



STATE AID SCENE



Number 18

State Aid Division

July 1996

BITUMINOUS LIAISON COMMITTEE ESTABLISHED

A bituminous liaison committee has been recently established with representatives from counties and cities. The committee consists of a county member from each Mn/DOT District and two county members from the Metropolitan Division, as well as four city engineers. Members were appointed by the presidents of the County Engineers and City Engineers association. The committee will meet periodically with Keith Englesby, Mn/DOT Bituminous Engineer, and his staff. It will provide a mechanism for Mn/DOT's bituminous engineering unit to become aware of concerns or issues on the part of local government in regard to bituminous technology, will enable Mn/DOT to better determine how it can be of assistance to counties and cities, will identify training needs of counties and cities, and will promote a better understanding of Mn/DOT's policies and practices related to bituminous technology.

STATE AID INTERNET SURVEY

We are gathering information about the internet to see if it could act as an avenue to distribute State Aid's needs data, replace the existing informational bulletin board and eventually distribute other State Aid publications. Please fill out the attached survey as accurately as possible. If you have any questions or need assistance, contact Jan Littleton at 612-296-7039

MN/DOT PAY ITEM LISTING

The Mn/DOT Bid Analysis Management System (BAMS), Pay Item Listing is now on the Bulletin Board. It is in a self expanding file that requires approximately 1.5 MB of storage once expanded. It is in ASCII format to allow interface with most spreadsheet programs. The last update was June 4, 1996. It will be updated periodically and on an as-requested basis. Contact Rick Kostohryz, 612-296-1679 on Bulletin Board questions and Bob Vasek, 612-282-6479 to request that the list be updated.

VEHICLE CLASS COUNTS

The ESAL forecasting procedures for use with the R-Value pavement design method found in Chapter 7 of the Road Design Manual have been superseded by the recent release of the Geotechnical Manual.

Many of you have discovered that the formula in the new manual will produce significantly higher ESALs than the formula in the Road Design Manual. That is because the Vehicle Class Percents of AADT found in the Geotechnical Design Manual in Table 4-4.2 are for use on trunk highways, and only when no project specific data is available.

For rural state-aid designs, the vehicle class percentages from Chapter 7 of the old Road Design Manual should be used. This will be included in the next revision of the Geotechnical Manual.

STATUTORY CHANGES EFFECTIVE AUGUST 1, 1996

Several changes in statute made by the 1996 legislature become effective on August 1 and affect the State Aid Division, counties, and cities. The following is a brief description of those changes:

●Prior to this year the statute contained the following restrictions on the ability of the counties and cities to advance funding for state aid projects:

- Counties were limited to advancing no more than 40% of their most recent apportionment.
- Counties were prohibited from advancing more than 30% of their most recent municipal apportionment.
- Cities of the first class were precluded from providing any advance funding for state aid projects.

Effective August 1 these restrictions are no longer in effect. This will provide more flexibility for counties and cities to provide advanced funding for their state aid projects from either local funds or through use of the general State Aid construction balance. Use of the state aid construction balance for advancing projects will continue to be in accordance with guidelines established by the State Aid Division in consultation with the Screening Boards.

●Effective August 1, counties may expend state aid municipal account accumulated balances in excess of two years of municipal account apportionment, on projects located outside cities under 5,000 population solely by resolution of the County Board. Spending of state aid municipal account balances below two years of municipal account apportionment will continue to be covered by the original statute, which requires a public hearing and opportunity for objection by municipalities under 5,000 population within the county.

●Effective August 1, statute provides a mechanism for resolving disputes on County State Aid Highways within municipalities. If a city council fails to approve establishment, construction, reconstruction or improvement of a County State Aid Highway, the

County Board may request that the dispute be heard by a dispute resolution board. The dispute resolution board consists of one county commissioner, one county engineer, one city council member or mayor, one engineer, and a Mn/DOT representative; all appointed by the Commissioner of Transportation. The county and city representatives cannot be from the effected county and city. If the dispute resolution board recommends in favor of the county's position, the Commissioner of Transportation may approve the establishment, construction, reconstruction, or improvement without city approval.

●After August 1, the formula for distributing County State Aid Highway funds among counties will be changed so that the mileage apportionment is based on lane miles rather than centerline miles. The statutory change provides that no county may receive less in mileage apportionment than it did in 1996. Because of this provision, there will be little change in the mileage portion of the distribution until such time as additional funding is provided by the legislature.

●The make up of the County Screening Board changes significantly effective August 1. In the past, there been one screening board member from each construction district and two from the Metropolitan Division. The new screening board will consist of one member from each construction district, two from the Metropolitan Division, and one from each county over 175,000 population. Hennepin, Ramsey, Dakota, Anoka, and St. Louis Counties are currently over 175,000 population. It is anticipated that Washington County will be determined to be over 175,000 population within the next two months. So it is likely that there will be six permanent county members for this Fall's Screening Board meeting, bringing the total to 15 members. The statute also provides that Screening Board terms may be no more than four years, compared to the previous limitation of two years. It appears that the two members from the Metropolitan Division will need to serve four year staggered terms in order for the new system to function.

