RESEARCH

2007-39

Populating Minnesota's Transportation Research Site Database

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Transportation Research

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In December 2003 the LRBB and Mn/DOT's Office of Materials allocated resources for a five-year project to identify, locate, describe, and track research test sections and other unique sites of interest on Minnesota (state and local) roadways. This became Investigation 809, Research Tracking for Local Roads. As the first step, Mn/DOT staff developed a database with a Web based user interface for entering and retrieving site data. The database was completed in 2004 and some individuals began to enter data into the database. With LRRB funds, a consultant was hired in November 2006 to facilitate and accelerate the collection, validation, and entry of data and also to make recommendations for database improvements. This report summarizes the efforts of that consultant. A number of recommendations are made in this report for improving the database and its user interface and for insuring that the database is robust. Each test section (site) in the database represents a significant investment of resources to design and construct something unique. Each site in the database may be of interest to other jurisdictions. Once constructed it could take years before the ultimate performance of a site can be determined. Meanwhile, champions change jobs and priorities change. This report raises a key question: How can we ensure a return on the investments made in site design and construction?

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Populating Minnesota's Transportation Research Site Database

Final Report

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Executive Summary

In December 2003, the LRBB and Mn/DOT's Office of Materials allocated resources for a five-year project to identify, locate, describe, and track research test sections and other unique sites of interest on Minnesota (state and local) roadways. This became Investigation 809, Research Tracking for Local Roads. As the first step, Mn/DOT staff developed a database with a Web based user interface for entering and retrieving site data. The database was completed in 2004 and some individuals began to enter data into the database. With LRRB funds, a consultant was hired in November 2006 to facilitate and accelerate the collection, validation, and entry of data and also to make recommendations for database improvements. This report summarizes the efforts of that consultant.

As of August 14, 2007 the database contained 1660 test sections in 90 groups (topics). A number of recommendations are made in this report for improving the database and its user interface and for insuring that the database is robust.

Each test section (site) in the database represents a significant investment of resources to design and construct something unique. Each site in the database may be of interest to other jurisdictions. Once constructed it could take years before the ultimate performance of a site can be determined. Meanwhile, champions change jobs and priorities change.

Key Question: How can we ensure a return on the investments made in site design and construction?
Answer: On an annual basis, research organizations should review the database and fund follow-up testing and research at sites related to timely topics.

Introduction

Every year, transportation agencies construct a significant number of test sections on Minnesota roads and streets. Only through innovation can government provide better or more efficient services. These test sections may be part of formal research projects or ad hoc tests of new products or procedures.

It is imperative that these test sections be tracked because:

a) These test sections represent considerable investments of time and money.
b) It may take years to determine results and they could be lost or forgotten.
c) Other agencies have an interest in the testing being done.

In December 2003 the LRBB and Mn/DOT's Office of Materials allocated resources for a five year project to identify, locate, describe, and track research test sections and other unique sites of interest on Minnesota (state and local) roadways. As the first step, Mn/DOT staff developed a database with a web based user interface for entering and retrieving site data. The database was completed in 2004 at which time some individuals began to enter data into the database. It can be found at:

http://www.mrrapps.dot.state.mn.us/mrrapps/tracking/tracking.asp

Transportation agencies in Minnesota can use the system to share information about roadway test sections that they have constructed and to learn what test sections have been constructed by other agencies

The database is hierarchical in structure as shown in Figure 1. Each group can contain multiple test sections and each test section can contain multiple field reviews. A given field review can be associated with only one test section and a given test section can be associated with only one group.

With LRRB funds, a consultant was hired in November 2006. The consultant provided expertise and resources in assisting the local transportation agency staff and Mn/DOT staff in collecting information about test sections, validating the information, entering the information into the database, providing training materials on the use of the database, and developing any recommendations that might improve the database.

