



**Metro District
Office of
State Aid**



**Design Guide
For
State Aid Projects**

June 2015

Table of Contents

Metro District State Aid Organizational Chart	3
S.A.L.T. Organizational Chart	4
Metro State Aid Website	5
Acronyms	6-7
Typical Project Time Frame	8
Plans Approved at Metro State Aid	9
State Aid Plan Submittal	10-11
State Aid Submittal Checklist	12
Request for State Aid Project Number	13-14
Plan Format	15-19
Signature Block	20
State Aid Funding Eligibility Chart	21-23
Signal Funding Options	24
Bridge Funding Eligibility Chart	25-28
Horizontal and Vertical Curve Design Charts	29-35
Variance Information	36-38
Landscape Items	39-40
Signal Justification Report Information	41-47
Roundabout Justification Report Information (Still being developed)	48
Storm Sewer Review	49-50
Pavement Design	51-55
Special Provisions	56
Traffic Management Plan (TMP)	56
Bikeway Information	56
.6XX Transport List Extensions	57
General Redline Comments Observed on Plan	58-59

MnDOT Metro District
Office of State Aid
Waters Edge
1500 West County Road B2
Roseville, MN 55113

MnDOT METRO DISTRICT STATE AID STAFF

Dan Erickson
District State Aid Engineer
651-234-7763
dan.erickson@state.mn.us

Deb Marciniak
Administrative Assistant
651-234-7701
debbie.marciniak@state.mn.us

Web Site: www.dot.state.mn.us/metro/stateaid/home.html

Cooperative Agreements & Turnbacks

Phil Bergem
Cooperative Agreements
Engineer
651-234-7776
phillip.bergem@state.mn.us

Carl Jensen
Project Manager
651-234-7768
carl.jensen@state.mn.us

Cyrus Knutson
Jurisdictional Transfer
Program Manager
651-234-7769
cyrus.knutson@state.mn.us

Vacant
Project Manager
651-234-7768
xxxx@state.mn.us

State Aid

Julie Dresel
State Aid Program Engr.
651-234-7780
julie.dresel@state.mn.us

Margaret Hylton
Project Manager
651-234-7767
margaret.hylton@state.mn.us

Rob Wielinski
Plans Specialist
651-234-7775
robert.wielinski@state.mn.us

Agreements and Payments
Sharon LeMay
Special Program Manager
651-234-7773
sharon.lemay@state.mn.us

Federal Aid

Elisa Bottos
Federal Aid Engineer
651-234-7766
elisa.bottos@state.mn.us

Colleen Brown
Lead Federal Aid Program
Manager
651-234-7779
colleen.brown@state.mn.us

Scott Eue
Project Manager
651-234-7764
scott.eue@state.mn.us

Lisa Daniels
Project Manager
651-234-7774
lisa.daniels@state.mn.us

Darrell Cass
Project Manager
651-234-7778
darrell.cass@state.mn.us

Dan Mattison
Project Manager
651-234-7761
daniel.mattison@state.mn.us

Jim Deeny
Federal Aid and State Aid
Construction Spec.
651-234-7762
jim.deeny@state.mn.us

Key:
 ————— = direct reports
 - - - - - = report to others

State Aid for Local Transportation

March 17, 2015

STATE AID ENGR. DIVISION DIRECTOR
 Mitch Rasmussen
 651-366-4831

ADMINISTRATIVE ASSISTANT
 (Princ. Office Admin. Specialist)
 Nancy Stone
 651-366-4830

DEPUTY STATE AID ENGINEER
 Ted Schoenecker
 Office: 651-366-3804
 Cell: 651-303-8908

IT SERVICES MGR.
 (IT Specialist 4)
 Lowell Schafer
 651-366-3835

PROJECT MGR/ APPLICATIONS
 (IT Specialist 3)
 Rick Kostohryz
 651-366-3836

NEEDS ASSISTANT
 (Sr. Engineer Specialist)
 Marshall Johnston
 (Temporary)
 651-366-3815

DISTRICT STATE AID ENGINEERS
District 1 John McDonald, 218-725-2705
District 2 Luane (Lou) Tasa, 218-755-6570
District 3 Kelvin Howieson, 218-828-5707
District 4 Merle Earley, 218-846-3607
District 6 Fausto Cabral, 507-286-7620
District 7 Gordon Regenscheid, 507-304-6105
District 8 Todd Broadwell, 507-537-2044
Metro Dan Erickson, 651-234-7763

STATE AID PROJECT DELIVERY ENGINEER
 (Sr. Admin. Engineer)
 Merry Daher
 651-366-3821

STATE AID OPERATIONS ENGR.
 Paul Stine
 651-366-3830

State Aid Bridge Engineer
 Dave Conkel, 651-366-4493
State Aid Accountant
 Cindy Degener (Mobility: 3/11-6/16)
 651-366-4850
State Aid Hydraulic Specialist
 Juanita Voigt, 651-366-4469

STATE AID PROGRAMS ENGR.
 (Sr. Admin. Engineer)
 Patti Loken
 651-366-3803

PROGRAM SUPPORT
 (Trans. Program Specialist)
 Shannon GeshickBullen
 651-366-3806

SPECIAL PROGRAMS PROJECT DEV. ENGR.
 (Admin.Engineer.Prof.)
 Lynnette Roshell
 651-366-3822

PROJECT DEV. ENGINEER
 (Principal Engineer)
 Gary Reihl
 651-366-3819

PLANS ENGINEER
 (Principal Engineer)
 Cathy Huebsch
 651-366-3826

CONSTRUCTION ENGINEER
 (Senior Engineer)
 Mitch Bartelt (Districts 6-8)
 651-366-3832

MANAGER – MSAS NEEDS STUDY
 (Engineer Specialist)
 Bill Lanoux
 651-366-3817

MANAGER – CSAH NEEDS STUDY
 (Sr. Engineer Specialist)
 Kim DeLaRosa
 651-366-3810

PROGRAM SUPPORT ENGR./ DISASTER COORD
 (Principal Engineer)
 Mark Vizecky
 651-366-3839

ASST. PROJECT DEV. ENGINEER
 (Senior Engineer)
 Vacant
 651-366-xxxx

ASST. PROJECT DEV. ENGINEER
 (Senior Engineer)
 Malaki Ruranika
 651-366-3825

PLANS SPECIALIST
 (Sr. Engineer Specialist)
 Ron Dahlquist
 651-366-3823

CONSTRUCTION ENGINEER
 Elisa Bottos (Metro)
 651-234-7766
 Ron Bumann (Districts 1-4)
 218-725-2811

MSAS NEEDS SPECIALIST
 (Transportation Specialist)
 Julee Puffer
 651-366-3813

CSAH NEEDS SPECIALIST
 (Transportation Specialist)
 John Pantelis
 651-366-3811

PROGRAM SUPPORT ENGR.
 (Sr. Engineer)
 Sulmaan Khan
 651-366-3829

PAVEMENT ENGINEER
 (Senior Engineer)
 Joel Ulring
 651-366-3831

WEBSITE & APPL. SUPPORT
 (Transp. Prog. Specialist 2)
 Alyssa Klossner
 651-366-3837

PLANS SPECIALIST
 (Engineer Specialist)
 Mark Channer
 651-366-3828

LABOR COMPLIANCE
 (Transp. Prog. Team Leader)
 Clancy Finnegan
 651-366-4204

NEEDS SUPPORT
 (Transportation Specialist)
 Deb Hall-Kuglin
 651-366-3816

ASST. PROJECT DEV. ENGINEER
 (Engineer Graduate 2)
 Mao Yang
 651-366-3827

METRO STATE AID WEB SITE

<http://www.dot.state.mn.us/metro/stateaid/home.html>

The following information/links can be obtained at the above web site.

1. What's New - State Aid news and bulletins, including training seminar dates.
2. Meet the Staff - Staff Roster with a short explanation of their duties, phone #'s and e-mail addresses.
3. State Aid Training - Up to date information on up-coming training seminars for State Aid, Federal Aid and Cooperative Agreement projects.
4. Downloadable State/Federal Aid Forms - Commonly used State/Federal Aid forms.
5. Municipal Agreement Program - Check out the status of your Cooperative Agreement projects.
6. State Aid Manual and State Aid Rules – provided as a link to SALT.
7. Standard Plates List – A listing of the current Standard Plates.
8. State Aid Contract/Final Estimate Payments - Status of your State Aid payments is at your fingertips.
9. Federal Aid Construction
10. ADA – Metro State Aid ADA Guidelines and links for MnDOT and SALT ADA websites.

Other links of Interest:

1. State Aid for Local Transportation Office (Central Office State Aid). Some information worth checking out at their site is the State Aid Scene, information on their current staff, TRNS*PORT list (downloadable), the current State Aid Rules and the State Aid Manual.
2. Bridge and Design Standard Plans/Provisions, Metro Traffic Engineering, Preliminary Design and Mn/DOT Sample Plan.
3. “Meet the Metro County Engineers”. Here you will find the Metro County Engineers names and phone numbers.
4. Metro City Engineer list. Here you will find the Metro City Engineers names and phone numbers.

ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
ATP	Area Transportation Partner
CA	Certified Acceptance
CARS	Contract Administration Record System
C&G	Curb and Gutter
CIC	Capital Improvement Committee
CSA	County State Aid
CSAH	County State Aid Highway
CO	Central Office
COE	Corp Of Engineers
DBE	Disadvantaged Business Enterprise
DE	Drainage Easement
DSAE	District State Aid Engineer
EA	Environmental Assessment
EAW	Environmental Assessment Worksheet
EEO	Equal Employment Opportunity
EDS	Employee Development Specialist
ESAL	Equivalent Single Axle Load
EVP	Emergency Vehicle Preemption (for Signal Systems)
F&P	Funding And Programming
FBF	Federal Bridge Funds
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
GE	Granular Equivalent
GRR	Great River Road
ICE	Intersection Control Evaluation
ISTEA	Intermodal Surface Transportation Efficiency Act
LCMR	Legislative Commission on Minn Resources
LPA	Local Public Agency
MEQB	Minnesota Environmental Quality Board
MMUTCD	Minnesota Manual on Uniform Traffic Control Devices
MnDOT	Minnesota Department Of Transportation
MRP	Minnesota Road Plan
MRPC	Mississippi River Parkway Commission
MSA	Municipal State Aid

ACRONYMS (cont.)

