Guardrail (GRL) Quarterly Technical Committee Conference Call
Wednesday, December 21, 2016 10:00AM – 11:00AM (EST)

Agenda

Committee Name: NTPEP-Technical Committee on Guardrail: List of Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Email Address</th>
<th>Agency Name</th>
<th>Designation</th>
<th>Member Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotherham, Brad B.</td>
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<td>Gregory Corporation</td>
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<td>Price, David</td>
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<td>RG Steel</td>
<td>Other</td>
<td>Non-Voting</td>
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<tr>
<td>Van Ness, Brian</td>
<td><a href="mailto:brian.vanness@trin.net">brian.vanness@trin.net</a></td>
<td>Trinity Industries, Inc.</td>
<td>Other</td>
<td>Non-Voting</td>
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Randy Pace, Ryan Fragapane, Johnathan Sirianni, Clark Dorr (RG Steel), Katheryn Malusky

1) Current Work Plan Update – (Brad):
   a) Where we left it last time with the following issues:
      i) Section 4.2.2.2. – Frequency of inspection for galv. checks at 10%. This is beyond the ASTM A123 frequency. CONCLUSION: Will discuss this further and make a decision which way to go Randy: Definition of a “lot” drives this. Brian: We check 3 pieces per dip. Dip may not be a lot. A123 has closer to 2%. Joseph: Can go with a number of
pieces. Two pieces per dip? Should we not stick to the standard (A123)? **PROPOSAL:** Chairs, Sarc, and Randy will rewrite to match spec. and circulate to Committee for comment. This will have to be a balloted change.

ii) **Adherence of coating required at 10% frequency. Which coatings and how is it to be accomplished?** AASHTO M180 requires “Stout Knife” for galvanizing. **CONCLUSION:** Will discuss this further and make a decision which way to go Brian: 8.3 of spec. does not give sample size. Should we look at the same frequency as the coating thickness? **DOTs: PROPOSAL:** Will be rewritten to show the same frequency as the coating thickness and circulated through the Committee. This will have to be a balloted change.

2) GRL Audits (Sarc.):
   a) Application Process: **Opened Nov. 17 and closes February 24th 2017. Mfg. should get with Ryan on any questions. Log on to: DATA.NTPEP.org and register. Once registered you can apply for an audit.**
   b) Schedule Audits **After Mfgs. apply and get QSM reviewed and accepted.**
   c) Perform Audits: **Will be scheduled during the 2017 cycle**
   d) **QSM manual review: Sarc. to resend checklist with the Minutes**

3) Annual Meeting Registration – (Brad):
   a) Registration: **Please remember to register for the meeting - Sunday, March 12th through Thursday, March 16th, 2017 Where: Seaport Hotel & World Trade Center, Boston, Massachusetts (GRL meeting is on Weds., March 15th 9:00-10:00AM)**

4) Lab to Perform Testing of Samples (Sarc.): **Have a Lab (NCDOT). Cost for Audit:**
   - Quality Management System Review $1,000.00
   - Website and Document Management System Fee $1,500.00
   - Audit Fee $3,000.00
   - Total (Year 1) $5,500.00
   - Will be $5,000 per year in years 2-5

5) 2017 Mock Audits (Sarc.):
   a) Audit Documents - **nearing completion of Working Draft of the Audit documents**
   b) **Mock Audit – Discussion:** Mock Audit will be planned for some time in Jan. in a Gregory plant in Ohio. Trinity offered Lima, OH plant for hot-dipped along with RG Steel location in Pulaski, PA for off-site galvanizing example. **CONCLUSION:** Mock Audits will be conducted in Canton & Lima, OH along with Pulaski, PA in Late January/early February (Jan. 30,31 Feb. 1-3)

6) Open Discussion:
   a) **Annual Meeting Topics/Presentations need to be submitted to Sarc. before January 15th.**

7) **Next conference call (Brad) February Tues. 21st 10:00AM (EST)- tentatively**
## QSM Review General Requirements