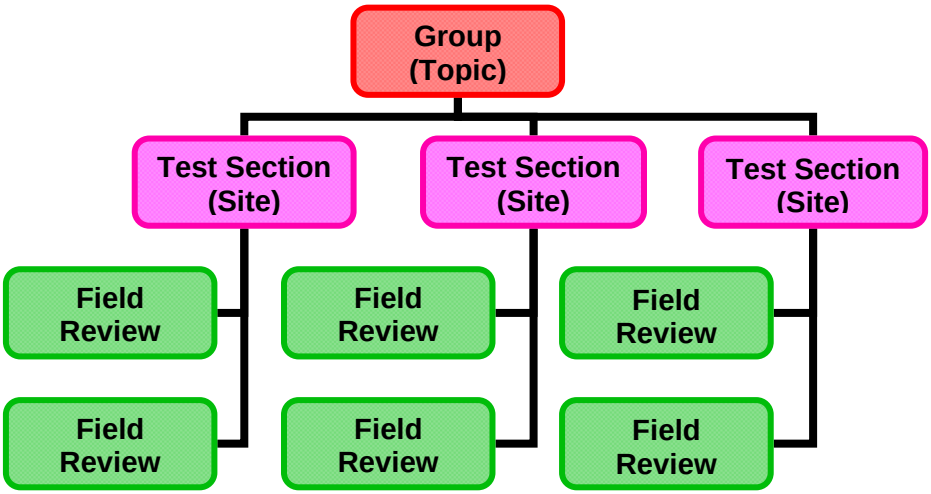


Figure 1 - Database Structure

Identify Information Sources

Most sources of test section information fell into one of four categories—a previous database, research reports, active research projects, or individuals.

Around 1989 Al Stanfield collected information on a number of test sections and entered them into a mainframe database. Because of a lack of access and support this data was hardly used, but it was retained in electronic format. Some of this data dates back to as far as the 1930's.

The Mn/DOT Library did a literature search of reports from Mn/DOT and LRRB sponsored research that included test sections. A search of reports on the LRRB web site was performed and documents that potentially referenced test sections were identified. Selected research reports were reviewed to determine if they contained adequate documentation of test sections.

Active research projects were reviewed to determine if they may include the design and construction of test sections.

E-mail content was drafted for the purpose of soliciting test section information from local transportation agencies. Rick Kjonaas sent the e-mail solicitation to county and municipal engineers, district state aid engineers (DSAEs), and central office state aid staff. Contacts were initiated with Mn/DOT's Offices of Materials, Bridges, and Traffic, Safety and Operations.

Potential private sector sources of test section information were identified.

A short form for collecting key test section data was also developed and distributed.

Contact Information Sources

Reports containing the old test sections from the previous database were circulated to appropriate districts or technical experts. They were asked to determine the validity of the old test sections.

If research reports referencing test sections did not contain adequate data then the principal investigators were contacted to supply additional information.

Principal investigators of active research projects were contacted to collect test section information that might be available.

Follow-up contacts were made with Mn/DOT District Materials Engineers and DSAE's to identify test sections and to solicit any other likely sources of test section information. Meetings were scheduled in each Mn/DOT district office for purposes of training and for collecting data. Cold calls were made to some local agency engineers based on their reputation of leadership or innovation.

Follow-up contacts and meetings were carried out with key Mn/DOT offices to identify test sections. Monthly meetings were held with the Office of Materials because their staff has knowledge of a great number of test sections.

Follow-up contacts with the private sector were made also.

Phone, e-mails, and meetings resulted in the following contact counts:

49 Counties
21 Cities
18 Mn/DOT Office of Materials staff
20 Mn/DOT District staff
11 Mn/DOT Bridge, Traffic, or Maintenance staff
10 Academic and Private Sector individual
---
129 Total

Review and Enter Information

Data was returned to the consultant in many formats including hand written notes, reports, annotated reports, short forms, e-mails, spreadsheets, and verbally through phone calls or meetings. If possible, and as time permitted, test section data was validated before being entered into the database. Validation occurred through cross referencing locations with other nearby sections, by checking other sources, or by consulting current roadway history files.

Although a majority of the old test sections from the previous database no longer existed or were no longer relevant, a considerable number were entered into the new database.

Some agency staff entered test sections and the Bridge Office expressed interest in entering their own test sections. However, a large percentage of the test sections were entered by the consultant directly on the web site or through a batch loading process with spreadsheets. One of the largest batches loaded in this way contained 178 weather monitoring sites. Some of these sites were not located on roadways, but since weather plays such an important part in roadway performance and operations, it is important to research and innovation to have access to local weather information.

