CHAPTER TWO

# PRODUCT EVALUATION PROGRAM

**GENERAL**

Chapter Two outlines the product evaluation procedure and provides directions to departmental units involved in the review, assessment, and evaluation of products submitted for acceptance by vendors. This procedure is applied to products/materials initially introduced to the department, products/materials that may have been modified since the original submittal, or products that have been determined to be performing unsatisfactorily in the field.

Because of technological advances, the number of products available for highway application is increasing. Due to the number of products being presented to NDOT for evaluation, and the fact that some previously approved products have performed poorly or are now considered technologically obsolete, a Product Evaluation Program was initiated. It has since been demonstrated that the pre-qualification of highway products/materials is instrumental to the success of NDOT’s construction operation.

Without a formal evaluation process involving high-level managers from the major operating divisions, there would be a lack of communication between districts and divisions regarding which products should be accepted for use or tested and whether the products could be of benefit to the department; product acceptance and/or evaluation would not be documented or communicated departmentwide. As such, the Product Evaluation Program is coordinated with other divisions/districts to ensure that all facets of the evaluation process work to improve the quality of products/materials used on state roadways. In addition, a formal, written, product evaluation procedure ensures that manufacturers/vendors are able to recognize that they are being treated fairly and in the same manner as their competitors.

The mission of the Product Evaluation Program is to serve as a clearinghouse for the evaluation and approval of products/materials proposed for use on NDOT construction projects.

#### Program Objectives

All products/materials submitted for approval are evaluated on the basis of need, performance, cost-competitiveness, and compliance with recognized specifications, i. e., AASHTO, ASTM, NDOT, etc. The objectives of the Product Evaluation Program are to:

1. Establish a formal policy and procedure for evaluation of highway products/materials, methods and procedures requested by outside parties;
2. Establish a formal procedure for the suspension from use of poorly-performing products/materials listed in the QPL when NDOT personnel initiate such an action;
3. Evaluate products/materials to ensure that various NDOT operating units are presented with legitimate solutions to product/material related problems;
4. Provide NDOT personnel with a centralized location for the submittal and referral of product/material evaluations;
5. Coordinate, document, and evaluate test programs of various products/materials and/or procedures;
6. Provide a tracking system for the evaluation and approval of products/materials and procedures;
7. Provide preliminary investigation and evaluation of a product/material prior to establishing a work plan/test protocol or undertaking a new procedure; and
8. Promote implementation and technology transfer (T²) of new products/materials or procedures for highway application.

**PROGRAM ADMINISTRATION**

### Product Evaluation Committee

The Product Evaluation Committee (PEC) acts in an advisory capacity to address requests for specification revision, establishment of qualified product lists, and requests for product field-testing. The PEC promotes interdisciplinary staff discussion of common problems dealing with the use of products/materials in construction or maintenance operations. The Deputy Director/Chief Engineer makes the final determination regarding implementation of the PEC actions and recommendations.

The PEC is comprised of the following NDOT staff members, or their designees:

1. Chief Construction Engineer;
2. Chief Bridge Engineer;
3. District I Engineer;
4. District II Engineer;
5. District III Engineer;
6. Chief Materials Engineer;
7. Specifications Engineer;
8. Chief Maintenance Engineer;
9. Chief Traffic Engineer; and
10. Operations Analysis Engineer.

In addition to these ten voting members, the PEC includes the FHWA Nevada Division Office Pavement and Materials Engineer and the NDOT Research Division Chief as non-voting members. The Research Division Chief presides over the PEC meetings and the Product Evaluation Coordinator serves as the committee secretary.

### Research Division

The Research Division coordinates the department’s Product Evaluation Program and has immediate responsibility for the management of product evaluations and subsequent approvals for use on NDOT projects. The Research Division’s responsibilities include the following activities pertaining to the department’s Product Evaluation Program:

1. Advise and respond to all external and internal inquiries regarding use of products/materials on NDOT projects along with disseminating appropriate NDOT policies and form relating to product evaluation;
2. Document all inquiries for product evaluations using a computerized database;
3. Ensure appropriate referral to QPLs by reviewing the Special Provisions for construction projects;
4. Conduct user surveys, literature searches, and needs assessment surveys for affected divisions/districts;
5. Conduct surveys of other state DOTs or other transportation agencies regarding the past history of products submitted for evaluation and approval;
6. Administer the department’s qualified products list (QPL);
7. Represent NDOT on, and coordinate its participation in AASHTO’s National Transportation Product Evaluation Program (NTPEP) Oversight Committee;
8. Coordinate revisions and establishment of Standard Specifications involving a QPL;
9. Coordinate/conduct field tests of products/materials that require in-service evaluation;
10. Prepare agendas and record minutes of PEC meetings; and
11. Provide a summary of PEC actions for a newsletter that enhances technology transfer (T²) as it relates to product/material information and the outcome of product evaluations.

**EVALUATIONS REQUESTED BY OUTSIDE PARTIES**

### Initiation

All appropriate contacts with NDOT regarding a product’s evaluation and/or approval are referred to the Product Evaluation Coordinator. These contacts and the subsequent submittal of product information are logged into a database.

Based on product literature supplied by the requesting party, the NDOT Product Evaluation Coordinator decides on the appropriate evaluation avenue of three options (acceptance based on current specifications, acceptance based on a revision to specifications and acceptance based on field testing). It is incumbent on the submitting party to provide all pertinent product specifications, test data, etc. used to compare the proposed product to current NDOT specifications. The submitted Product Information Package (PIP) shall include but is not limited to the following:

1. The completed product information form indicating compliance with NDOT, AASHTO, ASTM or other recognized specifications or standards, past history, etc.; and
2. Product literature, which may include photographs, material specifications, results of independent testing, approvals or documented use by other agencies, engineering designs or calculations, the Material Safety Data Sheet(s) (MSDS) for the product, if required, and any other information which will enable NDOT staff to adequately determine the purpose, need, and viability of the product.

All products submitted for evaluation must be produced in compliance with the latest revision of the AASHTO or ASTM standard within six (6) months of the publication of the revision.

Upon the initial assessment of a product, the Product Evaluation Coordinator sends the manufacturer/vendor NDOT’s “Policy for Product Evaluation Requested by Outside Parties” and an appropriate product information form to complete (Appendices A-5, A-6, A-7 and A-8).

### Acceptance Based on Current Specifications

NDOT has Standard Specifications and Standard Plans which encompass many of the products in the highway industry. The proposed product’s literature, along with a completed form as shown in Appendix A-6 is submitted to the affected division(s) for their review. If the affected division determines that the product meets current specifications, the product is added to the master qualified products list (QPL) under the appropriate specification section/subsection. In some instances, the affected division not only considers compliance with current specifications, but also considers department inventory issues prior to placing a product on the QPL. Once a determination is made regarding acceptance based on current specifications, the vendor is notified.

### Request for Specification Revision

Products that have been adequately field-tested, or are acceptable based on sound engineering practice, may be accepted through revisions to current NDOT specifications. The proposed revision submitted on the form shown in Appendix A-7 is reviewed by the affected district(s)/division(s). Once the divisional response is submitted to the Product Evaluation Coordinator, an action-item is placed on the agenda for the next quarterly meeting of the PEC. The PEC takes action on the specification revision and forwards the action taken to the Deputy Director/Chief Engineer for concurrence. If the Deputy Director/Chief Engineer approves a specification revision, the revision is coordinated with the Specifications Engineer and Research makes the necessary adjustments, if applicable, to the corresponding QPL. The Product Evaluation Coordinator notifies the vendor in writing of the final decision.

### Request for Field Test

Products that cannot be accepted under current specifications and have not been adequately field tested by other state DOTs or national testing organizations, may require evaluation under in-service conditions. In this case, the vendor must submit a completed form as shown in Appendix A-8. Formal field-testing involves product systems, or product lines such as protective coatings or bridge deck overlay systems. Products/materials needing this type of testing are placed as experimental features within construction contracts and may result in the formation of test decks to determine their performance and durability under in-service conditions. The Research Division is responsible for preparing comprehensive test protocols describing the monitoring, testing, and documentation required during the evaluation period. Placement of the product is documented in a construction report. Performance and durability are monitored over a specified evaluation period (at least one to two years) and documented in a final report. Upon completion of the field test, the Research Division makes a final recommendation to the PEC through the submittal of a comprehensive final report detailing proposed specifications and acceptance criteria if applicable. The information is presented to the Deputy Director/Chief Engineer for a final decision.

