

RESEARCH AND TECHNOLOGY

REVIEW

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RESEARCH BULLETIN

NDOT PRODUCT

Evaluation: The Past, Present and Future

It was 1988 when the NDOT product evaluation program was formally adopted as part of the Research Administrative Procedure Guide. It put forth a framework for the program with an organizational structure and a process to evaluate highway products. The program was then referred to as the New Product Evaluation System with the objective being to establish a formal policy and procedure for evaluation of new products, new methods and new procedures. However, it soon became apparent that the word "new", as it relates to products, is difficult to define and that field testing shouldn't be the

only evaluation option available.

In March of 1991, the Research Evaluation Committee, currently known as the Product Evaluation Committee (PEC), approved three options for product evaluation and renamed the process as the Product Evaluation Program. The three evaluation options are: 1) Acceptance based on current specifications; 2) Request for a specification revision; and 3) Request for a field test.

(NDOT Product continued on page 3)

Research Underway To Develop NDOT Standards For Noise Barrier Systems

Due to the increase in noise levels as traffic volumes grow coupled with an ever-increasing demand by the public for traffic noise abatement in Nevada, millions of dollars will be spent over the next few years for noise barriers on existing highways and as part of new roadway construction or major reconstruction. While much has been learned, NDOT is still experiencing some problems related to the evaluation, design, construction and maintenance of noise barrier systems, particularly those systems using non-traditional materials. Also, with the

advent of new technology in building noise barriers, research is needed to better understand the costs/benefits and to improve analysis techniques of various noise barrier systems. As such, NDOT has approved a research project to address these problems.

(Noise Systems continued on Page 4)

New 1999 Research Projects

Six new research projects have been added to the department's 1999 R,D&T work program. These mid-year additions are:

1. Validation of Fatigue Criteria for Performance-Graded Asphalt Binders Within Superpave System - a regional pooled-fund project aimed at validating the fatigue criteria included in the specification for performance-graded asphalt binders;
2. Development of NDOT Soundwall Evaluation Standards (see details in the above article);
3. Comparative Baseline Computer Modeling Variables for Three Traffic Control Devices - a case study of a specific intersection in Carson City to determine the operational effectiveness of three types of traffic control devices

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Product Evaluation Committee (PEC) Meeting Recap



Approved by the PEC in March 1999, the Techstar's W-seal bridge expansion joint material was added to the NDOT qualified preformed joint section 409.03.09 in the Pull Sheets. The approval is based on its satisfactory performance in a one-year field test of this product installed in a heavy

sand seal has been moved to District I from its originally approved test site in District III. The new principal investigator for this field test, Bill Graunke, will include this product on a chip seal test deck scheduled to be set up soon near Tonopah, provided that the material for the testing will be supplied free of charge.

March 3, 1999 PEC Meeting: Left to right; Gary Anderson, Specifications; Gary Selmi, Construction; Greg Novak, FHWA; Alan Hilton, Research; Rod McInnis, Structures Design; Chuck Nixon, District III; Dean Weitzel, Materials; Wes Clyde, Materials; Bill Graunke, District I; (not shown; Don Campbell, Traffic; Terry Springman, Maintenance; and Tie He, Research)

Astro Optics Raised Curb Marker

The Astro Optics CM-1 raised curb/median marker was approved for a field test in March 1998. However, to date the test has not been initiated due to a personnel change and a lack of application within the Department. In addition, NDOT does not have specifications or a qualified products list for this type of product. Hence, the field test is canceled.

Approved

Techstar's W-Seal Bridge Expansion Joint Material

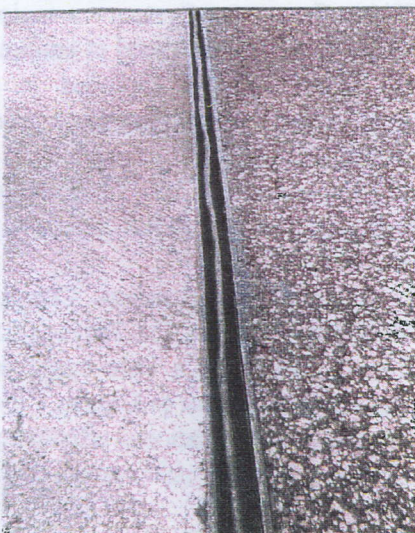


Photo 1, W-Seal watertight expansion joint.

traffic area across three lanes on U.S. 95 in District I.