Figure 2 below indicates how much data was collected and entered during the contract.

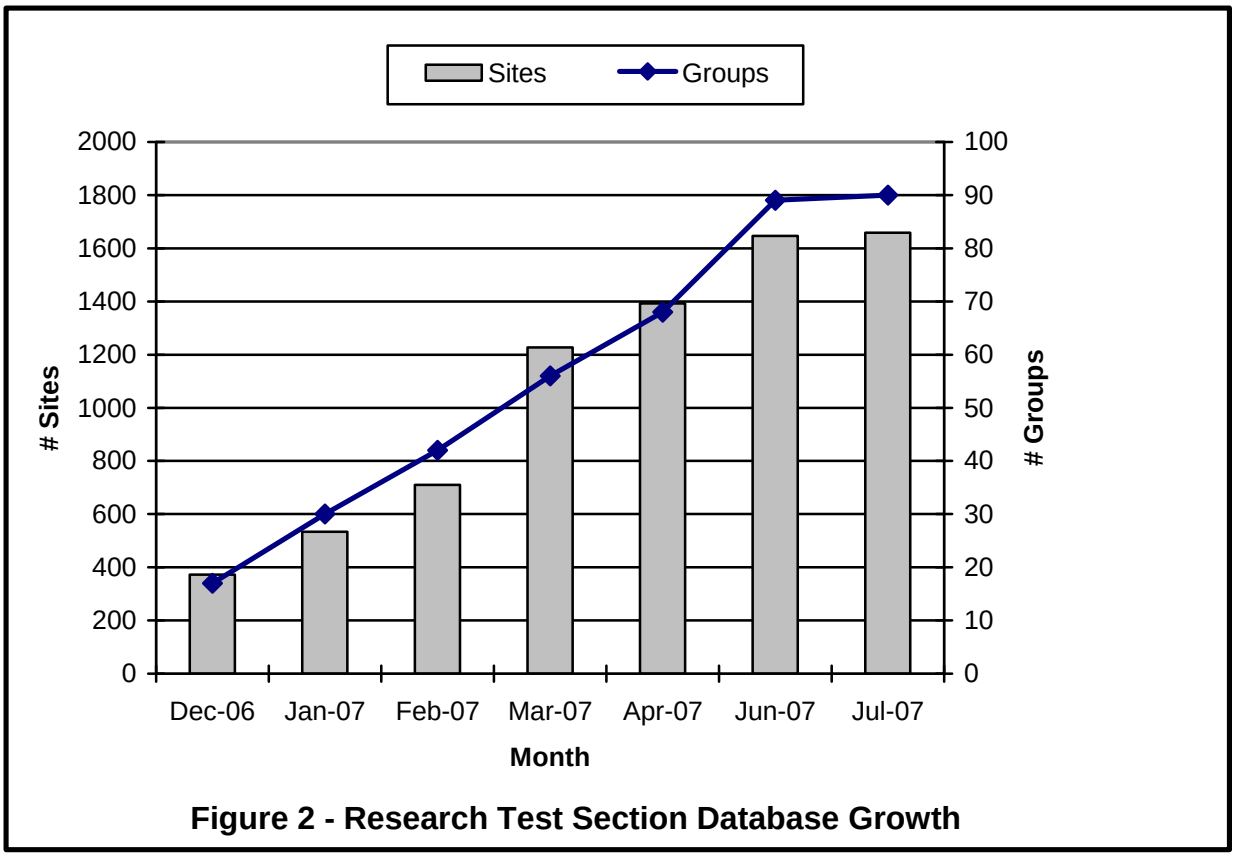


Figure 2 - Research Test Section Database Growth

Appendix A contains a listing of all current groups (topics) in the database along with contact and site count information.

Train Database Users

The consultant developed a brochure (Roadway Test Sites—Build ‘em! Track ‘em!) for the purpose of educating database users on how to utilize the database—see Appendix B. This brochure was distributed at city and county engineer meetings in January 2007.