Anyone desiring more information in regard to these changes may call the State Aid Division, at 296-30

**PRECAST CONCRETE BOX
CULVERT STANDARDS**

ate Aid Bridge Engineer, Khani Sahebjam, has prepared an attached letter regarding the standards for Precast Concrete Box Culverts. The letter contains the reasons for the development of these standards and lists four of the standards.

WE ARE AVAILABLE

Wayne Murphy, Director of the Office of Construction & Materials Engineering, has put together a list of key Maplewood specialty personnel along with their pager and cellular phone numbers to improve business hours phone response. The list of numbers is attached. The Pavement Offices (Bituminous, Concrete, and Grading & Base) will provide an after hours emergency service. That number is 612-818-6370. The Pavement Office business hours will be 7:30 AM to 4:00 PM, Monday through Friday.

FEDERAL-AID PROJECTS STATUS

July 1st, we entered the last quarter of Federal fiscal year 1996, and we have made the last call for 1996 projects. After all the maneuvering, the status of the 1996 project development reports (PDRs) and plans is as follows.

Number of projects	=	173
PDRs approved	=	164
PDRs received but not approved	=	6
PDRs not received	=	3
Projects let or date set	=	67
Plans received but not let	=	55
Plans not received	=	51

FORM 30133

A revised form, #30133, used for reporting data for special provisions for Federal-aid projects is available for use. A copy of the revised form is attached. Please discard any older versions of this form and begin using this revision immediately.

**FEDERAL-AID PILOT
PROJECT STATUS**

This past spring, cities and counties with Federal-aid projects in 1996 were asked to participate in a new process for administering Federal-aid contracts. Very briefly, this pilot process allows Federal-aid contracts to be let as local contracts rather than as state contracts which traditionally have been required. Benefits to the local agency include a less rigid plan review, shortened State Aid processing time, less coordination with Mn/DOT, and greater control over project schedules.

About 20 agencies are participating in this new process, under which five projects have been let, with two more coming soon, and four projects yet to be reviewed. We are hopeful that an even larger number will choose to participate in the program for 1997. As with any new process, a few glitches have been discovered, but overall, the process seems to be working smoothly. The most common complaint is that the pilot process is not as quick as the state-aid plan process as we had advertised. Admittedly, the pilot projects so far have not been processed as quickly as we would like. Competition for time from a few critical traditional projects has been the biggest factor. We expect, however, that in 1997, we will deliver approved Federal-aid plans within a 3-4 week time frame (traditional plans experience a 1-3 month backlog period).

After the 1997 season, we will reevaluate the pilot process, and if successful, implement the process as standard operating procedure for most traditional types of work.

Any city or county interested in participating in the pilot process for 1997 should contact either Mary Bieringer at (612) 296-9874 or Mark Gieseke at (612) 296-9877.

**MINNESOTA TRANSPORTATION LIBRARIES
ANNOUNCE AVAILABILITY OF NEW
ONLINE SERVICE**

Please see the attached sheet for the details on the new online information service offered by the Minnesota Transportation Libraries.

BRIDGE SCOUR PROTECTION

John Boynton of MnDOT's Office of Bridges and Structures is available to talk to City and County staff about bridge scour protection design. John says that no single design approach will work in all situations since each set of variables may lead to different protection configurations. John can be reached at 612-582-1187.

WETLAND CONSERVATION ACT AMENDMENTS

Attached for your consideration is a copy of an April 23 memo from Mr. Frank Pavko of MnDOT's Office of Environmental Services that summarizes some of the 1996 amendments to the Wetland Conservation Act.

WHAT HAPPENED TO THE TRB?

On July 1, 1996, Governor Carlson filed Reorganization Order No. 176 with the Office of the Secretary of State. This Reorganization Order transferred the duties and responsibilities of the Minnesota Transportation Regulation Board to the Minnesota Department of Transportation. The transfer was necessary since the legislature did not provide funding for the TRB for the new fiscal year.

MnDOT staff are formulating procedures to deal with TRB issues. Transportation agencies have in the past obtained railroad standard variances and rail crossing installation/removal approval from the former TRB. Any questions you have concerning the former TRB duties are to be directed to Mr. Brad Larson, 612-282-2170.

