

Dob Minnesota Department Of Transportation

Discusses how to locate quality caregivers, conduct background investigations, and visit facilities and perform interviews
The Warner Road pedestrian bridge project over Childs Road assessed potentials for deeply buried archeology sites within the Mississippi River valley. The project is located in the NW 1/4 SW 1/4 SW 1/4 NE 1/4 Section 4 T28N R22W. This investigation evaluated the subsurface for geologic ages, and depositional and post-depositional environments. Potentials for "suitable habitats" that could have contained intact cultural resources were assessed. This investigation then built a case either for or against the needs for a potentially more intensive archaeological investigation. Multiple radiocarbon dates, combined with geologic descriptions of three cores, helped to identify four main sedimentary packages. These packages include: 1) gleyed fluvial deposits, 2) wetland, lacustrine, and overbank deposits, 3) alluvial and fluvial deposits, and 4) mostly oxidized overbank and alluvial deposits. The sedimentary packages were of the correct age to contain both pre-Euroamerican and post-Euroamerican Settlement archaeological resources; however most were either formed in too high of an energy environment, or were too wet to contain intact land-based archaeological resources. Pier construction will not likely encounter a permanent/semi-permanent pre-Euroamerican site because most of these aged strata were deposited and remained under aquatic or submerged conditions. One pier location was not tested and may be an option for construction monitoring.

Atlas of Minnesota Resources & Settlement

A Report in Conjunction with Minnesota Horizons 1983

Final Report

Minnesota Tourist-travel Indicators

Measures that Matter

Investigating Their Effectiveness in Capturing Driver Attention

This two-pronged (driving simulation and field study) investigation of driver behavior in work zones contributes basic and applied knowledge to our understanding of work zone safety. In the driving simulator study, a fully interactive PC-based STISIM driving simulator was used to test the effectiveness of roadway elements designed to capture and sustain the attention of drivers in flagger-operated work zones. The participants were 160 licensed drivers from four age groups: 18-24, 32-47, 55-65, and 70+ years of age. Each participant drove each of the three conditions in counterbalanced order. The driving simulator study revealed that the new set of elements is more effective than the elements currently used to reduce driving speeds on the approach to a flagger-controlled work zone. No difference in mean driver speed was found in response to the sign with an LED presence. The dynamic speed display coupled with the horn is more effective than the dynamic speed display alone. The cognitively engaging elements identified as effective in the driving simulator study were tested in two field operational tests. The field tests revealed that all but one of the elements identified in the experimental driving simulator study were effective. In particular, the findings revealed that a combination of the speed trailer and horn barrel are effective in reducing the overall speed of vehicles approaching the field study work zone. The field test revealed that the new experimental layout practically eliminated high-speed outliers in addition to its success in reducing driver approach speed to the flag operator.

MnDOT Metro District Traffic Engineering is reviewing its practices for determining traffic sign life expectancy and replacement. The Metro District is interested in understanding the state of the practice regarding traffic sign colors, life cycles and management, specifically whether signs are selected for replacement based on a specific age or characteristics such as color fade, reduced retroreflectivity levels and loss of fluorescence. In addition, the Metro District would like to know the role that sign sheeting types and fabrication methods play in sign color selection and sign life expectations and replacement. To determine the state of the practice, a survey was sent to representatives of all state departments of transportation, several metropolitan area agencies and select Canadian provinces. This Transportation Research Synthesis includes findings from the survey along with the results of a literature search regarding sign life expectancy and replacement.