In cases where long-term performance (durability) is not an issue, e.g., a pre-engineered/tested structures-related product, a field test may consist of a trial installation. In such cases, the primary issue is the constructability of the product or the design process leading to the bid process. In most of these instances, the product is incorporated into a construction contract after the criteria to be evaluated is determined by the affected division. The PEC takes action on the final recommendation; the Deputy Director/Chief Engineer makes the final decision.

In some cases, a district or division may wish to have a product demonstration to determine operating and/or functional characteristics under local conditions. Usually the type of product being evaluated will be a single product, e.g., a raised pavement marker. This is the least formal type of field test yet requires documentation in the form of a work plan. NDOT maintenance personnel generally complete the installation, and the test section is evaluated based on established criteria. Any resulting action such as specification revision or establishment must be acted on by the PEC and concurred with by the Deputy Director/Chief Engineer.

Figure 2.1, pages 26 - 27, depict the procedure involved with product evaluations requested by outside parties in a flow chart format.

**PRODUCT EVALUATION PROCEDURE**

###### INITIATING CONTACT BY VENDOR

**PRODUCT EVALUATION COORDINATOR**

**- Document Inquiry, Log into Database**

**- Send Policy and Form**

**- Determine Evaluation Option:**

1. **Acceptance Under Current Specs**
2. **Request for a Field Test**
3. **Request for Spec Revision**

###### MANUFACTURER/VENDOR

**Complete Product Information Package (PIP)**

**PRODUCT EVALUATION COORDINATOR**

**- Initial Review of PIP**

**- Forward copy of PIP to the Affected Division**

**- Perform User Survey if Needed**

AFFECTED DIVISION RECOMMENDATION

**- Acceptance Under - Current Specs**

**- Add to QPL**

**AFFECTED DIVISION RECOMMENDATION**

## **- Field Test**

**AFFECTED DIVISION RECOMMENDATION**

## **-Specification Revision**

**PRODUCT EVALUATION COORDINATOR**

**- Update QPL Accordingly**

## **- Inform Vendor**

**PRODUCT EVALUATION COORDINATOR**

**- Write Product Summary**

**- Prepare PEC Agenda**

**PRODUCT EVALUATION COORDINATOR**

**- Write Product Summary**

**- Prepare PEC Agenda**

**PRODUCT EVALUATION COMMITTEE**

**- Review PIP**

**- Make Recommendation**

**PRODUCT EVALUATION COMMITTEE**

**- Review PIP**

**- Make Recommendation**

Continued on the next page

(Fig. 2.1)

**PRODUCT EVALUATION COORDINATOR**

**- Write Minutes of the PEC Meeting**

**-Summary for Concurrence to Deputy Director/Chief Engineer**

**DEPUTY DIRECTOR/CHIEF ENGINEER**

## **- Makes Final Decision**

**AFFECTED DIVISION and SPECIFICATION ENGINEER**

**- Revise Specification**

**-Make Change in Standard Specifications or Standard Plans**

**Yes**

Y

Yes

**No**

**PRODUCT EVALUATION COORDINATOR**

**- Inform Vendor**

**PRINCIPAL INVESTIGATOR (S)**

**- Prepare Work Plan**

**- Design Test Sections(s)**

**- Document Test Section(s)**

**- Monitor Test Section(s)**

**- Write Final Report**

**PRODUCT EVALUATION COMMITTEE**

**- Makes Final Recommendation**

**DEPUTY DIRECTOR/CHIEF ENGINEER**

## **- Makes Final Decision**

**PRODUCT EVALUATION COORDINATOR**

**- Inform Vendor**

(Fig. 2.2)

**INTERNALLY REQUESTED EVALUATIONS (RE-EVALUATIONS)**

### Initiation

Internally initiated product evaluations or, more appropriately named as re-evaluations, are conducted in the case of a poorly performing product or a product rendered technologically obsolete through advances in product/materials technology.

It is the initiating division’s/district’s responsibility to complete a product review form (refer to Appendix A-9) documenting the product’s poor performance. The affected division head or district engineer must sign the form. In cases of obvious product failure which constitute an emergency situation with regard to public safety, the division/district may immediately terminate use of the product pending further review.