NEW FACES

The State Aid office has had a few personnel changes in the last few months. Office Manager Ruth Cor has taken a one-year leave of absence to work with MN/Assist in the Department of Finance. Former receptionist, Mary Ann Hillyer, is now acting Office Manager during this time. Kim Whebbe has accepted the temporary position (up to one year) of receptionist for State Aid. Her functions are receptionist, support for Julie Skallman, Assistant State Aid Engineer, and payroll. Kim's background in accounting and payroll, will be especially helpful with the recent transitions within the Office. Kim's phone number is 296-3011. Former State Aid employee, Mjyke Nelson (recently with the Commerce Dept.) has returned to State Aid as Information Systems Director. We welcome Mjyke back and he can be reached at 296-6414.



State Aid for Local Transportation Automation Survey

We are gathering information about Internet access to see if the Internet could be used to distribute the Needs Data to the cities and counties more efficiently than the current Bulletin Board System. Please fill out the survey as accurately as possible. If you need assistance, call Jan Littleton at 612-296-7039

1) Name: _____
E-mail address (if available): _____

2) Do you currently have Internet access? (Circle one)
YES NO

If Yes, go to questions 2a, and 2b.

If No, briefly describe your office's position on obtaining access to the Internet in the section below.

2a) By what means do you connect to the Internet? (E.g., I use my modem and CompuServe. My Internet provider is MNet. I use the network infrastructure and Netscape.)

2b) Do you access the Internet with the same computer you use to download the Needs Data? (Circle One)
YES NO

3) Please give us any comments or concerns you may have about accessing the Needs Data via the Internet.

Please return surveys ASAP to Jan Littleton



Minnesota Department of Transportation

Memo

State Aid Bridge Office
Waters Edge Building, Suite 200
1500 West County Road B2
Roseville, Minnesota 55113-3105

Office Tel: 612/582-1191
Fax: 612/582-1110

July 17, 1996

To: All County Engineers

From: Khani Sahebjam *KS*
State Aid Bridge Engineer

Re: Precast Concrete Box Culvert Standards

As you know the Precast Concrete Box Culvert standards plans have been developed and issued by Mn\DOT in August of 1995. These are standard plans which can be incorporated with the grading plans by the local agency. The structural design for culverts ranging from 6'x4' to 12'x12' and fills as high as 25' has been completed and tabulated.

The reason for the development of these standards were two fold:

- 1- Eliminating structural design by Mn\DOT, local agency or consultant for each project
- 2- Eliminating Shop drawing review as required by Mn\DOT standard specification 3238.2

Therefore,

1- All new Box Culvert projects should use the standard design as shown in the Standard Plans Manual. The plans are available through the Bulletin Board or full size sheets from the Bridge office (English and Metric). Local agencies can select an appropriate Class box culvert using these tables and no special design is normally required. For special live loading conditions or fill heights not covered by the standard plans, a special design would be required.

2- There will be no shop drawing review required for projects with Precast Concrete Box Standard designs and this requirement should be eliminated from the contract documents for each project with a statement in the special provisions eliminating paragraph 3238.2A. This will be required until the next supplemental specifications, issued by Mn\DOT addresses this issue. State shop drawing review for special designs can be required at the engineer's discretion.

3- All old designs can and are encouraged to be redesigned to the new standard design by the local agency prior to letting. If a change in design is requested after letting, a standard box can be substituted by the contractor\fabricator which will have to fulfill the design requirements of the original design. In this case the local agency is responsible to ensure that the substitute Standard Precast Box is of an adequate design and no shop drawings will be required to be submitted (**a supplemental agreement would need to be issued to change the contract document to not requiring shop drawing review**).

4- All projects with the old design which have already been completed prior to the development of the Standard plans and are ready for advertising, can be processed as they are and a shop drawing review will be required.

cc: District State Aid Engineers
Julie Skallman, State Aid
Paul Stine, State Aid
Dan Dorgan, Mn\DOT Bridge
Jim Kochsiek, Mn\DOT Lab
File



STATE OF MINNESOTA
OFFICE MEMORANDUM

Office of Construction & Materials Engineering
1400 Gervais Avenue
Maplewood, MN 55109

DATE: July 12, 1996

TO: Addressees

FROM: Wayne Murphy
Director

SUBJECT: Maplewood Phone Service

As part of our continuing quest to improve service to all our customers and in direct response to concerns regarding Maplewood phone service identified through the customer relations critical issue team please note the following actions:

1. All key Maplewood specialty offices personnel who travel frequently will utilize pagers and cellular phones to improve business hours phone response. A list of those numbers is attached.
2. The Pavement Offices (Bituminous, Concrete, and Grading & Base) will provide after hours emergency calls service through a pager monitored by a Maplewood Manager. That number is 612-818-6370.
3. The Pavement Offices business hours will be 7:30 AM until 4:00 PM, Monday through Friday.

Please share with your staff. If you have any concerns please call. Thanks.