<table>
<thead>
<tr>
<th>ITEM</th>
<th>REQUIREMENTS</th>
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<tr>
<td><strong>Current Org Chart &amp; Policies</strong></td>
<td>Indicates the line of authority from the QC testing technicians to the QC manager, ensures that QC testing technicians have the authority to require corrective action, and ensure that the QC manager is independent of production management and of equal status.</td>
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<td><strong>Quality Mission Statement</strong></td>
<td>Describes the Manufacturer’s mission and be endorsed by the Manufacturer’s Chief Executive Officer.</td>
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<td><strong>Position Descriptions</strong></td>
<td>Describes the duties associated with each position included on the organization chart. These descriptions will also include the required skills, education, and experience associated with each specific position and indicate the supervision exercised and received.</td>
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</table>
| **Quality Control Personnel Training and Competency Evaluation** | Ensures that:  
- Manufacturer’s QC manager meets the requirements established by the Manufacturer;  
- QC manager qualifies technicians performing QC testing;  
- QC personnel are familiar with the tests they perform; and  
- QC personnel have sufficient authority to assure that corrective actions are carried out when necessary.  
Describes the Manufacturer’s QC technician qualification program. As a minimum the program will include:  
- Training in the applicable AASHTO/ASTM Designation Standard(s), or Manufacturer test procedures, operation of equipment, the procedures to be used, calculations required, and reporting;  
- Demonstration of competency in each required test;  
- Demonstration of ability to properly document test results;  
- Annual auditing of each technician’s ability to satisfactorily perform the required tests; and  
- Retraining when a test method is revised.  
Training and competency reviews documented in such a way that compliance with the requirements for the initial and updated training and the initial and annual competency reviews can be provided for each technician and for each test the technician performs. The documentation will include the date of the training or competency review and contain the handwritten signature or initials of the trainer/reviewer and the technician. This documentation will be retained, for a minimum period of 5 years, at each location where quality control testing occurs, and will be made available to NTPEP for review upon request. |
| **Customer Feedback** | Describes the customer feedback system. This procedure will indicate the following:  
- What position(s) or employee(s) are responsible for customer feedback;  
- Methods used to solicit, evaluate and respond to customer feedback;  
- Conditions under which corrective action will be implemented. |
| **Internal Quality Audits of Each Facility Producing Product(s)** | Includes a description of the procedures used to conduct internal audits. |
| **Management Reviews of Each Facility Producing Product(s)** | Includes written procedures for performing management reviews. The procedures should indicate the following:  
- What position(s) or employee(s) are responsible for ensuring that management reviews are performed;  
- The frequency, scope and criteria used for performing the management review(s); and  
- Conditions under which corrective action will be implemented. |
| **Corrective Action Procedures** | Includes procedures describing the actions taken when failures or nonconformities exist in any of the following areas: product, equipment, internal and external audits, and management reviews. These procedures should indicate what position(s) or employee(s) are responsible for implementing corrective action and the methods used to identify and implement corrective action(s). |
| **Sampling Plan for Quality Control and Quality Assurance** | Includes procedures describing sampling for quality control and quality assurance. These procedures should include the following details:  
- Number and frequency of samples taken;  
- Sample selection process, including sampling required for retesting;  
- The position(s) or employee(s) responsible for sampling; and  
- Required sample preparation. |
| **Testing Plan for Quality Control and Quality Assurance** | Includes procedures describing testing for quality control and quality assurance. These procedures should include the following details:  
- Number of samples required for testing;  
- Tests required to be performed;  
- The position(s) or employee(s) responsible for testing;  
- How test results are interpreted; and  
- The position(s) or employee(s) responsible for approving test results; and |