The consultant distributed the training brochure and reviewed how to enter and retrieve data from the database in meetings with Mn/DOT staff in eight districts in April and May 2007. These meetings included the DSAE’s and Materials Engineers in each Mn/DOT district. In a couple districts the Soils Engineer also attended these meetings.

In July 2007 at a joint meeting for District 6 and 7 local engineers, the consultant distributed the training brochure and reviewed how to enter and retrieve data from the database.

Recommendations

In working with Mn/DOT and local agency staff to collect and enter site information many ideas for improvements were uncovered. At this point no attempt was made to prioritize these recommendations or to ballpark costs. Some recommendations (the "low hanging fruit") could be completed within the scope of Investigation 809, while others would require additional resources. In general these ideas fell into the following three categories:

1) **How to Take Advantage of the Database**
   a) Some resources should be put towards evaluating these test sites. Perhaps on an annual basis research funding organizations should determine what timely topics might be addressed by evaluating test sections in the database. One example might be reviewing chip seal test sections as a follow up to Erland Lukanen's study based on pavement management data.
   b) Enter groups that were not populated by this contract. For example, flashing stop signs, weed control effectiveness, cupping of AC cracks
   c) Can issues not bound to specific sites (i.e. stop sign policies) be tracked in this database or would an "LRRB Blog" better serve this function?
   d) Before starting a new LRRB or Mn/DOT research project, search the database for relevant sites. This would somewhat parallel to doing a literature search before beginning a research project.

2) **How to Improve the Database and Interface**
   a) Modify data structure and interface to allow latitude and longitude entry and viewing. Can this be accomplished by building on the Mn/DOT pavement management system? Currently only about ten percent of the sites have a known latitude and longitude, so a data collection effort would be required also.
   b) Update the contact names and numbers on the web site.
   c) Provide a short URL for the site. For example: www.testsite.gov
   d) Fix the test section spreadsheet report to include the pit number, structure ID, and Control Section.
   e) The "Text Search For Section Data" should also search the group purpose field.
   f) After creating an on-line spreadsheet report don't require a user name and password to save it to the user's PC.
   g) Data searches on multiple fields would be useful. For example: route system and route number.
   h) A database security review should be performed to ensure the data already entered is not vulnerable.
   i) Change some of the more cryptic group names. For example: LRRB – 772, LRRB 703, and LTPP.
   j) Have a web page design review the current web site and recommend ways to improve it.
   k) Add the capability of tracking who is using the database and how often it is being accessed.

3) **How to Keep the Database Up-to-Date and Consistent**
   a) On an annual basis confirm the contact person for each group.
   b) Provide a single point of contact (Tim Clyne, Mn/DOT Road Research) for adding groups. This contact information should be on the web site.

c) On an annual basis, Mn/DOT districts and local governments should be solicited for unique sites. This could be in November or December after the construction dust has settled.
d) Researchers creating new sites should be required to enter them into the database.
e) More field reviews could be entered. Only 16 were entered as of July 5, 2007.
f) Errors are identified when data is retrieved to spreadsheets. These should be fixed.
g) References or Links to related reports should be entered into comments or lab testing fields.
h) Put a link to the data definitions on the web page.
i) Implement more data checks. i.e. keep drop down menus when updating fields
j) Each unique section on a project should be entered separately, including control sections.
k) Require an entry in the section contact field. It should include both a name and organization.
l) If a state project number is associated with a site and it is known—enter it.
m) The route system stored in the database should have only the 3-4 character abbreviations, not the full text names of systems. They should be stored as ISTH, USTH, CSAH, MUN, etc.
n) The keyword drop down menu should include more key words.

If potential users of the system do not see useful results coming out of the system it won't get used. That is why it is imperative that funding organizations support evaluations of sites and the publication of results and impacts on a regular basis.