NHS	National Highway System
PE	Permanent Easement
PM	Project Memorandum
PS&E	Plans, Specifications & Estimate
RFE	Report of Final Estimate
RSAC	Report of State Aid Contract
R/W	Right of Way
RJR	Roundabout Justification Report
SA	Supplemental Agreement
SALT	State Aid for Local Transportation
SAP	State Aid Project
SBB	State Bridge Bonds
SE	Slope Easement
SP	State Project (federal funds)
SHPO	State Historic Preservation Office
SJL	Signal Justification Letter
SJR	Signal Justification Report
SR	Study Report
STIP	State Transportation Improvement Plan
TAB	Transportation Advisory Board
TAC	Transportation Advisory Committee
TE	Temporary Easement
TGB	Targeted Group Business
TH	Trunk Highway
TIP	Transportation Improvement Plan
WBE	Women in Business Enterprise

Typical Project Time Frame

<u>Time Frame</u>	<u>Task (responsibility)</u>
1-4 weeks	Plan submittal and log-in, first submittal reviewed by plan reviewer, email with comments to designer (1-2 weeks) **. If the plan has a trunk highway endpoint or crossing, allow an extra 3 weeks for trunk highway routing and comments (3-4 weeks).
1-2 weeks	Corrections made by the designer
1 day-1 week	Final review by plan reviewer, approval or recommendation for approval by the District State Aid Engineer.
<hr/> <u>3-7 weeks</u>	TOTAL PROJECT REVIEW AND APPROVAL TIME

**** NOTE: During peak work load periods (January thru June), please allow extra time for initial plan review.**

PLANS APPROVED AT METRO STATE AID

The following types of plans are currently being approved in the Metro State Aid Office without further Central Office Review:

- Grading and Paving
- Right of Way
- Surfacing
- Overlays
- Seal Coats
- Landscaping
- Signals
- Cooperative Agreements*
- Plans requiring a variance (if variance has been approved and hold harmless resolution submitted)
- Force Account Agreements for all projects
- Turnback Plans*
- Mn/DOT Let Projects*
- Pedestrian Ramp Design

*The State Aid portion of these plans are approved at Metro. The plan still requires the normal Mn/DOT or Cooperative Agreement approval process if Mn/DOT or Cooperative Agreement funds are part of the project.

The following plans must continue to be reviewed by Central Office:

- Bridges and Culverts (eligible for town bridge and bridge bonding)
- State Park Road Account Plans (funding review by CO)
- Plans containing Hydraulic Risk Assessments

STATE AID PLAN SUBMITTAL

For Review of Plans in the Metro Division State Aid Office

WHAT TO SUBMIT FOR INITIAL REVIEW

After you have obtained a State Aid Project (S.A.P.) number (request form at <http://www.dot.state.mn.us/stateaid/projectdelivery/project-number-request.pdf> <http://dotapp7.dot.state.mn.us/saasreports/Logon.aspx> or by calling Margaret Hylton at 651-234-7767). When your plan is ready to be delivered to the Metro Division State Aid Office for the first time, please provide the following items to help expedite your plan review.

1. Prints of the Plan (11 x 17 preferred);
 - a) One copy if the project is MSA and does not impact a trunk highway.
 - b) Minimum of Ten copies if either endpoint is a trunk highway, adjacent to or crosses a Trunk Highway, or a trunk highway drainage area is affected. Contact our office to determine specific number of copies required which will result in a faster turnaround of your plan.
 - c) One more copy if a hydraulics percent split will be needed and you want us to "pre-submit" to State Aid Hydraulics.
 - d) One copy submitted to Dave Conkel, Bridge Office, for bridges over 10 feet, except culverts (obtain bridge numbers from Lisa Hartfiel at 651-366-4557 for all bridges over 10 feet).
2. A **COMPLETED** Plan Review Checklist:
No Bridge: <http://www.dot.state.mn.us/stateaid/projectdelivery/pdp/forms/sa-plan-review-checklist-no-bridges.doc>
Bridge Check List: <http://www.dot.state.mn.us/stateaid/projectdelivery/pdp/forms/sa-fa-bridge-plan-review-checklist.doc>
3. Drainage Area Maps and Hydraulic Computations;
 - a) One (1) copies if submittal to State Aid Hydraulics is required.
 - b) Two (2) copies if trunk highway endpoint or trunk highway drainage area.
4. If using the R Value Sigma N18 method,
 - a) A Soils / Geotechnical Report with the R Value clearly indicated.
 - b) ESAL computations bases on ESAL factors from Geotechnical Manual.
5. If using the soil factor HCADT method, and the soil factor in the Needs Report is higher than on the plan, substantiating evidence for the lowered soil factor.
6. If the plan is for Resurfacing (Reconditioning), and vertical and horizontal alignments have not been provided in the plan, copies of as-built plans from previous construction will be needed to verify the design speed. If the roadway was previously constructed with State Aid funds, all that is required is a copy of the as built Title Sheet with signatures.
7. Engineers Estimate with cost splits shown. A separate Engineers Estimate for R/W only if reimbursement for R/W costs is part of the plan.

STATE AID PLAN SUBMITTAL (CONTINUED)

8. Laboratory Testing Services Request Form, Fig. A(1) 5-892.243 of the State Aid Manual.
(found at <http://www.dot.state.mn.us/stateaid/other/lab-testing-plant-inspection-request.docx>)
9. Hydraulic letter/Risk Assessment if applicable (for culverts 3.05m (10ft.)) or greater.
(found at <http://www.dot.state.mn.us/stateaid/projectdelivery/environmental/hydraulic-flood-analysis.doc>)

WHAT TO SUBMIT FOR INITIAL REVIEW

10. No Parking Resolutions for the State Aid Route if parking lanes are not provided. For resurfacing or rehabilitation projects, a copy of an inplace resolution is fine.
11. SJR (Signal Justification Report) with signature block for Metro District State Aid Engineer, OR Signal Justification Letter and Warrant Analysis, dependent on situation.
12. RJR (Roundabout Justification Report) with signature block from Metro District State Aid Engineer.
13. Variance approval letter and Hold Harmless Resolution if a variance is required (variance checklist can be found at: <http://www.dot.state.mn.us/stateaid/variance/variance-justification-checklist.pdf>).
14. If your State Aid Project impacts the Trunk Highway Right of Way in any manner, please call Buck Craig (651-234-7911) in the Mn/DOT District Permit Office to obtain a permit to work on Mn/DOT Right of Way.

PLEASE RETAIN THE SIGNATURE ORIGINALS UNTIL FINAL REVIEW

WHAT TO EXPECT IN RETURN

1. Plan review in order of turn in date.
2. Routed review if Trunk Highway impacts are possible.
3. Plan review comments sent to the designer or request for final plans.

WHAT TO INCLUDE IN THE FINAL SUBMITTAL

1. The Final Plans with signatures:
 - a. Signature original title sheet.
 - b. One (1) copy of the plan set.
2. Revised submittal material (most often the Engineers Estimate).
3. Documentation of any additions or changes made to the plan other than those changes made due to the comments in the review letter.

S.A.P. _____-_____-_____
S.P. _____-_____-_____

STATE AID SUBMITTAL CHECKLIST

FIRST PLAN SUBMITTAL DATE _____

FINAL PLAN SUBMITTAL DATE _____

PLAN APPROVAL DATE _____

REQUIRED

- _____ STATE AID PLAN REVIEW CHECKLIST (for roadway type projects)
- _____ ENGINEERS ESTIMATE (required for al projects)
- _____ REVISED ENGINEERS ESTIMATE
- _____ LABORATORY TESTING SERVICES REQUEST FORM (for all projects)
- _____ SPECIAL PROVISION IF LAB SERVICES REQUIRED
- _____ R VALUE DOCUMENTATION (for roadway type projects)
- _____ ESAL CALCULATIONS (for roadway type projects)
- _____ PAVEMENT DESIGN CALCULATIONS (for all roadway type projects)
- _____ PARKING RESOLUTIONS (for roadway type projects that restrict parking)
- _____ DRAINAGE AREA MAPS/CALCULATIONS (projects which propose storm sewer)
- _____ HYDRAULIC RISK ASSESSMENT (if applicable)
- _____ HYDRAULIC MEMO RECEIVED (if applicable) _____ % ELIGIBLE
- _____ MnDOT PROJECT REQUIRES HYDRAULIC REVIEW
- _____ SIGNAL JUSTIFICATION REPORT/LETTER (SJR/SJL) (for signal projects) _____ SJR/SJL APPROVAL
- _____ ROUNDABOUT JUSTIFICATION REPORT (for roundabout projects) _____ RJR APPROVAL
- _____ FORCE ACCOUNT PAPERS _____ FORCE ACCOUNT APPROVAL
- _____ VARIANCE APPROVAL LETTER/HOLD HARMLESS RESOLUTION (if applicable)
- _____ BRIDGE REVIEW _____ DATE SENT TO BRIDGE _____
- _____ BRIDGE APPROVAL _____ DATE SENT FOR SIGNATURE _____
- _____ BRIDGE BOND APPLICATION _____ 1601B SPECIAL PROVISION _____
- _____ BRIDGE BOND FUNDING APPROVAL LETTER _____ DATE SENT TO PATTI _____
- _____ ENGINEER'S ESTIMATE EXCEL FORMAT
- _____ LRIP APPLICATION _____ DATE SENT TO PATTI _____
- _____ LRIP FUNDING APPROVAL LETTER _____ 1601B SPECIAL PROVISION _____
- _____ TRUNK HIGHWAY REVIEW _____ COMMENTS DUE BACK _____
- _____ RAIL REVIEW _____ COMMENTS DUE BACK _____
- _____ _____

SALT Request for State Aid Project Number



Requestor name: _____ Phone: _____

Requestor email: _____

City/County/Agency Name: _____

Funding types (check all that apply):

- Federal Aid Turnback State Park Road
 State Aid Disaster

Road System:

- CSAH Township Road Bikeway
 MSAS Trunk Highway Does not apply
 County Road Forest Highway
 City Street Park Road

Road No.: _____ Road Name: _____

Project Location (enter beginning and end of project to know points – not stationing):

From: _____ To: _____

In the City of: _____

If not in a City, enter the distance and direction from the nearest incorporation:

Distance: _____ miles Direction: _____ From: _____

Legal Description (Township-Section-Range): _____

Tied Project Numbers (if any): _____

(project numbers which will be on the same plan or in the same contract as this project)

--

New Bridge No.:

Old Bridge No.: _____

New Bridge No.:

Old Bridge No.: _____

Estimated construction

Start date Month: _____ Year: _____ **End date** Month: _____ Year: _____

Additional notes:

--

For State Aid Office Use Only – Assigned State Aid Project No. (SAP/SAP): _____

Type of work (check all that apply):