| **Retesting Plan for Quality Control and Quality Assurance** | Includes procedures describing retesting for quality control and quality assurance. These procedures should include the following details:  
- When retesting is performed;  
- Retest sampling requirements;  
- Special retesting conditions;  
- Criteria for acceptance of test results; and  
- Instructions for reporting original test results and retest results. |
| **A List of Physical and Chemical Test Equipment** | Includes a list(s) giving a general description of physical and chemical test equipment requiring standardization or checks. The following information will be included for each piece of equipment:  
- Interval between standardization or check;  
- Reference to standardization or check procedure; and  
- Location of standardization or check record. |
| **Lab Equipment Plan for Calibrating and Verifying Equipment** | Includes written procedures for ensuring that equipment calibrations and verifications are performed for all required equipment at the specified intervals (Ref.: Annex A.1). Where the referenced specifications do not state a calibration or verification frequency, a minimum of annually will apply. These procedures should indicate the following:  
- Position(s) or employee(s) responsible for calibration and verification activities;  
- Procedures for handling equipment which is newly acquired, removed from service, or does not meet accuracy requirements;  
- In-house equipment calibration and verification procedures, when they cannot be referenced in applicable standards; and  
- Certificates or other documents that establish traceability of in-house equipment or reference standards used for calibration and verification. |
| **Recording and Maintaining Product Information and Test Results** | Includes written procedures used to produce, check and amend test reports. These procedures should include the following details:  
- Identify position(s) or employee(s) responsible for maintaining testing information;  
- Describe distribution of testing information;  
- Identify location of testing information; and  
- Process for maintaining the above referenced information for a minimum period of 5 years and how they are made available to NTPEP for review. |
| **Handling Raw Material and Finished Product(s)** | Includes a written procedure for documenting origin of materials. It will also include the records retention for all documentation (certifications, test reports, worksheets, etc.) associated with materials, testing, and inspections. NTPEP Committee Work Plans will list the minimum retention time, but where none is shown, 5 years will be required.  
*and where applicable:*  
The QMS will include a written procedure for documenting traceability of steel and iron materials to comply with “Buy America” requirements. |
| **Quality Control Inspection** | Defines the quality control tests, the method for random sampling, the size of the sample, and the heat/lot/batch/etc. quantity for production facility quality control sampling and testing. The QMS will also include an example of a quality control test report form. The QMS will reference the applicable AASHTO/ASTM Designation Standard(s), or in house procedures and calibrations. The QMS will describe any Manufacturer procedure used.  
Includes a description of the Manufacturer’s statistical process control plan. The plan will use methods such as statistical control charts to monitor production facility quality control test results for the purpose of identifying trends and being able to make production adjustments as necessary. The plan will monitor each production plant separately and total Manufacturer product quality trends.  
Ensures that:  
- Each sample selected for quality control inspection and testing is designated with a sample control number for record keeping and traceability;  
- The test report for each sample identifies the plant, date, and heat/lot/batch/etc. designation; and  
- Quality control test reports are maintained and available for review for 5 years.  
Ensures that QC testing facility:
- Maintains current versions of all applicable AASHTO/ASTM Designation Standard(s), and Company test procedures for all tests performed and a current version of the Company’s QMS documentation;
- Adequately houses and allows proper operation of all required testing equipment; and
- Maintains records of all NTPEP reviews and actions taken to resolve any noted deficiencies.
- Performs calibrations and verifications on testing equipment in accordance with the Manufacturer’s recommendations, but at least at the specified intervals (Ref.: Annex A.1). These activities will be performed by the individuals who routinely use the equipment and are familiar with its use or by technicians of an accredited calibration/verification facility familiar with the equipment.