The Techstar's W-seal bridge expansion joint material, made from Santoprene thermoplastic, provides comparable movement to a strip seal or a compression seal. It can be placed in either sawn or armored joints, for new construction or to replace damaged joint seals. The major claimed advantages include quick and easy installation, tear and puncture resistance, and a perfect seal in the joint opening. Ⓢ

Breakaway Signpost Bases

The field test of breakaway signpost bases has been completed. A total of eight base systems including four Dent Bolt systems, two Poz-Loc systems and two NDOT systems were tested over a year period on the frontage road in Washoe Valley. The NDOT design that incorporated hardened washers, stop nuts and reduced torque was found to be equal or better than the other systems with respect to installation, performance and maintenance (particularly the inventory issue). Therefore, the design as shown in the NDOT 1999 Standard Plans will be used exclusively. Ⓢ

Field Test Update

KOCH High Float Emulsion

The field test of KOCH's high float emulsion (HFE-60P) for chip and

(Product Evaluation from page 1)

While the revised process provided an improved method of responding to the vast number of products and procedures submitted to NDOT for evaluation, some problems continued. The process, for the most part, remained reactive, i.e., a vendor-driven process, not proactive. Although the need for a proposed product was determined in advance, implementation, in terms of how and where the product would be specified, was not thoroughly considered prior to evaluation. As a result, some products were approved without a specific application or a goal for implementation; other approvals were informal with approval termed as use "on a case-by-case basis," meaning they were added to an informal approved products list known only to a few persons in the affected division.

The Research Division recently re-examined the process and concluded that to solve the problems associated with product evaluation and to maximize the resources expended on this component of the department's R,D&T program, every product submitted for evaluation must go through the process with the final implementation/application in mind. Since pre-qualification of products used on NDOT projects should be the outcome of product evaluation, the goal of product evaluation should either be the establishment of a qualified product list (QPL), or the placement of the product onto an existing QPL. In addition, through a series of questionnaires distributed both internally and externally, we learned that to be utilized a QPL must be formally documented and directly linked to the standard specifications.

We are taking a two-step approach to develop QPLs. The first step is to compile the existing QPLs (currently

termed as approved products lists) scattered throughout the specifications and place them into the "Pull Sheets" as a QPL attachment. The next step is to incorporate into the QPL attachment the products that have gone through the approval process, but for which there is not a current approved products list. The QPLs for these types of products will be based on the needs of the affected division. By creating a master list of qualified products, all formal and informal lists will be combined into one list that is complete and official. Once the QPL attachment is developed, the Research Division will be responsible for administering it including addition or deletion of a product and updating manufacturer's addresses. This will close the loop of the evaluation process - submittal, division evaluation, and implementation.

Besides the development of a master QPL, there are more challenges for the NDOT product evaluation program at present. One of them is how to use test results from national product testing programs such as AASHTO's National Transportation Product Evaluation Program (NTPEP) and the Civil Engineering Research Foundation's Highway Innovative Technology Evaluation Center (HITEC). Another challenge is how to conduct formal field tests of products using scientific procedures.

We envision that with the increasing need for quality materials/products and new technologies on Nevada

highways, the program will evolve to not only involve evaluating products for pre-qualification purposes, but to also include revising specifications to introduce or reflect new technologies and developing specifications based on test results from various national product testing programs mentioned previously. Also, we envision more product evaluations taking the form of applied research projects such as the recently approved noise barrier project.

Looking back over the last 10 years of our product evaluation program, we see the continuity, the evolution and the future of the program. We believe that the program is an integral part of the department's quality control/assurance program, and that product evaluation will play an important role in achieving the department's goal of building safe, high quality highways. ☺

(New 1999 Research from page 1)

(all-way stops, a roundabout, and a traffic signal);

4. National Work Zone Safety Information Clearinghouse - development and operation of a single point of contact for potential users soliciting information concerning safe and effective work zones;

5. Establishment of a Technical Service Program for the Implementation of the AASHTO Product Evaluation List (APEL) - a project to provide for the creation of an on-line database available to all states to enter and extract information on the evaluation of highway-related products/materials; and

6. Support for the Task Force of SHRP Implementation - a project to provide continuing support for the introduction and adoption of SHRP research through the concept of the Lead States Program. ☺

***Knowledge is one thing that
doesn't become secondhand when
used.***

1999 Farmers' Almanac

(Noise Systems from page 1)

Parsons Transportation Group (PTG) has been selected to conduct the research. The objectives of this research are to: 1) establish specifications for various types of noise barrier installations (including material specifications, acoustical and structural design methodologies and construction details) for new construction and retrofit projects; 2) develop performance criteria by which proposed noise barrier systems will be evaluated for placement on a qualified products list (QPL); and 3) evaluate existing noise barrier systems previously submitted for department approval for compliance with the developed standards.

Through an extensive literature review and interviews with representatives

from NDOT, noise barrier vendors and other transportation agencies, PTG will analyze noise barrier standards and practices currently employed in NDOT, federal and other state agencies. Also, they will examine major evaluation factors for various types of noise barriers with respect to acoustical performance, material properties, structural adequacy, susceptibility to damage, maintainability, aesthetics, and initial and life cycle costs. At the end of the project, they will provide a report of research results with recommendations for NDOT implementation including revisions to current specifications and a QPL for new construction and retrofit purposes. The research is expected to be completed in December, 1999. ☺

The Research Division administers the department's research, development and technology transfer program and serves as the "clearing-house" for product evaluations.

Research and Technology Review is published quarterly by the NDOT Research Division. Its purpose is to provide the latest information on the NDOT research activities including product evaluation and other pertinent research topics.

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