Addressees: ADE's
Resident Engineers
District Materials Engineers
County Engineers
City Engineers

cc: John Sandahl

**CONSTRUCTION MATERIALS ENGINEERING
CELLULAR LIST/PAGER LIST:
July 15, 1996**

AFTER HOUR EMERGENCIES CALL: 612-818-6370		
NAME:	CELLULAR #	PAGER#
BEBERG, DAVE	612-790-4098 612-390-1781 1-800-620-1781	612-527-7917
BEAUDRY, TERRY	612-209-2514 612-435-7044 1-500-435-7044	612-818-4385
BETTS, RAY	612-209-2292 612-390-7043 1-500-435-7043	612-209-2292
ENGLESBY, KEITH	612-209-2533 612-390-7041 1-500-435-7041	612-818-4389
GARRITY, JOHN		612-818-4391
KOCHSIEK, JIM		612-818-4394
LEWERER, JIM	612-209-2504 612-390-7045 1-500-435-7045	612-818-4390
LILLY, JIM	612-840-6691	612-818-4393
MURPHY, WAYNE	612-867-0732	Port: 612- 670-2874
SCHMIDT, JIM		612-818-4392
SCHWARTZ, DOUG	612-790-4268 612-390-1782 1-800-620-1782	612-818-4387
YOUNG, DUANE	612-209-2485 612-390-7042 1-500-435-7042	612-818-4388
ZELLER, MATT	612-790-0856 612-390-3921 1-800-620-3921	612-818-4386

DEPARTMENT OF TRANSPORTATION
DIVISION OF STATE AID FOR LOCAL TRANSPORTATION
DATA FOR SPECIAL PROVISIONS FOR FEDERAL-AID PROJECTS

S.P. _____

LETTING Desired Date _____ Hour _____

1. Location of bid opening _____.

(1404) MAINTENANCE OF TRAFFIC (0563) TRAFFIC CONTROL

1. Carry Traffic During Construction _____ Yes, _____ No.
2. Divert by Detour _____ Yes, _____ No.
3. Detour Signing by County/City Forces _____ Yes, _____ No.
4. Advance Signing by County/City Forces _____ Yes, _____ No.
5. Construction Zone Signing by County/City Forces
_____ Yes _____ No.

NOTE: A Traffic Control Plan is required for all
Projects. See State Aid Manual (5-892.231).

LIABILITY INSURANCE PROVISIONS REQUIRED _____ Yes, _____ No.

PROJECT CONTAINS RAILROAD CROSSING OR WORK ON RAILROAD R/W
_____ Yes, _____ No.

NOTE: County/City will furnish information relative to the
costs of providing flaggers and other protective services and
devices if required by the Railroad when requested by prospective
bidders.

(1803) PROSECUTION OF WORK

Bar Chart _____ Yes, _____ No; Critical Path _____ Yes, _____ No.

TIME SCHEDULE Indicate your choice by completing information.

1. Start Work (a) on or before (definite date) _____
(b) 8 calendar days after date of notice of
approval of Contract
2. Complete Work (a) _____ Working Days
(b) _____ Completion Date

(2105) EXCAVATION AND EMBANKMENT

1. Top _____ inches of natural topsoil not permitted in
upper _____ feet of subgrade.
2. _____ inches of topsoil to be spread on slopes / ditch
bottoms / borrow pit areas (circle appropriate areas)
3. Excavation quantity computed on the basis of:
A. Volume allowance for topsoil (in accordance with
2105.4A _____).
- B. No. volume allowance for topsoil _____.
4. Payment for Common Excavation will be made on the basis of:
A. Final Cross Section Measure
1) On Entire Project
2) Between the following stations _____.

- B. Planned Quantities
 - 1) On Entire Project
 - 2) Between the following stations _____.
- 5. Compaction of Embankments:
 - A. Quality Compaction _____ B. Specified Density _____
- 6. Tolerances:
 - A. According to Provisions of 2112.3 _____.
 - B. Reasonable conformity with line, grades and elevations as shown in the Plan or as directed by the Engineer _____

(2112) SUBGRADE PREPARATION

- 1. Incidental _____.
- 2. Paid for by equipment hours _____.
- 3. Done by others _____. By whom _____.
- 4. Paid for under Item No. 2112.501 _____.

(2211) & (2221) AGGREGATE BASE AND SHOULDERING CONSTRUCTION

- 1. Gradation of Class _____ Aggregate shall be modified as follows: _____
 Gradation of Class _____ Aggregate shall be modified as follows: _____
- 2. Compaction of Base: Quality Compaction _____
 Specified Density _____
 Control Strip _____
- 3. Compaction of Shouldering: Quality Compaction _____
 Specified Density _____
 Control Strip _____
- 4. Tolerances: 1) According to provisions of 2211.3D _____
 2) Reasonable conformity with cross sections shown in the Plans and lines and grades directed by the Engineer _____

AGGREGATE PRODUCTION

- 1. Contractor to make own arrangements for materials
 _____ Yes, _____ No.
- 2. Delete second paragraph of 3138.2C? _____ Yes _____ No.