Describes in detail the requirements for the QC test facility(ies) and includes, as a minimum, a description of how the Manufacturer will cover QC responsibilities at all times, including when the QC Manager is away from the plant for any reason.

| Labeling and Storage of Finished Product(s) | Includes a written procedure describing how finished product is labeled, packaged and stored. It will also include an explanation of the product markings used by the Manufacturer. |
| Control of Nonconforming Product(s) | Includes written procedures describing the actions to take when product does not conform to the specification requirements. These procedures should include the following details:
  - What position(s) or employee(s) is responsible for making decisions related to nonconforming product;
  - How nonconforming product is identified, labeled and segregated;
  - What happens in the event it is shipped;
  - What is done with the nonconforming product;
  - Who is responsible for taking corrective action
  - How test reports clearly identify the deficiencies;
  - How products produced subsequent to the previous testing, are identified and quarantined pending investigation of the failure; and
  - The process for obtaining and testing check samples. |
NTPEP Committee Work Plan for
Evaluation of Highway Guardrail Manufacturers

NTPEP Designation: [GRL] (2017)
1. SCOPE

1.1 The National Transportation Product Evaluation Program (NTPEP) serves the member departments of the American Association of State Highway and Transportation Officials (AASHTO).

1.2 This NTPEP Committee Work Plan (hereafter referred to as the “work plan”) covers the requirements, auditing and testing criteria for the NTPEP evaluation of Highway Guardrail Manufacturers. This work plan is intended to be utilized with NTPEP document SP01, Qualification of Highway Product Manufacturers Through the Use of NTPEP Audits, to provide a comprehensive audit program for Highway Guardrail.

1.3 The purpose of the program is to provide audit information from manufacturing plants that comply with the quality control and product testing requirements of this program. AASHTO member departments can then use this information in their quality assurance program for Manufacturer/product acceptance. This may include utilizing this information to establish a qualified Manufacturer list, a qualified products list, or both. By participating in this program, the Manufacturer agrees to produce product that meets or exceeds the requirements in applicable AASHTO/ASTM Designation Standard(s) and follow the minimum quality control provisions of their quality program.

1.4 Testing of the Manufacturer’s product(s) against the applicable standard(s) and auditing the Manufacturer’s in-plant quality control facilities and procedures are included in this program. The Manufacturer agrees that NTPEP may use the test results and audit reports along with other relevant information for review and verification of compliance with this NTPEP program and the applicable AASHTO/ASTM Designation Standard(s).

1.5 This standard practice may involve hazardous materials, operations, and equipment. It does not purport to address all safety problems associated with its use. It is the responsibility of the user of this standard practice to establish the appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. REFERENCED DOCUMENTS

2.1 AASHTO/ASTM Standards:
- AASHTO M 111 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- AASHTO M 180 Corrugated Sheet Steel Beams for Highway Guardrail
- AASHTO M 232 Zinc Coating (Hot-Dip) on Iron and Steel
- AASHTO M 298 Coatings of Zinc Mechanically Deposited on Iron and Steel
- AASHTO M 30 Zinc-Coated Steel Wire Rope and Fittings for Highway Guardrail
- AASHTO T 65 Mass of Coating on Iron and Steel Articles with Zinc
- AASHTO T 244 Mechanical Testing of Steel Products Controlled Environment
- ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated or Zinc-Iron Alloy-Coated by the Hot-Dip Process
3. TERMINOLOGY


3.2 Auditor – A NTPEP representative to review submittals, coordinate auditing and testing, and report audit findings.

3.3 Audits – Documented reviews of a Manufacturer’s plant and associated test facilities by a NTPEP Auditor and any AASHTO member department co-auditor that wishes to participate.

3.4 Independent Laboratory – An outside laboratory that performs raw material or finished product tests for the Manufacturer. NTPEP reserves the right to audit the independent laboratory for the tests that are being performed for the Manufacturer.

3.5 Initial Audit – The first audit conducted at a Manufacturer, which has not had an audit conducted by another independent agency.

3.6 Lot – The amount of product produced per type per machine per production run or as described in AASHTO M180.

3.7 Manufacturer – An individual producer of guardrail. The corporate name and physical location will be included in the NTPEP program listings.