Roadway		continued...Bridge/Culvert		continued...Traffic Control	
<input type="checkbox"/>	Aggregate Base	<input type="checkbox"/>	Bridge Replacement	<input type="checkbox"/>	Temporary Traffic Signal
<input type="checkbox"/>	Aggregate Shoulder	<input type="checkbox"/>	Bridge Widening	<input type="checkbox"/>	Traffic Management System
<input type="checkbox"/>	Aggregate Surfacing	<input type="checkbox"/>	Construction Detour		Traffic Signal Cab. & Controller
<input type="checkbox"/>	Bike Lane	<input type="checkbox"/>	Culvert Extension	<input type="checkbox"/>	Traffic Signal Installation
<input type="checkbox"/>	Bituminous Base	<input type="checkbox"/>	Culvert Replacement	<input type="checkbox"/>	Traffic Signal Poles
<input type="checkbox"/>	Bituminous Crack & Seal	<input type="checkbox"/>	Culvert Replacement	<input type="checkbox"/>	Traffic Signal Revision
<input type="checkbox"/>	Bituminous Mill	<input type="checkbox"/>	Deck Replacement	<input type="checkbox"/>	Traffic Barrier
<input type="checkbox"/>	Bit. Mill & Overlay	<input type="checkbox"/>	Existing Alignment	<input type="checkbox"/>	Warning Flasher
<input type="checkbox"/>	Bituminous Overlay	<input type="checkbox"/>	Joint Repair	Other Facilities	
<input type="checkbox"/>	Bit. Pave. Replacement	<input type="checkbox"/>	Mechanical Upgrade	<input type="checkbox"/>	Aggregate Bike Trail
<input type="checkbox"/>	Bituminous Surfacing	<input type="checkbox"/>	Multiuse Trail Bridge (incl. bike)	<input type="checkbox"/>	Bike Lockers
<input type="checkbox"/>	Bypass Lane	<input type="checkbox"/>	Multiuse Trail Underpass (incl. bike)	<input type="checkbox"/>	Bike Rack
<input type="checkbox"/>	Channelization	<input type="checkbox"/>	New Alignment	<input type="checkbox"/>	Biological Relocation
<input type="checkbox"/>	Cold Inplace Recycle	<input type="checkbox"/>	New Bridge	<input type="checkbox"/>	Bituminous Walk
<input type="checkbox"/>	Con. Crack & Joint Repair	<input type="checkbox"/>	New Culvert	<input type="checkbox"/>	Building Removal
<input type="checkbox"/>	Concrete Mill & Overlay	<input type="checkbox"/>	Overlay	<input type="checkbox"/>	Bus Shelters
<input type="checkbox"/>	Concrete Overlay	<input type="checkbox"/>	Paint	<input type="checkbox"/>	Concrete Sidewalk
<input type="checkbox"/>	Con. Pave. Replacement	<input type="checkbox"/>	Pedestrian Bridge	<input type="checkbox"/>	Curb Ramps
<input type="checkbox"/>	Concrete Surfacing	<input type="checkbox"/>	Pedestrian Underpass	<input type="checkbox"/>	Decorative Ped. Lighting
<input type="checkbox"/>	Construct Detour	<input type="checkbox"/>	Railing Replacement	<input type="checkbox"/>	Decorative Roadway Lighting
<input type="checkbox"/>	Culvert	<input type="checkbox"/>	Skyway	<input type="checkbox"/>	Erosion Control
<input type="checkbox"/>	Curb & Gutter	<input type="checkbox"/>	Temporary Bridge	<input type="checkbox"/>	Exhibits
<input type="checkbox"/>	Diagonal Parking	Non-construction		<input type="checkbox"/>	Fencing
<input type="checkbox"/>	Drainage/Less 10 ft. Culvert	<input type="checkbox"/>	Access Control	<input type="checkbox"/>	Historic Building Restoration
<input type="checkbox"/>	Emergency Repairs	<input type="checkbox"/>	Archaeological Study	<input type="checkbox"/>	Historic Preservation
<input type="checkbox"/>	Erosion Repair	<input type="checkbox"/>	Areawide Planning	<input type="checkbox"/>	Historic Vehicle Restoration
<input type="checkbox"/>	Existing Alignment	<input type="checkbox"/>	Artifact Acquisition	<input type="checkbox"/>	Interpretive Facilities
<input type="checkbox"/>	Grading	<input type="checkbox"/>	Construction Engineering	<input type="checkbox"/>	Kiosks
<input type="checkbox"/>	HOV Lane	<input type="checkbox"/>	Corridor Management Plan	<input type="checkbox"/>	Landscaping
<input type="checkbox"/>	Median	<input type="checkbox"/>	Corridor Study	<input type="checkbox"/>	Maintain Building
<input type="checkbox"/>	Micro Surfacing	<input type="checkbox"/>	Design Engineering	<input type="checkbox"/>	Miscellaneous Amenities
<input type="checkbox"/>	New Alignment	<input type="checkbox"/>	Develop Training Materials	<input type="checkbox"/>	Multiuse Bit. Trail (incl. bike)
<input type="checkbox"/>	Patching	<input type="checkbox"/>	Marketing	<input type="checkbox"/>	Noise Abatement
<input type="checkbox"/>	Reconstruction	<input type="checkbox"/>	Preliminary Engineering	<input type="checkbox"/>	Other Local Uses
<input type="checkbox"/>	Roundabout	<input type="checkbox"/>	Right of Way Acquisition	<input type="checkbox"/>	Other Transp. Facil. Restoration
<input type="checkbox"/>	Seal Coat	<input type="checkbox"/>	Scenic Easement	<input type="checkbox"/>	Park and Ride
<input type="checkbox"/>	Shoulder Paving	<input type="checkbox"/>	Tourist Information	<input type="checkbox"/>	Parking Lot
<input type="checkbox"/>	Shoulder Widening	<input type="checkbox"/>	Training Conference	<input type="checkbox"/>	Pedestrian Lighting
<input type="checkbox"/>	Slope Flattening	Traffic Control		<input type="checkbox"/>	Rest Area
<input type="checkbox"/>	Storm Sewer	<input type="checkbox"/>	Emergency Vehicle Preemption	<input type="checkbox"/>	Retaining Wall
<input type="checkbox"/>	Subgrade Correction	<input type="checkbox"/>	Guardrail	<input type="checkbox"/>	Scenic Overlook
<input type="checkbox"/>	Truck Climbing lane	<input type="checkbox"/>	Interconnect	<input type="checkbox"/>	Street Lighting
<input type="checkbox"/>	Turn Lane	<input type="checkbox"/>	Railroad Crossing Signal	<input type="checkbox"/>	Tourist Center
<input type="checkbox"/>	Widening	<input type="checkbox"/>	Railroad Crossing Surfacing	<input type="checkbox"/>	Trail Head
Bridge/Culvert		<input type="checkbox"/>	Ramp Meter	<input type="checkbox"/>	Transit Hub
<input type="checkbox"/>	Approach Panel	<input type="checkbox"/>	Signal Lamp Replacement	<input type="checkbox"/>	Utility Relocation
<input type="checkbox"/>	Bridge Rehab	<input type="checkbox"/>	Signing	<input type="checkbox"/>	Wetland Mitigation
<input type="checkbox"/>	Bridge Removal	<input type="checkbox"/>	Striping		

EMAIL THIS COMPLETE FROM TO YOUR DISTRICT STATE AID OFFICE.

PLAN FORMAT ITEMS

Use of these items in a plan presented for review in the State Aid Division will facilitate a quick review.

TITLE SHEET INFORMATION

1. CONSTRUCTION PLAN FOR work description (Excavation, Agg. Base Class 5, Curb & Gutter, Bituminous Surfacing, R/W Acquisition, Storm Sewer, etc). Use pay item level of detail rather than saying a roadway name or bikeway.
2. SAP ###-###-### LOCATED ON _____ FROM _____ TO _____
3. PROJECT LENGTH showing exceptions if any.
Length must agree with the stationing shown on the index map. Provide a block for each SAP number, if there is more than one project number in the plan.
4. GOVERNING SPECIFICATION NOTE.
THE 2014 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION
“STANDARD SPECIFICATIONS FOR CONSTRUCTION” AND THE 2014 EDITION OF THE
“MATERIALS LAB SUPPLEMENTAL SPECIFICATIONS FOR CONSTRUCTION” SHALL
GOVERN.
5. PLAN PREPARATION CERTIFICATION with License number, printed name and signature of the preparer. Certification is now required by the Board on **EACH** sheet, including Standard Plan sheets where information has been added or deleted. Cross Section sheets do NOT require certification.
6. DESIGN DESIGNATION INFORMATION BLOCK
 - a) Show traffic dates in the year the project is to be let and adjust the figures, if appropriate.
 - b) Traffic figures should match values shown in the needs. If the proposed roadway is of a lesser width than the amount dictated by the traffic figures in the needs, justification is needed.
 - c) Soil factors should match the percentage shown in the needs. If the soil factor shown on the plan provides more stability than the factor shown in the needs, a soils letter and tests or borings supporting the lowered factor are required and needs updated.
 - d) Show Exceptions to the Design Speed if less than the design speed allowed by the rules. Include the stations of the exception and the reason allowed.
*DESIGN SPEED NOT ACHIEVED AT: Sta. _____ to Sta. _____ (reason)**
A Stop Condition or lighted sag vertical curve is permitted with no variance.
If the exception requires a variance include variance note.

PLAN FORMAT ITEMS CONTINUED

TITLE SHEET (CONTINUED)

7. VARIANCE NOTE, if one has been approved for the project, in the following format;
* *THIS PROJECT HAS BEEN GRANTED A VARIANCE FROM MINNESOTA RULE 8820. __ (a) __,
DATED FEBRUARY 2013, SO AS TO PERMIT __ (b) __ IN LIEU OF THE REQUIRED __ (c) __.
THE VARIANCE WAS SIGNED BY __ (d) __ ON __ (e) __.*
- Complete the blanks in the variance note with;
- The rule number the variance was granted from, followed by the date of the current rules book.
 - The project roadway width, design speed, R/W width, or condition allowed by the variance.
 - The condition that would have been required by the rules had the variance not been granted.
 - The name and position of the person who signed the variance.
 - The date the signature was affected.
8. MMUTCD NOTE
The following note should be included on the Title Sheet of all construction plans:
All traffic control devices shall conform to the MMUTCD, including "Field Manual for Temporary Traffic Control Zone Layouts"
9. SIGNATURE BLOCK.
- A County signature will be requested on a City plan when there is any impact on the County Right of Way.
 - A City signature will be requested on a County plan when there is any impact on the City Right of Way.
10. ALL PROJECT NUMBERS AND SHEET NUMBERS ON LOWER RIGHT CORNER OF ALL SHEETS.
11. INDEX MAP with print size legible on an 11x17 reduced copy.
- Show major roadways in the general project area.
 - Provide leaders from Begin and End Project numbers, with stationing, to the appropriate points on the index map. Length between stations must match Project Length blocks. Provide leaders with station values for any exceptions and equations to the project length.
12. LEGAL DESCRIPTIONS are required on State Aid **RURAL** projects.
- Provide land ties to endpoints of each project.
 - Show the distance and direction to the nearest town.
13. INDEX OF SHEETS with the statement *This Plan Contains XX Sheets*. A & B sheets must be listed separately.
14. BAR SCALES for index map, plan, profiles, and cross sections.
15. PLANS SYMBOLS.