### Review

The form and accompanying documentation such as pictures, written accounts of product failure, etc., are submitted to the Product Evaluation Coordinator for review. The Product Evaluation Coordinator reviews the documentation contained on the form and surveys other users of the product including other NDOT divisions/districts and state DOTs. The Product Evaluation Coordinator then writes a product summary detailing a history of past use and outlining those instances of unsatisfactory performance as documented by the initiating district/division.

### PEC Action

After completion of the product review, the information is sent to the PEC prior to their next regularly scheduled meeting and the vendor is notified. Based on the information provided from the Product Evaluation Coordinator, along with any rebuttal provided by the vendor, the PEC makes a recommendation regarding product use, i.e., limit the product's use, suspend usage ending a specification revision, or such other action as may be warranted.

**Final Action**

The Deputy Director/Chief Engineer makes the final decision regarding product status. The vendor is informed of the final decision and provided with the supporting documentation. The initiating district/division and the PEC are notified of the final decision. The Specifications Engineer is then responsible for making all necessary changes to the Standard Specifications and/or Standard Plans and the Product Evaluation Coordinator makes changes as appropriate to the master QPL.

Figure 3.1, page 30, depicts the procedure for an internal product re-evaluation.

INTERNALLY REQUESTED PRODUCT REVIEW

INITIATING DISTRICT/DIVISION

- Complete Form

- Submit Form and Accompanying Documentation

PRODUCT EVALUATION COORDINATOR

- Review Form and Documentation

- Perform User Survey

- Write Product Summary

- Inform Vendor

PRODUCT EVALUATION COMMITTEE

- Review Form & Documentation

- Make Recommendations

DEPUTY DIRECTOR/CHIEF ENGINEER

## - Makes Final Decision

PRODUCT EVALUATION COORDINATOR

- Inform Vendor

# PROGRAM IMPLEMENTATION

**Qualified Products List**

The QPL for construction products/materials is the end result of the Product Evaluation Program. The QPL is a list of manufactured products available on the market that have been evaluated and determined suitable for a specified use. Typically, an individual QPL for a particular type of product/material contains at least two products. However, as stated by NRS 338.140, part 2, “in those cases involving a unique or novel product application required to be used in the public interest, or where only one brand or trade name is known to the specifying agency, it may list only one.”

The QPL is maintained by the Product Evaluation Coordinator and is appended to contract Special Provisions for each NDOT construction project. Specification numbers in the QPL correspond to the applicable subsection in the Standard Specifications where the item is specified.

A contractor’s procurement and use of products is limited to those listed in the QPL or to those products/materials meeting current specifications. A QPL ensures that products/materials used on construction projects are pre-qualified and approved for use through a formal process. The establishment of a QPL provides for thorough evaluation on a one-time basis rather than each time the product is submitted for use on a project. Acceptance criteria are established for each individual QPL that include, but are not limited to, the following:

1. Acceptance under current standard specifications;
2. Compliance with crashworthiness requirements prescribed in the NCHRP Report 350;
3. Acceptance by the FHWA;
4. Evaluations through AASHTO/NTPEP testing;
5. Highway Innovative Technology Evaluation Center (HITEC) testing; and
6. Such additional criteria as may be considered necessary.

Evaluation of a product listed on the QPL does not constitute an endorsement by the department, nor does it imply a commitment to purchase, recommend, or specify the product in the future. Testing and certification of specific products remains in effect regardless of the status shown in the list.

Products/materials remain on the QPL as long as their performance in the field is satisfactory. The NDOT product evaluation procedure provides for the suspension and re-evaluation of a product/material exhibiting poor performance in the field.

**GLOSSARY OF ACRONYMS**

**ACRONYMS DEFINITION**

SPR State Planning and Research

R,D&T Research, Development and Technology Transfer

FHWA Federal Highway Administration

NDOT Nevada Department of Transportation

TRIS Transportation Research Information Service

RAC Research Advisory Committee

RMC Research Management Committee

RFP Request for Proposal

TRB Transportation Research Board

NCHRP National Cooperative Highway Research Program

T2 Technology Transfer

PEC Product Evaluation Committee

QPL Qualified Products List

PIP Product Information Package