3.8 NTPEP Designated Laboratory – A laboratory qualified by NTPEP to perform the specific tests as outlined in the Standard Practice and has an on-site qualified technician(s) and equipment necessary to perform the tests per the applicable AASHTO/ASTM Designation Standard(s).

3.9 NTPEP Highway Guardrail Technical Committee – The NTPEP Technical Committee that includes member departments of the AASHTO and members of Industry. The members are volunteers who are interested in the advancement of the product. The Technical Committee appoints a Chair and a Vice Chair.

3.10 Quality Management System (QMS) – The documented process used by the Manufacturer for quality control/quality assurance.

3.11 Testing of Products – Sample(s) selected from the manufacturing line or stockyard to be tested by the NTPEP designated laboratory. The results are shown for use by the AASHTO member department.

3.12 Zinc Bath Lot – A zinc bath lot for a manufacturing facility is the molten zinc in the dipping bath at any given time.

3.13 Zinc Lot – A lot of zinc for a manufacturing facility is a railcar or truckload.

Additional terminology can be found in applicable AASHTO/ASTM Designation Standard(s) as well as the NTPEP Standard Practice SP01.
4. ADDITIONAL QUALITY MANAGEMENT SYSTEM (QMS) REQUIREMENTS

4.1 The QMS will include a written procedure for documenting traceability of steel and iron materials to comply with “Buy America” requirements.

*Note 1 - Buy America requirements may vary from state to state and it is the responsibility of the manufacturer to comply with the requirements for each state transportation agency to whom the manufacturer provides product.*

4.1.1 This procedure will indicate the individual(s) responsible for implementing and monitoring this procedure and how the steel items are identified and tracked through each manufacturing step. In addition, the QMS will include how foreign steel products (if used) are identified, tracked and documented for the manufacturing steps performed by the Manufacturer.

4.1.2 Additionally, the procedure will include a description of the processes and examples of the documentation used to prove compliance with “Buy America” requirements of the furnished products.

4.2 Handling Raw Materials and Finished Product - The QMS will include a written procedure for handling raw materials and finished product.

4.2.1 Metal – Metal delivered to the guardrail manufacturer’s facility must be marked in accordance with the referenced specification. The identity of the metal must be traceable throughout the manufacturing process. The manufacturer must maintain mill test reports and documentation for all metal.

4.2.1.1 The highway guardrail manufacturer must maintain all documentation (mill test reports, certifications, etc.) for the steel purchased and used in highway guardrail.

4.2.2 Coatings – For manufacturers performing their own coatings, the QMS will include origin, traceability and testing for this process.

4.2.2.1 The highway guardrail manufacturer must maintain all documentation for the zinc for galvanizing and any additional coating (paint, powder, etc.) materials purchased for use in highway guardrail. This procedure will indicate the responsible individuals and how the coating materials are identified and tracked through each manufacturing step.

4.2.2.2 In addition, the QMS will describe the Manufacturer’s inspection process to conduct inspections of the steel raw materials and coated finished products in accordance with AASHTO M 180 and M 30. The QMS will require the Manufacturer to perform at least the following items of inspections on a continuous basis during production, and to record the results of such inspections at the minimum frequency indicated in Table 1.

<table>
<thead>
<tr>
<th>Inspection</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Coating thickness measurements on galvanized product (per ASTM A123)</td>
<td>10 % random check per dip (batch dip)</td>
</tr>
<tr>
<td></td>
<td>Each coil (continuous galvanization)</td>
</tr>
<tr>
<td>Adherence of Coating</td>
<td>10 % of production</td>
</tr>
<tr>
<td>Surface Finish of Final Product - visual</td>
<td>10 % of production</td>
</tr>
<tr>
<td>Repair of damaged coating - surface preparation, materials, application,</td>
<td>100 % of production</td>
</tr>
<tr>
<td>thickness verification</td>
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NTPEP 2016  GRL -3  AASHTO
4.3  
**Quality Control Inspection** - The QMS will include an example of all quality control test reporting forms and reference the AASHTO, ASTM, or in house procedures utilized for inspections.