PLAN FORMAT ITEMS CONTINUED

ESTIMATED QUANTITY SHEET

1. ITEM NUMBERS and UNITS associated with the number that matches the TRNS.PORT list, which can be found for 2014 Spec Book at <http://bidlet.dot.state.mn.us/english2014.aspx>. If item cannot be found in the TRNS.PORT list, replace the item number with a similar item number and use a .6XX extension (refer to sheet 59 for .6XX extension list) and include in the special provisions the method of measurement, payment and construction specifications, of which we would need a copy of.
2. SEPARATE COLUMNS:
 - a) For each SAP.
 - b) For STORM SEWER a separate column is required for each SAP.
 - c) For Local Funds, to pay non-participating items. If local funds are provided from different sources (more than one city or county), a separate column for each source as necessary.
 - d) Landscape column for Landscape items.
3. BASIS OF ESTIMATED QUANTITIES SUMMARY.
4. NOTES TO THE PAY ITEMS
 - a) Show application rates for tack coat, fertilizer, mulch, and other quantities where the unit is not a total measure.
 - b) When Lump Sum items are used, state what the total includes, especially the number of trees in Clearing and Grubbing which are needed to compute the replacement quantity by ratio.
5. TABULATIONS, consider construction location summaries for pay items like: Fence; Trees and Shrubs; Removals; Retaining Walls; Storm Sewer; and Earthwork. All quantities must be verifiable through the use of tabulations or notes on the plan.
6. EARTHWORK SUMMARY, list excavation and embankment quantities so that it is apparent how much material is excess, if the excess is to be disposed of by the contractor or stockpiled, or, if borrow is needed to justify the quantity.
7. Do not show 0 “zero” quantities in the SEQ or Tabulations.

CONSTRUCTION NOTES

1. Include descriptions of suitable and unsuitable soils and where their placement is allowed or specified.
2. Define tapers through the base material to match an existing roadway.
3. Note if topsoil stripping and stockpiling is expected.
4. Define compaction requirements and methods.

PLAN FORMAT ITEMS CONTINUED

STANDARD PLATES

1. FHWA NOTE.
THESE STANDARD PLATES AS APPROVED BY THE FHWA SHALL APPLY.
2. CURRENT LETTER DESIGNATION for each plate number, which can be found at <http://standardplates.dot.state.mn.us/StdPlate.aspx>.
3. DESCRIPTION matches the one in the manual.
4. USE A BICYCLE SAFE CASTING.
5. PROVIDE ADDITIONAL CONSTRUCTION DETAILS, for items that do not have a MnDOT Standard Plate.
6. IF MULTIPLE SHEETS FOR PLATE, INCLUDE (X SHEETS) AFTER DESCRIPTION.

TYPICAL SECTIONS

1. INDIVIDUAL LANE WIDTHS for thru lanes, turn lanes, parking lanes, and shoulder widths (rural).
2. G.E. REQUIREMENTS MET. Check total and Bituminous G.E.
3. SHOW RIGHT OF WAY WIDTH.
4. NOTE CLEAR ZONE.
5. SPECIFICATION AND DEPTH OF ROADWAY CONSTRUCTION PAY ITEMS.
 - a) Use spec. 2360 Bituminous Quality Management items.
6. Add LABELS for: Pavement Cross Slopes; Inslopes; Ditch Widths; and Backslopes.
7. LABEL THE LOCATION OF THE PROFILE GRADE.
8. Dimension the TOPSOIL DEPTH, and label SEED AND SOD REQUIREMENTS.
9. Illustrate DITCH BOTTOM and BACKSLOPE ROUNDING.

STANDARD PLAN SHEETS

1. If applicable, include Mn/DOT Standard Plan sheets as details in the plan. Standard Plan sheets are available on our web page <http://standardplans.dot.state.mn.us/StdPlan.aspx>
2. If changes are made to the Standard Plan sheet or any details are crossed out, a plan certification block must be added to the sheet.

PLAN FORMAT ITEMS (CONTINUED)

PEDESTRIAN RAMP DESIGN PLAN SHEETS

1. MnDOT Standard Plans 5-297.250 sheets 1-5 (Most Current Date Version) must be included in plan set. Along with MnDOT Standard Plate 7038 and/or 7035.
2. Design guidance for ADA can be found at: <http://www.dot.state.mn.us/ada/design.html> If you need assistance with Ped Ramp design, please give the ADA office a call and they will help you with your design.
3. Detail drawings for EACH Ped Ramp are preferred for State Aid projects. When the Ped Ramp is within Trunk Highway R/W, details are required and will be reviewed by MnDOT ADA Office.

PLAN SHEETS

1. HORIZONTAL and VERTICAL CURVE DATA are required to verify design speed. Show superelevation with the horizontal curve data. Plan view of the transition areas or a super chart may be used.
2. Ensure that any VARIANCE PARAMETERS have been met by the plan, if applicable.
3. Add SIGHT DISTANCE OBSTACLES such as trees and walls to the in-place topography.
4. Provide dimensions for INTERSECTION and ENTRANCE RADII.
5. Show RIGHT of WAY and TEMPORARY EASEMENT dimensions.
6. Consider showing DRAINAGE DIRECTION ARROWS.
7. Show in-place and proposed UTILITIES and DRAINAGE SYSTEMS.
8. Provide STATIONING AT CORPORATE LIMITS of municipalities.
9. Add a NORTH ARROW & SCALE to each sheet.
10. LABEL appropriate REMOVAL and CONSTRUCTION ITEMS for quantity verification..

CROSS SECTION SHEETS

1. RIGHT of WAY, PERMANENT EASEMENT and TEMPORARY EASEMENT LINES are required.
2. Show DRAINAGE PATTERNS and SPECIAL DITCH GRADES.
3. CENTERLINE AND ENTRANCE CULVERTS.
4. Cross section end areas are helpful so that earthwork quantities can be verified more quickly.

SIGNATURE BLOCK

(revised 11-9-2006)

Combinations of funding or jurisdiction will require different combinations of signatures.

☆ FOR COOPERATIVE AGREEMENT PLANS

☺ FOR FEDERAL AID PLANS

● FOR STATE AID PLANS

* (Include the appropriate signatures when the project affects Materials, Water Resources, Traffic or Bridge on any portion of the trunk highway right of way.)

☆ ☺ ● Approved _____ Date _____
CITY OF _____ ENGINEER

☆ ☺ ● Approved _____ Date _____
COUNTY ENGINEER

☆ Recommended for Approval _____ Date _____
DISTRICT TRANSPORTATION ENGINEER

☆ * Recommended for Approval _____ Date _____
DISTRICT MATERIALS ENGINEER

☆ * Recommended for Approval _____ Date _____
DISTRICT WATER RESOURCES ENGINEER

☆ Recommended for Approval _____ Date _____
DISTRICT TRAFFIC ENGINEER

☆ * Recommended for Approval _____ Date _____
STATE BRIDGE ENGINEER

☆ Recommended for Approval _____ Date _____
STATE PRE-LETTING ENGINEER

☆ Office of Land _____ Date _____
Management Approval DIRECTOR, LAND MANAGEMENT

☆ Approved _____ Date _____
STATE DESIGN ENGINEER

☺ _____ Date _____
DISTRICT STATE AID ENGINEER: REVIEWED FOR
COMPLIANCE WITH (1) STATE AND/OR FEDERAL AID RULES/POLICY

☺ _____ Date _____
APPROVED FOR (1) STATE AND/OR FEDERAL AID FUNDING: STATE AID ENGINEER

● _____ Date _____
DISTRICT STATE AID ENGINEER: REVIEWED FOR
COMPLIANCE WITH STATE AID RULES/POLICY

● _____ Date _____
APPROVED FOR STATE AID FUNDING: STATE AID ENGINEER

(1) This portion will be modified when State and/or Federal Aid funds are used for part of the local match.

For plans that contain *both Federal Aid and State Aid funding*, use the required Federal Aid signatures shown above.

The City/County Engineer (or approved designee) must sign the plan to approve the use of Federal Aid or State Aid funds.

If a route is shared by more than one City or County, a signature is required from each.

If work will be done on or impacts another agency's right of way, approval by that agency is required.

STATE AID FUNDING ELIGIBILITY

ITEM	ELIGIBILITY		CONDITIONS
	FULL	LIMITED	
Bike Paths	X		--MSA: in permanent R/W or parallel easement --CSA: part of bike path plan & in permanent R/W or parallel easement
Culverts	X		
Curb & Gutter	X		--concrete or bituminous
Drain Tile	X		--as grading expense, not storm sewer
Engineering Costs: archaeological surveys pre-design design staking of right of way soils determination construction engineering inspection testing		MAX 25%	--Actual costs up to 25% of State Aid eligible construction costs
Landscaping: decorative handrails ornamental fences & railings brick pavers colored concrete aesthetic surface treatment special surface finish ornamental <u>roadway</u> lighting internally lit street signs trees shrubs, ground cover, mulch irrigation decorative retaining walls/planters decorative fences split rail pedestrian lighting		MAX 5% ** ** ** ** ** **	Max. 5% of yearly construction allocation --decorative treatment on <u>items necessary</u> for transportation purposes --standard item costs paid for under grading ** costs in excess of standard item costs are eligible under 5% landscaping --when exceeding 2 to 1 replacement --no max dia. --when irrigating eligible landscaping <u>on R/W</u> --when holding eligible items -- <u>on R/W</u>
ITEMS NOT ELIGIBLE: water fountains, waste receptacles, benches, statuary			

STATE AID FUNDING ELIGIBILITY

ITEM	ELIGIBILITY		CONDITIONS
	FULL	LIMITED	
Lighting(roadway)--standard	X		--standard poles/fixtures (cobra,shoebox) --criteria: 1. 4 or more lanes, or 2. at intersection, or 3. revision due to reconstruction, or 4. within a city,or 5. approval of DSAE w/justification
Lighting(rdwy)--ornamental	X	**	--if required by adopted city/county policy ** if not--see landscaping
Mailbox Supports	X		
Overlays	X		
Pedestrian Ramps	X		
Retaining Walls	X		
Right-of-Way:			
payment for land	X		--taken or damaged
payment for easements	X		--temporary or permanent
appraisal costs	X		--owners' & local road authority
owners/occ relocation costs	X		
title searches	X		
abstract update	X		--due to taking (costs necessary for property owner to clear title to make property merchantable are NOT eligible)
filing fees: recording of deed satisfaction of mortgage	X		
state deed tax	X		
condemnation costs	X		
payment to utility company	X		--utility movement required by construction
cleanup of contaminated property	X		--reimbursement by owners/polluters to be paid back to State Aid account
Roundabouts	X		Same as "signal below"
Seal Coats	X		--no time limit

STATE AID FUNDING ELIGIBILITY

ITEM	ELIGIBILITY		CONDITIONS
	FULL	LIMITED	
Seed/Sod/Mulch	X		
Shoulders	X		--can be gravel
Sidewalks incl: bit/conc boulevard	X		--MSA or CSA, one or both sides --no width limit
Signals incl: EVP, Signs Eligibility Sketch		**	** if any legs eligible, all public streets under same jurisdiction eligible
Signal Interconnect	X		--either by legs or 100% on mainline
Storm Sewer See Tech Memo 96-SA-02		**	** proportionate share determined by State Aid Hydraulics Engineer
Surfacing	X		
Signing/Striping	X		
Trees	X		--2 to 1 replacement
Water/Sanitary Sewer	X		--only replacement due to construction --upgrades not eligible
<p>ITEMS NOT ELIGIBLE Parking Meters, incl relocation Street signs on corners Work off State Aid R/W (unless approved by DSAE)</p>			

SIGNAL FUNDING OPTIONS

8820.3100 GENERAL STATE-AID LIMITATIONS. Subp. 5. Traffic control signals. The extent of state-aid participation in signal installations must be determined by the proportion of the number of approaching routes under the jurisdiction of the county or urban municipality to the total number of approaching routes involved at each installation. When at least one approach is eligible for state-aid participation for a county or urban municipality, then all other approaches under the same jurisdiction are also eligible.