Appendix A

Group Listing for August 14, 2007

Group Name	Purpose Description	Contact Name	Site Count
40 Year Old PCC Pavement Performance	To track the performance of old concrete pavement sections	Bernard Izevbekhai, MnDOT Road Research	2
60 Year PCC	Test Sections built to observe variables that effect long term performance of concrete pavements	Tom Burnham, MnDOT Road Reseach	12
Asphalt Construction Joint, Density Spec	Track asphalt paving projects that contained density specification and testing for longitudinal construction joint	John Hager, MnDOT Dist. 7 Materials Eng	2
Asphalt Construction Joint, Sealant	Track asphalt paving projects that placed sealants at longitudinal construction joints	John Hager, MnDOT Dist. 7 Materials Eng.	10
Asphalt Film Thickness	Laboratory measurement of cores from state projects	John Garrity, MnDOT Office of Materials	18
Asphalt Overlay Lift Thickness	To determine if lift thickness (and resulting density) differences affect asphalt overlay performance	John Hager, MnDOT Dist 7 Materials Eng.	2
Automated School Bus Stop Warning Sign	In limited visibility areas a transmitter on a school bus activates a warning sign indicating the bus has stopped ahead	Mike Lownsbury, MnDOT Willmar District	1
Blade Laid Asphalt	To determine if blade laid bituminous performs better than paver laid	Bridgit Miller, MnDOT D6 Soils Engineer	5
Bridge Deck Sealing	Evaluate deck seals	Jim Lilly, MnDOT Bridge	1
Bridges with Spread Footings	To monitor settlement for bridges with spread footings	Gary Person, MnDOT Office of Materials	3
Bumps In HMA Overlay	LRRB 843 - predicting bumps in HMA overlay as function of either construction technique, sealant type, or route treatment.	Dr. James Wilde - MSU Mankato	1
Centerline Rumble Strips	To determine the ability of centerline rumble strips to prevent crossover into an opposing lane and run off the road accidents	Jon Jackels, MnDOT Office of Traffic, S	40
Chip Seals on MnDOT Roads	Evaluate the effectiveness of chip seals on higher volume/speed roadways	Perry Collins, MnDOT D6 Materials Eng.	28
Cold-in-Place Recycling	To track cold in place recycling sites	Graig Gilbertson, MnDOT Bemidji District	27
Concrete Joint Sealers	To evaluate the performance of sealants in concrete expansion joints	Jim McGraw, MnDOT Office of Materials	18
Crack Sealants for Bituminous Pavements	Evaluate the performance of sealants used on cracks in bituminous pavements	Jim McGraw, MnDOT Office of Materials	12
Design of AC Pavements in MN, Inv 183	Calibrate AASHO design guide for asphalt (flexible) pavements for Minnesota conditions	Roger Olson, MnDOT Road Research	0
Dowel Bars and Joints Misaligned	To track the performance of PCC pavement joints that misaligned with dowel bar baskets	Tom Burnham, MnDOT Road Research	1
Earth Retaining Walls	To monitor the performance of earth retaining walls	Gary Person, MnDOT Office of Materials	1
Edge Joint Sealing	Joint sealing studies involve measuring changes in edge drain outflow and base moisture content in response to precipitation events.	Roger Olson, MnDOT Road Research	2
Embankments Through Swamps	Design & evaluation of roadway widening through swamps. Conclusions: floated widening can be constructed. Ditch fabric & ship embankment were best.	Gary Person, MnDOT Office of Materials	11
Engineered Emulsion in Reclaimed Mat'l.	To evaluate the additional strength added to the structure due to adding engineered emulsion to reclaimed material upon placement	Rod Garver, Mn/DOT D1 Materials Eng.	3
Expansion Joint Spacing	To evaluate the performance of non-standard expansion joint spacing in concrete pavement	Perry Collins, MnDOT D4 Materials Eng.	1
Fly Ash Stabilization of Subgrade	Develop design standards for using fly ash to stabilize subgrade material taking into account engineering and environmental performance	Eddie Johnson, MnDOT Road Research	5
Fog Chip Seal	Determine if fog seal hold chips in longer and if ice melts off the road faster	John Hager, MnDOT D7 Materials Eng.	8
Fog Seal	Evaluate the performance of fog sealing pavement lanes or shoulders	Roger Olson, MnDOT Road Research	10
Fractured Concrete Base Course	To determine the level of reflective cracking and quality of ride on asphalt overlays of fractured or rubblized concrete pavement	Roger Olson, MnDOT Road Research	51
Full Depth Bituminous on Aggregate Base	To track the performance of Full Depth Bituminous on Aggregate Base	Perry Collins, MnDOT D4 Materials Eng.	2