(2331) & (2340) BITUMINOUS PAVEMENT

- 1. Compaction of Bituminous Surface:
 - Ordinary Compaction _____ (2331 or 2340)
 - Specified Density _____ (2331)
 - Control Strip _____ (2331 or 2340)
 - Modified Specified Density (2340)
- 2. Contractor Certified Plant Requirements _____ Yes _____ No.
 (2340 mixtures only)
- 3. Tolerances: 1) According to provisions of 2331.3J _____
 2) Final surface variation no greater than 3/16 inch from a 10 foot straight edge, and slope variation not to exceed plus or minus 3/4 inch in 12 feet _____
- 4. Mix Designation Numbers for Bituminous Mixtures shall be shown on the Typical Sections in the Plans.

(2357) TACK COAT

Kind & Grade _____

MINNESOTA

TRANSPORTATION

LIBRARIES

A joint program of the Minnesota Department of Transportation, the University of Minnesota Center for Transportation Studies, and the Minnesota Local Road Research Board

July 26, 1996

To: County and City Transportation Officials

From: Minnesota Transportation Libraries

Subject: Access to Online Library Resources

On June 1, 1996 Minnesota Transportation Libraries mailed software and documentation to County and City Transportation Officials. The purpose of the software was to update your State Aid Bulletin Board Menu to provide access to the Minnesota Transportation Libraries (MTL) online service.

This service allows you to access, from your State Aid PC, MTL's online library catalog as well as a number of databases on CD-ROMs in the Mn/DOT Library. You can search these databases to find information on transportation, community development, planning and other topics of interest.

The databases you have access to include:

Online Library Catalog - (MnSCU/PALS) - a catalog of materials in Mn/DOT Library, other state agency libraries, state universities and colleges.

Transport CD - abstracts from the TRIS database, compiled by the Transportation Research Board, from the European Ministers of Transport, and transportation related information from the Organisation for Economic Cooperation and Development. The abstracts are of journal articles, books, technical reports, conference proceedings, and research-in-progress.

Computer Select - full text of articles from the most recent year, of about 100 computer related magazines

Business Index - abstracts of journal articles covering management, economics and human resource topics from more than 800 business magazines

OSHA CD - the text of all regulations from the U.S. Occupational Safety and Health Administration along with selected documents and technical information from OSHA's Computerized Information System.

If you did not receive the software, or if you have any questions about the service, please call or e-mail Jim Byerly (612) 296-7702, jim.byerly@dot.state.mn.us.

DEPARTMENT OF TRANSPORTATION
Office of Environmental Services
3485 Hadley Ave. N. Oakdale, MN 55128

STATE OF MINNESOTA
OFFICE MEMORANDUM

DATE: April 23, 1996

TO: Addressees

FROM: Frank Pafko, Director
Environmental Process Section

PHONE: 779-5099

SUBJECT: WETLAND CONSERVATION ACT AMENDMENTS of 1996

The Minnesota Legislature passed and the Governor has signed HF787, amending the state Wetland Conservation Act. This bill, held over in conference committee from the 1995 session, is a compromise between environmental interests and landowner, development, and local government interests. The compromise should reduce "red tape", provide for continued wetland protection, and encourage wetland restoration. With one exception, this bill is very favorable to transportation interests.

Provisions of HF787 which are of interest to transportation are:

- Public road authorities undertaking road reconstruction, bridge replacement, and lesser type projects on existing roads to meet state or federal design and safety standards, are exempted from preparing formal wetland replacement plans. Only the amount of wetland impact must be reported to the Board of Water and Soil Resources (BWSR). This provision does not apply to capacity improvements (i.e. major construction) on existing roads or to new roads. There will need to be some interpretation of this language relative to projects such as minor realignments, frontage roads etc.
- To be exempt from replacement plan preparation, road authorities must still minimize wetland impacts and consider implementing site-specific mitigation; submit annual reports to BWSR by January 15 identifying wetlands impacted the previous year and anticipated impacts for the next year. The technical evaluation panel could review the project and any delineation, minimization, or on-site mitigation decisions, if questions are raised.
- BWSR will replace wetlands impacted by county, city, and township road projects as described in the first bullet. \$3 million was appropriated for that purpose. At least 50% of those funds must be spent in the seven county metro area. Additionally local road authorities can purchase subsidized wetland credits from BWSR for new and expanded road projects.