The Effect of Minnesota Aggregates on Rapid Chloride Permeability Tests

Evaluation of Highway Advisory Radio in the I-35W Traffic Management Network

Analysis of Bridge Deck Cracking Data

Department of Transportation and Related Agencies Appropriations for 2003

The Impacts of Deferred Maintenance in Minnesota

Minnesota Milestones 1998

The purpose of this project was to explore beliefs and attitudes about risky driving behavior and traffic safety interventions between urban and rural drivers as a function of age. This was accomplished by conducting focus groups and surveys in rural and urban areas with teens and seniors. Results indicated that traffic safety policy for teens should focus on distraction and sensory-motor functioning amongst seniors. In terms of traffic safety policy for rural areas, attention should be given to interventions promoting seatbelt compliance. Relative to traffic safety interventions, teens felt GDL helped them become better drivers but weren't convinced GDL had made them better/safer. Teen felt smart technology could have positive effects on safety, but an acceptable program based on this technology needs to balance factors such as cost, robustness, and limitations on driving. Seniors were receptive to mandatory testing but felt it must be flexible, objectively administered, and based on criteria other than age. Rural seniors were concerned about alternative mobility programs for those drivers that fail the proposed test. Relative to these alternative programs, seniors' acceptance was related to the perceived accessibility to a safe and affordable program that is sufficiently versatile to accommodate a range of transportation needs.

Cracking of the concrete decks on newly constructed bridges in Minnesota has become a significant concern. Since 2005 MnDOT has been collecting bridge deck construction and early age cracking information on a "Bridge Deck Placement Data Form." The information collected has been entered into a database, along with early age crack surveys, concrete mix design information and concrete testing information. There currently is information on over 120 bridges stored in the database. Crack surveys were performed on 20 of the bridges contained in the database. A statistical analysis of the data, including the updated crack surveys, was performed to determine if there were any relationships between variables collected on the forms and crack frequency, type, or

time of development. The analysis showed that, in general, the data collected was not sufficiently consistent to draw significant conclusions. A relationship for temperature restraint cracking for bridges with integral abutments was developed for lineal feet of cracking as a function of bridge deck age, water/cementitious material ratio, and total cementitious content. Recommendations were made for modifications to current construction practices and improving the uniformity of the data collected on the "Bridge Deck Placement Data Form" in the future, so that additional analysis could be performed with more consistent data.

Flagger Operations

Hearings Before a Subcommittee of the Committee on Appropriations, House of Representatives, One Hundred Seventh Congress, Second Session

A Cut Above

Summary of ... Progress Report

Minnesota's National Rankings

Minnesota in the Eighties-- Its People and Its Land

The roadway system is critical to social development, economic growth, and the overall quality of life. In the U.S., the condition of highways and roads is being compromised due to several reasons including age deterioration, rising costs of construction, and a decline in funding. Similarly, in Minnesota, the majority of pavements are aging and in need of significant maintenance or reconstruction, but there is an expected deficit of \$17.7 billion for state roads over the next 20 years. At the local level, pavement conditions along state-aid roads and county, city, and township roads are anticipated to deteriorate significantly based on current funding levels. In addition, significant budgetary impacts on maintenance spending are expected due to the COVID-19 pandemic. Given these budget limitations, agencies often postpone planned maintenance to make funding available for other transportation purposes, but the deferred maintenance will negatively affect asset life, leading to higher future maintenance costs and lower roadway safety. This research analyzes spatial patterns of maintenance expenditures across localities in Minnesota, explores how fiscal conditions affect maintenance expenditures, and examines roadway maintenance decision-making across localities.

The Minnesota Department of Transportation (MnDOT) operates 137 truck stations and 18 headquarter sites. Replacement of 80 of these truck stations will be required within the next 20 years based on expected life cycles. There is a need to optimize the locations of truck stations on a statewide basis. Truck stations serve several functions for MnDOT maintenance operations. They exist to maintain the state's trunk highway system and provide a base of operation for many personnel and maintenance vehicles. Alternative locations were developed for each truck station and optimized individually. Truck station locations were optimized using a GIS optimization model to determine operational outputs. The outputs of each optimization model were used in a cost-analysis model to determine the 50-year life-cycle savings of each alternative. The cost analysis included factors for the number of events per year, number of cycles per event, wages, over time versus straight time, and vehicle operating costs. Implementation optimization was conducted to determine which alternatives should be implemented and in what order. The implementation modeling was an iterative process where each optimal location replaced the existing location and became the baseline scenario to which the next iteration was compared. Results indicated that 123 truck stations should be rebuilt on site, 24 should be relocated, and 2 should be combined. The total expected cost savings from implementing the optimal alternatives over a 50-year period is \$23,362,000. The implementation plan recommends the order for truck station replacement for each district based on age, condition, and implementation priority.

