texture is applied to surface, the intermediate curing compound is applied and then reapplied as needed due to surface drying. 1001.3(p)3.c

• Double layer of damp burlap is applied as soon as it can be applied without marring texture (slight marring is acceptable) but prior to surface drying. Soaker hoses are applied to surface without plastic cover unless cool/cold weather curing covers required. 1001.3(p)3.b

POST PLACEMENT

After the curing cover is in place, the Inspector needs to assure proper curing conditions are maintained:

• Burlap covers are maintained in a saturated condition. 1001.3(p)

• Suitable cure temperatures are maintained. Cure covers, blankets, tents, heaters, etc. are maintained as required. Assure that cool/cold weather curing system does not exceed maximum allowable temperature. 1001.3(p)

• Record of daily curing temperatures is made. 1001.3(p)

• Gradually lower temperatures within heated enclosure over three-day period when cure is discontinued. 1001.3(p)

• Unsuitable dead or live loads are not applied to uncured deck. 1001.3(q)

• The District shall complete the Bridge Deck Cracking Input Forms.

NOTE: All specifications references are from Publication 408.
Publication 408, Section 1001.3(k)3.a provides for the use of 25% more cement than the quantity specified for the concrete class being used on an exception basis if approved by the District Materials Manager/District Materials Engineer (DMM/DME). This is specifically for concrete placements made in or under water. The extra cement is added to the mix to stiffen or thicken the paste content to make it more resistant to scour and compensate for paste loss that will occur when placing concrete in water. When water is present, it should be reasonably still to minimize water's negative effect and loss of paste.

Placing concrete in water is not the preferred condition. Prior to the Inspector authorizing a Contractor to place concrete in water, the Contractor must make a valid effort to first dewater the site by use of pumps (in sufficient quantity and capacity), sealing the forms, diversion of the stream, or other legitimate effort. Only after these attempts have failed to adequately stem the flow of water should the Contractor be permitted to place in water. Any pump discharge containing cement paste must be controlled to prevent discharge into any waterway.

Water is added at the plant to compensate for the slump loss that would be anticipated with the addition of the extra cement; however, when placing concrete with extra cement, the maximum slump permitted at the point of placement is 2½ inches. Extra air entraining admixture is also added to the load to compensate for the extra cement. There is no relaxation of plastic air content or slump specifications as many such placements are structural elements that require durable concrete.

Ideally, place extra cement concrete to a level just above the surface of the water (about 2 inches). When making placements in water, first place concrete to seal off the flow of water and then, if possible, purge water by placing concrete on top of previous deposits to attempt to eliminate pockets of mud/water being trapped in the placement. Loads of extra cement concrete and conventional loads may be alternated if approved by the DMM/DME and if the conventional concrete is not being placed in more than 2 inches of water.

For purposes of acceptance testing of the concrete (by compressive strength), do not test any extra cement concrete loads unless at least 50% of the lot is comprised of extra cement concrete. If random selection determines a load of extra cement concrete be tested for acceptance, either select the next conventional load of concrete for testing or select an alternate load by PTM No. 1. Slump tests should still be performed for quality control purposes. Plastic air content should still be performed for quality control and acceptance purposes.

This procedure will increase the volume of concrete. The increased volume should be considered by the Inspector if computing yield and by the Contractor when calculating and ordering concrete in a placement. A separate mix design is not necessary unless required by the DMM/DME.

April 2017 Edition
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The contractor must submit Form CS-1042, Minimum Quality Control Plan for Field Placement Operations, for the placement of any Latex Modified Wearing Surface, as directed in the specifications, to the Assistant Construction Engineer or Structure Control Engineer for review. The contractor is to address the following points with the listed minimums:

I. ORGANIZATIONAL CHART

A. Key Personnel
   • Name(s) of supervisor(s), foreman and concrete technician(s) listing their responsibilities and any required certification identification numbers
   • Name of latex manufacture representative/company providing support during the mix design process

II. EQUIPMENT SPECIFICATIONS

A. Surface Preparation Equipment
   • Type of equipment to be used to clean the deck and/or reinforcement bars, including rated capacity

B. Mixing Equipment
   • Type and model of latex mixer trucks
   • Calibration

C. Placing and Finishing Equipment
   • Type and model of specific finishing machine
   • Type and number of work bridges
   • Type of vibrators
   • List hand tools to be used

D. Lighting Plan (non-daylight placement)
   • Sketch of light plant placements
   • Light configuration on finishing machine

III. SURFACE PREPARATION

A. Repair and/or Removal operation of existing concrete deck

B. Pre-placement operations and cleaning procedures
• Procedure for cleaning the existing concrete surface and removal of rust from exposed reinforcement bars
• Steps for preparation of deck prior to latex placement (set finish machine, perform dry run, water blast within 24 hours of placement, vacuum standing water, cover with plastic, etc.)

IV. MATERIAL CONTROL

A. Aggregates
• Gradation tests on coarse and fine aggregates
• Moisture tests run immediately prior to placements
• Aggregate piles and charged mobile mixers protected from sun and rain
• Mobile mixers to be purged of any residual aggregates
• Mobile mixers charged less than six (6) hours prior to scheduled placement unless otherwise approved by the Representative

B. Latex /Cement
• Latex
  a) Mobile mixers to be purged of any residual cement, latex
  b) Discard any latex and/or cement which can’t be accounted for by certification and history
  c) Product certification for each latex tanker prior to project use of the latex
  d) Product samples taken from each latex tanker and submitted for testing. Prior to sampling from tanker, ensure the latex material has been circulated.

• Cement
  a) Supplier/Type
  b) Product certification for cement
  c) Mitigation methods to control latex/cement temperatures

C. Completed mix
• Compatibility testing completed during mix design process
  a) Yield and workability tests performed in conjunction with mixer calibration
  b) Method to monitor completed mix temperatures

V. TESTING

A. Temperature (ASTM C 1064)
• Ambient and latex mixture temperature specification limits
B. Slump test (AASHTO T 119)
   • Latex mortar mixture and latex concrete mixture slump specification limits and target values

C. Air test (AASHTO T 152)
   • Latex mixture air content specification limits

D. Yield test (AASHTO T 121 or Yield Box)
   • If require – test may be performed following the procedure specified in Pub. 408 Section 1042.3(a)2.f

E. Evaporation rate (ACI 305R)
   • Evaporation rate specification limits

VI. CONCRETE CYLINDERS

A. Size/number of cylinders
   • Cylinders to be molded as specified in PTM No. 611

B. Curing cylinders
   • Specimens cured according to PTM No. 611
     a) Method of curing for first 48 hours
     b) Method of curing after 48 hours

VII. FIELD PLACEMENT, MANPOWER and EQUIPMENT

A. Personnel, Experience and Equipment
   • Contractor/Subcontractor performing placement
   • Manpower by name, assigned duties and previous work experience
   • All equipment, including backup

B. Placement limitations
   • Method and equipment to monitor surface evaporation
   • Method and equipment to maintain evaporation rate within allowable limits

C. Curing and protection
   • Initial curing methods (burlap fully moistened but not dripping wet)
   • Polyethylene placement timing
   • Water source
   • Wet cure (method to keep burlap saturated during working and non-working hours)/dry cure durations
   • cool/cold weather provisions
   • High/Low thermometers
D. Straightedge and Texturing
   • Straight edging test method and frequencies
   • Texturing method and equipment (plastic or mechanical)

E. Reaction Plan
   • Material available to construct bulkhead
   • Method of rain protection
   • Mobile mixer or equipment breakdown procedures

F. Detailed sketch of equipment supports
The District may encounter recently constructed Latex Modified Concrete (LMC) overlays that crack, in some cases mildly or severely. This document is intended to provide information that will assist the District in making an informed decision regarding repair, removal, replacement or acceptance if cracking should occur in the overlay after placement and curing.

Any deck that is proposed to be overlaid should always be investigated, as part of the design process, for both chloride ion content contamination as well as possible ASR (Alkali-Silica Reactive) aggregate degradation. If chloride-ion contaminated concrete is allowed to remain under the overlay, it will always be present to corrode the reinforcement steel whenever any moisture is present. Refer to DM 4, Chapter 5 for acceptable limits. If the overlay is placed over a deck that is cracked as a result of ASR, the cracking will most likely reflect to the overlay surface due to the unstable substrate deck even if the surface is scarified. Any cracks in the existing deck must be addressed in the rehab process with methods such as epoxy crack injection to prevent reflective cracking.

Cracking may originate as the result of one or more contributing factors. LMC overlays have provided more than 30 years of continuous service even where cracking was present in the surface of the overlay. Cracking which is not detrimental to the overlay performance were typically shallow (less than 1/4”) and with narrow surface widths (less than 0.007”) formed typically as a result of drying shrinkage following placement from delays in the application of curing and/or improperly conditioned (dry) aggregates used in the latex concrete mixture.

If after reviewing the completed LMC placement, the District agrees that crack repair is an acceptable alternative, the contractor must submit a Quality Control and Action Plan addressing the following minimum set of criteria.

The following content should be included in an acceptable Quality Control and Action Plan submitted by the contractor:
1. Map of deck cracking
   a. Size and amount of cracks. Indicate if cracks are not working or flexing
   b. Cores to determine if cracks are full depth or shallow
   c. Cores submitted to an independent laboratory as well as cores submitted to LTS for analysis of the cracks.
   d. Photo summary of the cracks
2. Material that is proposed for sealing (not required to be listed in Bulletin 15)
   a. Brand name and manufacturer
      i. High molecular weight methacrylate
      ii. Low viscosity or ultra-low viscosity epoxy resin
iii. Alternative material. Currently, many new materials are being developed, which may not be listed in Bulletin 15 but may be determined to be acceptable.

iv. Urethanes are not recommended for new LMC overlays.

b. Material data and use sheet
c. Crack preparation methods and equipment
d. Ambient temperatures for intended application
e. Substrate temperatures for intended application
f. Material temperatures for intended application
g. Moisture conditions of the cracks
h. Relative humidity
i. Wind speed at time of application if applicable

3. Application methods/process description in detail
   a. Surface/Crack preparation
   b. Flooding or individual crack
   c. Daylight or dark hours
   d. Lighting, if needed

4. Safety
5. Crew makeup
6. Post-sealing testing method to validate penetration and effectiveness of operation.

Due to the wide array of ambient conditions and circumstances such as application temperatures in the field versus the ideal temperature range of the crack sealing material, moisture conditions, etc., any QC and Action Plan must be submitted to the Laboratory Testing Section (LTS) of the Bureau of Project Delivery for review and concurrence. The Plan will be evaluated by the chemists of LTS. LTS will report the suitability of the plan back to the District for their consideration.

Never permit the use of a slurry of liquid latex admixture, water, cement, and sand as a repair method.
Documentation of pile driving operations is needed for verification of the pile capacity, as well as a means for assessing pile integrity. Complete and accurate records are necessary to verify conformance to the design plans and specifications for the structure foundation and for item quantity calculations to determine payment(s) due the contractor.

Test piles must be driven in the presence of the Structure Control Engineer or their representative to verify the pile hammer's capability, determine driving characteristics, verify pile capacity achieved, and to establish a pile tip elevation before driving any bearing piles. Record the following information on Form CS-1005, PILE DRIVING LOG, for all test piles and bearing piles for the purpose of creating a project record of the Pile Driving Operation:

I. ECMS #, SR & SECTION - located on the first page of the contract.

II. PILING CONTRACTOR - contractor or approved subcontractor performing the pile driving operation.

III. STRUCTURE # - located in the title block on the structure plans. Example: S-12345.

IV. SUBSTRUCTURE UNIT - located in the structure plans. Specific to the actual location where the piles are being driven. Example: Abutment # 1, Wing A, Pier # 3, etc.

V. ESTIMATED/MINIMUM TIP ELEVATION - document the estimated pile tip elevation, and for friction piles, also document the minimum pile tip elevation. Refer to the General Plan sheet in the structure plans, locate the soil boring symbol in the "LEGEND" and determine the soil boring number (B-1, B-2, etc.) closest to the substructure unit where the pile driving operation is to take place. On the Soils Borings page(s) in the structure plans, the boring number will be located at the top left of the boring information header. The estimated pile tip elevation will be designated as "EPTE" or "PTE", and the minimum pile tip elevation will be designated as "MPTE" for friction piles. Another location containing the EPTE is the Elevation and Typical Section plan sheet in the structure plans. The EPTE can be found in the Elevation view for each substructure unit. Verify that the pile tip elevation from the Soils Boring is the same pile tip elevation from the Elevation and Typical Section plan sheet. Example: 866.40.

VI. ESTIMATED/MINIMUM PILE LENGTH - document the estimated pile length, and for friction piles, also document the minimum pile length. Refer to the cross-section plan sheet in the structure plans for the substructure unit where the piles are to be driven. Find the proposed bottom of footer elevation, along with the length of pile extending into the footer (typically 1.0 FT for standard pile footings and 1.5 FT for integral abutments). Add the length of pile extending into the footer to the proposed bottom of footer elevation, creating
a top of pile elevation. The estimated pile length is the difference between the top of pile elevation and the EPTE, and the minimum pile length is the difference between the top of pile elevation and the MPTE. Example: (946.50 + 1.00) - 866.40 = 81.10 LF.

VII. HAMMER, CAP BLOCK MATERIAL, THICKNESS & DATE VERIFIED - refer to the pile hammer approval for the hammer type, manufacturer and model number, as well as the cap block material and thickness. Example: Hammer - ICE D25-32; Cap Block Material - Polymer; Thickness - 3". Prior to any pile installation, inspect the hammer to verify the cap block material is in good condition, is the approved thickness, and that the material matches the information in the pile hammer approval. Record the date the inspection of the cap block material was conducted.

VIII. PILE NUMBER - make a copy of the pile layout sheet for the substructure unit where the piles are to be driven. Assign a number to each pile location and maintain this copy with the pile driving logs. Cross reference the assigned pile number from the copy to Form CS-1005.

IX. TEST(T)/BEARING(B) - refer to the pile layout sheet for the substructure unit where the piles are to be driven. The symbol used to designate which pile(s) is considered a test pile(s) is located in the "LEGEND". Piles, other than those indicated as test piles, are considered bearing piles. For test piles, document in the COMMENTS Section the ultimate pile capacity and whether the Wave Equation Analysis Program (WEAP) or Dynamic Monitoring with a Pile Drive Analyzer (PDA) was used to determine the pile capacity at absolute refusal or end of driving criteria.

Note: Record the test pile data for each substructure unit on the "As Built" plans in the "Pile Installation Information" block located on the pile layout plan sheets. Also, provide a copy of Form CS-1005 completed for all test piles to the District Geotechnical Engineer.

X. TYPE OF PILE - the pile type, size, and grade of steel. The type and size of pile can be located in the pile hammer approval or on various plan sheets of the structure plans. The grade of steel can be found on the material certification (CS-4171) or the certified mill test reports received on the project for the piling. Examples: Steel H-pile - HP 10 x 57 GR50 (shape - depth x lbs/ft - Grade of Steel); Steel Shell - 8.5" x 14" x 7 gage GR2 (tip diameter x butt diameter x wall thickness - Grade of Steel); Timber - 10" x 16" x 18' (tip diameter x butt diameter x length).

XI. PILE HEAT NUMBER - heat numbers are typically stenciled on each individual pile. Verify the heat numbers with the provided certifications (CS-4171) and Mill Test results before any driving operations begin.

XII. TYPE OF PILE TIP - if pile tip reinforcement is used, document the type as Standard or Heavy Duty and Cast or Fabricated, along with the Grade. The grade can be found on the
material certification (CS-4171) or the certified mill test reports received on the project for the pile tips. If no pile tip reinforcement is required, document as N/A. Example: HD/Cast 65-35

XIII. PLUMB OR BATTERED - found on the pile layout plan sheet for the substructure unit where the piles are to be driven. Refer to the "LEGEND" for the symbol which denotes any battered pile location(s). Plumb piles are driven vertically and battered piles are driven in the direction shown on the pile layout plan sheet and at the slope specified on the Typical Section view. Example: Plumb or Battered - 3:12.

XIV. DRIVING CRITERIA - the minimum blows per inch to attain the required driving resistance. If the piles are required to be driven to absolute refusal, refer to Pub. 408, Section 1005.3(b)4.a. For piles which are to be driven to end of driving criteria, refer to Pub. 408, Section 1005.3(b)4.b. Example: 20/1", 15/1", etc.