Full Depth Reclamation	Track the performance of stabilized base consisting of recycled mixture of original flexible pavement and base	Tim Andersen, MnDOT Office of Materials	23
Gabions for Erosion Control	Monitor the performance of gabions to control erosion. With or without geotextiles	Gary Person, MnDOT Office of Materials	6
Geofoam Fill Under Pavement	To measure the dynamic response and long term performance of bituminous and concrete sections over geofoam fill.	Bernard Izevbekhai, MnDOT Road Research	6
Geofoam Settlement in Bridge Abutments	To monitor the settlement used in a bridge abutment	Schane Rudlang, City of Bloomington	1
Geosynthetic Project	Document the performance of geosynthetics under ASHPHALT SURFACED pavements	Lou Tasa, Mn/DOT Bemidji District	60
Geosynthetics under Gravel Surface Roads	Document the performance of geosynthetics under GRAVEL SURFACED pavements	Lou Tasa, D2 State Aid Engineer	1
Geotextiles for Slope Stabilization	Evaluate stability of slope provided by geotextile	Gary Person, Mn/DOT Office of Materials	4
Integral Abutment Bridge Behavior	To monitor the behavior of integral abutment bridges and the validity of design assumptions.	Michael Sheehan, Olmsted County Engineer	1
Interground Limestone in Cement	Determine if there are any negative effects of using up to 5% interground limestone in cement	Nancy Whiting, MnDOT Road Research	2
LRRB - INV772	Subgrade best practices	Gene Skok, MnDOT Road Research	70
LRRB 703	Construct & evaluate surface preparation sites prior to an overlay.	Roger Olson, MnDOT Road Research	0
LRRB 723 Saw and Seal	Test different sealant materials, joint spacings, reservoir shapes, saw cut depths, and sawing/routing methods.	Roger Olson, MnDOT Road Research	39
LRRB 770 Rubberized Crack/Joint Filler	Repair of rubberized crack filler / joint filler.	Tom Wood, MnDOT Road Research	47
LRRB 825 Monitor Olmsted CR 104 and 117	Continue monitoring (after LRRB 767) the performance of unique design sections. Variables include binder type, crack management strategy, aggregate base type.	Shongtao Dai, MnDOT Office of Materials	7
LRRB 826 Appropriate use of RAP	Appropriate use of RAP based on field experiences. Testing of cored specimens. Distress type and timing.	Ed Johnson, MnDOT Road Research	2
LRRB 830 Roadway Subsurface Drainage	Compare: edge-drains versus centerline drains, drainage from low points vs. higher elevations, crushed concrete in base vs. no crushed concrete	Stephen Schnieder, Nobles County Eng.	31
LRRB 842 - Dust Control	Help local agencies quantify effectiveness of dust control products.	Ed Johnson, MnDOT Road Research	5
LTPP	SHRP/LTPP national pavement research program - Mn/DOT test sections	Ben Worel, MnDOT Road Research	84
Lithium Mitigation of ASR in PCC	To determine if different levels of Lithium treatment have a mitigating effect on concrete experiencing Alkali Silica Reaction	Nancy Whiting, MnDOT Road Research	1
Lug Anchors for Concrete Pavement Slabs	To evaluate the performance of lug anchors to prevent the slippage on concrete panels	John Hager, D7 Materials Engineer	1
Methracrylate, Silane Treatments of PCC	Try HMW methracrylate monomer and silane treatments on concrete pavements experiencing D-Cracking	Nancy Whiting, MnDOT Road Research	6
Microsurfacing	Evaluate performance	Roger Olson, MnDOT Road Research	30
Mitigating PCC Aggregate Problems	Identify D-cracking aggregate sources, Evaluate test methods, Develop new test methods, Evaluate mitigation methods. MnDOT Report 2004-46	Bernard Izevbekhai, Mn/DOT Road Research	34
MnDOT Saw and Seal	Test different sealant materials, joint spacings, reservior shapes, saw cut depths, and sawing/routing methods.	Roger Olson, MnDOT Road Research	91
MnROAD Test Sections	To measure the response and performance of various pavement structure types under various loading conditions in a cold climate.	Ben Worel, MnDOT Road Researh	71
Oil Gravel	Evaluation of use of oil gravel technology for low volume roads	Ed Johnson, MnDOT Road Research	10
PCC TEXTURE AND FRICTION	Study Friction, Texture Ride Interaction For Optimization Algorithm	Bernard Izevbekhai, MnDOT Road Research	104
Pathway Maintenance	To track the performance of various maintenance needs and methods as local pathway systems age.	Debra M. Bloom, City of Roseville	2
Pedestrians in Free Flow Intersections	Monitor and record pedestrian and vehicle behaviors in slip lanes and potential countermeasures were evaluated for their effectiveness	Kaye Bieniek, Olmsted County	6
Permeability	Measure field permeability of pavement base layers with Mn/DOT permeameter	Tim Clyne, Mn/DOT Road Research	25