Minnesota Labor Market Trends

Public Review Draft

Highway Spending

Travel Behavior Over Time

Minnesota Milestones

Generational Perspective on Teen and Older Drivers on Traffic Safety in Rural and Urban Communities

Optimizing Truck Station Locations for Maintenance Operations

This report investigates the effect of the type of coarse aggregate used in concrete on chloride ions penetrability as indicated by the rapid chloride penetration test (RCPT). Twelve coarse aggregate types, commonly used in Minnesota Department of Transportation highway construction projects, were identified and used for this study. The coarse aggregate types were subjected to laboratory testing to determine their physical properties and ambient chloride content. The aggregate types were used to prepare fresh concrete according to Mn/DOT specifications in which silica fume and fly ash were used. In order to characterize the concrete in terms of resistance to chloride ions penetration, concrete specimens made of these aggregate types were subjected to the rapid chloride permeability test at different ages. All mix parameters including gradation and quantities of different aggregates were held constant in different mixes. The only variable was the aggregate type. For concrete specimens tested at 28 days of age, the average total charge passed varied between 1,452 and 2,606 Coulombs, which can be described as "low" to "moderate" chloride ions penetrability, according to AASHTO designation. The average total charge passed decreased with time (age) for all of the concrete specimens tested. Considering specimens at 91 days of age, the average total charge passed ranged from 601 to 1,236 Coulombs, which can be characterized as "very low" to "low" chloride ions penetrability. The aggregate type has a noticeable influence on the RCPT results for the concrete mix design that was utilized.

A Review of Mechanisms, Analysis of MnDOT Bridge Construction Data, and Recommendation for Treatment and Prevention

Special Report, Comparing Expansions: Yesterday and Today

Sign Life-cycle Policies and Practices

Optimizing Truck Station Locations for Maintenance Operations

Evaluation Report

Transportation-based Classifications of Minnesota's Counties and Metropolitan Statistical Area Tracts Using Measures from the 1990 Census of Population and Housing

"This twenty-seventh edition of A Guide to Starting a Business in Minnesota, like its predecessors, is intended to provide a concise, summary discussion of the major issues faced by those starting a business in Minnesota. This edition of the Guide contains three major sections: the narrative text; a Resource Directory, which provides addresses and telephone numbers of organizations referenced in the text; and the Directory of Licensed and Permits, which lists all business licenses and permits required by the State of Minnesota, the state agency which issues or administers the license or permit, and a telephone number for obtaining more information. Topics presented in the narrative text are presented in the order in which the new business owner typically must address them."--Preface

The project was initiated to obtain installation, operations, maintenance, and evaluation data on Highway Advisory Radio (HAR) in a surveillance and control network. The site selected for the project was a segment of I-35W between I-494 and 66th Street within the I-35W Traffic Management System operated by the Minnesota Department of Transportation. This report describes the operating agency's experiences and assessment of HAR. It covers the installation and operations of HAR for a one year period. The report includes an analysis of major system elements, message characteristics, motorist use and acceptance, and various system costs.

Concrete Strength Required to Open to Traffic

Geomorphic Investigation of the Warner Road Pedestrian Bridge Over Childs Road, Ramsey County, Minnesota

The Vital Statistics Act and Regulations of the Minnesota State Board of Health

Minnesota Statistical Profile, 1976

Sample State Administrative Driver License Suspension Forms

Case Studies of Development in the Minneapolis-St. Paul Metropolitan Region

Using detailed travel surveys (the Travel Behavior Inventory) conducted by the Metropolitan Council of the Minneapolis/Saint Paul (Twin Cities) Region in Minnesota for 1990, 2000-2001, and 2010-2011, this report conducts an analysis of changes in travel behavior over time. Specifically looking at changes in travel duration, time, use, and accessibility; telecommuting and its relationship with travel and residential choices; transit service quality and transit use; effects of age and cohort; and changes in walking and bicycling. Much has changed in this period, including the size of the region, demographics, economics, technology, driver licensing, and preferences, examining in turn the effects of investment, development, and population change on behaviors for the Minneapolis-St. Paul region as a whole and for areas within the region. While this research cannot hope to untangle all of the contributing factors, it aims to increase understanding of what did happen, with some explanation of why. This will inform transportation engineers, planners, economists, analysts, and decision makers about the prospective effects of future changes to networks, land use, and demographics while also evaluating the effects of previous network investments.