XV. STROKE RANGE - The required operating stroke range (minimum/maximum) of the ram for the hammer being used can be found in the pile hammer approval. Example: 6.0 Ft to 7.5 Ft.

XVI. STROKE LENGTH - the operating stroke length of the ram is a critical component in driving a pile to its designed bearing capacity. The amount of energy imparted on the pile is directly related to the length of the stroke. Upon reaching absolute refusal or end of driving criteria, determine and record the stroke length by either witnessing the length of ram exiting the top of the hammer, the use of a saximeter, or a proximity switch. To determine the length of ram exiting the top of the hammer, measure the distance from the top of the ram to the top of the chamber while performing the cap block inspection. Subtract this measurement from the minimum stroke and the maximum stroke ranges indicated in the pile hammer approval. This will determine the minimum/maximum length of ram that should be witnessed exiting the chamber upon reaching absolute refusal or end of driving criteria. Confirm the stroke length meets or exceeds the minimum length indicated in the pile hammer approval, ensuring the pile has reached the designed bearing capacity. Do not exceed the maximum stroke length of the ram, as this could cause damage to the pile. Example: 6.5 Ft.

XVII. STARTING LENGTH - measured length of pile prior to the initial driving operation at each pile location. This measurement will not include the pile tip reinforcement. Example: 60.00 LF.

XVIII. REBUILT LENGTH - for those cases where the starting length is too short to reach absolute refusal or end of driving criteria, the piles need to be extended by splicing. The length rebuilt is the additional length(s) of pile spliced to the starting length. Example: 28.80 LF.
XIX. CUT OFF LENGTH - the length of the pile cut off, upon completion of driving the pile to absolute refusal or end of driving criteria. Example: 7.20 LF.

XX. NET PAY LENGTH - the starting length plus rebuilt length minus cut off length. Example: 60.00 LF + 28.80 LF - 7.20 LF = 81.60 LF.

XXI. TOLERANCE (SECT. 1005.3(b)3) - is the pile within the allowable tolerances indicated in the referenced section? Yes or No. (If NO, contact the Structure Control Engineer.)

XXII. PILE TIP ELEVATION - The actual pile tip elevation upon reaching absolute refusal or end of driving criteria. This elevation is calculated by subtracting the driven length of the pile from the bottom of footer elevation. Example: 946.5 - 80.6 = 865.90.

XXIII. DEPTH FT/IN, BLOWS per FT & BLOWS per IN - working with the Structure Control Engineer and using the information provided on the soil borings, determine an appropriate depth increment (10', 5', 1', 6", 3" or 1") to begin documenting the number of blows required to drive the pile that depth. These depth increments will continue to decrease throughout the pile driving operation depending on the blow counts required to achieve these depths. The depths and corresponding blow counts listed in the BLOW COUNT GUIDANCE block on Form CS-1005 may be used as a reference to determine when you may decide to decrease the depth increment that you're monitoring. Document the depth increments cumulatively in the DEPTH FT/IN column, along with the blow count needed to drive the pile that depth in the appropriate BLOWS per FT or BLOWS per IN column, until the predetermined driving criteria has been achieved.

XXIV. COMMENTS - The following is a list of suggested items which may be documented in the comments block:

1. Test Pile(s) - if Wave Equation Analysis Program (WEAP) or Dynamic Monitoring with a Pile Drive Analyzer (PDA) was utilized to determine the ultimate test pile capacity
2. Ultimate pile capacity at absolute refusal or end of driving criteria for test piles
3. PDA results
4. Re-driving Data
5. Splicing notes
6. Augering, Predrilling, Spudding, Pre-excavation, or Jetting details if applicable
7. Cause of any delays or stoppages
8. Driving method - found on General Notes Plan Sheet
9. Anything else pertinent to the pile driving operation

If additional space is needed for comments, use the back side of the form and document in the comments block that additional comments are included on the back of the form.

The following illustration is an example of a completed CS-1005
# PILE DRIVING LOG

ECMS# 54321  SR: 1026  SEC: 004  Piling Contractor: ABC Contractor, Inc.

Structure # 12345  Substructure Unit:  Pier # 3
Tip Elevation: 866.40  Pile Length: 81.1 LF

Hammer: ICE D25-32  Material: Polymer  Thickness: 3"
Cap Block  Data: 09/09/2014

**SPLICE & PILE TIP REINFORCEMENT WELDING PROCEDURES MUST BE APPROVED BEFORE PILE DRIVING**

<table>
<thead>
<tr>
<th>Pile Number</th>
<th>Test (T) / Bearing (B)</th>
<th>Type of Pile</th>
<th>Pile Heat Number</th>
<th>Type of Pile Tip</th>
<th>Plumb or Battered</th>
<th>Driving Criteria</th>
<th>Stroke Range</th>
<th>Stroke Length</th>
<th>Starting Length</th>
<th>Rebound Length</th>
<th>Cutoff Length</th>
<th>Net Pay Length</th>
<th>Tolerance 1005(b)(2)</th>
<th>Pile Tip Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T</td>
<td>HP 10x57 A709 Gr50</td>
<td>357030</td>
<td>HD/Cast 65-35</td>
<td>Plumb</td>
<td>20 / 1'</td>
<td>6.0 FT to 7.5 FT</td>
<td>6.5 FT</td>
<td>80.00 LF</td>
<td>28.80 LF</td>
<td>7.20 LF</td>
<td>81.60 LF</td>
<td>Yes</td>
<td>865.00</td>
</tr>
<tr>
<td>2</td>
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**COMMENTS**

- Driving Method A
- Saximeter Used: 71° 64° 90° 10° 71° 57° 3° 45°
- Test Pile Ultimate Capacity 560 kips (WEAP): 73° 98° 11° 17° 73° 95° 7° 15°
- Driving of test pile stopped at 6-4' for Method 1 Splice
- Driving of test pile stopped at 55-7" for Method 1 Splice

**INSPECTOR & DATE**

- Joe Inspector: 08/09/2014

April 2017 Edition
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PRE-DEMOLITION MEETING REQUIREMENTS

PRE-DEMOLITION

Prior to the actual demolition operations of a structure or box culvert, a pre-demolition meeting is required by specification.

The participants should include:

- Department and Consultant Project Inspection Staff
- District Structure Control Engineer
- Quality Assurance Representative (attendance based on availability)
- Contractor’s Superintendent and Foreman
- Person responsible for development of the demolition plan (if requested by a party with involvement in the demolition).
- Railroad Representative (if deemed necessary)

A chain of command should be established at this meeting for both the Department and the Contractor so that if unanticipated problems arise during the demolition operations, decisions can be made in a timely manner.

The agenda of the pre-demolition meeting shall include, at a minimum the following:

- **Definition of Demolition**: All parties should be aware that the definition of demolition is as follows: Demolition is considered to be the point in time when a portion of the structure is being cut, sawed, drilled, or impacted through excavation or other means that could affect the stability of the structure.

- **Review of Specifications**: The applicable edition of Publication 408 Sections 105.17 and 1018 should be reviewed as well as any contract special provisions dealing with the demolition operations.

- **Demolition Plan**: Publication 408, Section 1018, REMOVAL OF EXISTING BRIDGES OR CULVERTS, requires the contractor to submit a plan to the District Executive showing or describing the demolition and removal methods to be used for the removal of an existing bridge or culvert, as indicated. The complexity of the submitted plan is specific to the complexity of demolition of each structure. At a minimum, each plan must include the following:
  - Methods of protection and safety for the general public, inspection personnel, and construction personnel. Examples include, but are not limited to, temporary M and P of T required specifically for the demolition operations and a fall protection plan.
  - Location and method of protection of utilities.
• Phasing and sequence of operations indicating construction equipment to be used, including catalog cut sheets for any and all equipment operating on the structure. If cranes are being utilized include the maximum radius and lifting capabilities.
• Rigging, if required, must also include catalog cuts.
• Location and weights of equipment during demolition.
• Weights of equipment/materials to be staged/stockpiled on the structure.
• When and how critical sections of the structure are to be removed (i.e. fracture critical components, arches, rigid frames) and provide analysis as required by the Representative to determine the structural stability of partial or complete parts of the structure being demolished.
• Method of providing temporary support for elements which will become unstable.

Review of the Accepted Demolition Plan: The contractor should be prepared to review with all parties in attendance, their accepted demolition plan. If any party has a question regarding any part of this plan, now is the time to ask for clarification. Do not wait until the demolition operations are underway.

Environmental Issues: If required, discuss any BMPs that are specific to the demolition operation. Ensure the E and S measures have been implemented prior to beginning demolition. If revisions to the E and S plans are necessary, ensure the revisions have been approved by the appropriate agencies.

Demolition Operations Located Over or Under a Railroad: Although a railroad presence is not required at the demolition meeting, if the structure to be removed is over or under a railroad, written acceptance of the demolition plan from the railroad is required. Failure by the contractor to obtain the railroad company's written acceptance will require an alternate plan submittal to the Department and the railroad company for review and acceptance.

Temporary Shielding: If temporary shielding is part of the demolition operations, it must be certified as per Section 105.03 (c) Certification of False Work Adequacy before placing any loads on the system.

DURING DEMOLITION
• The inspector(s) assigned to the demolition operations must have a copy of the accepted demolition plan in the field.
• The inspection staff should ensure that the contractor is adhering to this plan at all times. Any variation of the accepted demo plan will require a new submission.
• Verify all rigging/lifting equipment is as per demo plan before the start of work and before any lifts.
• Verify all equipment being used is the same as shown on the accepted demolition plan.
- Maintain the minimum distance from all overhead energized utilities as per OSHA.
- LIFTING OVER LIVE TRAFFIC IS PROHIBITED
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The Department accepts studs for field applied use based upon certification by the manufacturer. The Contractor must submit to the Engineer for approval before installation, the following information:

1. The name of the manufacturer.
2. Description of the stud and arc shield.
3. A certification from the manufacturer that the studs are qualified as specified in AASHTO M 169 and Section 1105.02(e), Publication 408.
4. A notarized copy of the qualification test report.
5. Documentation (mill test report or other) indicating the studs were melted and manufactured in the USA.

Many projects will receive structural members with the studs supplied by the fabricator. In this case, the above documentation is not required as the requirements will be verified through in-plant inspection.
INSPECTION, ERECTION AND ACCEPTANCE OF GALVANIZED STEEL CONSTRUCTION ITEMS

To ensure galvanized steel items meet specifications, all field inspectors should:

1. Thoroughly inspect all galvanized items before erection.

2. Determine if any defects exist due to improper application of zinc coating (such as: lumps, blisters, grit), improper handling, stacking, loading, unloading and storage.

3. Thoroughly re-inspect after erection.

4. Instruct the Contractor to repair all damage according to Sections 620.3(a), (b) and 1105.02(s)2, Publication 408.

5. Submit samples to the Laboratory Testing Section for testing if it is doubtful whether the certified material meets specifications. The samples should be identified by supplier, fabricator, manufacturer and pertinent contract information.

See the following sources for the frequency and size of sample for sampling and testing.

- For Products, Hot Dipped Galvanized: In accordance with ASTM A-123.
- For Hardware, Hot Dipped Galvanized: In accordance with ASTM A-153.
- For Hardware, Mechanically Galvanized: In accordance with ASTM B-695.
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Section 1105.03(m)1, Publication 408 requires that welding of structural steel for highway bridges be performed as per AASHTO/AWS D1.5 Bridge Welding Code in its entirety.

Welding of tubular structures, however, is not included in AASHTO/AWS D1.5. Section 1105 indicates that welding for tubular structures should be in accordance with AASHTO/AWS D1.1 Structural Welding Code. Refer to Section 1105 and the contract drawings for the applicable code year.

Questions related to welding and fabrication of structural steel should be directed to the Structural Materials Section of BOPD.
Adequate shelter is required for elastomeric materials. Elastomeric materials should be stored on flat surfaces in well-ventilated rooms away from heat and the sun's direct rays.

Elastomers, such as neoprene bearing pads, should be shipped and stored on flat, fully supporting surfaces, and should not be rolled or folded. Elastomers, such as polyvinyl chloride or neoprene waterstop, neoprene tubing and closed cellular neoprene sponge, may be shipped and stored in coils if the inside coil diameter is sufficient to prevent material set. Closed cellular sponge should not be stored in stacks higher than 12 inches to prevent material set.

Pre-cut elastomers may be bought for specific projects or in bulk unless otherwise noted in the specifications or special instruction. Cutting bulk shipments of bearing pads and sponge is limited to prestressed concrete beam producers, and should be supervised by the Plant Inspector. Bearing pads and sponge should be cut with a rotary knife or other approved means to insure a smooth, straight, vertical cut free from nicks or surface irregularities. Freehand cutting is prohibited. Waterstop and tubing may be cut at the job site under the Project Inspector's supervision. Cutting and welding waterstop, tubing, etc., should conform to the Department's standards or manufacturer's Department-approved recommendations.
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Field Welding of Piles includes both pile extensions and welding of the pile section to tip reinforcement.

Only the submerged metal arc welding (SMAW) or ‘stick’ welding is permitted for field welding. Wire feed welding processes such as Flux Core Arc Welding (FCAW) or Gas Metal Arc Welding (GMAW or ‘mig’) are prohibited for field welding. While these processes are capable of providing acceptable weld quality under controlled (fabrication shop) conditions, environmental factors encountered during field welding can result in weld defects that could otherwise be avoided.

BC-757 requires that welding be performed only by AWS certified welders. Welders performing work must be qualified to either AWS D1.5 (Bridge Welding Code) for H – piles or AWS D1.1 (Structural Welding Code) for tubular piles.

Contractors are required to submit a Weld Procedure Specification (WPS) to the District Structural Control Engineer for approval prior to welding. After approval, the WPS is to be made available to Department inspection staff on the project.

The following inspection checklist was developed to assist District personnel:

1. Require the contractor to submit a shop drawing for approval. Verify that the material types – grade, dimensions, joint details and weld symbols are properly detailed.
2. Require the Contractor to provide certified mill test reports for the pile materials.
3. Verify welder certifications prior to welding.
4. Require the Contractor to submit their Weld Procedure Specification (WPS) for approval prior to production welding. Approved WPSs can be used for applicable situations on any project until the expiration date.
5. During production, verify electrode, joint configuration and welding equipment settings conform to the approved WPS.
6. Ensure the welding electrodes are being handled (dried) according to BC-757M.
7. Perform visual non-destructive evaluation in accordance with the applicable welding code to ensure minimum weld sizes and profiles are met.

Assistance in evaluating contractor WPS’s can be arranged by contacting BOPD’s Structural Materials Section – Steel Unit.
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Semi-Final Inspection

The semi-final inspection is an optional procedure to be utilized if requested by the Contractor. The semi-final inspection will have no direct impact on the establishment of interest charges, time charges, or contractor responsibility. The semi-final inspection will be as follows:

- The Contractor requests a semi-final inspection when the project or a designated section of the project is substantially complete and ready for the development of a punchlist of items requiring completion or revision in order to be accepted by the Department.
- The District will respond in a timely manner and participate in a mutually arranged semi-final inspection.
- The Engineer will note, by stations and in detail, any work or conditions requiring correction or completion.
- More than one semi-final inspection may be conducted depending on the nature of the project.
- If a semi-final inspection is not requested by the Contractor, only a final inspection will be conducted.

Final Inspection

The final inspection will be conducted as follows:

- The Contractor requests that a final inspection be conducted, as specified in Section 110.08(a), Publication 408, for the project or a designated section of the project.
- The District will respond in a timely manner and participate in a mutually arranged final inspection. For projects with a National Pollutant Discharge Elimination System (NPDES) Permit, the District will ensure that a representative from the Pennsylvania Department of Environmental Protection (DEP) or their designee, County Conservation District, participates in the final inspection.
- The Final Inspection Form, Form CS-4137 (See Page D.1.1-5), must be completed for all projects. The date of physical work completion and the date of project
acceptance will be established on the form. Provide a copy of the completed Final Inspection Form to the Contractor.

Complete the Final Inspection Form as follows:

- Complete all items on the Final Inspection Form. Not all items on the Form will apply in all situations. Insert "N/A" for items that are not applicable.

- List all attendees.

- Record the date on which the Final Inspection is conducted. Only one final inspection is to be held per project or for any substantially completed project section.

- The District will designate a Department representative to be responsible for ensuring that all punchlist items are addressed. The Department representative must be available and able to respond in a timely manner.

- **Item 1.** If or when all physical work has been satisfactorily completed, sign in the space provided and record the date as the Date of Physical Work Completion.