		<u>Approaches</u>		<u>Funding Options</u>
		1	2	
<u>Scenario 1</u>	TH	1		MSAS (offsystem)
	MSAS	3	4	CSAH / or MSAS (offsystem)
	CSAH	2		MSAS
		City Local		City Local or MSAS

		<u>Approaches</u>		<u>Funding Options</u>
		1	2	
<u>Scenario 2</u>	TH	1		MSAS (offsystem)
	Co Rd	3	4	CSAH / or MSAS (offsystem)
	CSAH	2		County Local or CSAH
		City Local		City Local or MSAS (offsystem)

		<u>Approaches</u>		<u>Funding Options</u>
		1	2	
<u>Scenario 3</u>	TH	1		MSAS (offsystem)
	MSAS	3	4	CSAH / or MSAS (offsystem)
	CSAH	2		MSAS
		Private Rd		City Local or Private

BRIDGE FUNDING ELIGIBILITY

- Federal Bridge Funds (FBF), designated “BR” in the State Transportation Improvement Program (STIP), are available for up to 80% of the “abutment to abutment” costs of eligible bridge rehabilitation or reconstruction work on any publicly owned bridge or culvert longer than 20 feet (clear span as measured along the roadway centerline). **“Abutment to abutment” costs include the 2 foot granular fill or concrete slab above the top of a culvert and all materials under the fill or slab.** Bridges to receive funds are selected by the Area Transportation Partnership (ATP). Federal Funds are provided “in part” are limited to federal funds indicated in the STIP. Funding is dependent on the availability of funds.
 - Bridges, which are deficient under federal criteria **and** have a sufficiency rating less than 50 are eligible for reconstruction.
 - Bridges, which are deficient under federal criteria **and** have a sufficiency rating less than 80 are eligible for rehabilitation.
 - Bridges with sufficiency rating greater than 80 are not eligible for Federal Bridge Funds.
- Minnesota State Transportation Funds, State Bridge Bonding funds (SBB) aka “Fund 29” are available for up to 100% (typically 20% for matching FBF) of the “abutment to abutment” costs of eligible rehabilitation or reconstruction work on any publicly owned bridge or culvert longer than 10 feet (clear span as measured along the roadway centerline), or *roadway in lieu of bridge* work. Work must be done by contract, not local forces.
 - Bridges, which are deficient under federal criteria **and** have sufficiency rating less than 80 are eligible for SBB.
 - *Roadway in lieu of bridge* projects are eligible for SBB, up to the cost of replacing the structure; this includes structure removal, grading, and right-of-way.
 - Bridges that replace structures less than 10 feet long are eligible for SBB.
 - Eligibility for Town Bridge Funds is the same as SBB.
- Items not eligible for FBF and SBB may be eligible for State Aid funding (SA) if on a State-Aid route.
- Town Bridge (Twn Br) funds are available for up to 100% of eligible township bridge rehabilitation, reconstruction, or other necessary work. The County may request 100% funding if the cost is less than \$20,000. Items eligible for bridge items is shown the Twn Br column. Approaching grading is eligible after the first \$10,000 of local cost (including bridge removal), if requested in writing.
- Turnback funds may be used to replace or repair bridges the Trunk Highway turnback projects. Eligibility is the same as shown in the SA column.
- “Prorated” means the item is partially eligible at the ratio of participating to non-participating items. Traffic control and mobilization are two common examples.
- Decorative or aesthetic items are limited to the estimated cost of the standard items. For example, a chain link fence may be standard, but the designer feels a decorative railing is appropriate in particular situations. The proration rate is the estimated cost for chain link fence, divided by actual unit price of the decorative railing.

BRIDGE FUNDING ELIGIBILITY

ITEM	ELIGIBILITY				CONDITIONS
	FBF	TWN BR	SBB	SA	
GENERAL					
Mobilization	X	X	X	X	100% eligible if approach grading is to the touchdown point. Pro-rated by participating bridge amount if grading goes beyond touchdown point.
Structure Excavation	X	X	X	X	
Engineering & Surveying	X	X		X	See Tech Memos 93-SA-05 for eligibility of historic/archaeological review services with federal planning funds.
Bridge and Non-Bridge Removals	X	X*		X	* See note (1) Approach Grading Cost.
Salvage		X*		X	* See note (1) Approach Grading Cost.
Traffic control	X	X	X	X	100% eligible if approach grading is to the touchdown point. Pro-rated by participating bridge amount if grading goes beyond touchdown point.
Right of Way		X*	X*	X	*May be eligible on road-in-lieu of bridge projects.
Utility Work	X			X	Whether electrical, gas, telephone not owned by subdivision of the State; or storm, sanitary owned by subdivision of the State.
BRIDGE STRUCTURES					
Granular Backfill for Abutment Drainage System System	X	X	X	X	
Granular Bedding	X	X	X	X	
Bridge Foundation & Structure	X	X	X	X	Includes piling, beams, joints, rebar, overlays, bearings...
Slope Preparation & Paving	X	X	X	X	

BRIDGE FUNDING ELIGIBILITY

ITEM	ELIGIBILITY				CONDITIONS
	FBF	TWN BR	SBB	SA	
Concrete Sidewalk on Bridge	X	X(a)	X(a)	X	(a) If existing &/or if urban sidewalk approaching (up to 6' both sides; 8' if only one side). Remaining width may be eligible for FBF, SA, or FA funds; State Aid Manual 5.4.VI
Path on Bridge	X	X(b)	X(b)	X	(b) If existing &/or urban path approaching bridge (maximum 8' if only on one side). See sidewalk funding conditions above if on both sides. Remaining width may be eligible for FBF, SA, or FA funds; State Aid Manual 5.4.VI
Drainage System	X	X	X	X	On the bridge and/or behind abutments.
Lighting Systems (including conduit)	X	X	X	X	If lighting is justified. Ornamental units prorated to standards.
Guard Rail	X	X	X	X	
Ornamental Metal Rail	X	X	X	X	Prorated to cost of standard railing or chain link fence.
Architectural Surface Treatment	X			X	Subject to 5% of annual construction allocation cap. See "landscape" guidance.
<i>CULVERTS</i>					
Culvert Pipe & Aprons	X	X	X	X	
Culvert Bedding	X	X	X	X	
Culvert Backfill Including Granular	X	X	X	X	Eligible to minimum depth of cover required (usually 2').
<i>APPROACH WORK</i>					
Clearing & Grubbing	X	X*		X	* See note (1) Approach Grading Cost.
Common Excavation for Approaches	X	X*		X	* See note (1) Approach Grading Cost.

BRIDGE FUNDING ELIGIBILITY

ITEM	ELIGIBILITY				CONDITIONS
	FBF	TWN BR	SBB	SA	
Topsoil Borrow	X	X*		X	* See note (1) Approach Grading Cost.
Surfacing	X	X*		X	Concrete, bituminous or aggregate. * See note (1) Approach Grading Cost.
Curb & Gutter	X	X*		X	* See note (1) Approach Grading Cost.
Sidewalks Along Approaches	X	X*		X	* See note (1) Approach Grading Cost.
Channel Excavation	X	X	X	X	To the touchdown point.
Approach Panels	X	X*	X*	X	*Eligible if included in the same plan as the bridge construction.
<i>EROSION CONTROL</i>					
Riprap	X	X	X	X	Granular or geo filter incidental.
Silt Fence	X	X*		X	* See note (1) Approach Grading Cost.
Turf Establishment	X	X*		X	* See note (1) Approach Grading Cost.
<i>OTHER</i>					
Water Retention Projects	X	X*		X	* See note (1) Approach Grading Cost. Needs to replace a deficient bridge.

(1) Approach grading costs are those costs for grading & surfacing the roadway approaches to the bridge, from the bridge to the point where an alignment that meets design standards can match into the existing alignment. Bridge removal is an approach grading cost. For Town Bridge Funds only, costs in excess of \$10,000 are eligible.

Note this list represent the projects that commonly apply for bridge funds. If you have a project replacing a deficient bridge and would like more information on potential bridge funding, contact Patti Loken at 651-366-3803.

**LOW SPEED URBAN HORIZONTAL CURVE DESIGN
 CURVE RADII FOR VARIOUS DESIGN SPEEDS ON
 LOW-SPEED URBAN STREETS WITH CURB AND GUTTER
 BASED ON MAXIMUM URBAN FRICTION FACTORS**

RATE OF SUPER (e)	20 MPH	25 MPH	30 MPH	35 MPH	40 MPH
-0.02	96	182	300	454	667
0.02	84	155	250	372	534
0.03	81	149	240	356	508
0.04	79	144	231	341	485
0.05	77	139	223	327	464
0.06	75	135	215	315	445

EQUATION FOR DETERMINING RADIUS

$$R = V^2 / [15 (e + f)]$$

WHERE:

R = RADIUS (ft) AT CENTERLINE

V = SPEED (mph)

e = SUPER-ELEVATION

f = URBAN FRICTION FACTOR

SPEED (mph)	FRICTION FACTOR (for e = 0.06)
20	0.30
25	0.25
30	0.22
35	0.20
40	0.18

SUPER-ELEVATION SHALL BE DEVELOPED 2/3 ON TANGENT AND 1/3 ON CURVE.