4.3.1  
The QMS will describe the calibration/verification methods (specification, Manufacturer’s procedure, etc.) used to maintain all inspection equipment. The methods will include, at a minimum: types of standards used, frequency, examples of documentation used to record results, and procedures utilized.

4.3.2  
The QMS will also describe the Manufacturer’s inspection process and forms used to conduct inspections of the steel raw materials and finished products in accordance with AASHTO M 180 and M 30. The QMS will require the Manufacturer to perform at least the following items of inspections on a continuous basis during production, and to record the results of such inspections at the minimum frequency indicated in Table 2.

**Table 2: Production Inspection Requirements**

<table>
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<tr>
<th>Inspection</th>
<th>Frequency</th>
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<tr>
<td>Steel sheet or coil thickness (per AASHTO M 180)</td>
<td>Two per heat</td>
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<tr>
<td>Workmanship (per AASHTO M 180 and M 30)</td>
<td>Continuous, recorded once per shift</td>
</tr>
<tr>
<td>Marking (per AASHTO M 180 and M 30)</td>
<td>Once per shift</td>
</tr>
<tr>
<td>Product dimensions*</td>
<td>Once per production shift per product</td>
</tr>
<tr>
<td>Hole Placement (Corrugated Sheet)</td>
<td>Once per production shift per product</td>
</tr>
<tr>
<td>Surface Finish - visual</td>
<td>10% of production</td>
</tr>
<tr>
<td>Construction (Wire Rope)</td>
<td>Once per shift per machine</td>
</tr>
<tr>
<td>Joints and Splicing (Wire Rope)</td>
<td>Once per shift per product</td>
</tr>
</tbody>
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*Product dimension checks should be performed on rail, backup plates, flared ends, buffer ends, etc. Dimensions need not be verified for installation hardware such as nuts, bolts, and washers.

4.4  
**Labeling and Storage of Finished Product** - The QMS will include a written procedure describing how finished products are labeled, packaged, and stored to include:

- The Manufacturer’s method for permanently marking the guardrail components in accordance with the minimum requirements of AASHTO M 180 and any customer-specific requirements;
- Detailed explanation of any coding used to mark the products; and
- The procedures used to ensure that product handling, storage, and shipping processes will not adversely affect the material composition, characteristics, or product quality.

5.  
**NTPEP ON-SITE AUDITS**

5.1  
Quality Control Testing Evaluation - Each Manufacturer will be asked to demonstrate the quality control tests they perform as stated in their QMS. While performing each test, the most current AASHTO or ASTM test methods will be referenced. The equipment used for each test will be examined and applicable records will be reviewed. The auditor will also select three random weeks (within the previous 12 months) of test reports for raw materials and finished guardrail produced in accordance with AASHTO M 180 and M 30 to review.

5.1.1  
**Testing of Products** – The auditor(s) will select samples of guardrail materials available at the time of the audit for testing in accordance with SP01, Section 8, “Annual Product Conformance Testing”. The auditor(s) will select samples from the production lots available during the audit. All sampling and testing will be in accordance with the applicable AASHTO/ASTM Designation Standard(s). The samples will be for testing at the NTPEP Designated Laboratory.
6. **ANNUAL PRODUCT CONFORMANCE TESTING**

6.1.1 The NTPEP Auditor will select samples during each annual Manufacturer audit to be tested by the NTPEP Designated Laboratory.

6.1.2 Each sample will consist of material of suitable size for testing (and to provide additional test specimens for failure verification) in accordance with AASHTO M 180 and M 30.