- **Item 2.** If the final inspection reveals that items of physical work remain to be completed or corrected, sign in the space provided to acknowledge the production of a punchlist. Form CS-4136, Punchlist Form (See Page D.1.1-6), or the Punchlist mobile application, may be utilized for this purpose. With the exception of the physical work items identified on the punchlist form, the Contractor is relieved of responsibility and liability for satisfactorily completed work items on the project as of the date of the final inspection.

- **Item 3.** If material certifications, work order support documentation, or any other contractually required documents have not been furnished as of the date of the final inspection, sign in the space provided to acknowledge the production of a punchlist for such documents. Form CS-4136, or the Punchlist application, may be utilized for this purpose.

- **Item 4.** If or when all contractually required certificates and/or documents have been properly furnished, record the date and sign in the space provided.

- **Item 5.** If or when physical work on a designated section of the project has been satisfactorily completed and contractually required certificates and/or documents have been properly furnished, with the exception of those physical work items and/or required documents identified on the punchlist form / application, record the date and sign in the space provided. The date indicated here will be the date that the Contractor is relieved of responsibility for further physical work, maintenance, and third party liability for all satisfactorily completed work items on the designated
section of the project. The Contractor will be relieved of responsibility and liability for punchlist items as of the completion date for these items as indicated on the punchlist form / application.

- **Item 6.** If or when all physical work has been satisfactorily completed and all contractually required certificates and/or documents have been properly furnished, record the date and sign in the space provided. The date indicated here will be the date that the project is accepted by the District. The Acceptance Certificate is to be issued immediately upon satisfying the requirements of this item.

Complete all applicable items and dates on the Final Inspection Form. The dates that must be indicated prior to submitting this form are as follows:

- **Final Inspection Date**
  - This date corresponds to the ECMS Finalization Checklist screen field labeled "Final Inspection" and is to be input accordingly.

- **Date of Physical Work Completion (Item 1)**
  - This date corresponds to the ECMS Finalization Checklist screen field labeled "Physical Work Completed" and is to be input accordingly.

- **Contractually Required Certificates and/or Documents (Item 4).**
  - This date corresponds to the ECMS Finalization Checklist screen field labeled "Required Documents Received" and is to be input accordingly.
  - This date is important because interest charges do not accrue for items of final payment which have not been paid due to a lack of required information from the Contractor.

- **Acceptance Date (Item 6)**
  - This date corresponds to the ECMS Finalization Checklist screen field labeled "Project Acceptance". This date should also correspond to the latter of the dates shown in Items 1 and 4.

**Acceptance Certificate**

The District is responsible to generate the Acceptance Certificate in ECMS.
- The Acceptance Certificate cannot be created until the Finalization Checklist has:
  - Final Inspection date

*April 2017 Edition*
– Physical Work Complete date (project is in “post-construction” status)
– Required Document Received date entered
– Verified that no construction items with available quantities exist

Also, the Department will not consider a construction project accepted until the required materials certifications and/or other contractually required documents relating to verification that physical work items meet specifications have been satisfactorily furnished.

Be advised that an Acceptance Certificate is to be issued immediately upon satisfaction of all contractual requirements as indicated by the Final Inspection Form, CS-4137. District project personnel are responsible for establishing the status of all physical work items and all contractually required certifications and documents at the time of final inspection.

Project Permit Close Out

• **Notice of Termination Form for NPDES Permits**
  o Upon receipt of a contractor's completed Notice of Termination (NOT) Form and its accompanying close-out documents as indicated in Section 107.28, Publication 408, complete Section 8 and Section 2 of the NOT Completeness Review and Fieldwork Checklist. Submit the fully executed NOT Form to DEP or their designee within 14 calendar days to gain release from the NPDES Permit(s) related to the project. Upon submission of the NOT to DEP or their designee for acknowledgement, if release is not gained as a result of Contractor related non-compliance issues, provide the contractor written direction of the results so that compliance can be achieved. If there are no cited Contractor related compliance issues and the Department does not gain release from the permit for any other reason(s), execute and submit the DEP Co-permittee Liability Release Form to DEP or their designee no later than 75 calendar days after submitting the fully executed NOT Form.

• **DEP State Water Obstruction and Encroachment Permit**
  o Complete the Water Obstruction and Encroachment Permit Completion Report indicating that the work has been completed as approved and submit the Completion Report to the appropriate DEP Regional Office within 30 days of project completion.

• **U.S. Army Corps of Engineers Pennsylvania State Programmatic General Permit (PASPGP)**
  o Complete the PASPGP Permit Compliance, Self-Certification Form upon completion of the verified work and required mitigation and submit the completed form to the appropriate Corps District.
Contract Time Charges

Contract time charges are to stop when all physical work on the project has been satisfactorily completed as indicated on the Final Inspection Form.

Interest Charges

For projects let after April 7, 1994, interest charges begin to accrue 30 calendar days after the date that all physical work under the contract has been satisfactorily completed, and run until the date when final payment is made. For projects let prior to April 7, 1994, interest charges begin to accrue on the day after all physical work is satisfactorily completed. The Date of Physical Work Completion is determined by the final inspection and is indicated on the Final Inspection Form.

If payment for an item or items is withheld due to lack of required information from the Contractor, interest charges for the item or items will not begin to accrue until 30 days after the date that the Engineer receives the information required for payment.
FINAL INSPECTION FORM

S.R. Sec. County District

Contract No. Contractor

A Final Inspection of the above project or substantial project section was held on ____________________________.

ATTENDEES:

1. All physical work is satisfactorily completed.
   Date of Physical Work Completed ____________________________.

   (PennDOT)

2. The inspection revealed that physical work items, as noted on the attached punchlist form must be completed or corrected to ensure compliance with the contract. With the exception of those physical work items identified on the punchlist form, the Contractor is relieved of responsibility for further physical work and maintenance, for satisfactorily completed work items on the project.

   (PennDOT)

3. The contractually required certificated and/or documents, as noted on the attached list, must be furnished and completed in order to prepare the project for final acceptance.

   (PennDOT)

4. All contractually required certificated and/or documents have been furnished and are satisfactory.

   ____________________________ Date ____________________________

   (PennDOT)

5. On the following designated section of the project, physical work items have been satisfactorily completed and contractually required certificates and/or documents have been furnished; with the exception of those physical work items and/or required documents identified on the attached punchlist form. The Contractor is relieved of responsibility for further work, and maintenance, for satisfactorily completed work items on the section.

   Section Description ____________________________ Sta. to Sta. ____________________________ Date ____________________________

   (PennDOT)

6. All physical work items have been satisfactorily completed and all contractually required certificates and/or documents have been furnished. I recommend an Acceptance Certificate be processed relieving the contractor of further responsibility on this project.

   ____________________________ Date ____________________________

   (PennDOT)

April 2017 Edition
### PUNCHLIST FORM

**Contract No.** ________________  **S.R.** ________________  **Sec.** ________________

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#### PHYSICAL WORK

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#### REQUIRED DOCUMENTS

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When the last physical work has been completed on the project and a Final Estimate is to be developed, a comprehensive, complete check of each project must be made by the Finals Unit with reference to pay quantities and project recording of operations and events. Current estimate audits may occur while projects are under way.

Bear in mind that the auditors are not familiar with the project and must rely entirely upon the information submitted to them in the records. An audit trail must be provided by reference, so that original source documents can be quickly located for checking by the auditors. Adequate documentation and accurate reference must be readily available. Source documents contain the original recording of the field information and must be referenced through the Items/Estimate Book.
Section B.1.16 discusses the importance of "as-built" drawings and the procedures to be used to maintain them throughout the life of the project.

After the construction has been completed, the "as-built" drawings together with the project field records are submitted to the District Finals Unit for review. The field changes noted on the "as-built" prints should be submitted as an electronic file to the District. The electronic files will be maintained by the District Plans Unit. These electronic files may be obtained for future use by maintenance or other forces that are in need of the information contained thereon.

On the "as-built" Plans, summary sheet, tabulation of quantities sheet or the required list, items with alternatives, such as pipes, binder courses, stabilized aggregate base course, shoulders, conduits, etc. should be recorded by showing only the choice used "as-built" and crossing out all other alternatives for the item involved.

The Title Sheet should contain the Contractor's name, project completion date, and the date that the project was opened to traffic.
PennDOT’s Records Retention and Disposition Schedule needs to be followed. The District is responsible for providing adequate space for records storage.

The following policy is presented on records retention:

**100% State Projects**

Records must be retained for seven (7) years from the date when the project has been placed into Final Status.

**Federal-aid Projects**

The same as for 100% State projects or three (3) years from the date of FHWA Final Voucher (Form FHWA-1447A), whichever is later.

Currently, ECMS calculates the seven (7) year disposition time frame based on the Project Final Status date.

**Exceptions**

In the event a claim has been filed by the Contractor, the Office of Chief Counsel will provide directions on retention.

Certain Worker Health-related records for involvement with hazardous wastes such as asbestos or lead paint (e.g., blood test results for exposure) must be retained for up to 25 years.

Hazardous Waste Manifests must be retained for a period of 20 years as indicated in PennDOT’s Record Retention and Disposition Schedule.

**Electronic Records**

Documents received electronically (e.g., emails, email attachments, digital photos, etc.) should be stored in the PennDOT Project Collaboration Center (PPCC) in the appropriate location (i.e., Project Files and Photos tab) and not printed out and saved as hard copies in the project files. Documents submitted and reviewed via PPCC, ECMS or eCAMMS should be stored in the system in which they were received and not be printed and saved as hard copies in the project files.

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Paper Records

All documents that are received on the construction project as hard copies, such as, but not limited to, material invoices, and concrete and bituminous concrete delivery tickets, must be retained in their original format.

Note:

All documents that reside in PPCC, with the exception of Shared Files, will be programmatically archived into the Enterprise Content Services (ECS) system one year after the project is placed into Final status.

All PPCC submittals must be reconciled before the ECMS Finalization Checklist item “PPCC Submittals Closed and Documents in Shared Files moved to Project Files” can be marked complete.

To assist in the audit trail, as outlined in POM Section B.1.2, all reconciled submittals must be adequately identified and cross referenced.

Any records elected to be scanned and saved (i.e., sketches and computations) must be legible, otherwise only the original record should be saved.
Upon the completion of all projects, there are a number of reports which must be completed and submitted to various Central Office Units. These reports are required to be completed by either the Contractor or the District.

This section will provide guidance on the various reports that are required to be submitted for each project. The Contractor is to be reminded at the time of the final inspection of all outstanding reports and informed that all required forms and/or reports must be submitted before the Department will issue the Acceptance Certificate.
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On Federal-aid Projects, all Contractors and Subcontractors with contracts of $10,000 or more are required to submit annually, for the work force on project during the last active payroll period preceding July 31, Federal Form **FHWA-1391**, Federal-aid Highway Construction Contractors Annual EEO Report Form. Log in using your ECMS user name and password, complete and submit the FHWA-1391 electronically at [https://www.dot18.pa.gov/fhwa1391](https://www.dot18.pa.gov/fhwa1391) by August 15 of each year.

Contractors/subcontractors will be notified by email if they are required to submit a report. To log into the system, contractors/subcontractors must have a valid ECMS username and password.

All contractors/subcontractors are required to submit a report for all projects listed in the “Open Projects” tab.

If the contractor/subcontractor worked on the project in July, they must submit a report with their workforce numbers.

If the contractor/subcontractor was active on the project, but did not work on the project in July, they must submit a “No Workforce” report.

If the contractor/subcontractor has completed all their contracted work on the project, they must submit a “No Workforce” report.

If the contractor/subcontractor has not started their contracted work on the project, they must submit a “No Workforce” report.

The report covers employment and is to represent the project work force on board for the last active payroll period preceding July 31 each year.

Questions in regards to reporting should be directed to the Bureau of Equal Opportunity, Contract Compliance Division at 717-787-5891 or 800-468-4201.
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The District is responsible for generating the FHWA-1446B, Final Acceptance Form for Federal Oversight projects through ECMS.

1. Finals Unit Supervisor, from ECMS **Finalization Checklist** screen
   - Scroll down to **Details** heading
   - Click **New** button in heading
   - Select **FHWA-1446B**
   - **FHWA-1446B** screen is displayed

2. Enter a **date** for FHWA-1446B record

3. Select **Yes** or **No** from Lighting/Signing Incorporated drop-down list (required)

The FHWA 1446-B cannot be created until the Finalization Checklist has:
   - 4238A - Certification by District Materials Engineer/Manager is completed and Doc Linked
   - 4238C - Letter of Certification is completed and Doc Linked
   - Verified all Claims have been satisfied
   - Contract Time has been addressed
   - Acceptance Certificate has been completed
   - Notification of Final Quantities has been completed

Upon completion of Form **FHWA-1446B**, the District will submit it through the ECMS workflow process, and it will be routed electronically to the BOPD, Contract Management Section Chief and to the FHWA Approver for review and approval.

**Federal Oversight Federal-aid Projects**

The FHWA Area Engineer will complete Form **FHWA-1446A** when the project is complete and generally acceptable as a part of the FHWA routine construction monitoring of Federal Oversight Projects.

If findings/observations are noted by the Area Engineer, ensure that all FHWA findings have been resolved.
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The District must prepare Form TR-4238A, District's Letter of Project Materials Certification, for all Department projects. This form certifies that all construction operations and materials incorporated into each project met specification requirements or proper disposition of exceptions are explained and documented in the project files. In accordance with the requirements outlined on page B.9.2-1, project personnel are to ensure that FHWA is contacted and advised of major decisions that will be made concerning the acceptance/rejection of deficient materials on Federal Oversight projects. Submit the TR-4238A for all projects with Federal funding, in eCAMMS. The TR-4238A is due within 60 days of when the project reaches Semifinal status in ECMS and the physical work is complete, as designated by the Physical Work Complete (PWC) date in the ECMS Finalization Checklist. The submitted TR-4238A will be processed in accordance with the QA Manual, Publication 25, Chapter 7.

The following items which were incorporated into the work are required to be listed as exceptions on the back of Form TR-4238A:

1. Materials that did not meet specification requirements, but were incorporated into the work. (Acceptance Sampling and Testing Only).

2. Any 409 material that results in a reduced payment.

3. Any 409 material that had one parameter with a PWT of 64% or less. For lots remaining in place with 50% (70% PWT) payment, submit the permission by the District Executive, as required in Publication 408, Section 409.4(a) Table K. For material which was removed and replaced or for lots which were changed in disposition due to an outlier determination, state the disposition of this material.

4. RPS 506 material that meets the definition of defective work and remained in place with reduced payment.

5. Aggregates with PWL < 90% on acceptance tests.

6. Structural Concrete that does not meet PWL $F'_{CS} > 99\%$. For deficient concrete remaining in place with 5% payment, submit the permission by the District Executive, as required in Publication 408, Section 110.10(d).1.a.

7. Materials incorporated into the work without the required certifications.

8. Materials incorporated in the project without the required acceptance testing as outlined in Section B.6.5.
If none of the above items were present, the following box is checked on Form TR-4238A:

"No Material Deviations"

For bituminous failures, list the TR-447 reference number, the material type, the failure parameter and the disposition of the material.

The District Materials Engineer/Manager (DME/DMM) and/or members of the DME/DMM Staff should have completed at least one materials review on each project in accordance with POM Section B.6.2 in order to determine compliance with contract specifications. Upon completion of the project, a complete review of materials records is conducted to assure that project personnel have properly completed all required materials documentation (see Section B.6.2) prior to the DME/DMM initiating and signing Form TR-4238A.

The TR-4238A must also be signed by the Assistant District Executive for Construction on behalf of the District Executive and by the Assistant Construction Engineer/Manager, who coordinated with the Project Engineer/Manager by monitoring all of the construction operations to assure compliance with contract specifications. On municipal projects, the signature of the Municipal Manager is required.

In order to provide the necessary assistance to the DME/DMM for completion of Form TR-4238A, project personnel must complete all of the materials control forms discussed in Section B.6.2 and provide copies to the DME/DMM upon completion of the final inspection.
Title 67, Transportation, Chapter 457, Prequalification of Bidders requires that all Contractors and Subcontractors be evaluated and rated upon completion of every contract.

This evaluation system includes the use of the following:

- Past Performance Report (Form CS-4307)
- Subcontractor’s Past Performance Report (Form CS-4307SUB)

The evaluator for each project will need sufficient copies of Form CS-4307 for the Contractor and CS-4307SUB for each Subcontractor who worked on the ECMS project.