SAVED AS FIG D-3 .221

Rate of Superelevation and Calculated Length of Runoff for Rural and High-Speed Urban Roadways ($e_{max} = 0.06$ ft/ft) ($S = 0.0025$ ft/ft)

DEGREE OF CURVE (D)	RADIUS OF CURVE (R)	V=40 mph		V=45 mph		V=50 mph		V=55 mph		V=60 mph		V=65 mph		V=70 mph		V=75 mph	
		e	L	e	L	e	L	e	L	e	L	e	L	e	L	e	L
0°15'	22918	NC	0	NC	0	NC	0	NC	0	NC	0	NC	0	NC	0	NC	0
0°30'	11459	NC	0	NC	0	NC	0	NC	0	NC	0	RC	96.0	RC	96.0	RC	96.0
0°45'	7639	NC	0	NC	0	RC	96.0	RC	96.0	0.021	100.8	0.023	110.4	0.026	124.8	0.029	139.2
1°00'	5730	NC	0	RC	96.0	RC	96.0	0.023	110.4	0.027	129.6	0.030	144.0	0.033	158.4	0.037	177.6
1°15'	4584	RC	96.0	RC	96.0	0.024	115.2	0.028	134.4	0.032	153.6	0.036	172.8	0.040	192.0	0.044	211.2
1°30'	3820	RC	96.0	0.024	115.2	0.028	134.4	0.032	153.6	0.037	177.6	0.041	196.8	0.046	220.8	0.051	244.8
1°45'	3274	0.023	110.4	0.027	129.6	0.031	148.8	0.036	172.8	0.041	196.8	0.046	220.8	0.051	244.8	0.056	268.8
2°00'	2865	0.025	120.0	0.030	144.0	0.035	168.0	0.040	192.0	0.045	216.0	0.049	235.2	0.055	264.0	0.059	283.2
2°15'	2546	0.028	134.4	0.033	158.4	0.038	182.4	0.043	206.4	0.048	230.4	0.053	254.4	0.057	273.6	0.060	288.0
2°30'	2292	0.030	144.0	0.035	168.0	0.040	192.0	0.045	216.0	0.051	244.8	0.055	264.0	0.059	283.2	D _{max} =2°15'	
2°45'	2083	0.032	153.6	0.037	177.6	0.042	201.6	0.048	230.4	0.053	254.4	0.058	278.4	0.060	288.0		
3°00'	1910	0.034	163.2	0.039	187.2	0.044	211.2	0.050	240.0	0.055	264.0	0.059	283.2	D _{max} =2°45'			
3°15'	1763	0.036	172.8	0.041	196.8	0.046	220.8	0.052	249.6	0.057	273.6	0.060	288.0				
3°30'	1637	0.038	182.4	0.043	206.4	0.048	230.4	0.054	259.2	0.058	278.4	D _{max} =3°15'					
3°45'	1528	0.039	187.2	0.045	216.0	0.050	240.0	0.055	264.0	0.059	283.2						
4°00'	1432	0.041	196.8	0.046	220.8	0.051	244.8	0.057	273.6	0.060	288.0	D _{max} =4°15'					
4°15'	1348	0.042	201.6	0.048	230.4	0.053	254.4	0.058	278.4	0.060	288.0						
4°30'	1273	0.043	206.4	0.049	235.2	0.054	259.2	0.059	283.2	D _{max} =4°15'							
4°45'	1206	0.044	211.2	0.050	240.0	0.055	264.0	0.059	283.2								
5°00'	1146	0.046	220.8	0.051	244.8	0.056	268.8	0.060	288.0	D _{max} =5°15'							
5°15'	1091	0.047	225.6	0.053	254.4	0.057	273.6	0.060	288.0								
5°30'	1042	0.048	230.4	0.054	259.2	0.058	278.4	D _{max} =5°15'									
5°45'	996	0.049	235.2	0.055	264.0	0.059	283.2										
6°00'	955	0.050	240.0	0.055	264.0	0.059	283.2	D _{max} =6°45'									
6°15'	917	0.051	244.8	0.056	268.8	0.060	288.0										
6°30'	881	0.052	249.6	0.057	273.6	0.060	288.0	D _{max} =6°45'									
6°45'	849	0.053	254.4	0.058	278.4	0.060	288.0										
7°00'	819	0.053	254.4	0.058	278.4	D _{max} =6°45'											
7°15'	790	0.054	259.2	0.059	283.2												
7°30'	764	0.055	264.0	0.059	283.2	D _{max} =8°30'											
7°45'	739	0.055	264.0	0.059	283.2												
8°00'	716	0.056	268.8	0.060	288.0	D _{max} =8°30'											
8°15'	694	0.057	273.6	0.060	288.0												
8°30'	674	0.057	273.6	0.060	288.0	D _{max} =8°30'											
8°45'	655	0.058	278.4	D _{max} =8°30'													
9°00'	637	0.058	278.4														
9°15'	619	0.058	278.4	D _{max} =11°15'													
9°30'	603	0.059	283.2														
9°45'	588	0.059	283.2	D _{max} =11°15'													
10°00'	573	0.059	283.2														
10°30'	546	0.060	288.0	D _{max} =11°15'													
11°00'	521	0.060	288.0														
11°30'	498	D _{max} =11°15'															

KEY TO TABLE

- R = Radius of curve, ft
- D_{max} = Maximum degree of curve
- V = Design speed, mph
- e = Superelevation rate, ft/ft
- NC = Normal Crown
- RC = Remove Crown
- L = Calculated length of superelevation runoff, ft
(From adverse crown removed to full superelevation, based on one lane of rotation. L value for RC condition based on normal 0.020 cross slope.)

NOTES:

1. $e_{max} = 0.06$ ft/ft
1. Tangent runout lengths are in addition to the table runoff lengths
2. Table transition runoff lengths based on:

$$L = \frac{W \times e}{S}$$

Where: S = Longitudinal slope (MnDOT typical $\frac{1}{400}$ or 0.0025 ft/ft)

W = Lane width (12 ft)

e = Superelevation (Table values based on method 5 procedures of AASHTO where superelevation and side friction are in a curvilinear relation with the inverse of the radius of curve)

Where conditions are restrictive, the following absolute minimum longitudinal slopes may be used:

Design Speed	40	45	50	55	60	65	70
Slope	1:170	1:185	1:200	1:215	1:230	1:240	1:250

**Minimum Rates of Superelevation and Calculated Length of Runoff for
Low-Speed Roadways in Urban Locations ($e_{max} = 0.06$ ft/ft) ($S = 0.0025$ ft/ft)**

RADIUS OF CURVE (R)	V=20 mph		V=25 mph		V=30 mph		V=35 mph		V=40 mph	
	e	L	e	L	e	L	e	L	e	L
700	NC	0	NC	0	NC	0	NC	0	NC	0
600	NC	0	NC	0	NC	0	NC	0	RC	96.0
500	NC	0	NC	0	NC	0	NC	0	0.035	168.0
450	NC	0	NC	0	NC	0	RC	96.0	0.059	283.2
400	NC	0	NC	0	NC	0	RC	96.0	R _{min} =450	
375	NC	0	NC	0	NC	0	0.021	100.8		
350	NC	0	NC	0	NC	0	0.036	172.8		
325	NC	0	NC	0	NC	0	0.054	259.2		
300	NC	0	NC	0	NC	0	R _{min} =320			
275	NC	0	NC	0	RC	96.0				
250	NC	0	NC	0	RC	96.0				
225	NC	0	NC	0	0.046	220.8				
200	NC	0	NC	0	R _{min} =215					
175	NC	0	RC	96.0						
150	NC	0	0.026	124.8						
140	NC	0	0.046	220.8						
130	NC	0	R _{min} =135							
125	NC	0								
120	NC	0								
115	NC	0								
110	NC	0								
105	NC	0								
100	NC	0								
95	RC	96.0								
90	RC	96.0								
85	RC	96.0								
80	0.033	158.4								
75	0.056	268.8								
	R _{min} =75									

KEY TO TABLE

- R = Radius of curve, ft
- R_{min} = Minimum radius of curve, ft
- V = Design speed, mph
- e = Superelevation rate, ft/ft
- NC = Normal Crown
- RC = Remove Crown
- L = Calculated length of superelevation runoff, ft
(From adverse crown removed to full superelevation, based on one lane of rotation. L value for RC condition based on normal 0.020 cross slope.)

NOTES:

1. $e_{max} = 0.06$ ft/ft
2. Tangent runout lengths are in addition to the table runoff lengths
3. Table transition runoff lengths based on:

$$L = \frac{W \times e}{S}$$

Where: S = Longitudinal slope (Mn/DOT typical $\frac{1}{400}$ or 0.0025 ft/ft)

W = Lane width (12 ft)

e = Superelevation rate (Table values based on method 2 procedures of AASHTO where first side friction and then superelevation are increased in inverse proportion to the radius of curve)

Where conditions are restrictive, the following absolute minimum longitudinal slopes may be used:

Design Speed	20	25	30	35	40
Slope	1:140	1:150	1:160	1:165	1:170

Figure B(1) 5-892.211

Crest Vertical Curves

October 22, 2004

Minimum Length of Vertical Curves of "Stopping Sight Distance"

A	V (mph)												
	25	30	35	40	45	50	55	60	65	70	75	80	
0.8	75	90	105	120	135	150	165	180	195	210	225	240	L=3V
0.9	75	90	105	120	135	150	165	180	195	210	225	240	
1	75	90	105	120	135	150	165	180	195	210	225	240	
1.1	75	90	105	120	135	150	165	180	195	210	225	240	
1.2	75	90	105	120	135	150	165	180	195	210	225	240	
1.3	75	90	105	120	135	150	165	180	195	210	225	240	
1.4	75	90	105	120	135	150	165	180	195	210	225	279	S>L
1.5	75	90	105	120	135	150	165	180	195	210	225	381	
1.6	75	90	105	120	135	150	165	180	195	210	291	471	
1.7	75	90	105	120	135	150	165	180	195	210	371	551	
1.8	75	90	105	120	135	150	165	180	195	261	441	621	
1.9	75	90	105	120	135	150	165	180	195	324	504	684	
2	75	90	105	120	135	150	165	180	211	381	561	741	
2.1	75	90	105	120	135	150	165	180	262	432	612	792	
2.2	75	90	105	120	135	150	165	180	309	479	659	839	
2.3	75	90	105	120	135	150	165	202	352	522	702	882	
2.4	75	90	105	120	135	150	165	241	391	561	741	921	
2.5	75	90	105	120	135	150	165	277	427	597	777	959	
2.6	75	90	105	120	135	150	165	310	460	630	810	998	
2.7	75	90	105	120	135	150	191	341	491	661	841	1036	S<L
2.8	75	90	105	120	135	150	219	369	519	689	872	1074	
2.9	75	90	105	120	135	150	246	396	546	716	904	1113	
3	75	90	105	120	135	150	271	421	571	741	935	1151	
3.1	75	90	105	120	135	154	294	444	594	766	966	1190	
3.2	75	90	105	120	135	176	316	466	616	790	997	1228	
3.3	75	90	105	120	135	196	336	486	636	815	1028	1266	
3.4	75	90	105	120	135	215	355	505	655	840	1059	1305	
3.5	75	90	105	120	135	233	373	523	675	864	1091	1343	
3.6	75	90	105	120	135	251	391	541	694	889	1122	1381	
3.7	75	90	105	120	137	267	407	557	713	914	1153	1420	
3.8	75	90	105	120	152	282	422	572	733	938	1184	1458	
3.9	75	90	105	120	167	297	437	587	752	963	1215	1497	
4	75	90	105	120	181	311	451	602	771	988	1246	1535	
4.1	75	90	105	120	194	324	464	617	790	1012	1277	1573	
4.2	75	90	105	120	206	336	476	632	810	1037	1309	1612	
4.3	75	90	105	120	218	348	488	647	829	1062	1340	1650	
4.4	75	90	105	120	230	360	500	662	848	1087	1371	1688	
4.5	75	90	105	130	240	370	511	678	868	1111	1402	1727	
4.6	75	90	105	141	251	381	522	693	887	1136	1433	1765	
4.7	75	90	105	151	261	391	534	708	906	1161	1464	1804	
4.8	75	90	105	160	270	400	545	723	925	1185	1496	1842	
4.9	75	90	105	170	280	410	556	738	945	1210	1527	1880	
5	75	90	105	178	288	418	568	753	964	1235	1558	1919	
5.1	75	90	105	187	297	427	579	768	983	1259	1589	1957	
5.2	75	90	105	195	305	435	590	783	1002	1284	1620	1995	
5.3	75	90	105	203	313	444	602	798	1022	1309	1651	2034	
5.4	75	90	105	210	320	452	613	813	1041	1333	1683	2072	
5.5	75	90	108	218	328	460	624	828	1060	1358	1714	2111	
5.6	75	90	115	225	335	469	636	843	1080	1383	1745	2149	
5.7	75	90	121	231	341	477	647	858	1099	1408	1776	2187	
5.8	75	90	128	238	348	485	659	873	1118	1432	1807	2226	
5.9	75	90	134	244	354	494	670	888	1137	1457	1838	2264	