Permeable Asphalt Stabalized Base (PASB)	To Track the performance of Permeable Asphalt Stabilized Base (PASB)	Perry Collins, MnDOT D4 Materials Eng.	2
Pervious Pavements	Track the test sections that are placed in the state	Ben Worel, Mn/DOT Road Research	1
Precast Concrete Panel	Evaluate installation methods and performance of precast concrete panels to repair Minnesota roadways	Tom Burnham, MnDOT Road Research	1
Recycled Concrete Aggregate in New PCC	To evaluate the performance of concrete pavement that contains recycled concrete aggregate	Bernard Izevbekhai, MnDOT Road Research	7
Reflective Cracking	Document the performance of different reflective cracking strategies used in our roadways	Roger Olson, MnDOT Road Research	32
Rejuvenators for Asphalt Pavements	To evaluate the performance of Rejuvenators for Asphalt Pavements	Roger Olson, MnDOT Road Research	6
Retrofit Dowel Bars	To evaluate the constructability and performance of various retrofit dowel bar details in PCC Pavement	Tom Burnham, MnDOT Road Research	21
Rich Bottom Base	To track the performance and expected improved fatigue properties of asphalt pavements with a rich base layer	Roger Olson, MnDOT Road Research	9
Roundabouts	To track the safety and congestion performance of roundabouts on Minnesota roads	Paul Stine, Mn/DOT State Aid Division	32
Rubber in Bituminous Pavements	To track test sections where tire waste, crumb rubber, etc is included in bituminous mix	Roger Olson, Mn/DOT Road Research	18
Safelane (tm) Overlays	To evaluate the product in terms of durability, friction, deicing capability, and bonding strength.	Bernard Izevbekhai, MnDOT Road Research	5
Shingles in Bituminous Pavement	To track test sections that contain shingle manufacturing waste, shingle tear off scraps, etc in bituminous pavement	Roger Olson, MnDOT Road Research	21
Slurry Seals	Evaluate the performance on slurry seals or slurry leveling in retarding pavement aging or in improving road friction or geometry	Tom Wood, MnDOT Road Research	8
Stamped Crosswalk and Pavement Markings	To track the performance of stamped or imprinted crosswalks, longitudinal lines, stop lines, symbols, and other pavement markings	Ed Johnson, MnDOT Road Research	11
Storm Water Management Practices	Assessment of Various Storm Water Management Practices on the Water Quality of Runoff	Jon Haukaas, City of Fridley	4
Street Lights at Rural Intersections	Street lights at rural intersections offer a low cost and very effective strategy for mitigating nighttime vehicle crashes. See MnDOT Report 1999-17	Roger Gustafson, Carver County Engineer	32
Subdrain Performance	To monitor the performance of subdrains for special drainage needs	Gary Person, MnDOT Office of Materials	16
SuperPave	Track the performance of the SuperPave test sections in Minnesota	Ed Johnson, MnDOT Road Research	110
Thermal Expansion of PCC	To determine the rate of thermal expansion measured under actual field conditions on in-service roads.	Tom Burnham, MnDOT Road Research	3
Thin Bituminous Overlay	Evaluate the performance of a thin Bituminous overlay as a surface treatment	Roger Olson, MnDOT Road Research	12
Tied Concrete Shoulders	To determine the effect that tied concrete shoulders have on faulting, ride, and other PCC pavement performance	Bernard Izevbekhai, MnDOT Road Research	5
Timber Bridge Test Sites	Assess the condition of timber bridges by determining the fundamental frequency of the superstructure and the overall strength of the structure	Brian Brashaw, NRRI, UM at Duluth	12
Truncated Domes	To evaluate the durability and performance of ADA compliant truncated domes for pedestrian ramps	Larry Matsumoto, City of Minneapolis	1
Unbonded Concrete Overlays	To track the performance of Unbonded Concrete Overlays	Bernard Izevbekhai, MnDOT Road Research	6
Unique Local PCC Road Construction Items	To track unique design elements that make PCC pavements for cost effective for local roads	John Brunkhorst, McLeod County Engineer	1
Unsealed Concrete Pavement Joints	To evaluate the performance of unsealed joints in concrete pavement compared to sealed joints	Doug Schwartz, MnDOT Concrete Engineer	17
Uretek	To track the use of this product/material in the state	Ben Worel, Mn/DOT Road Research	1
Weather Monitoring Sites	National Weather Service (NWS), Road Weather Information System, and Frost or Thaw Depth Sites	Gerry Geib, MnDOT Office of Materials	191
Whitetopping	To evaluate the performance of thin and ultra thin concrete (PCC) overlays of asphalt pavements	Tom Burnham, MnDOT Road Research	20
Wildlife Habitat on Right of Way	Evaluate the viability of developing habitat opportunities along roadways	John Hager, MnDOT D7 Materials Eng.	1
Winter Pavement Tenting - LRRB 827	Field measurements on HMA pavements having localized heave at transverse cracks	Ed Johnson, MnDOT Road Research	5
Zinc Coated Dowel Bars	Track the performance of concrete pavements that use zinc coated dowel bars	Bernard Izevebekhai, MnDOT Road Research	2