The evaluator will enter ratings into the ECMS-Contractor Evaluation screen for the Contractor and for each Subcontractor who worked on the ECMS project.

Form CS-4307SUB need not be completed for Services and DBE Suppliers.

The instructions for completing the evaluation are found on Form CS-4307 and they are self-explanatory.

It is important that the requirements on Form CS-4307 and CS-4307SUB be adhered to.
The Quality Survey entitled “Construction Project – Quality Survey for Design Items” has been developed to provide construction contractors and PennDOT construction managers an opportunity to evaluate design plans and items prepared by, or for, the Pennsylvania Department of Transportation. The Quality Survey can be used for all project types: Conventional Design/Bid/Build, Design/Build, and Modified Review Projects.

The “Construction Project – Quality Survey for Design Items” form is to be completed online. From the Project Information page in ECMS, select the “Quality Survey for Design Items” hyperlink under the “Closeout” section. The form is to be completed by the construction Project Manager or Assistant Construction Engineer/Manager and by a Contractor field representative. The Quality Survey is to be completed just prior to final inspection and discussed at the final inspection. After completing the form, an overall score is to be computed and can be found in ECMS under the Project Information page Detail Information section.
The Bureau of Project Delivery has requested that the Bridge Division be notified of any errors on shop drawings that cause problems during construction.

Consultants are engaged by the Department to check shop drawings for fabricated structural steel structures (including sign structures), and in order to determine the proficiency of these consultants, a monitoring procedure is established.

Please include a statement regarding the adequacy of shop drawings when completing the “Construction Project – Quality Survey for Design Items” described in Section D.3.9. If the shop drawings were inadequate or significant errors were detected, forward an additional copy of the Quality Survey to the Bureau of Project Delivery, Bridge Design & Technology Division with specific information regarding the errors.
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*SP = SUPERPAVE WITHOUT RECLAIMED MATERIALS
SR = SUPERPAVE WITH RECLAIMED MATERIALS (RAP, RAS OR RAP & RAS)

See Bulletin 27, Chapter 1, Section 3.2 for explication

See Bulletin 27, Appendix H for explication

Extraction and gradation tests

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<td>EPX11, EPX22, EPX31, EPX33, EPXDB, EPOLIQ</td>
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<td>SEC 501.2 {EPX 31, 33}</td>
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<td>SEC 516.2(k) {EPXDB}</td>
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<td>SEC 1001.2(i) {EPX 11, 13, 22}</td>
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<td>LINSEED OIL, BOILED</td>
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<td>LSOBOD, LSOBOI, LSORAW</td>
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<td>PREFORMED CELLULAR POLYSTYRENE used in concrete pavement patching</td>
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<td>ASPHALT ROOF CEMENT</td>
<td>116</td>
<td>MASTIC</td>
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<td>mastic pipe sealer</td>
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<td>PIPE - CONCRETE</td>
<td>225</td>
<td>CL1 CL2 CL3 CL4 CL5</td>
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<td>used in construction of pipe culverts</td>
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<tr>
<td>PIPE - POLYETHYLENE</td>
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<td>M252 M294C M294S</td>
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<td>used in construction of pipe culverts, underdrains, and base drains.</td>
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<td>M294 = 12&quot;-36&quot; pipe, M252= 4&quot;-15&quot; pipe</td>
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<td>S = smooth wall, C = corrugated wall</td>
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<td>PIPE - METAL</td>
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<td>PIPE CCGSB CSMC1</td>
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<td>used in construction of pipe culverts, underdrains and base drains.</td>
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<tr>
<td>DI=ductile iron pipe. CAA=corrugated aluminum alloy</td>
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<td>CSMCI=corrugated steel pipe, metallic coated type I</td>
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<td>CSMC1A = CSMCI Type IA, HC=half circle pipe</td>
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<td>CSPAMC=corrugated steel pipe-arch, metallic coat</td>
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<td>CCGSB=coated corrugated galvanized steel, type B coat</td>
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<td>CCGSC=coated corrugated galvanized steel, type C coat</td>
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<td>CAAPA=corrugated aluminum alloy pipe-arch</td>
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<td>CCGSPA=coated corrugated galvanized steel pipe-arch</td>
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<td>CCGS10=coated corrugated galvanized steel, grade 10/10</td>
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<td>PIPE - PVC</td>
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<td>PIPE</td>
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<td>PREFABRICATED DRAIN used in construction of pavement base drains Edge=edge drains for pavement Wall=wall drains for retaining walls</td>
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<td>AEP, AET, CMS-2, CMS-2s, CNTT, CQS-1h, CQS-1hP, CRS-1, CRS-1P, CRS-2, CRS-2P</td>
<td>AE5, CSS-1, CSS-1h, CSS-1hP, CSS-1P, E-10, E-1PRIME, EDP, HFMS-2, HFMS-2h, HFMS-2s, HFRS-2, HFRS-2P</td>
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### PUBLICATION 408 SECTIONS
AND/OR OTHER APPLICABLE AREAS

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CLASSIFIED ACCORDING TO AGGREGATE TYPE AND GRADATION. LW=LIGHT WEIGHT AGGREGATE SL=SLAG
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<td>704.1(c)1</td>
<td>CONCRETE CYLINDER</td>
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<tr>
<td>CONCRETE CORE&lt;br/&gt;<strong>CONC</strong>=prestress and precast products</td>
<td>218&lt;br/&gt;A&lt;br/&gt;AAA&lt;br/&gt;AAP&lt;br/&gt;AAPAVE&lt;br/&gt;AASTRU&lt;br/&gt;ACLCON&lt;br/&gt;BOXBM&lt;br/&gt;BOXCVT</td>
<td>BTMNS&lt;br/&gt;C&lt;br/&gt;CORE&lt;br/&gt;EDWALL&lt;br/&gt;HES&lt;br/&gt;HPC&lt;br/&gt;IBEAM&lt;br/&gt;INLET</td>
<td>INCB &lt;br/&gt;LMC&lt;br/&gt;MEDNBR&lt;br/&gt;MHLSEC&lt;br/&gt;SDWALL&lt;br/&gt;REWALL</td>
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<td>CONCRETE MIX</td>
<td>268&lt;br/&gt;FMCH&lt;br/&gt;MIX1&lt;br/&gt;MIX2</td>
<td>PEQE&lt;br/&gt;RESR</td>
<td>SPOU&lt;br/&gt;1212</td>
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<tr>
<td>PREMOLDED EXPANSION JOINT MATERIAL&lt;br/&gt;used in the construction of transverse &amp; longitudinal joints in concrete pavement</td>
<td>424&lt;br/&gt;CORK&lt;br/&gt;FIBER</td>
<td>SEAL</td>
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<tr>
<td>LOAD TRANSFER UNIT&lt;br/&gt;used in concrete pavements letter following DOWEL indicates type of bond breaker, <strong>LTU</strong> is a basket assembly</td>
<td>267&lt;br/&gt;DOWELA&lt;br/&gt;DOWELB</td>
<td>LTU</td>
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<tr>
<td>RUBBERIZED JOINT SEALING MATERIAL&lt;br/&gt;used in the cleaning and sealing of transverse &amp; longitudinal joints in existing asphalt and concrete pavements and for sawing and sealing new asphalt pavement overlays.</td>
<td>63</td>
<td>TYPE2</td>
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<tr>
<td>RUBBERIZED JOINT SEALING MATERIAL&lt;br/&gt;used in the cleaning and sealing of transverse &amp; longitudinal joints in existing asphalt and concrete pavements and for sawing and sealing new asphalt pavement overlays</td>
<td>63</td>
<td>TYPE1</td>
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<tr>
<td>NEOPRENE PAVEMENT SEAL</td>
<td>422&lt;br/&gt;PAVMNT</td>
<td>Note: Blank&lt;br/&gt;Material&lt;br/&gt;Class used for Misc. Seals</td>
<td>SEAL</td>
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<td>SECTION</td>
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<td>705.4(d)</td>
<td>NEOPRENE BRIDGE SEAL</td>
<td>423</td>
<td>COMP STRIP</td>
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<tr>
<td>705.4(e)</td>
<td>PREFORMED CLOSED CELL POLYETHYLENE JOINT FILLER used in the construction of transverse &amp; longitudinal joints in concrete pavement</td>
<td>605</td>
<td>D3204</td>
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<tr>
<td>705.4(f)</td>
<td>PREFORMED POLYURETHANE FOAM JOINT FILLER used in the construction of transverse longitudinal joints in concrete pavement</td>
<td>610</td>
<td>POLYUR</td>
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<tr>
<td>705.4(g)</td>
<td>ASPHALT RUBBER SEALING COMPOUND used for cleaning and sealing longitudinal and transverse joints and cleaning and sealing cracks in existing asphalt pavement surfaces as part of routine maintenance and before placing an overlay and also used for sawing and sealing new asphalt pavement overlays</td>
<td>63</td>
<td>D5078</td>
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<tr>
<td>705.5(b)</td>
<td>PIPE GASKET elastomeric gaskets for circular pipe</td>
<td>600</td>
<td>C361 C443</td>
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<tr>
<td>705.5(c)2</td>
<td>PVC WATERSTOP</td>
<td>416</td>
<td>WSTOP Note: Blank Material Class used for Misc. Waterstop</td>
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<td>705.6</td>
<td>GRAPHITE LUBRICANT</td>
<td>401</td>
<td>GLUBE</td>
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<td>705.8</td>
<td>CAULKING COMPOUND</td>
<td>405</td>
<td>COMCAU</td>
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<td>705.9</td>
<td>JOINT BACKING MATERIAL</td>
<td>615</td>
<td>JTBACK</td>
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<tr>
<td>709.1</td>
<td>REBAR black = uncoated, epoxy = epoxy coated, galv = galvanized</td>
<td>231</td>
<td>BLACK EPOXY GALV</td>
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<tr>
<td>DESCRIPTION</td>
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<tr>
<td>709.3 MATERIAL IS CLASSIFIED BY COATING WITH A CLASS FOR THE TYPE WIRE.</td>
<td>WELDED WIRE MESH-PLAIN &lt;br&gt; <em>black = uncoated, epoxy = epoxy coated, galv = galvanized</em></td>
<td>230 BLACK &lt;br&gt; CONCME &lt;br&gt; EPOXY &lt;br&gt; PIPEME WIRE</td>
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<tr>
<td>709.4 MATERIAL IS CLASSIFIED BY COATING WITH A CLASS FOR THE TYPE WIRE</td>
<td>WELDED WIRE MESH - DEFORMED &lt;br&gt; <em>black = uncoated, epoxy = epoxy coated, galv = galvanized, deformed = rough surface</em></td>
<td>235 BLACK &lt;br&gt; GALV &lt;br&gt; EPOXY WIRE</td>
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<tr>
<td>711.1(a) &amp; 711.1(b) &amp; 711.1(c) CLASSIFIED AS WHITE AND BURLAP-BACKED.</td>
<td>POLYETHYLENE SHEETING &lt;br&gt; <em>used for curing concrete</em> &lt;br&gt; <em>BRLBKD = burlap-backed</em></td>
<td>409 WHITE &lt;br&gt; BRLBKD&lt;br&gt;Note: Blank Material Class used for Misc. Sheeting</td>
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<tr>
<td>711.1(d)</td>
<td>BURLAP &lt;br&gt; <em>used for curing concrete</em></td>
<td>407 BURLAP&lt;br&gt;Note: Blank Material Class used for Misc. Burlap</td>
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<tr>
<td>711.2(a), 711.2(b), 711.2(c) CLASSIFIED BY PIGMENT COLOR INTERM IS FOR BRIDGE DECK INTERMEDIATE CURING COMPOUND.</td>
<td>CURING COMPOUND</td>
<td>398 BLACK &lt;br&gt; WHITE &lt;br&gt; CLEAR INTERM</td>
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<tr>
<td>711.3(d), 711.3(e) CLASSIFIED ACCORDING TO TYPE. AEA = AIR ENTRAINING AGENT LATEX = LATEX EMULSION</td>
<td>CONCRETE ADMIXTURES</td>
<td>403 AEA &lt;br&gt; LATEX</td>
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| OTHER ADMIXTURES | 403 | ACCL = S-BA  
| | | CI = S-CLR  
| | | HRWR = S-LI  
| | | WR = S-PA  
| | | WR-ACCL = S-PD  
| | | RE = S-SC  
| | | RR = S-SEA  
| | | S-TWW  
| | | S-UWVM  
| | | S-VM  
| | | S-WKR  
| | | S-WP  
| MASONRY UNITS | 221 | BLOCK  
| | | Note: Blank  
| | | Material  
| | | Class used  
| | | for Misc.  
| | | Masonry  
| | | Units  

711.3(f)  
ACCL = ACCELERATOR  
CI = CORROSION INHIBITOR  
HRWR = HIGH RANGE WR  
WR = WATER REDUCER  
WR-ACCL = WATER REDUCER AND ACCELERATOR  
RE = RETARDER  
RR = WATER REDUCER/RETARDER  
TYPE S – SPECIFIC PERFORMANCE ADMIXTURES - CLASSIFIED BY TYPE:  
BA = BONDING AGENT  
CLR = COLORANT  
LI = LITHIUM FOR ALKALI SILICA REACTIVITY (ASR)  
PA = PUMPING AID  
Pd = POLYMER DISPERSING  
SC = SHRINKAGE CONTROL OR REDUCTION  
SEA = STRENGTH ENHANCING ADMIXTURE  
TWW = TRUCK WATER WASHOUT  
UWVM = UNDERWATER VISCOSITY MODIFYING (ANTI-WASHOUT)  
VM = VISCOSITY MODIFYING  
WKR = WORKABILITY RETAINING  
WP = WATERPROOFING  

713.2  
MATERIAL IS CLASSIFIED AS PRECAST CONCRETE BLOCK, SEWER BRICK & BUILDING BRICK.  
block = precast concrete block  
sbrick = sewer brick, bbrick = building brick  

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<td>BRICK</td>
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<tr>
<td>394</td>
<td>LIQUID</td>
<td>CALCİUM CHLORİDE</td>
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<tr>
<td>420</td>
<td>WTRMIX</td>
<td>WATER</td>
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<tr>
<td>429</td>
<td>RSALT</td>
<td>ROCK SALT</td>
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<tr>
<td>276</td>
<td>FLYA</td>
<td>FLYASH</td>
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<tr>
<td>276</td>
<td>GGBFS</td>
<td>GROUND GRANULATED BLAST FURNACE SLAG</td>
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<tr>
<td>417</td>
<td>CL1</td>
<td>GEOTEXTILES</td>
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<td>419</td>
<td>FERT</td>
<td>FERTILLZER</td>
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<tr>
<td>425</td>
<td>MULCH</td>
<td>PEAT MOSS OR MULCH</td>
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</tbody>
</table>

**Note:** Blank Material Class used for Misc. Brick

---

**Material is classified according to the various classes:**

- **CL = class** (i.e. **CL1 = class 1**)
- **CL2 = class 2**
- **CL3 = class 3**
- **CL4 = class 4**
- **PAVFAB = Paving Fabric (AASHTO M 288)**
- **PEAT = Peat Moss or Mulch**
- **ECM = Erosion control mat**
- **ECMB = Erosion control mulch blanket**

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**Additional Notes:**

- Material Class used for Misc. Brick
- Water for mixing or curing concrete.
- Calcium chloride
- Rock salt
- Flyash
- Ground granulated blast furnace slag
- Silica fume
- Geotextiles
- Fertilizer
- Peat moss or mulch