6.1.3 Product conformance tests to be conducted are shown in Table 3.

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<thead>
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<th>Test Property</th>
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<td><strong>Corrugated Sheet Steel Beams</strong></td>
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<td>Coatings:</td>
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<tr>
<td>• Galvanizing</td>
<td>• A653, M 111, M 180</td>
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<td>• Paint</td>
<td>• M 180</td>
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<td>Base Metal for Beams:</td>
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<tr>
<td>• Yield Point</td>
<td>M 180</td>
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<td>• Tensile Strength</td>
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<td>• Elongation</td>
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<tr>
<td>Bolts and Nuts</td>
<td>A307, M 180, M 232, M 298</td>
</tr>
<tr>
<td>Washers and Backup Plates</td>
<td>M 232</td>
</tr>
<tr>
<td>End or Buffer Sections:</td>
<td></td>
</tr>
<tr>
<td>• Yield Point</td>
<td>M 180</td>
</tr>
<tr>
<td>• Tensile Strength</td>
<td></td>
</tr>
<tr>
<td><strong>Zinc-Coated Steel Wire Rope</strong></td>
<td></td>
</tr>
<tr>
<td>Base Metal for Wire Rope</td>
<td>M 30, A741</td>
</tr>
<tr>
<td>Zinc</td>
<td>B6</td>
</tr>
<tr>
<td>Zinc-Coated Wire Rope:</td>
<td></td>
</tr>
<tr>
<td>• Breaking Strength</td>
<td>• M 30/T 244</td>
</tr>
<tr>
<td>• Construction</td>
<td>• M 30</td>
</tr>
<tr>
<td>• Ductility</td>
<td>• M 30</td>
</tr>
<tr>
<td>• Mass of Zinc Coating</td>
<td>• M 30/T 65</td>
</tr>
<tr>
<td>• Adherence of Coating</td>
<td>• M 30</td>
</tr>
<tr>
<td>Fittings:</td>
<td></td>
</tr>
<tr>
<td>• Coatings</td>
<td>M 111 or M 232</td>
</tr>
</tbody>
</table>

6.2 NTPEP Designated Laboratory Samples:

6.2.1 The NTPEP Auditor will instruct the Manufacturer on the proper labeling of the NTPEP Designated Laboratory samples. The Manufacturer will send (freight paid by the Manufacturer) the samples to the NTPEP Designated Laboratory for testing.

6.2.2 After the NTPEP Manufacturing Auditor posts the results from the NTPEP Designated Laboratory testing, the Manufacturer is provided the opportunity to offer an explanation of any significant differences between the NTPEP designated laboratory and Manufacturer test results, including any corrective actions found necessary in the manufacturing process or testing procedures. The manufacturer will notify NTPEP within 15 calendar days of receiving results if they intend to offer an explanation.
6.3  Retest Samples:

6.3.1  Guardrail materials (of a suitable size for testing and to provide additional test specimens for failure verification) will be obtained and sent to the NTPEP Designated Laboratory for use in the testing and confirmation of any failing test results.

6.4  If during the testing portion of the audit or during the NTPEP Designated Laboratory testing at least one tested sample fails to meet specification requirements or when the Manufacturer is found during an audit to have neglected one or more aspects of the governing QMS during manufacturing, the nonconformance will be addressed as outlined in SP01.

6.5  Shipment of Samples:

6.5.1  The Manufacturer is responsible for the shipment of the guardrail samples. Proper care (packaging, identification, tracking, etc.) to limit damage or loss of the sample shipment is the responsibility of the Manufacturer. Loss or damage of the samples will require re-sampling and testing at the Manufacturer’s expense.

6.6  Testing of Samples:

6.6.1  The NTPEP Designated Laboratory will complete all testing on the samples and send test results to AASHTO within 45 days of the receipt of the samples.

7.  FINISHED PRODUCT DOCUMENTATION

7.1  Documentation used to prove compliance with “Buy America” shall be included with the finished products as required by the specifying DOT.

8.  KEYWORDS

8.1  NTPEP; highway guardrail; Manufacturer
X1. **NTPEP QA PROGRAM FOR HIGHWAY GUARDRAIL - PARTICIPANT RESPONSIBILITIES**

X1.1. **Background:** This section summarizes the responsibilities for the different parties.