Appendix B

Training Brochure

To store Test Sites go to the Web site on the back of this brochure and follow the 3 easy steps inside the brochure.

To search Test Sites see the data reporting options on the Web site.

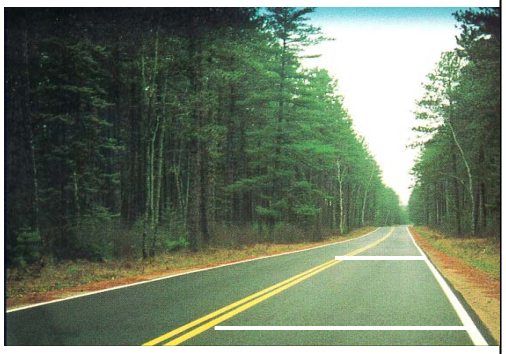
NOTE: Test Site data is organized in a simple 3-level hierarchy. "Study Groups" are at the top level. Each study group can have multiple "Test Sections". *(However, an individual test section can belong to only one study group.)* Similarly each test section may have multiple "Field Reviews".

The Local Road Research Board (LRRB) Test Site Tracking System is hosted on Mn/DOT's Office of Materials Web site:

http://www.mrrapps.dot.state.mn.us/mrrapps/tracking/tracking.asp

Any questions about the use and operation of the Test Site Tracking System can be directed to *Dave Johnson*, *651-808-0154, dmj.mn@comcast.net*

Roadway Test Sites— Build `em! Track `em!



Photos provided by Mn/DOT and U.S. Army Corps of Engineers

STEP #1

Click on “Study Group”

A new Study Group must be created if one does not already exist.

A Study Group needs to have a title, a time frame, and a contact name identified.

It also needs a description of the purpose of the study. (In other words, why were test sections constructed?)

STEP #2

Click on “Test Section”

Much information can be entered about a test section, but the following is critical:

1. Test section number
2. “Parent” study group
3. Test section location (avoid ambiguity)
4. Description of what makes it unique
5. Contact name

STEP #3

Click on “Field Review”

“Owner” Study Group and Test Section need to be identified and then it is straight forward to identify:

1. Who did the review? (Reviewer)
2. When did they do the review? (Date)
3. What was learned by the review? (Comment)