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<table>
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<tr>
<th>Section</th>
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<th>Material Class</th>
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</table>
| 806.2(a) | Erosion Control Blanket  
HVECMB = high velocity ECMB  
MISCHW = hardware for erosion controls | 525 | ECM  
ECMB  
HVECMB |
| 806.2(b) | Turf Reinforcement Mat  
POLY = polyethylene turf reinforcing mat  
NYLON = nylon turf reinforcing mat  
MISCHW = hardware for reinforcing mats | 530 | POLY  
NYLON  
MISCHW |
| 806.2(c) | Synthetic ECRM  
ECRM = erosion control/revegetation mat  
MISCHW = hardware for ECRM | 535 | ECRM  
MISCHW |
| 850.2(a) | Rock, General | 283 | CURB  
SIDEWK  
R3  
R4  
R5  
R6  
R7  
R8  
RL |
| 865 | Silt Barrier Fence  
used in erosion & sedimentation control code in form:  
Class-Type-Measurement | 515 | 3A18  
3A30  
3B18  
3B30 |
| 901.3(b) | Emulsified Petroleum Resin Dust Palliatives | 12 | EPR |
| 901.3(b) | Calcium Lignosulfonate Dust Palliatives | 13 | LIGNOS |
| 961.2 & 1103.14(a) | Line, Plastic TRF-Cold | 449 | PERM  
TEMP |
| 962.2(b) | Traffic Paint | 308 | SOLWHT  
SOLYEL  
WTRWHT  
WTRYEL |
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<td>Metal Bridge Deck Forms&lt;br&gt;<code>SIP = stay in place, followed by grade</code></td>
<td>242&lt;br&gt;SIP33, SIP50, SIP37, SIP80&lt;br&gt;Note: Blank Material Class used for Misc. Bridge Deck Forms</td>
<td>SIP40</td>
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<tr>
<td>Rebar Chair&lt;br&gt;<code>stain = stainless steel, epoxy = epoxy coated, plast = plastic coated, galv = galvanized</code></td>
<td>266&lt;br&gt;EPOXY, GALV, STAIN</td>
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<td>Tie Wire&lt;br&gt;<code>used to secure reinforcement steel in place</code></td>
<td>580&lt;br&gt;A684</td>
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<tr>
<td>UHPC – Concrete Cylinder</td>
<td>217&lt;br&gt;UHPC</td>
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<tr>
<td>UHPC = Concrete Core</td>
<td>218&lt;br&gt;UHPC</td>
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<tr>
<td>Mechanical Rebar Spllices&lt;br&gt;<code>used in rehabilitation of concrete structures&lt;br&gt;black = uncoated, epoxy = epoxy coated, galv = galvanized</code></td>
<td>555&lt;br&gt;BLACK, EPOXY, GALV</td>
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<tr>
<td>Shotcrete – Concrete Cylinder</td>
<td>217&lt;br&gt;SHOTCRETE</td>
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<tr>
<td>Shotcrete – Concrete Core</td>
<td>218&lt;br&gt;SHOTCRETE</td>
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<tr>
<td>Structural Paint</td>
<td>306&lt;br&gt;PRIME, DRYFLM, INTER, TOP</td>
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</tr>
<tr>
<td>1101.09</td>
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<tr>
<td>1101.10</td>
<td>JUNCTION BOXES used in highway lighting</td>
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<tr>
<td>1103.07 &amp; 1103.08</td>
<td>POST - METAL</td>
<td>237</td>
</tr>
<tr>
<td>1103.14(a)2</td>
<td>GLASS BEADS</td>
<td>390</td>
</tr>
<tr>
<td>1107</td>
<td>BEAM CONCRETE</td>
<td>219</td>
</tr>
<tr>
<td>1107.02(n)3.a, 1107.02(n)3.b, 1107.02(n)3.c, &amp; 1107.02(n)3.d</td>
<td>PRESTRESSING STRAND</td>
<td>238</td>
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<tr>
<td>1107.02(p)1</td>
<td>CLOSED CELL NEOPRENE SPONGE used in prestress concrete bridge construction</td>
<td>413</td>
</tr>
<tr>
<td>1110.01(a) and (b) &amp; 1016.2(a)1</td>
<td>FENCE FABRIC RW = right of way fence, followed by type # PRTECT = protective fence</td>
<td>233</td>
</tr>
<tr>
<td>1111.02(b)1 &amp; 1111.02(b)2</td>
<td>POT BEARING DISC BEARING</td>
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<tr>
<td>1111.02(c)5, 1111.02(c)6, &amp; 1111.02(c)7</td>
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<tr>
<td>1113.03(f) 50 &amp; 60 DURO, PLAIN &amp; LAMINATED BEARING PADS.</td>
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<td>50PL 60LAM 60PL</td>
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</tr>
<tr>
<td>pl = plain, lam = laminated</td>
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<tr>
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<td>THIS CODE IS TO BE USED FOR WELDERS CERTIFICATIONS &amp; FOR BRIDGE STEEL SAMPLES, BASED ON CROSS-SECTIONAL SHAPE.</td>
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<td>ROUND RECT Note: Blank Material Class used for Misc. Bridge Steel</td>
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<td>PDT - SPECIFICATION FOR CARBIDE USED FOR SNOWPLOWS. BLADES SENT TO LTS FOR HARDNESS TESTING.</td>
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<td>310</td>
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<td>WATER FOR ENVIRONMENTAL PURPOSES.</td>
<td>421</td>
<td>WTRENV</td>
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<td>PRM24 (not listed in Publication 408).</td>
<td>399</td>
<td>DFUEL</td>
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<tr>
<td>See Chart</td>
<td>302</td>
<td>BACKFL FOUN RM 6 TPSTOIL</td>
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<tr>
<td>See Chart</td>
<td>303</td>
<td>CUTSLP RM 2.8 EMBKMT RM 4</td>
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<tr>
<td>SOIL, DISTURBED</td>
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<td>SLSRKY</td>
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<td>SOIL, UNDISTURBED</td>
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<td>EMBKMT RM 4 SUBGRD</td>
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### SOILS CHART

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<th>Embkmt</th>
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<th>Cutslp</th>
<th>Backfl</th>
<th>Subgrd</th>
<th>Slsrvy</th>
<th>Undisturbed Soil</th>
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<tr>
<td>Publication 408 section:</td>
<td>206.2(a)</td>
<td>802.2</td>
<td>203 &amp; 204</td>
<td>206.3</td>
<td>210.3(b)</td>
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<td>206.2(a), 210.3, 203/4</td>
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**Test**

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<th>Cutslp</th>
<th>Backfl</th>
<th>Subgrd</th>
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</table>

Note: Undisturbed Soil has three material classes, EMBKMT, SUBGRD, and CutsLP, whose Publication 408 section corresponds to Publication 408 section of the same material class for disturbed soil.

EMBKMT = EMBANKMENT [206.2(a)]
TPSOIL = TOPSOIL [802.2]
SLSRVY = SOIL SURVEY
BACKFL = BACKFILL [206.3]
SUBGRD = SUBGRADE [210.3(b)]
CUTSLP = CUTSLOPE [203 & 204]
FIELD COMPUTATION GUIDES

The following field computation guides are provided to assist project personnel in computing various pay quantities.
Suggested Method and Measuring and Computing Approach Areas

Triangle No. 1
Area = \sqrt{s(s-a)(s-b)(s-c)}
= \sqrt{30.4 \times 2.4 \times 10.4 \times 17.6}
= \sqrt{13354.53} = 115.56

Triangle No. 2
Area = \sqrt{s(s-a)(s-b)(s-c)}
= \sqrt{30.4 \times 2.4 \times 10.4 \times 28.0}
= \sqrt{151263} = 388.93

Triangle No. 3
Area = \frac{1}{2} \times \text{base} \times \text{height}
Area = \frac{1}{2} \times 12 \times 4.4
Area = 6 \times 4.4
Area = 26.4

Rectangle No. 4
Area = W \times L
Area = 12 \times 18
Area = 216

Triangle No. 4
2/3 (42 \times 1.8)
= 2/3 (75.6)
= 50.4

Triangle No. 2
2/3 (28 \times 3.6)
= 2/3 (100.8)
= 67.2

Triangle No. 3
2/3 (20 \times 3)
= 2/3 (60)
= 40.0

Deductions
Total = 782.89
Deductions = 157.60
Total Paved = 625.29
Refer to Pub 72M, Roadway Construction Standards, RC-30M for more detail.
Refer to Pub 72M, Roadway Construction Standards, RC-30M for more detail.
### CONCRETE REINFORCING

#### STANDARD REINFORCING BARS

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Volume Formulae for Geometrical Solids
FORMS

The following forms are referenced in the Project Office Manual. The list is categorized for easy reference.

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<td>Method for Calculation of Moisture Density Relationship</td>
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**INSPECTION and ACCEPTANCE FORMS**

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QUALITY ASSURANCE REPORTING SYSTEM

The following Quality Assurance Reporting System (QARS) checklists are utilized by the CQAS representatives, and they are available upon request through the Assistant Construction Executives.

CONSTRUCTION OPERATION REVIEWS

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**MATERIAL OPERATION REVIEWS**

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PROJECT OFFICE MANUAL REVISION PROCESS

Overview

Editions of the Project Office Manual are released every three years, with revisions released annually as needed. Each edition and revision cycle begins approximately three to six months before the release. Revisions will be released as warranted by the volume and criticality of changes.

Beginning with the January 2009 edition, the Project Office Manual is only distributed in electronic format.

Decision Points / Quality Checkpoints

There are several decision points and quality checkpoints documented in the flowchart as diamonds. Diamonds reflect questions to determine the proper flow of the process from that point forward.

Detailed Task Description

The task descriptions provide detailed information for each task identified in the POM Revision Flow Chart.

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<tr>
<td>3</td>
<td>Reviewers of the internal Clearance Transmittal respond within the specified time period to the initiator.</td>
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<td>4</td>
<td>Based on the comments received from reviewers, the initiator of the Clearance Transmittal will determine whether to continue with the development of the POM revision.</td>
</tr>
<tr>
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<td>An external Clearance Transmittal is developed by the initiator and distributed as appropriate within the initiating organization, and externally to other PennDOT Bureaus and business partners, as appropriate.</td>
</tr>
<tr>
<td>6</td>
<td>Reviewers of the external Clearance Transmittal respond within the specified time period to the initiator.</td>
</tr>
<tr>
<td>7</td>
<td>Based on the comments received from the Clearance Transmittal reviewers, the initiator of the Clearance Transmittal will determine whether to continue with the development of the POM revision. If the initiator is able to resolve the comments, the revision (Final version) to the POM is sent back to Specifications and Quality Initiatives Coordinator (SQIC), working in the New Products and Innovations Section of the Bureau of Project Delivery to be included in the next POM update. The initiator should issue formal revisions to the POM via Strike-Off Letter, when necessary.</td>
</tr>
<tr>
<td>1e</td>
<td>During use and review of the POM, necessary edits to the POM are identified.</td>
</tr>
</tbody>
</table>
The SQIC, working in the New Products and Innovations Section of the Bureau of Project Delivery, accumulates the changes from Strike-Off Letters and identified edits. If changes warrant a revision, a revision to the POM could be issued. Typically, the collected revisions will be held until the annual POM revision.

The SQIC will make the appropriate changes and revisions, with internal consultation as necessary, to the POM.

The SQIC will provide the change initiator with a copy of the revised POM Section to ensure that the revised section reads as intended.

The SQIC finalizes the changes and formats the revised portions of the POM.

The SQIC develops the List of Changes summarizing the changes to the POM to be provided to the end users.

**Cycle and Process Times**

<table>
<thead>
<tr>
<th>Activity Sequence</th>
<th>Process Time</th>
<th>Cycle Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 7</td>
<td>N/A</td>
<td>Continually (depending on proposed changes)</td>
</tr>
<tr>
<td>8 – 12</td>
<td>2 weeks</td>
<td>2 - 6 weeks depending on volume</td>
</tr>
</tbody>
</table>
POM Revision Flow Chart

1. Discover that field practice requires clarification or update to POM. (Revised)
2. Distribute Step 1 - Internal Clearance Transmittal (ICT). (Reviewed)
3. Submit responses to Initiator. (Reviewer)
4. Revise change to POM. (Initiator)
5. Distribute Step 1 — External or Step 2 Clearance Transmittal (Initiator)
6. Submit comments on External Clearance Transmittal. (Reviewer)

A

No

No

End

B

C

Yes

Yes

Yes

Yes

Yes

No

No

No

No

No

No

No

Yes

Yes

Yes

Yes

Yes

Yes

Yes
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APPENDIX B
USE GUIDELINES FOR STANDARD SPECIAL PROVISIONS & PROVISIONAL SPECIFICATIONS
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The above-referenced standard statewide special provision is for the use of asphaltic plug expansion dams for in-service bridge decks.

Advantages to using asphaltic plug expansion dams are as follows:

- Accommodates bridge joints with movement ranges of 1 ½ inches
- Suitable for placement on existing cement concrete decks, and on decks with existing or proposed bituminous concrete overlays with or without waterproofing membranes
- Prevents joint leakage if installed on suitable joints
- Provides a smooth ride for the traveling public
- Easy to install with some specialized equipment
- Can be installed and opened to traffic within one working day with single lane closures
- Repairable if cracks develop

Use asphaltic plug expansion dams for in-service bridge decks as follows:

1. Install the asphaltic plug expansion dam on bridge joints with a thermal and/or rotational movement range of 1 ¼ inches or less.

2. Install the asphaltic plug expansion dam system in a thickness of 2 inches minimum.

3. Install the asphaltic plug expansion dam on joints with skew angles from 45 degrees to 90 degrees.

4. Installation is not limited by AADT or ADTT.

5. Eligible for 100% state and/or for certain federal participatory funding.

6. For existing cement concrete decks without a bituminous overlay, use asphaltic plug expansion dams as a temporary joint rehabilitation technique (less than 8 years) until the bridge deck or joints undergo a complete standard rehabilitation. Existing armored expansion dams or modular expansion dams may need to be removed prior to placing an asphaltic plug expansion dam. Specify and include limits on the removal of these existing expansion dams in the contract or construction plans.
7. For cement concrete bridge decks with existing bituminous concrete overlays with or without waterproofing membranes, use asphaltic plug expansion dams as a temporary joint rehabilitation technique (less than 8 years) until the bridge deck or joints undergo a complete standard rehabilitation.

8. For existing cement concrete bridge decks planned to receive a bituminous concrete overlay with or without a membrane, place the bituminous concrete overlay over the entire bridge deck first. Upon completion of the bituminous concrete overlay, use the asphaltic plug expansion dam in this case, to serve only as long as the expected life of the bituminous concrete overlay.

9. Repair cracks in existing asphaltic plug expansion dams by heating the asphaltic plug material surrounding the crack with a propane torch until the asphaltic plug material is soft enough to move with a hand trowel. Trowel the heated material into and over the entire crack. Maintain traffic control for 30 minutes after the repair or until the asphaltic plug material has sufficiently cooled to accept traffic without damage.

10. Perform an economic evaluation to justify an asphaltic plug expansion dam over an alternate repair or rehabilitation technique such as bridge joint sealing, repair/replacement of existing joint system, or other approved joint system.
TYPICAL JOINT DETAIL

GENERAL NOTES:

1. For use of the asphaltic plug expansion dam in-service bridge decks with existing or proposed bituminous concrete overlays with and without waterproofing membranes.

2. Place asphaltic plug expansion dam material up the face of cut-off piers, piers, and abutments as recommended by the manufacturer.
TYPICAL JOINT DETAIL

GENERAL NOTES:

1. For use of the asphaltic plug expansion dam on service bridge decks.

2. Place asphaltic plug expansion dam material up the face of pilings, parapets, and across sidewalks as recommended by the manufacturer.
USE GUIDELINES FOR
BRIDGE JOINT POLYMER MORTAR EXPANSION DAM INSTALLATION USING TWO PART, RAPID CURE SILICONE JOINT SEALANT

c07051 ITEM 9705-2101 (ITEM 9705-0101) - POLYMER MORTAR FOR BRIDGE JOINT EXPANSION DAM
ITEM 9705-2102 (ITEM 9705-0102) - SILICONE SEALANT FOR BRIDGE JOINT EXPANSION DAM

The above-referenced provisional specification is for the use of a bridge joint polymer mortar expansion dam installation using a two-part, rapid cure silicone joint sealant. Approval is based upon field evaluations and testing performed by Valley Forge Laboratories for PennDOT, and documented in Research Project No. 93-063, Bridge Deck Joint Systems. If at any point the District becomes concerned with the condition of the installed joint seals, or any problem is demonstrated with their use, the Provisional Specification will be withdrawn from future use.

Some advantages of using the polymer mortar/silicone joint sealer include:

1. Combines a tough, wear-resistant polymer for expansion joint nosing with a rapid-curing high movement silicone for sealing the joint.
2. The silicone seal is cold applied and remains pliable in cold or warm temperatures.
3. The silicone sealant bonds to itself, allowing separate lanes to be sealed one at a time, but joinable when the adjacent lanes are eventually sealed.
4. Can cure, within 8 hours, allowing earlier traffic movement.
5. Sealant accommodates movements of +100/-50% of joints 1 to 3 inches and +/-50% for joints of 3 to 4 inches.
7. Unaffected by sunlight, rain, snow, ozone or temperature extremes.

An advantage of the polymer mortar/two-part epoxy joint sealer system is that it allows all preliminary work and preparation, and then easy installation, by County bridge maintenance crews.