Minimum Length of Vertical Curves of "Stopping Sight Distance"

A	V (mph)											
	25	30	35	40	45	50	55	60	65	70	75	80
6	75	90	140	250	360	502	681	903	1157	1482	1870	2302
6.1	75	90	146	256	366	511	693	918	1176	1506	1901	2341
6.2	75	90	152	262	372	519	704	933	1195	1531	1932	2379
6.3	75	90	157	267	378	527	715	949	1215	1556	1963	2418
6.4	75	90	163	273	384	536	727	964	1234	1580	1994	2456
6.5	75	90	168	278	390	544	738	979	1253	1605	2025	2494
6.6	75	90	173	283	396	552	749	994	1272	1630	2056	2533
6.7	75	90	178	288	402	561	761	1009	1292	1655	2088	2571
6.8	75	90	183	293	408	569	772	1024	1311	1679	2119	2609
6.9	75	90	187	297	414	578	783	1039	1330	1704	2150	2648
7	75	92	192	302	420	586	795	1054	1349	1729	2181	2686
7.1	75	96	196	306	426	594	806	1069	1369	1753	2212	2725
7.2	75	100	200	310	432	603	818	1084	1388	1778	2243	2763
7.3	75	104	204	315	438	611	829	1099	1407	1803	2275	2801
7.4	75	108	208	319	444	619	840	1114	1427	1827	2306	2840
7.5	75	112	212	323	450	628	852	1129	1446	1852	2337	2878
7.6	75	116	216	328	456	636	863	1144	1465	1877	2368	2916
7.7	75	120	220	332	462	644	874	1159	1484	1901	2399	2955
7.8	75	123	223	336	468	653	886	1174	1504	1926	2430	2993
7.9	75	127	227	341	474	661	897	1189	1523	1951	2462	3032
8	75	130	230	345	480	670	908	1204	1542	1976	2493	3070
8.1	75	134	234	349	486	678	920	1220	1562	2000	2524	3108
8.2	75	137	237	353	492	686	931	1235	1581	2025	2555	3147
8.3	75	140	240	358	498	695	942	1250	1600	2050	2586	3185
8.4	75	143	243	362	504	703	954	1265	1619	2074	2617	3223
8.5	75	146	246	366	510	711	965	1280	1639	2099	2648	3262
8.6	75	149	249	371	516	720	976	1295	1658	2124	2680	3300
8.7	75	152	252	375	522	728	988	1310	1677	2148	2711	3338
8.8	75	155	255	379	528	737	999	1325	1696	2173	2742	3377
8.9	75	158	258	384	534	745	1011	1340	1716	2198	2773	3415
9	75	160	261	388	541	753	1022	1355	1735	2222	2804	3454
9.1	75	163	264	392	547	762	1033	1370	1754	2247	2835	3492
9.2	75	165	266	397	553	770	1045	1385	1774	2272	2867	3530
9.3	78	168	269	401	559	778	1056	1400	1793	2297	2898	3569
9.4	80	170	272	405	565	787	1067	1415	1812	2321	2929	3607
9.5	83	173	275	410	571	795	1079	1430	1831	2346	2960	3645
9.6	85	175	278	414	577	804	1090	1445	1851	2371	2991	3684
9.7	88	178	281	418	583	812	1101	1460	1870	2395	3022	3722
9.8	90	180	284	422	589	820	1113	1475	1889	2420	3054	3761
9.9	92	182	287	427	595	829	1124	1491	1909	2445	3085	3799
10	94	184	290	431	601	837	1135	1506	1928	2469	3116	3837
K	12	19	29	44	61	84	114	151	193	247	312	384
S	155	200	250	305	360	425	495	570	645	730	820	910

V = Design Speed (mph)

S = Sight Distance (ft)

L = Length of Curve (ft)

A = Algebraic Difference of the Grades

Height of Eye = 3.5 feet

Height of Object = 2.0 feet

L minimum = 3V; desirable as per AASHTO

When S > L; Then L = 2S - 2158/A

When S < L; Then L = (AS²)/2158

When A > 10; Then L = AK

Note: S and K values given above and used in calculations are the rounded "design" values as given in Exhibit 3-76, pg 274 of AASHTO's "A Policy on Geometric Design of Highways and Streets, 2001".

Minimum Length of Vertical Curves of "Stopping Sight Distance"

A	V (mph)							
	25	30	35	40	45	50	55	60
0.8	75	90	105	120	135	150	165	180
0.9	75	90	105	120	135	150	165	180
1	75	90	105	120	135	150	165	180
1.1	75	90	105	120	135	150	165	180
1.2	75	90	105	120	135	150	165	180
1.3	75	90	105	120	135	150	165	180
1.4	75	90	105	120	135	150	165	180
1.5	75	90	105	120	135	150	165	180
1.6	75	90	105	120	135	150	165	180
1.7	75	90	105	120	135	150	165	180
1.8	75	90	105	120	135	150	165	180
1.9	75	90	105	120	135	150	165	180
2	75	90	105	120	135	150	165	180
2.1	75	90	105	120	135	150	165	180
2.2	75	90	105	120	135	150	165	180
2.3	75	90	105	120	135	150	165	180
2.4	75	90	105	120	135	150	165	180
2.5	75	90	105	120	135	150	165	182
2.6	75	90	105	120	135	150	170	219
2.7	75	90	105	120	135	151	200	253
2.8	75	90	105	120	135	176	228	285
2.9	75	90	105	120	148	199	255	314
3	75	90	105	121	167	221	279	342
3.1	75	90	105	137	185	241	302	367
3.2	75	90	105	151	201	260	324	392
3.3	75	90	114	165	217	278	344	414
3.4	75	90	125	178	232	295	363	436
3.5	75	90	136	191	246	311	381	456
3.6	75	94	146	202	259	326	398	475
3.7	75	103	155	213	271	340	414	493
3.8	75	111	164	224	283	353	429	510
3.9	75	118	173	234	294	366	443	526
4	75	125	181	243	305	378	457	541
4.1	80	132	189	252	315	390	470	556
4.2	86	138	196	261	325	401	482	570
4.3	91	144	203	269	334	411	494	583
4.4	96	150	210	276	343	421	506	597
4.5	101	156	217	284	351	431	517	610
4.6	105	161	223	291	359	440	529	624
4.7	109	166	229	298	367	450	540	638
4.8	114	171	234	304	375	459	552	651
4.9	118	176	240	311	383	469	563	665
5	122	180	245	317	390	478	575	678
5.1	125	184	250	323	398	488	586	692
5.2	129	188	255	330	406	498	597	705
5.3	132	192	260	336	414	507	609	719
5.4	135	196	265	342	422	517	620	733
5.5	139	200	270	349	429	526	632	746
5.6	142	204	275	355	437	536	643	760
5.7	145	207	279	361	445	545	655	773
5.8	148	211	284	368	453	555	666	787
5.9	150	215	289	374	461	565	678	800
6	153	218	294	380	468	574	689	814
6.1	155	222	299	387	476	584	701	828
6.2	158	225	304	393	484	593	712	841
6.3	161	229	309	399	492	603	724	855

L=3V

S>L

S<L

Minimum Length of Vertical Curves of "Stopping Sight Distance"

A	V (mph)							
	25	30	35	40	45	50	55	60
6.4	163	233	314	406	500	612	735	868
6.5	166	236	319	412	507	622	747	882
6.6	168	240	324	418	515	632	758	895
6.7	171	244	328	425	523	641	770	909
6.8	173	247	333	431	531	651	781	922
6.9	176	251	338	437	539	660	793	936
7	178	255	343	444	547	670	804	950
7.1	181	258	348	450	554	679	816	963
7.2	184	262	353	456	562	689	827	977
7.3	186	265	358	463	570	699	839	990
7.4	189	269	363	469	578	708	850	1004
7.5	191	273	368	475	586	718	862	1017
7.6	194	276	373	482	593	727	873	1031
7.7	196	280	377	488	601	737	885	1045
7.8	199	284	382	494	609	746	896	1058
7.9	201	287	387	501	617	756	908	1072
8	204	291	392	507	625	766	919	1085
8.1	206	295	397	513	632	775	931	1099
8.2	209	298	402	520	640	785	942	1112
8.3	212	302	407	526	648	794	954	1126
8.4	214	305	412	532	656	804	965	1140
8.5	217	309	417	539	664	813	977	1153
8.6	219	313	422	545	671	823	988	1167
8.7	222	316	426	551	679	833	1000	1180
8.8	224	320	431	558	687	842	1011	1194
8.9	227	324	436	564	695	852	1023	1207
9	229	327	441	571	703	861	1034	1221
9.1	232	331	446	577	710	871	1046	1234
9.2	235	335	451	583	718	880	1057	1248
9.3	237	338	456	590	726	890	1069	1262
9.4	240	342	461	596	734	900	1080	1275
9.5	242	345	466	602	742	909	1092	1289
9.6	245	349	471	609	749	919	1103	1302
9.7	247	353	475	615	757	928	1115	1316
9.8	250	356	480	621	765	938	1126	1329
9.9	252	360	485	628	773	947	1138	1343
10	255	364	490	634	781	957	1149	1357
K	26	37	49	64	79	96	115	136
S	155	200	250	305	360	425	495	570

VARIANCES

“Where a local unit of government feels that a variance from the Minnesota Rules for State Aid Operations Chapter 8820 is justified they shall submit a written request, in the form of a resolution, passed by the pertinent political subdivision, to the Commissioner of the Minnesota Department of Transportation. As required in State Aid Operations Rules, Chapter 8820.3300, the resolution shall identify the project by locale and termini, shall cite the specific rule or standard for which the variance is requested and describe the modification proposed.”

See the following page for a checklist to aid in formulating a variance request. Requests are due March 1, June 1, September 1, and December 1 of each year. The variance committee will then convene at the ends of those months to hear the requests.