This report brings together several aspects of land development dynamics that have been examined in previous reports of the Twin Cities Regional Dynamics section of the Transportation and Regional Growth Study, in a series of place-based case studies of Minor Civil Divisions (MCDs) and school districts within the Minneapolis-St. Paul metropolitan region. The report focuses on the local property tax as the locus of interaction between municipal revenue generation and service provision, and the K-12 education finance system in the State of Minnesota. The report finds that local units of government are vulnerable to larger spatial trends over which they have little control, and thus an absence of region-wide or statewide policies to equalize support for PreK-12 education funding and delivery of services will encourage competition for development dollars and uneven development across the region. The report is part of a series, "Transportation and Regional Growth," funded by the Minnesota Department of Transportation.

School District Student Transportation

Evolving Geographies and Transportation Impacts

Minnesota Statistical Profile

Report

Minnesota Economic Trends

In this study, we examine population and housing change, changes in industrial activity and occupational changes, and characteristics of commuters and the journey to work for those working away from home in 26 regional centers and their commute sheds in Greater Minnesota. We also explore ways in which Public Use Microdata Samples (PUMS) and Public Use Microdata Areas (PUMAs) might be exploited to shed additional insight into the changing nature of the demographic, economic and commuting patterns that are now pervasive throughout Greater Minnesota. These data are evaluated to explore links between demographic and economic features of working-age populations, and relationships between worker and household characteristics and aspects of commuting activity on the other. The final chapter examines regional economic vitality and travel behavior across the Minnesota Countryside. When population change in sample regional centers in the 1990s is compared with change in the nearby counties that comprise the centers' commuting fields, four situations appear: those where centers and their commuting fields both had population increases; centers with declining populations, but increases in the commuting fields; centers with growing populations, but with declines in their commuting fields; and situations where both the center and the commute field lost population.

The current empirical methods for determining traffic-opening criteria can be overly conservative causing unnecessary construction delays and user costs. The research described here recommends innovative mechanistic-based procedures for monitoring concrete early age development and evaluating the effect of early traffic opening on long-term damage accumulation. The procedure utilizes recent developments in nondestructive testing to optimize traffic opening timing without jeopardizing pavement longevity. These tasks were achieved via extensive field and laboratory experiments allowing for the analysis of variables such as curing condition and loading type with respect to the effect of early loading of concrete. The results of these efforts culminated in the development of a program that analyzes the effect of design and opening time decisions on pavement damage. The deliverable can be utilized by transportation agencies to make more informed decisions.

Urbanization of Minnesota's Countryside, 2000-2025

Minnesota Profile

Minnesota, a Good Place to Do Business

Atlas of Minnesota Resources and Settlement

Transportation

Pavement Rehabilitation Selection

The objective of the project was to outline best practices for the selection of asphalt pavement recycling techniques from the many choices that are available. The report specifically examines cold-in-place recycling (CIR), plain full depth reclamation (FDR), and mill & overlay (M & O). Interviews, surveys, and site visits were conducted at both Mn/DOT districts and counties, where relevant rehabilitation information was supplied on over 120 projects. A database was constructed to organize the details of these projects, and the parameters in the database included (1) cracking, (2) ride, (3) rutting, (4) age, and (5) traffic volume. From studying the existing rehabilitation projects in the State, Ride Quality

Index (RQI) and Surface Rating (SR) were selected as the descriptors of pavement surface condition. A decision procedure based on the analysis of all available projects was developed. The decision procedure included (1) consideration of road geometrics; (2) pavement condition survey; and (3) structural adequacy evaluation. Furthermore, a step-by-step checklist was developed to provide local engineers with a simple and useful tool to follow the decision procedures. The procedure includes selection of rehabilitation method, pavement thickness design, materials mixture design, and construction.

A Guide to Starting a Business in Minnesota

How to Find the Best Quality Child Care

A Program Evaluation Report

Current Literature

Minnesota Directory of Group Day Care Programs