The following drawings show the variety of installation designs that are possible, using this sealing system, and which meets all requirements of the provisional specification as established for this product. The region designated PNS is the polymer mortar. The properly prepared joint can have a width of from 1 inch to 3 inches.

This provisional special provision is intended to be bid as an alternate to other joint repair systems.
JOINT REPAIR FOR FIXED JOINTS WITH NO OVERLAY

1. Refer to Table 1
2. Do not bond Elastomeric Mortar to weak or rotten concrete.

NOTE: Remove broken or spalled concrete to solid material. In some instances the concrete removal may be so extensive that it may be necessary to reinforce the Elastomeric Mortar.

Nosing of sufficient thickness can be ready for traffic in 2-4 hours depending on temperature.
JOINT REPAIR FOR FIXED JOINTS WITH A.C. OVERLAY

1. Refer to Table 1
2. Do not bond Elastomeric Mortar to weak or rotten concrete.

**Minimum Width of Noising shall be 6".**
If the overlay thickness exceeds 3" in depth, the installer shall use a 2 to 1 width to thickness ratio.

**NOTE:** Asphalt Concrete Overlay across the bridge deck and the approach slabs at the Joint Sealant Locations shall be cut and removed as detailed and the concrete surface prepared in accordance with the Sealant manufacturer's specifications. Noising of sufficient thickness can be ready for traffic in 2-4 hours depending on temperature.
JOINT REPAIR FOR EXPANSION JOINTS WITH NO OVERLAY

1. 'a' should be in the range of 25 mm to 75 mm. See Table 2.
2. Refer to Table 1.
3. If Armor Joint is loose, removal of the Armor Joint is strongly recommended.
4. Do not bond Elastomeric to weak or rotten concrete.

NOTE: Remove broken or spoiled concrete to solid material. In some instances the concrete removal may be so extensive that it may be necessary to reinforce the Elastomeric Mortar.

NOTE: Asbestos Concrete Overlay across the bridge deck and the approach slab of the water. Sealant Crack shall be cut and removed as detailed and the concrete surface prepared in accordance with the sealant manufacturer's specifications.

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JOINT REPAIR FOR JOINTS HAVING
OVERLAYS AND OPENINGS OF 25 mm TO 75 mm

1. "X" should be in the range of 25 mm to 75 mm.
2. Refer to Table 1.
3. Do not bond Elastomeric Mortar to weak or rotten concrete.

Minimum width of nosing shall be 6".
If the Overlay thickness "T" exceeds 3" in depth, the
installers shall use a 2 to 1 width to thickness ratio.

NOTE:
Asphalt Concrete Overlay across the bridge
deck and the approach slabs of the joint
Sealant locations shall be cut and removed as
detailed and the concrete surface prepared in
accordance with the sealant manufacturer's
specifications.

Nosing of sufficient thickness can be ready for
traffic in 2-4 hours depending on temperature.
JOINT REPAIR FOR JOINTS HAVING SLIDING PLATES AND NO OVERLAY

1. "X" should be in the range of 25 mm to 75 mm. See Table 2.
2. Refer to Table 1.
3. If steel plates are loose, removal is strongly recommended.
4. Sealant shall be applied when the temperature is 27°C or higher.

- Place bond breaker tape across bottom of joint
- Rapid Cure Joint Sealant
- Existing Expansion Plate

Sheet No. 5

Can be used if approved by District Bridge Engineer

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JOINT REPAIR FOR JOINTS HAVING SLIDING PLATES AND A.C. OVERLAY

1. "x" should be in the range of 25 mm to 75 mm. See Table 2.

2. Refer to Table 1.

3. If steel plates are loose, removal is strongly recommended.

4. When depth of joint opening is too shallow to allow proper reseal and sealant depth, backer rod may be cut to fit depth. When backer rod cannot cut to fit, bond breaker tape may be used. Sealant thickness must not exceed manufacturer's specifications.

5. Elastomeric Mortar shall extend to the end of the steel plate or shall have a minimum length of 150 mm, whichever is greater.

6. Do not bond Elastomeric Mortar to weak or rotten concrete.
JOINT REPAIR FOR JOINTS HAVING SLIDING PLATES AND NO OVERLAY

1. Spacing should be in the range of 25 mm to 75 mm. See Table 2.
2. Refer to Table 1.
3. If sliding plates are loose, remove the plate and replace with Elastomeric Mortar. If the plate is not loose, leave in place.
4. Do not bond Elastomeric Mortar to weak or rotten concrete.

3. Rapid Cure Joint Sealant

DETAIL OF EXPANSION JOINT WITH SLIDING PLATE REMOVED

DETAIL OF EXPANSION JOINT WITH SLIDING PLATE IN PLACE

Note: Nosing of sufficient thickness can be ready for traffic in 2-4 hours depending on temperature.
<table>
<thead>
<tr>
<th>Joint Opening</th>
<th>Steel Plate Thickness</th>
<th>Steel Plate Depth</th>
<th>Joint Opening Compression</th>
<th>Joint Opening Expansion</th>
<th>Total Expansion Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>2</td>
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<tr>
<td>2</td>
<td>1/2</td>
<td>1/2</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>2-1/2</td>
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<td>1/2</td>
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<td>5</td>
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<td>1/2</td>
<td>5/8</td>
<td>1-1/2</td>
<td>6</td>
<td>4-1/2</td>
</tr>
</tbody>
</table>

**Table 1**

1 Table based on temperature of 77 degrees F. +/- 2 degrees and 50% RH +/- 5%.

2 Mean opening (width at 77 degrees F. +/- 2 degrees and 50% RH +/- 5%).

For joints less than 1", or greater than 3" at time of sealing, contact Sealant Representative for recommendations.

If sealant is installed during cold weather (60 degrees F. or below), Sealant Representative should be contacted for specific installation instructions.

**NOTE: ALL DIMENSIONS ARE IN INCHES.**
<table>
<thead>
<tr>
<th>Temperature</th>
<th>L=30m</th>
<th>L=60m</th>
<th>L=90m</th>
<th>L=120m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees C</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
</tr>
<tr>
<td>0</td>
<td>56</td>
<td>81</td>
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<tr>
<td>45</td>
<td>41</td>
<td>32</td>
<td>22</td>
<td>13</td>
</tr>
</tbody>
</table>

**Steel Girders**

| Max. Jl. Movement | 24    | 48    | 71    | 95     |

<table>
<thead>
<tr>
<th>Degrees C</th>
<th>L=30m</th>
<th>L=60m</th>
<th>L=90m</th>
<th>L=120m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Jl. Movement</td>
<td>15</td>
<td>28</td>
<td>29</td>
<td>62</td>
</tr>
</tbody>
</table>

**Concrete Girders**

Delta is the maximum anticipated joint movement.

* Unless otherwise specified on the Original Construction Plans.

**Note:** The setting temperature is used in installing expansion bearings and deck joints. The setting temperature of the bridge, or any component thereof, shall be taken as the actual air temperature averaged over the 24 hour period immediately preceding the setting event.
The above-referenced provisional special provision specification is for the use of embedded galvanic anodes. Approval is based upon a field evaluation conducted by the Structural Design Section, District 11-0, in response to a Product Evaluation, PE# 01-145. If at any point the District becomes concerned with the condition of the galvanic anode installation, or any problem is indicated with their use, the Provisional Specification will be withdrawn immediately, or modified and reissued if the problem can be addressed.

An advantage of the embedded galvanic anodes is that all preliminary work, preparation and the anode installations can be performed by County bridge maintenance crews or by the contractor on site.

Embedded galvanic anodes are designed for placement in concrete patch repairs to provide localized protection for uncoated, black bar reinforcing steel. Each anode consists of a sacrificial zinc core surrounded by an active cementitious matrix. Fastening the anode to prepared rebars provides galvanic protection, inhibiting rebar corrosion within an approximate 1+/- square yard area, and reducing the potential for new corrosion to develop in the surrounding chloride-contaminated or carbonated concrete.

Typical uses include applications in patch repairs for prevention of adjacent area corrosion commonly referred to as “Ring Anode” or “Halo” effect, installations along new/old concrete interfaces in bridge widening or joint replacement projects to prevent corrosion, and installations in prestressed concrete beam ends or other critical areas to provide localized corrosion protection to strands from corrosion caused by leaking joints.

Cathodic Protection (CP) systems are primarily intended to prevent or retard corrosion in concrete structures. In extremely corrosive environments, CP may be considered for steel structures. There are several key factors that need to be considered and evaluated before CP is deemed a technically acceptable and cost effective solution on an individual project.

Establishing the required electrical continuity in new construction comes only with significant effort and, in rehabilitation work, it is exceedingly difficult. Therefore, the design and use of CP systems for any structure, or part thereof, needs to be approved by the Central Office Bridge Quality Assurance Division (BQAD).

The above-referenced Provisional Special Provision is for the use of stay-in-place forms for pipe endwalls. Approval is based upon a field evaluation conducted by the County Maintenance Manager, Maintenance District 10-5, in response to a Product Evaluation, PE# 01-160. If at any point the District becomes concerned with the condition of the stay-in-place endwall installations, or any problem is indicated with their use, the Provisional Special Provision will be withdrawn immediately, or modified and reissued if the problem can be addressed.

An advantage of the endwall stay-in-place forms is that all preliminary work, preparation, and the installation can be performed by County maintenance crews or by the contractor on site in a fraction of the time required for standard, cast-in-place endwalls.

The stay-in-place endwall form consists of three pre-formed sections and a pipe adapter, each made of linear low density polyethylene. The main endwall section is 36” high x 60” wide x 12” deep and weighs less than 100 lbs. It can be adapted to standard 18”, 15” and 12” diameter pipe. The additional section pieces adjust the unit’s height for depth of pipe, cover height, etc. The sections are easily fastened together with galvanized screws and then each is filled with Class A Cement Concrete.

The endwall stay-in-place forms can be bid or used as an alternate to standard, Type D-W endwalls which are cast-in-place using plywood forms.
USE GUIDELINES FOR
EPOXY-BASED SURFACE TREATMENT FOR BRIDGE DECKS

The above-referenced provisional specification is for the use of epoxy-based surface treatment for in-service bridge decks. These overlays were evaluated under Pennsylvania Research Project No. 83-29.

If at any point the District becomes concerned with the skid resistance of the overlay, a skid resistance test can be performed. If further experience gained by the Districts demonstrates a problem with the use of a specific epoxy-based surface binder, the District will have to notify RA-pdBulletin15@pa.gov, and the product could be potentially withdrawn from Bulletin 15 (Qualified Products List for Construction).

Some advantages to these overlays include:
- Low dead load due to thinness (total thickness is ¼ to 3/8 inch)
- Short application time; under good temperature conditions, an overlay may be able to be applied within 24 to 48 hours on a properly-prepared surface
- Low permeability to moisture
- Resistance to deicing salts
- Good bond strength to concrete bridge decks
- Restores skid resistance to deck surface
- Approximate service life of ten years with minimal maintenance

The following guidelines are to be used in the consideration of these overlays for in-service bridge decks:

1. The bridge deck replacement decision should still follow the procedures in Design Manual 4, Section 5.5.2.3.

2. The overlay can be used to improve or restore the skid resistance on concrete bridge decks without asphaltic overlays.

3. To reduce chloride penetration in concrete bridge decks without asphaltic overlays, use the following limiting factors to select potential bridge decks for application of the epoxy-based surface treatment.
   a. Select decks on medium and high volume routes (ADTT > 100).
   b. Select decks with a Deck Condition Rating (BMS item E17) greater than or equal to 5 (i.e. light to moderate deterioration). Typically, deck scarification is not performed prior to overlay application (surface texture after scarification may be too rough for the thin overlay to smooth out). Without scarification, a slightly better bridge deck is required for these overlays compared to approved overlay alternatives. However, shotblasting of the entire deck surface is required prior to overlay application.
c. Select decks with chloride contents less or equal to 2 lbs./cu. yd. over an average of the total deck. In Pennsylvania research projects, the overlays provided good resistance to chloride penetration.

d. Select decks containing good sound concrete with adequate strength before application of the overlay. The thinness of the multiple layer, epoxy-resin based overlays will not bond to unsound concrete or concrete susceptible to delamination. Known areas of deteriorated concrete should be removed and replaced before applying the overlay.

e. Use air content requirements outlined on Design Manual 4, Section 5.5.2.3.

f. Perform an economic evaluation to allow the use of this overlay in place of any other overlay alternatives.

g. The application of three layers (total thickness of 3/8 inch) is recommended for any route with ADTT > 250.

4. For concrete filled grid steel decks without overlays, use the following limiting factors to select potential bridge decks for this type of overlay:

a. All concrete filled grid steel decks requiring rehabilitation are potential candidates for this type of overlay.

b. Remove deteriorated concrete and fill the cups with concrete if the full depth concrete is deteriorating. The epoxy-based resin overlay material can be combined with the fine aggregate to produce a slurry material that can be used to fill in small patches of cupped areas less than ¾ inch average depth and no more than 1 ¼ inch deep. Fill steel grid flush with the top of the steel grid.

c. Perform an economic evaluation to allow the use of this overlay in place of any other overlay alternatives.

d. The application of three layers (total thickness of 3/8 inch) is recommended for any route with ADTT > 250.

The following guidelines are to be used in the consideration of these overlays for newly poured bridge decks:

1. Allow a minimum of 30 days of curing time before placing an Epoxy Based Surface Treatment.
USE GUIDELINES FOR GRADE ADJUSTMENT OF EXISTING MISCELLANEOUS STRUCTURES USING RUBBER RINGS  
c06061 ITEM 9606-2050 (ITEM 9606-0050) GRADE ADJUSTMENT OF EXISTING INLETS USING RECYCLED RUBBER GRADE ADJUSTMENT RINGS;  
ITEM 9606-2150 (ITEM 9606-0150) GRADE ADJUSTMENT OF EXISTING MANHOLES USING RECYCLED RUBBER GRADE ADJUSTMENT RINGS.

Rubber Grade Adjustment Rings are available as an alternate to all types of grade adjustment rings. The contract must be let with these rings as an alternate bid item or the District may choose to put it into the contract as the sole item for adjustment rings.

Rubber adjustment rings are to be installed according to the manufacturer’s recommendations. Maximum permitted total height for rubber adjustment rings is 3 inches; minimum height is 0.5 inch.

The rubber rings are lighter and easier to manipulate than steel rings. Currently available rings are manufactured from recycled tires. Provisional approval is granted for these grade adjustment rings based upon extensive test results provided by the manufacturer.

The specification for this product is a Provisional Specification. Until widespread experience with Rubber Grade Adjustment Rings is gained statewide, this product will retain a provisional status. Project designers are requested to consider any unusual site conditions that would affect the use of rubber adjustment rings.

Contact NPI before using: RA-pdBulletin15@pa.gov. If the Districts observe a problem with the use of the Rubber Grade Adjustment Rings, the Provisional Specification will be withdrawn immediately.
USE GUIDELINES FOR POST MOUNTED SIGNS, TYPE B, C, & E, EXPANDED FOAM BACKFILL

The above-referenced provisional special provision specifications are for the use of Expanded Foam Backfill for Setting Sign Posts. Approval is based on response to a Product Evaluation, PE #00-089 in which several Maintenance Counties have routinely used the product.

This item is proprietary, but should be allowed as an alternate to Packaged Dry Concrete for Type B signposts and Class A concrete for Type C and Type E wood signposts. Refer to Bulletin 15, Miscellaneous Items, for the supplier who can provide this material.

Contact NPI before using: RA-pdBulletin15@pa.gov. If at any point the District becomes concerned with the condition of the Expanded Foam Backfill for Setting Sign Posts installation, or any problem is indicated with its use, the Provisional Specifications will be withdrawn immediately, or modified and reissued if the problem can be addressed. As a precaution, it is recommended that no installation be made adjacent to an open joint pipe.

Expanded Foam Backfill for Setting Sign Posts is an engineered backfill for setting sign posts. It is a modified, rigid polyurethane foam shipped in two parts and mixed on site. The foam expands up to nine times its original volume and contours to the shape of the excavated area.

An advantage of Expanded Foam Backfill for Setting Sign Posts is that it saves time in the installation of the posts since the foam hardens quickly and develops enough strength to complete a sign installation within thirty minutes. Sign crews can complete an installation in a single trip rather than having to return for the installation of the sign post after a conventional concrete footing has cured.