Wetland Conservation Act Amendments

Page 3

April 23, 1996

- BWSR is required to implement emergency rule changes within 60 days. The revised Rules are expected to take effect June 10, 1996 upon publication in the State Register. This process is currently underway and Mn/DOT has had input into the revised Rules. This may also streamline wetland replacement plan requirements.
- Wetland credit can now be given for stormwater ponds, preservation of upland associated with wetland replacement, vegetative restoration of farmed wetlands, and preservation of wetlands restored under a temporary Conservation Reserve Program (CRP) contract.
- The acreage threshold for regulation of wetland impacts (deminimis) have been increased for certain types of wetlands.
- These new provisions took effect April 12, 1996, the day after the Governor signed HF787.

District wetland contacts will be sent the full text of HF787 and any necessary changes to the Highway Project Development Process will be conveyed via future presentations, training, and handbook updates. Questions about the Wetland Conservation Act can be directed to myself, Sarma Straumanis (779-5088), or Nick Tiedeken (779-5105).

Addressees:

D. Durgin
J. Sandahl
P. Hughes
C. Siggerrud
P. Murphy
G. Rohrbach
M. Linzie
District Engineers
Preconstruction Managers
District State Aid Engineers
District Predesign Engineers
District Hydraulic Engineers
District Wetland specialists

cc. L.E. Foote
S. Straumanis
N. Tiedeken
B. Kovach
K. Faruq

THE WORD

June, 1996

Metric Update in Minnesota



Metric Conference Summarized

For those not in attendance at the AASHTO-FHWA National Metric Conference held last April in Minneapolis, a summary of discussions is presented :

Promote metric by finding reasons to support it. Don't stop at just saying FHWA requires it The FHWA has not changed its priorities on conversion. They will continue to move forward in an orderly fashion ... Half of the federal projects to be awarded this year are metric ... Signs should be converted at the same time nationwide ... Training and selling is a must to gain metric acceptance ... AASHTO documents are being converted. The AASHTO Clearinghouse will help with information ... \$70 billion will be spent on metric construction in the next 4 years ... Alabama will have kilometer posts in place by 1997 ... Minnesota will have 40% of their projects in metric in 1996 ... MUTCD rule making will be coming out this summer ... Problems with rounding distances for sign legends ... rebars to go with a soft conversion ... Questions remain with information systems, convert historical data or leave alone ... 6 nationwide "Town Meetings" planned for open forum discussion concerning metric in areas other than road construction ... Training is available, and should be afforded to everyone, at some time, and some intensity. ... ASCE metric info at [ITTP://WWW.INFI.NET~CSTONE/COMINDEX.HTM](http://www.infi.net/~cstone/comindex.htm) ...

Cities and Counties are working with metric, but not with the speed of the state agencies. ... The 1st metric bids were lower than expected ...

Contractor views: Don't wait to convert, it will cost more in the long run. Keep a positive attitude. Better estimating software is needed. Metric logo and conversion chart on the plan is helpful. Contractors need to believe that the government is committed. Eliminate mixed messages ... Metric fasteners exist, and they are domestically produced ... A Vendor Book is available from the US Metric Assn ...

Regional Meetings & State discussions: - need to outreach utilities, RR's, local gov'ts ... Have one central metric authority, not 4 or 5 guides ... strive for uniformity in communications ... industry does not supply materials because we do not demand it ... Contractors will go metric if they believe we are serious this time ... establish reasonable timetables for total metric compliance ... add a metric agenda item to all AASHTO Design meetings ... some environmental reports in dual, others all metric ... a federal awareness campaign is needed ... DOT construction personnel must work in metric

Summary remarks : Public awareness must be timed to achieve greatest effectiveness. ... Tailor training to the audience, job application ... Recommended that more regional meetings be held, but questioned whether another national meeting is necessary.

Authors of the quotes, and a more detailed summary are available from the MnDOT Metric office

Paint Stripes To Go "Metric"

Highway workers typically estimate distances by "counting the centerline stripes". The old "50-foot" method was great, but how many people know that the cycle is 40 feet for the rest of the nation. As the transportation agencies get fully metric in their operations - what will be the "paint cycle" be?

A recent MnDOT Tech Memo (96-07-T-01) has laid out the 2 m - 8 m ratio that will guide the driver safely, and enable crews to "measure" distances as before. Guidelines are established in this memo for new striping contracts, and what to do on existing roads that may only need to be "restriped". The length of the metric "double no-pass" stripe shall remain the same.

"Hardship" Allows "Inch-Pound" Retention

As attention grabbing as this headline may seem, the same regard is usually given to the sound bytes and summarized summaries when it appears that there is a chink in the armored wall of metric transition. A recent article (in an engineering trade magazine) reports that a pending federal bill will prohibit agencies from specifying metric products, if its use poses a "hardship".

Most people find it a hardship to get up in the morning, or to change oil on their car. But, the job must get done; so, what is a hardship?