X1.2. **Manufacturers’ Responsibilities:** Participating Manufacturers will develop and implement a Quality Management System (QMS) outlining their quality control testing program for production of highway guardrail. In addition, the manual will address the following general program, testing facilities, personnel qualification, and record keeping requirements.

X1.2.1. **General Requirements:**

X1.2.1.1. Each Manufacturer will be prepared to accommodate Manufacturer and testing facility audits (scheduled and follow-up) by NTPEP representatives when submitting its initial QMS, or updated QMS in the case of the annual re-evaluation, to NTPEP.

X1.2.1.2. Each Manufacturer’s facility is responsible for ensuring continuous compliance with all NTPEP quality control requirements. Failure to do so may result in revocation of the listing and certificate on the NTPEP website.

X1.2.2. **Testing Facilities:**

X1.2.2.1. The Manufacturer’s quality control manager will be responsible for quality control testing at all facilities and will assure that all sampling and testing is done by qualified technicians.

X1.2.2.2. The testing facilities will maintain current versions of all AASHTO, ASTM, and Manufacturer test procedures for all tests performed and a current version of the Manufacturer’s QMS.

X1.2.2.3. The facilities will adequately house and allow proper operation of all required testing equipment.

X1.2.2.4. The testing equipment will be calibrated/verified/checked in accordance with the Manufacturer’s recommendations at least to the specified intervals (Ref.: SP01, Annex A.1) by personnel customarily involved in such work as documented in the QMS.

X1.2.2.5. The testing facilities will maintain records of all test results and all NTPEP reviews and actions taken to resolve any noted deficiencies.

X1.2.2.6. Records of equipment calibration and verification will be maintained and available to NTPEP and AASHTO member departments upon request.

X1.2.3. **Testing Personnel**

X1.2.3.1. The Manufacturer’s quality control manager will meet the requirements established by the Manufacturer for the position.

X1.2.3.2. Documentation will show that the technician has been trained in the test procedures to be performed.

X1.2.3.3. Documentation will show that the technician has satisfactorily demonstrated competency to perform the required testing and that this demonstration is repeated annually.
X1.2.3.4. Documentation will show that technician training has been updated when revisions in test methods occur.

X1.2.3.5. Review of reports will show the technician can properly perform test procedure calculations and properly record information.

X1.2.3.6. Technicians-in-training may perform sampling and testing at qualified facilities provided they are working under the direct supervision of a technician fully qualified under NTPEP requirements.

X1.2.3.7. If requested, technicians will perform sampling and testing for NTPEP observers.

X1.2.4. **Testing Documentation**

X1.2.4.1. All quality control test results for highway guardrail will be documented in reports of the same format as the sample forms submitted in the QMS and will be kept for a minimum of five years.

X1.2.4.2. The reports will document the actions taken in the event of product test failures.

X1.2.4.3. The reports will show the manufacture location, date of manufacture, and test results. Identification will be such that the test reports for any product can be located.
X2. AUDIT AGENDA

On-Site Audit

Opening Meeting
- Introductions
- Address Any Safety or Security Concerns
- Address Confidentiality
- Questions, Comments, or Concerns?

Summary of Desktop Review (every 5 years)
- Resolved Findings
- Unresolved Findings
- Most Current Quality Manual

Manufacturing Line Walk Through
- Manufacturing and Inspection Processes
- Record Product Information for Traceability Purposes
- Designate Highway Guardrail Samples for Testing

Review of Documentation
- Review and Collect Certificates
- AASHTO and ASTM Standards
- Training and Competency Evaluations
- Internal Audits
- Management Reviews
- Equipment Records

Quality Control Testing
- Demonstration of In-House Inspection Methods
- Review of Inspection of Equipment

Audit Summary Close-Out Meeting
- Review of Audit Findings
- Questions/Concerns?
- Closing Remarks