Typical uses include installation of new Type B sign supports and repair of leaning Type B sign supports. Expanded Foam Backfill for Setting Sign Posts is also approved for use by PennDOT forces for Types C & E wood sign supports.
USE GUIDELINES FOR PREFORMED SILICONE JOINT SEALING SYSTEM  
c10081 ITEM 9008-2101 (ITEM 9008-0101) - SILICONE JOINT SEALING SYSTEM;  
ITEM 9705-2201 (ITEM 9705-0201) - JOINT BACKING MATERIAL

The above-referenced provisional specification is for the use of a preformed silicone joint sealing system. Approval is based upon field evaluation and testing performed by the Bureau of Maintenance and Operations through Research Project No. 96-015.

Contact NPI before using: RA-pdBulletin15@pa.gov. If at any point the District becomes concerned with the condition of the installed joints, or any problem is demonstrated with their use, the Provisional Specification will be withdrawn immediately, or modified and reissued if the problem can be addressed.

An advantage of the preformed silicone joint sealing system is that all preliminary work and preparation, and easy installation, can be performed by County bridge maintenance crews.

Preformed Silicone Joint Sealing Systems have applications for the repair of bridge joints where nosing or joint faces are in good condition and can be cleaned or abraded to ensure a good bond with the installed seal. Where required, the joint must first be redefined with new headers of elastomeric concrete or reconstructed nosings. The two preformed silicone joint sealing systems are intended for movement ranges of 1 ¼” to 3” and 2 ½” to 4”. The project designer must calculate the range of movement for the structure to determine the proper joint sealing system to use.

The following drawings show the variety of installation designs that are possible, using a preformed silicone joint sealing system, which meets the requirements of the provisional specification as established for this product. Please note that the use of a preformed silicone joint sealing system is only guided by the attached installation drawings, but not limited to that particular vendor.

This provisional special provision will be bid as an alternate to other joint repair systems.
Variations for Silicoflex™ Installations

Silicoflex (4" MtF) with steel header material (for larger movements)

Silicoflex (2" MtF) with steel header material

Silicoflex (2/4" MtF) with strip seal locking mechanism A

Silicoflex (4" MtF) with concrete header material (for larger movements)

Silicoflex (2/4" MtF) with concrete header material

Silicoflex (2/4" MtF) with strip seal locking mechanism A

Silicoflex (2/4" MtF) with strip seal locking mechanism E

Silicoflex (2/4" MtF) with strip seal locking mechanism E

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### SF 225 vs SF 400

<table>
<thead>
<tr>
<th>Model</th>
<th>Installation Width Range</th>
<th>Maximum Closure</th>
<th>Maximum Opening</th>
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</thead>
<tbody>
<tr>
<td>SF 225</td>
<td>1 1/4&quot; - 3&quot;</td>
<td>3/4&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>SF 400</td>
<td>2 1/2&quot; - 4&quot;</td>
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USE GUIDELINES FOR A PROCESSED TREATED CRUMB RUBBER MODIFIED BITUMINOUS CONCRETE

The above-referenced provisional special provision specification is for the use of treated Crumb Rubber Modified (CRM) Bituminous Concrete. Approval is based upon Research Project No. 1995-054, “Evaluation of Tyrsolv Crumb Rubber Asphalt Modifier” conducted by the New Products and Innovations Section, Bureau of Project Delivery, in response to a Product Evaluation, PE #93-104. Satisfactory performance of this product was reported on two heavily trafficked experimental sections. This product can be used provided an economical approach can be developed to make it cost competitive with conventional sources of asphalt (such as funding to promote the use of recycled materials). The treated CRM can be used either as a fine aggregate/filler combination (dry process) or as a modifier to the asphalt cement (wet process).

The use of treated CRM as an aggregate (dry process) involves mixing the treated crumb rubber with the aggregate before incorporating the asphalt cement into the mix. In the wet process, the asphalt cement is reacted with the treated crumb rubber at elevated temperature in a constant agitation-blending unit for a prescribed amount of time (normally 1 to 2 hours, minimum) prior to blending the modified binder with the aggregate in the mix. The dry process potentially is more economical than the wet process and does not require any additional equipment to be installed at the asphalt plant. The wet process application was verified through Superpave performance testing and the benefits initiated these field applications. The dry process application was brought on board due to unavailability of equipment for wet process blending at the time of construction.

One possible advantage of using a treated CRM listed in Bulletin 15 is that the modified bituminous paving course mixtures may improve rutting resistance where small paving quantities would make the use of a Polymer-Modified binder impractical. The addition or substitution of treated CRM in the paving mixture could potentially enhance the high temperature performance of the asphalt cement without adversely affecting its low temperature performance.

Contact NPI before using: RA-pdBulletin15@pa.gov. If at any point the District becomes concerned with the condition of the treated CRM installation, or any problem is indicated with its use, the Provisional Specification will be withdrawn immediately, or modified and reissued if the problem can be addressed.
USE GUIDELINES FOR
PROTECTIVE COATING FOR REINFORCED CONCRETE SURFACES AND
PROTECTIVE COATING FOR CEMENT CONCRETE PAVEMENT

c10191 ITEM 9019-2152 (ITEM 9019-0152) PROTECTIVE COATING FOR REINFORCED CONCRETE SURFACES

c05031 ITEM 9503-2152 (ITEM 0503-0152) PROTECTIVE COATING FOR REINFORCED CONCRETE PAVEMENT

The above-referenced Provisional Special Provisions expand the use of Penetrating Sealers, for Protective Coating for Reinforced Concrete Surfaces and Cement Concrete Pavement. The intent is to permit all penetrating sealers listed in Bulletin 15 to be used on surfaces not exposed to vehicular traffic, as an alternative to boiled linseed oil. It is also the intent to permit penetrating sealers, classified as Silicates in Water and listed in Bulletin 15, to be used on surfaces exposed to vehicular traffic (concrete pavement and concrete bridge decks). Approval is based upon vendor test data, testing performed at the Laboratory Testing Section, and observations of field applications in District 1-2, District 12-2 and the Pennsylvania Turnpike Commission. Until additional experience is gained statewide, this product utilization will retain a provisional status.

Provisional status requires that the Districts notify the New Products and Innovations Section, Bureau of Project Delivery, of the use of silicates in water as a protective coating for reinforced concrete surfaces exposed to vehicular traffic, and cement concrete pavements, so that monitoring of the product and its application can be arranged with the District. Districts do not need to provide notification of the use of penetrating sealers used on surfaces not exposed to vehicular traffic.

Contact NPI before using: RA-pdBulletin15@pa.gov. If at any point the District(s) becomes concerned with the condition of treated Reinforced Concrete Surfaces and/or Cement Concrete Pavement or any problem is indicated with the use of Silicates in Water as a Protective Coating, the Provisional Special Provision will be withdrawn immediately, or modified and reissued if the problem can be addressed.

An advantage of Silicates in Water is that the pavement treatment can strengthen, clean and seal concrete already in good condition. Silicates in Water penetrate the surface to react with the free alkali present in concrete filling voids and solidifying the masonry. The material is non-flammable and contains no volatile organic compounds.
USE GUIDELINES FOR REPAIR OF ACCESS ROADS

c06001 ITEM 9600-1025 (ITEM 9600-3025) - REPAIR OF ACCESS ROADS

The above-referenced standard special provision is intended to establish a predetermined amount of money for the repair of local roads used for access to state owned bridges under construction. The associated contract item is to have a unit of measure of Dollar, a unit price of $1.00, and a quantity equal to the predetermined amount. The following guidelines are applicable to use of this specification:

- Access to the site of the proposed construction should be considered during the Design Phase of the project. Local access roads designated by the Department should be listed on the plans along with a note indicating that the Contractor may elect to use an alternate access route subject to the approval of the Department.

- The District must document the condition of the Department designated access route, or the Contractor’s alternate access route, preferably through video logging and condition surveying, prior to the commencement of construction activities.

- Access to both sides of the bridge should be designated beginning at the point of departure from the permitted route(s).

- Hauling Restrictions, as specified in Publication 408, Section 107.23, are applicable to any designated access route as well as to a Contractor’s alternate access route.

- When included in a proposal/contract, the standard special provision will require a merge line document indicating which local roads have been designated by the Department for use as access roads.

- The predetermined amount of money allocated in the proposal/contract is to be used for the repair of access roads whether the designated route is used or the Contractor elects to use an approved, alternate access route.
USE GUIDELINES FOR
STEEL FIBER REINFORCED CONCRETE WEARING SURFACE
c10901 ITEM 3090-____(ITEM 1090-___) - STEEL FIBER REINFORCED CONCRETE WEARING SURFACE, __mm(“)

The above-referenced approved statewide special provision is for the use of Steel Fiber Reinforced Concrete (SFRC) as a thin overlay for in-service bridge decks.

The following information should be considered in the design of SFRC bridge deck overlays:

- SFRC does not eliminate cracking, but it does significantly reduce the growth and width of cracks.

- SFRC provides post-crack integrity, which enables the concrete to still carry loads even after cracking. This property increases the spall resistance and reduces spalls and/or pop-outs at the surface.

- SFRC overlays with a maximum water cement ratio of 0.43 for Class AAA concrete mixes are not impermeable, nor are they considered a water proof membrane or overlay. SFRC overlays with a maximum water/cement ratio of 0.43 should not be construed as an alternate to Latex Modified Mortar or Concrete Overlays.

- The impermeability of SFRC overlays can be improved by reducing the water/cement ratio to 0.40 or less. Reduction of the water/cement ratio is encouraged, and the special provision allows the use of high range water reducers to accomplish this.

- SFRC is recommended for overlays of structures where the existing conventionally-reinforced concrete bridge deck cannot be removed, such as in slab bridges and deck arches. These types of structures, where the allowable dead load capacity has permitted, have typically received minimally-reinforced Class AAA concrete overlays in thicknesses up to five inches. Steel fiber reinforcement should provide beneficial properties in these types of overlays.

- If the water/cement ratio for SFRC is not decreased to improve impermeability, SFRC overlays are recommended to be used on bridge decks that are conventionally-reinforced with epoxy-coated reinforcement.

- A minimum thickness of two inches is recommended for all SFRC overlays to provide adequate coverage.
The above-referenced standard special provision addresses the issue of providing payment for the removal and replacement of unstable subgrade and emphasizes that the Districts should make every effort, during project design, to adequately determine the subsurface conditions that will be encountered.

The subgrade undercut area and depth of excavation for a specific project can be affected by many factors including, but not limited to, known subsurface field conditions, the availability of suitable, excavated material from project operations for use as backfill, and the planned use of geotextile support fabrics or geosynthetics for subgrade stabilization. Consideration should also be given to the potential effect of Section 110.02(d) of the Specifications, Required Changes in the Scope of Work, which limits the Contractor’s ability to recover additional costs in situations where an item experiences a significant change in character as a result of a decrease to below 75% of original contract quantity by limiting total compensation to the contract item’s original value.

The following criteria should be considered, during project design, when determining the extent of unstable subgrade for the purpose of estimating a quantity for the Class 1C Excavation item (Item 9203-0400 or 9203-2400):

- Conduct a visual inspection of the project site checking for the presence of water; failed drainage systems; distresses, such as faulted or broken slabs, that may indicate a foundation problem; mid-slab and/or fatigue (alligator) cracking; low areas where water tends to collect; cut sections; slide areas and/or seepage associated with fill sections; and a locally high water table (i.e. roadway located near an existing stream or creek).

- Consult with District Construction personnel regarding their experience on adjacent projects.

- Consult with the District Pavement Engineer, District Geotechnical Engineer, and District Maintenance Engineer to ascertain whether any previous soils data is available and to obtain information on the maintenance history of the roadway (i.e. records from past maintenance work).

- Determine the potential for subgrade problems to develop as a result of planned construction operations.

- If applicable, include shoulder areas when estimating the undercut quantity for unstable subgrade.

- Obtain soil samples from within shoulder areas.
The above-referenced standard special provision employs a tool box approach to improving the subgrade for reconstruction projects and provides for a cost effective uniform treatment across the entire project. The Subgrade Treatment special provision allows the contractor to choose between one foot of rock or chemically stabilizing the top foot to subgrade with a lime product to strengthen the subgrade soils.

The following subgrade stabilization design worksheet details soil studies needed to verify that soils are reactive with lime and to verify that soils achieve strength requirements prior to incorporating into contracts.
Subgrade Stabilization
Design Worksheet

Stage I (40 hours)

1. Look at Old Soils Reports
   and/or
2. Check Geology and Soils map
   a. Know what type of soil you have based on bedrock or soils map.
      1. Limestone - Clay type soils
      2. Shale/Sandstone - Sandy with less clay

Stage II (30 hours)

1. Sampling
   a. Take samples at each major change or at intervals determined by Stage I analysis.
   Samples should be taken at anticipated subgrade elevation.

Stage III (30 days to get results)

1. Testing
   a. AASHTO M 145 Soil Classification
   b. AASHTO T 265 Natural Moisture
   c. AASHTO T 99 - Optimum Moisture/Maximum Density (without additives)
   d. ASTM D 5102 - Unconfined compressive strength (without additives). Prepare sample cylinders according to ASTM D 5102, Method B with the following modification: Revise Section 12 to read: Cure compacted specimens in a plastic airtight moisture proof container at a temperature of 104°F for 7 days.
   e. AASHTO T 193 - CBR (without additives)
   f. ASTM D 6276 Using pH to determine Soil/Lime Proportioning. Determine the amount of lime that results in a minimum lime/soil pH of 12.4.
   g. AASHTO T 99 - Optimum Moisture/Maximum Density (with lime, lime/fly ash, etc.)
   h. ASTM D 5102 - Unconfined compressive strength (with lime, lime/fly ash, etc.). Target minimum = 125 psi. Prepare sample cylinders according to ASTM D5102, Method B with the following modification: Revise Section 12 to read: Cure compacted specimens in a plastic airtight moisture proof container at a temperature of 104°F for 7 days.
   i. AASHTO T 193 - CBR (with additives)

Stage IV (4 hours)

1. Do a confirmation inspection of exposed subgrade prior to starting stabilization.
USE GUIDELINES FOR
TYPE 1 RIGHT OF WAY FENCE WITH COMPOSITE POSTS

The above-referenced provisional specification is for the use of composite posts in the construction of Type 1, Right of Way fencing. Approval is based upon laboratory testing performed by the Laboratory Testing Section and observations of actual installations by other agencies. No field evaluations have been made of the composite post designs.

Contact NPI before using: RA-pdBulletin15@pa.gov. If at any point the District becomes concerned with the condition of the installed posts, or any problem is demonstrated with their use, the Provisional Specification will be withdrawn immediately.

Some advantages of using these posts include:
1. Can be provided in five different colors.
2. Nonconductive, for use in high voltage application areas.
3. Bending strength equal to/or greater than Schedule 40 steel pipe.
4. Corrosion resistant to water, salts, temperature changes, acid rain, petroleum products.
5. Flexural “memory”; bends twice as far as steel, returns to original position when pulling force is removed.
6. Posts are compatible with standard commercial steel or malleable iron, hardware components.

The following guidelines are to be used in the consideration of these composite posts, for Type 1 Right of Way installations:
1. Posts cannot be driven but must be set in concrete footings not less than four (4) times the diameter of the post itself. Concrete should be 6” deeper that the post. Footings should be a minimum of 42” in depth and deeper where climatic or soil conditions warrant. Post footing caps to be trowel finished with slight slope away from post.
2. Most all fabricating methods used currently in the process of aluminum, steel, wood or other materials are available for the fabrication of composite post structurals.
3. Fabricating methods may require some changes in technique or modification of equipment.
4. Detailed fabrication manuals are available from composite post manufacturers.
USE GUIDELINES FOR ROLLER COMPACTED CONCRETE

Introduction

The purpose of this guideline is to provide additional information to construction personnel about Roller Compacted Concrete (RCC) pavement that may not be covered in the Publication 408, Specifications.

As a result, of the Department’s research project RP #2010-248 Evaluation of RCC as a Shoulder Alternative and other state DOT’s research about RCC pavements, RCC has been approved as a concrete pavement, concrete shoulder, and concrete base course. For concrete pavement, RCC can be used on roadways with an ADT of less than or equal to 2,000 and a speed limit of 55 mph or less. For concrete shoulders, RCC can be used as alternate to plain cement concrete adjacent to reinforced or plain cement concrete pavements. Also, RCC can be constructed as a base course under a wearing course or surface treatment.