In true federal fashion, hardship is "defined" in this pending bill, S. 1386 - the Small Business Metrification (sic) Amendment. Impacts on the road construction industry are unknown at this time (you can't second guess the legislative process), but routine metric dimensions, such as lane widths, should not be affected.

More details to follow as they become reality.

Meanwhile, "The Metric Tattler", available at most supermarket checkout lanes, will provide accurate fodder to fuel the fears of the metrically challenged.

FHWA to Adopt Interim Final Rules

The April 22, 1996 issue of the "Federal Register" contains information regarding the process that is being taken to adopt an interim policy for design (metric) standards on highway projects. Instead of Sominex, read pp.17566 - 17572 tonight.

X X X

Bob McPartlin, MnDOT Metrication Administrator
Mail Stop 675 395 John Ireland Blvd

612-296-4337

St. Paul, MN 55155

FAX 612-296-765

THE WORD

July, 1996

Metric Update in Minnesota



Metrics and "the Games"

When watching the Olympic Games this summer, tune in your metric ears to the variety of events that use this universal measurement system. Weightlifting, distances in swimming and track (other than "the marathon" -- a special race of its own and is defined by "26 miles, 385 yards"), the different classes for boxing & wrestling, etc. Knowing the weather conditions around Atlanta during this time of year, it may be best if the announcers use "degree Celsius" for the temperature reporting. We'll all feel cooler then.

A word of caution, however, regarding the "universal measurement system". There may be a **centimeter** used. Though it is metric, it is not "SI". The centimeter is used by many countries that are already metric, and is part of their system. Another word of caution is the pronunciation of the term for "1000 m" -- most reporters will probably say "key lom' ah ter", but they haven't had the training that most highway people have had. They probably also say "pa tah' ta".

Making a Game of Metric

As you travel this summer, especially on a route that you are familiar with, make a metric game with the distance and velocity of your car. Use the kilometer numbers on the speedometer dial and dashboard clock to figure your destination in kilometers. If you will be traveling a constant 110 km/hr, and you have clocked 90 minutes (1 1/2 hours), then you have gone 165 km distance. The stretch of I-94 from Albertville to Alexandria won't seem nearly as lengthy.

Another game might involve the construction of a pop bottle boat, using empty 2 L bottles for floatation. Since a 220 lb. person is about 100 kg, and we know from the buoyancy principle that we need to displace about 100 kg of water to float -- how many bottles do we need to make our raft? (Kids, do not try this at home without supervision.) Remembering that 1 kg of water occupies 1 L of volume means that there will be a lot of soda consumed to make this raft seaworthy.

A Reminder - Tools Needed for Metric Jobs

As in any project, you can't do a proper job without the proper tools. And, you have to use the tool as it was intended to be used. To drive down tacks with a sledge hammer is overkill. Likewise, to sink a pole barn nail with the flat side of a pair of pliers is a task. So, if there is a metric project coming up for surveying this fall, make sure your crew has metric tapes, survey rods and chains. It will make their job easier and with less mistakes to worry about. Order that equipment now. (Do not buy metric keel.)

Consistency on Track. Plans Appear "OK"

Recent discussions with MnDOT "plan checkers" have indicated that they have seen no major inconsistencies with proper SI nomenclature and techniques with MnDOT projects. However, the State Aid Division does not report such positive results for local government projects. To reinforce good habits, or to create them if needed, the following is a reprint from a previous issue of "The Word" and a reminder of common SI symbols to use for various metric units:

Unit	Symbol	Permissible, ONLY IF printer / software does not allow for superscripts
millimeter	mm	mm -- not MM
meter	m	m -- not M, mtr.
square meter	m ²	m ² --not m^2, sq.m., s. meter, sm
cubic meter	m ³	m ³ -- not m^3, cu.m., c. meter, cm
kilometer	km	km -- not clics, Km, KM
kilogram	kg	kg -- not kilos, KG
metric ton	t	t -- not tonne, T
hectare	ha	ha -- not HA, Ha or HO, ho
degree Celsius	°C	C -- not centigrade
liter	L	L -- not l, ltr
velocity	km/h m/s	km/h -- not km/hr, kph, KM/ H m/s -- not mtr./sec., MPS, m/sec

Remember to use the "space" rule between numerals and the symbol.

Avoid the **comma**, and use a space to separate groups of 3 digits. (It is permissible to write all 4 numerals together of a 4 digit number.) Example - 112 233.4 t or 5567.7 m²

New Words NOT Allowed

When converting a document, and a word like "mileage" or "footage" occurs, **do not** fall into the trap of converting it to "kilometerage" or "meterage". Use the word distance and rearrange the wording to get a better syntax. Similarly, substitute area for "acreage" or "yardage", and mass for "poundage". If "metric" reads right, then it will be used right. (Quartzite, by the way, should not be converted.)