Product Description

RCC is a very dry concrete mix that is placed with a conventional or a high-density asphalt paver and then compacted with rollers. Essentially, RCC combines aspects of soils testing, Portland cement concrete pavement material practices and asphalt pavement construction practices.

The RCC mixture is composed of the same basic ingredients of cement, aggregate and water as conventional ready mixed concrete. Differences are the mix design will have a lower water cement ratio, may use a dense aggregate gradation with a maximum aggregate size less than 1 inch, may or may not have air entrainment, and may have limited use of admixtures. The lower water to cement ratio (as low as 0.30, but typically 0.40) produces mixtures similar to damp gravel with no slump. The lower water cement ratio mix may produce a higher compressive strength pavement than conventional concrete pavements.

Construction of the RCC pavement is similar to asphalt paving in that the RCC mixture is transported from the plant to the construction site with haul trucks. The mixture is deposited onto a conveyor or into the hopper of a conventional or a high-density asphalt paver. The paver will place the RCC at a thicker depth than the required design depth, so that after compaction the RCC is at the proper depth. After placement, various size rollers are used to obtain the final thickness, density and surface texture.

The placement width and depth of the RCC pavement will depend on the paver dimensions and size. The desired pavement thickness may be achieved by placing RCC in single or multiple lifts. RCC does not require forms, steel reinforcing, and dowel bars. Control joints may or may not be required in the RCC pavement. The Department will require control joints in shoulders to match up with the mainline concrete pavement. If joints are required, the spacing requirements should be specified on the plan sheets.

Expectations

Life expectancy depends on construction materials, environmental conditions and traffic volumes. Typical RCC pavement design life is estimated to be 20 years.
The surface of RCC is rougher and has a more open texture similar to asphalt than conventional Portland cement concrete. However, with the proper mix and placement the surface appearance of RCC can be made as aesthetically pleasing as conventional concrete. This can be achieved by mix proportions, roller pattern, or diamond grinding the final pavement surface.

**Pavement Design**

RCC can be designed to support a wide range of traffic loading conditions. PennDOT RCC design procedures are in Publication 242, *Pavement Policy Manual*, Chapter 8. National experience with RCC pavement has been on roadways with lower speeds and with heavy repetitive loadings. For these types of roads, RCC was selected because its open surface texture is similar to hot mix asphalt and the high compressive strength could withstand the traffic volume loadings. RCC typically has a rougher surface than conventional Portland Cement Concrete pavement and asphalt pavement. The ride quality results will vary depending on the equipment used during placement. Do not select RCC pavements for locations where the International Roughness Index will be measured for ride quality and payment incentives.

The locations where PennDOT has decided to allow the use of RCC are for shoulders, temporary median crossovers and roadways with an ADT ≤ 2000 (local and collector roads).

- For shoulders, RCC may be the final wearing course adjacent to reinforced or plain cement concrete pavements as specified in Publication 408, *Specifications*, Section 658.
- For temporary median crossovers, RCC may be used as final wearing course or as a base course as specified in Publication 408, *Specifications*, Section 502 and Section 323.
- For roadways with an ADT ≤ 2000 and speed limit ≤ 55 mph, RCC may be used as the final wearing course or as a base course under an asphalt wearing course or a surface treatment as specified in Publication 408, *Specifications*, Section 502 and Section 323.

If the RCC will have an exposed pavement surface and a speed limit of 35 miles per hour or greater, the pavement surface should be textured by diamond grinding. For locations where RCC is placed as a base course, the RCC pavement surface does not need diamond grinding before placing the asphalt wearing course or surface treatment. Diamond grinding, asphalt wearing courses and surface treatments should be separate construction items.

Control joints can be designated in order to initiate crack locations. For shoulders, control joints should match up to the spacing and alignment of the adjacent concrete mainline. For temporary median crossovers and roadways with an ADT ≤ 2000 and speed limit ≤ 55 mph, use spacing designated in Publication 72M, RC-27 or designate on the plans or using the following rules. For RCC pavements less than 8 inches thick, space control joints 15 feet to 20 feet and for RCC pavement 8 inches or greater multiply the RCC pavement thickness by 2.5 for the control joint spacing in feet.

The structural behavior of RCC is similar to conventional concrete. To determine pavement design thickness use current PennDOT concrete pavement design procedures in Publication 242, *Pavement Policy Manual*, Section 8.15. Design thickness can range from 4 inches to 18 inches.
During the design selection, take into consideration RCC pavement compressive strength has the potential to be from 4,000 psi to 10,000 psi.

**Construction**

**Equipment**

Due to the lower water cement ratio, RCC mixtures are stiffer and harder to mix. Use concrete mixing plants capable of producing a drier mix. For even distribution of the paste, aggregates and water, smaller batches than normal plant capacity should be produced when using a central mix tilt drum plant. The selected plant should be capable of mixing the RCC more vigorously than normal concrete at the production rate needed for the project.

RCC is transported to the placement site in haul trucks. The haul trucks should be clean and have covers to reduce the rate of evaporation of the RCC mixture and protect it from detrimental weather conditions. Trucks should be loaded in multiple piles to reduce the possibility of the RCC mixture segregating during transport. An adequate number of trucks should be on hand to supply a continuous amount of RCC mixture to the paver.

Asphalt pavers used to place the RCC mixture can be modified conventional pavers or high-density pavers. Conventional pavers should be used for single lifts or multiple lifts totaling a maximum of 6 inches. High-density pavers should be used for single lifts up to 9 inches and multiple lifts totaling a maximum of 18 inches. The paver should be equipped with a vibratory leveling screed and one or more tamping bars. Both provide preliminary compaction. In addition, the paver should be equipped with automatic grade control devices to maintain required thickness. If a high-density paver is used, less rolling will be needed for compaction.

Smooth drum vibratory rollers and rubber-tired rollers are used for compaction after the paver. They are used to achieve final compaction, proper thickness and an acceptable pavement surface. Larger smooth drum (5 to 8 tons) rollers should be used for compaction. Smaller smooth drum (less than 5 tons) and rubber-tired rollers should be used for finishing and minimizing surface marks.

At least one water truck should be on hand for water misting, it should be available to moisten the aggregate base and to reduce the rate of evaporation of the RCC pavement surface. Additional trucks may be needed if the selected method of cure is water curing. Curing should begin as soon as final compaction is complete.

**Material**

Mix designs are developed using either proportioning by evaluation of consistency tests (workability approach) or by soil compaction method. Refer to *ACI 325.10R-95 Report on Roller-Compacted Concrete Pavements, Chapter 4* or *Concrete Pavement Technology Center Guide for Roller Compacted Concrete Pavements Section 4* for further explanation of both of these methods.

At central mix tilt drum plants, this stiff mixture should be produced in smaller quantities to minimize segregation and ensure consistent mixing. Twin shaft pugmills or central mix twin shaft plants can be operated at full capacity. The mixture is transported to the job site in covered haul trucks to reduce moisture loss during transit. Verify trucks are cleaned before new material is
added for transport. Do not add water to the mixture after leaving the plant. After placement and compaction, fogging and misting of the pavement surface are acceptable to mitigate evaporation. Workability issues with the mix need to be discussed with the plant for admixture changes. Retarding admixtures can be utilized for maintaining moisture contents in the mix during longer haul times, or during hot, dry, and windy days to mitigate evaporation.

A test section of the material should be completed prior to full production and placement to verify the process. The RCC mix must be dry enough to support the weight of large compaction equipment, yet wet enough to allow for an even distribution of the cement paste throughout the mix during production and placement operations. During the test section placement, the contractor and inspector will learn if the plant will be able to produce a consistent mix, if the equipment will place the material at the required density and if the equipment will be able to achieve the proper thickness. The optimum rolling pattern can be established as well as determining an acceptable surface finish.

An approved mix design should be on file and in the inspector’s possession before placement.

**Testing**

If the soil compaction method is used for the RCC mix design, the standard test ASTM D 1557 *Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort* should be used to determine the optimum moisture and density of the mix.

To determine the compressive strength of the RCC mix use ASTM C 1435 *Standard Practice for Molding Roller-Compacted Concrete in Cylinder Molds using a Vibratory Hammer* for molding the test specimens. Cylinder molds need to be placed in rigid steel sleeves during molding for support. The RCC material lifts are consolidated using a vibratory hammer drill, not a tamping rod. The hardened and cured cylinders are tested using PTM 604 *Compressive Strength of Molded Concrete Cylinders*.

RCC mixtures are not tested for slump or air content.

After placement and rolling, the RCC pavement is tested for density using ASTM C 1040 *Standard Test Method for In-place Density of Unhardened and Hardened Concrete including Roller Compacted Concrete, by Nuclear Methods*.

**Placement**

Nationally, RCC pavements have been placed on various subgrade and subbase courses, ranging from existing surfaces with no improvements, rehabilitated subgrades and subbases using full depth reclamation, and newly constructed subgrades and subbases. All options have had successful results. For Department projects, RCC will be placed on a prepared subgrade and subbase course. The acceptable subgrade and subbase for the project location should be determined during the design phase of the project. The subgrade and subbase courses selected should be able to support the compaction of the RCC pavement during construction. The subgrade and subbase should be a separate construction items. Do not place RCC on a frozen ground or foundation.

After the RCC mixture is delivered to the site, it is deposited onto a conveyor or directly into the asphalt paver hopper. Some modifications may have been done to the paver hopper size to adjust
to using a stiff cement concrete mixture instead of an asphalt paving mixture. Having a shoe on the paver is recommended to improve the outside edge setup and to form a tapered safety edge. The paver should have automatic grade control devices, and a minimum compaction system of at least one tamping bar and a vibratory screed. The type of paver used during placement will establish the initial compaction of the RCC pavement and determine the size of vibratory rollers needed to achieve the final thickness, density, and surface appearance. The type of rollers and size required are specified in Pub 408 Section 502.3(d) 4. The sequence and number of roller passes for Pub 408 Section 502.3(h) should be established during the test section placement.

RCC can be placed in more than one lift. Multiple lifts should be placed with equal thicknesses to achieve the final thickness. For example, a 10 inch pavement would be placed with two 5 inch lifts. The first lift may be initially placed at 5.5 inches and compacted to 5 inches, before placement of the second lift. Lifts can range from 4 inches to 9 inches. The initial thickness for each lift can be 10 to 25 percent more than the final thickness of each lift to allow for compaction, the percentage can be determined during the placement of the test section to accommodate each mixture during placement. The weather and mixture conditions will influence the set up time of RCC pavement.

For some locations, RCC placement will have vertical and horizontal joints. Roller patterns for joints are described best in ACI 325.10R-95 Report on Roller-Compacted Concrete Pavements, Chapter 7.6 and Concrete Pavement Technology Center Guide for Roller Compacted Concrete Pavements Section 7. The time of placement between the lift materials determines if the vertical and horizontal joints are fresh or cold. For a fresh joint the RCC adjoining material lifts or vertical joints are placed within 60 minutes, while a cold joint the adjoining RCC material is placed together after 60 minutes. The standard time of 60 minutes may be adjusted depending on if the mix retarding admixtures are slowing the set time or if the ambient weather conditions are accelerating the set time. For placement requirements at these joint locations, follow the requirements in the Publication 408, Specifications.

RCC pavement surfaces are not smooth with horizontal or longitudinal tining like conventional concrete. The paver and roller combination used during placement will determine the outcome of the final pavement surface. Maintaining a continuous supply of RCC material, proper mix moisture and a steady forward movement of the paver will prevent tearing of the surface during placement. During the test section placement, establish and determine the best combination of roller size and pattern for final compaction, for removing surface tears and cracks during placement and for providing a tight knit pavement surface. A tight knit surface is smooth, does not have rips tears or cracks. The paste and aggregate are interlocked giving the surface a similar appearance to an asphalt wearing course.

Layout control joints, as indicated on the construction plans, saw cut to 1/4 depth of the compacted RCC pavement. Saw cut pavement, behind the rolling operation as soon as possible to prevent random cracking, use early entry saws set to the manufacturer's recommendations. Saw cutting should not cause raveling or other damage to the pavement; begin sawing no later than 18 hours after RCC placement.

Some of the benefits of RCC are that it can be constructed quicker than conventional concrete. It requires less labor because formwork is not required and it does not need any reinforcement,
dowels, tie rods or steel. RCC pavement sets up and obtains strength quicker than conventional concrete.

Closing

These guidelines give general information about pavement design and construction of RCC pavement. If there are any questions, please contact the New Products and Innovation Section, Bureau of Project Delivery at 717-787-7150.
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APPENDIX C
TRAFFIC CONTROL
PREVAILING WAGE COVERAGE

Application of Davis-Bacon labor standards on Federal-aid (Davis-Bacon) projects – Coverage Principles

The Davis-Bacon and related Acts (DBRA) require all contractors and subcontractors performing on covered contracts to pay laborers and mechanics employed on the site of the work at least the wage rates (including fringe benefits) determined to be prevailing for corresponding classes of workers engaged on similar projects in the locality.

The prevailing wage provisions of these statutes do not customarily apply to the employees of bona fide material suppliers serving the general public where those companies only manufacture and furnish materials, equipment, or supplies to a work site. Consequently, whether the Davis-Bacon labor standards apply to employees of a traffic control company and the extent of coverage depend on whether the company is performing on the contract as a subcontractor or material supplier.

As a general matter, for Davis-Bacon purposes, a subcontractor is a company that undertakes part of the prime contract’s requirements. A traffic control company’s status as a subcontractor or material supplier is therefore dependent on what is actually being required of the company in relation to the contract and is determined after an examination of the facts of a particular case. Pertinent facts include the specific requirements of the prime contract, the work the company agrees to perform, and the work the company actually performs on the contract. (It is immaterial for purposes of determining a company’s status whether the company has a written subcontract, a rental agreement, or any other arrangement with the prime contractor or a subcontractor.)

While a definitive ruling concerning a specific case may require knowledge of the specifics of the case, in general if a traffic company performs any more than the delivery of the equipment and routine maintenance of the equipment, the company is performing part of the construction contract and is, for Davis-Bacon purposes, a subcontractor.

For example, employees of traffic service companies which operate as subcontractors on DBRA projects to set up and service traffic control devices (e.g., barricades, directional signs, lights, arrowboards, etc.) are generally covered by DBRA.

Also, employees of a material supplier who are required to perform more than an incidental amount of construction work in any workweek at the site of work would be covered by the Davis-Bacon labor standards and due the applicable wage rate for the classification of work performed on the site.

For enforcement purposes under U.S. Department of Labor guidance, an employee who spends more than 20 percent of their time in a workweek engaged in such activities on the
site would be covered by Davis-Bacon contract clause requirements for all time spent on the site during that workweek.

However, traffic service companies which rent equipment to the prime contractor and perform only incidental functions at the site in connection with delivery of the equipment are regarded as material suppliers whose employees would not be subject to DBRA unless particular employees spend a substantial amount of time (20% or more) in the workweek on the covered site or sites.

Applicability of Davis-Bacon to workers on the “site of the work” and U.S. Department of Labor policy regarding material delivery truck drivers

Federal Davis-Bacon prevailing wage requirements apply to laborers and mechanics employed by a contractor or subcontractor on the “site of the work”.

The regulatory definition of the term “site of the work” and other regulatory definitions that apply to the administration and enforcement of the DBRA are set forth in the applicable U.S. Department of Labor regulations in Title 29 of the Code of Federal Regulations, Subpart A. The applicable definition of the term “site of the work” is stated in section 5.2(l).

In light of that definition and the definition of “construction …” in section 5.2(j), off-site transportation of materials supplies, tools, etc., is not covered unless such transportation occurs between the construction work site and a dedicated facility located “adjacent or virtually adjacent” to the work site.

Three U.S. appellate court decisions in the 1990’s led DOL to reexamine and revise the regulatory definitions of the term “site of the work” and of the term “construction, prosecution, completion, or repair” as it applies to transportation. As a result of those court rulings, revised regulatory definitions issued in 2000 addressed the application of Davis-Bacon prevailing wage requirements to material delivery truck drivers. As stated in the 2000 final rule published in the Federal Register on December 20, 2000:

As a practical matter, since generally the great bulk of the time spent by material delivery truck drivers is off-site beyond the scope of Davis-Bacon coverage, while the time spent on-site is relatively brief, DOL chooses to use a rule of reason and will not apply the Act’s prevailing wage requirements with respect to the amount of time spent on-site, unless it is more than “de minimis.” Under this policy, the Department does not assert coverage for material delivery truck drivers who come onto the site of the work for only a few minutes at a time merely to drop off construction materials. 65 FR 80276.