Metric Info Makes the Internet

Computer buffs can access <http://www.nist.gov/metric> to reach the Dept. of Commerce's Metric Program; or <http://physics.nist.gov/SI> to get the Guide for Use of SI Units. (If you can learn to navigate the Internet, you can learn SI.)

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THE WORD

August, 1996

Metric Update in Minnesota



Precision, Accuracy and Rounding

American "number crunchers" have a propensity to use whatever is available to them in their work. When working out a simple problem such as the batting average of their offspring's T-Ball "7 for 13" hitting, they will report 0.53846 if they have a 6 digit calculator and 0.5384615 if they have an 8 digit calculator. Common practice uses only 3 places for batting averages, so only "slide rule" accuracy is needed.

The same analogy is used in road work. To determine the total mass of asphalt on a 4.9 km overlay project, two lane, 40 mm nominal thickness, the proper calculation and rounding should be:

$$4.9 \text{ km} \cdot \frac{1000 \text{ m}}{\text{km}} \cdot 2 \cdot (3.6 \text{ m}) \cdot 40 \text{ mm} \cdot \frac{2.4 \text{ kg}}{\text{m}^2 \cdot \text{mm}} \cdot \frac{\text{t}}{1000 \text{ kg}} = 3387 \text{ t}$$

However, in practice, the seasoned designer will round that answer to an easier number to work with – possibly 3400 t (or even 3500 t). The bottom line – watch the intended precision of your calculations and conversion factors. Don't get too carried away with "exact" answers based on "assumed" criteria. (Good advice, whether a metric job or not.)

ASTM, AASHTO Approve of "Soft" Re-Bars

Recent publications from the Concrete Reinforcing Steel Institute indicates that ASTM has approved of the soft converted bar sizes and that AASHTO is recommending the use of these revised ASTM specifications. CRSI is encouraging all rebar producers to conform to the standards, and they acknowledge that there will be a transition time of which "non-metric" rebars will be supplied.

The following chart should aid those designers that need this information:

English Name	Area - in ²	Metric Name	Dia. mm	Area - mm ²
#3	0.11	10	9.5	71
#4	0.20	13	12.7	129
#5	0.31	16	15.9	199
#6	0.44	19	19.1	284
#7	0.60	22	22.2	387
#8	0.79	25	25.4	510
#9	1.00	29	28.7	645
#10	1.27	32	32.3	819
#11	1.56	36	35.8	1006
#14	2.25	43	43.0	1452
#18	4.00	57	57.3	2581

The net result is that the bars will be the same physical size as previous, only with a "new" metric mark on them, to give it a "metric" name. It may take awhile for these metric marks to be in the inventory, but when designing a structure, you can be sure that the area of steel will be proper when delivered.

FHWA Publishes Policy on Metric Signing

In the June 11, 1996 "Federal Register", FHWA announced that it is adopting as its policy for traffic control devices, the two AASHTO publications – "Guide to Metric Conversion", June, 1993; and "Traffic Engineering Metric Conversion Factors", October 1993. FHWA has determined that these interim metric values "are functionally equivalent to and mirror, to the extent possible, the English measurements already adopted..." The "rounded off" measurements in the documents allow for easier conversions and assures that the traffic control devices that meet current standards will also meet the proposed metric unit standards.

Also, according to the notice, the 1988 MUTCD has referenced the 1977 "Standard Alphabet" and the 1979 "Standard Signs" documents, that are both metric editions. (The new "completely metric" MUTCD is scheduled for the rulemaking process late summer / early fall 1996.)

Status of the "Soft Metric" Legislation

The concrete block and recessed lighting industries have gotten legislation introduced that would allow their industries to retain a "soft conversion" for building construction projects. This bill (H.R. 2779) has passed its sub-committee hearing, and is before the House. The bill also creates a "metric ombudsman" to review and respond to complaints from those in the bidding process. Action in the Senate is unknown at this time.

Another bill, H.R. 3617, removes the words "Before September 30, 2000" from section 205 of the 1995 NHS Authorization Bill. This action would eliminate any metric mandate from PS & E business by FHWA. Other federal agencies are unaffected by this legislation, as well as other business that FHWA performs.

Thoughts While Traveling --

A recent trip to Boston Mass. resulted in the meterman reflecting on some of the standards by the different states - and metric units & costs. The Indiana, Ohio, New York and Massachusetts Turnpikes have "numbered" exits that are consecutive, not according to the mileposts. Hence, their conversion costs (and confusion) will not be as great when metric traffic signs are in place. New York has guide posts every 0.025 mile (132' or 40 m) on the right side of the road, and 0.05 mile on the center median. Converting to kilometer posts (every 100 m) will save them money. Canada has very limited "dual numbering" speed signs across the border. The vertical clearance signs were metric only. It is easy to learn metric when your life could be at risk.

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