Contact Metro State Aid (Dan Erickson or Julie Dresel) well in advance of the deadline to work through Variance issues. Final Request is due to Central Office as noted above.
Submit variance requests to:

Please send a copy of the request to:
Dan Erickson or Julie Dresel
Metro State Aid
1500 W. County Road B2
Roseville, MN 55113

Paul Stine
395 John Ireland Boulevard
4th Floor
St. Paul, MN 55155
651-366-3830

Variance Packet information

The planning, scoping, design, implementation, operation, and maintenance of roads should reasonably address the safety and accessibility needs of users of all ages and abilities. The needs of motorists, pedestrians, transit users, and vehicles, bicyclists, and commercial and emergency vehicles moving along and across roads, intersections, and crossings should be considered in a manner that is sensitive to the local context and recognizes the varying needs in urban, suburban, and rural settings.

A request for a variance to the design elements required by State Aid Operations Rules Chapter 8820 should contain the following as applicable:

1. As required by the Rules: a certified resolution from the responsible city council or county board which identifies the project by location and termini, cites the applicable Rule and chapter, cites the standard for which the variance is requested, and describes what is proposed in lieu of the standard.

If applicable, cite the relevant guidance provided in the latest edition of "A Policy on Geometric Design of Highways and Streets", from AASHTO. For projects in urban areas, if applicable, cite the relevant guidance provided in the latest edition of the "Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities" from the Institute of Transportation Engineers.

2. Location map and typical section (in-place and proposed).
3. Describe adjacent land uses (agricultural, residential, commercial, etc).
4. Describe the needs of motorists, pedestrians, transit users, and vehicles, bicyclists, and commercial and emergency vehicles moving along and across roads, intersections, and crossings should be considered in a manner that is sensitive to the local context. If applicable, cite the relevant guidance provided in the Institute of Transportation Engineers' "Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities".
5. Describe effects of designing in accordance to Rule versus proposed non-standard element on adjacent properties, pedestrians, bicycles, motoring public, and emergency vehicles.
6. Define the critical design element involved (i.e. not "Design Speed"): horizontal alignment (radius or degree of curvature), vertical alignment, grades, lane width, shoulder width, bridge width, structural capacity, stopping sight distance (horizontal and vertical), cross slope, super-elevation, clearance (horizontal and vertical).

Variance Packet information (cont.)

7. Estimate the cost/impacts to construct to the standard, the cost to build to the proposed element, and information that logically explains why the particular proposed design was chosen. For instance, if the radius and sight distance for a horizontal curvature is proposed at 35 mph instead of 55 mph, include cost/impacts for 50 mph and 40 mph radii and sight distance.
8. Include available accident data in detail that indicates the resulting damage (property damage/injury/death), contributing causes, and location.

The Minnesota Crash Mapping Analysis Tool (MnCMAT) is available thru the SALT Traffic Safety website at: <http://www.dot.state.mn.us/stateaid/trafficsafety.html>. Note that access to the MnCMAT application requires approval of the city or county engineer. Questions on gaining access or use of the application can be directed to mcmat.dot@state.mn.us.

9. Include existing and projected traffic counts.
10. Include legal, posted, and/or safe speed of abutting roadway sections.
11. Indicate if future improvements are planned on the roadway or on adjacent property.
12. Describe safety mitigation considered, such as signing in accordance with MMUTCD, side-slope flattening, etc.
13. Any other pertinent factors.

Landscape Items

Metro State Aid Plan and Payment Policy

Plans

All plans should show a separate column for landscaping items.

The “Statement of Estimated Quantities” should contain a separate column for landscape items. This column will contain all items that are considered to be decorative landscaping such as wildflowers, shrubs, waste receptacles, etc. By providing an extra landscaping column on the plans, both the Local Partner and Mn/DOT personnel will see the bottom line cost for landscaping at a glance.

Items that are functional but ornamental, such as brick pavers, internally lit street signs, and ornamental fences and railings, will fall into both the roadway and landscaping columns. These items are eligible under the roadway column up to the cost of the average bid price for an equivalent non-ornamental item. The excess cost of these items is considered to be landscaping and will be subject to the 5% annual landscaping reimbursement cap per State Aid Rules 8820.3100, Subpart 10.

To split these items between two columns, State Aid and the Local Partner should develop a mutually agreeable percentage which will reflect what portion of the cost is the state aid eligible roadway cost and what portion is the excess cost for the ornamental product. This percentage will then be applied to the quantity for the item and shown in the roadway and landscaping columns as a quantity, reflecting the percentage split.

For example, brick pavers for sidewalks are eligible up to the usual cost of a regular concrete sidewalk. The excess cost of the pavers over regular concrete is considered a landscape expense and is eligible within the 5% landscaping cap. If the agreed upon percentage for this item was 80% roadway and 20% landscaping (the cost of the pavers was 20% more than the cost of regular concrete sidewalk) the Statement of Estimated Quantities would be shown like this:

				S.A.P. 123-456-789	
Item No.	Description	Unit	Total Estimated Quantity	Roadway	Landscaping
2531.604	Brick Pavers	SF	1000	800	200

Reimbursement

Landscape expenditures will be capped at 5% of the annual construction allocation based on the calendar year of the submittal and the actual payment made to the local partner. The purpose of using the calendar year versus the plan approval year is to simplify the record keeping system, to more efficiently and equitably track expenditures, and to allow the most flexibility for our customers.

For purposes of expenditure tracking, the 5% retainage on landscaping items will be considered payable during the year of finalization, when the local partner actually receives the money, not during the year of the original submittal. The reason for this is to better manage overrun/underrun issues. We need to ensure that the actual dollar amount being spent on landscaping does not exceed the 5% cap for any given calendar year and that the local partner is allowed to fully utilize landscaping funds despite overruns or underruns.

Tracking Procedure

1. When a Report of State Aid Contract is received for a project which contains landscaping items, a copy of that local partner's current year construction allocation will be obtained and the 5% landscaping cap will be computed.
2. The Landscaping Items paid out on the report (95%) will then be deducted from the Landscaping cap.
3. As the calendar year progresses, all other reports from the same local partner will have any landscaping items deducted from the landscape cap until a zero balance is achieved.
4. If a local partner expends their entire landscaping allotment, they will be advised that they can choose one of the following options: shift the remaining costs into a non-participating status; temporarily shift the landscaping items into non-participating status until the time of final estimate when a new allocation may be available; submit partial requests in subsequent years to recover 100% of the landscaping costs.
5. At the time of the Report of Final Estimate, landscaping costs will be reconciled with previous payments and the 5% retainage and overrun payments will be deducted from the current year's landscaping cap.

SIGNAL JUSTIFICATION REPORT (SJR)

WHEN REQUIRED?

- NEW SIGNAL INSTALLATION (TEMPORARY OR PERMANENT)
- COMPLETE RECONSTRUCTION OF EXISTING SIGNAL
(Changes affecting number of lanes, relocation of poles, etc.)

WARRANT ANALYSIS

WHEN REQUIRED?

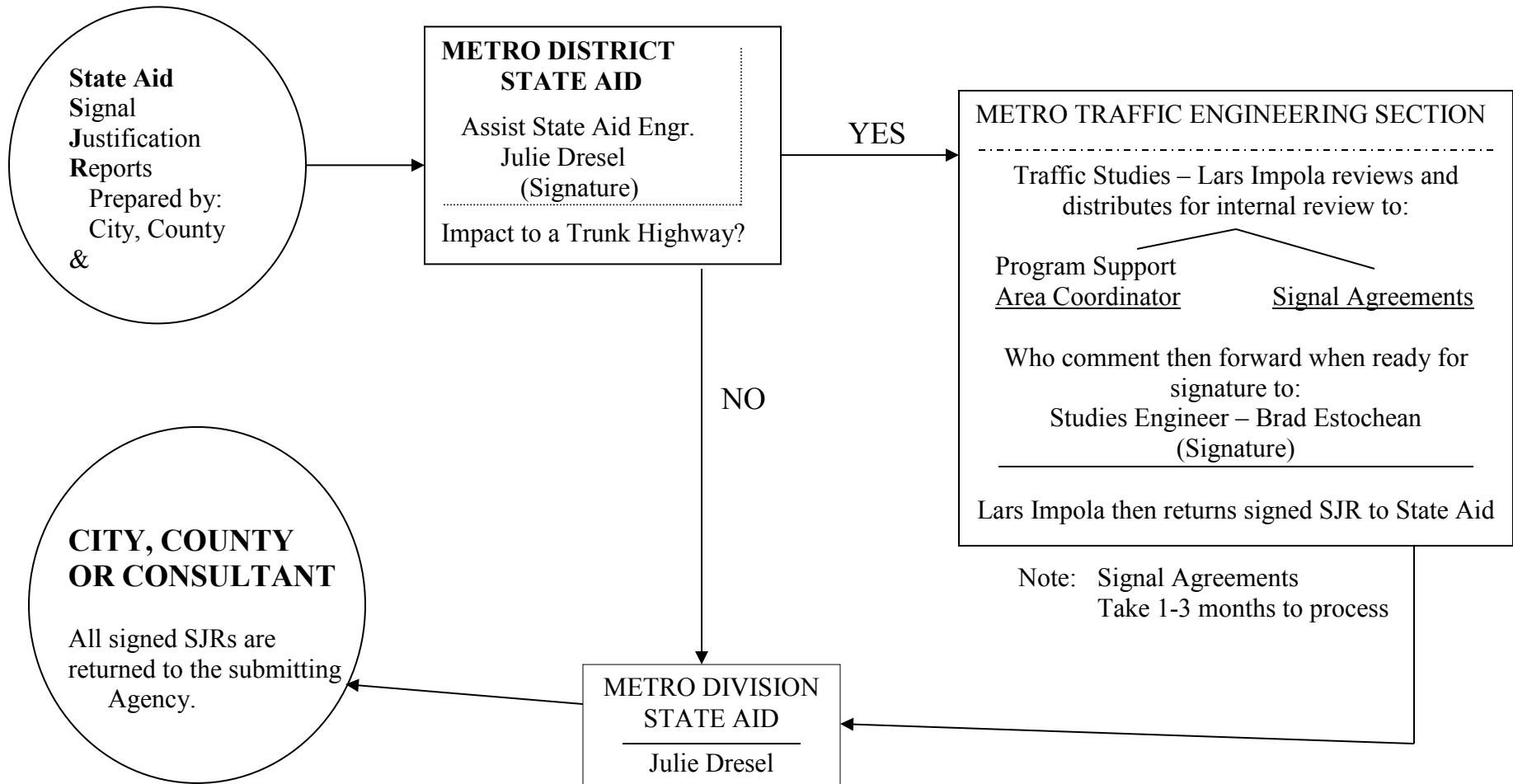
- REVISION TO EXISTING SIGNAL
(Adding signal heads, pedestrian heads, phasing changes, etc.)
- ADDITION OF EMERGENCY VEHICLE PRE-EMPTION (EVP)

WHEN ARE NEITHER REQUIRED?

- REPLACEMENT OF LOOPS DUE TO MILLING (ANY APPROACHES)
- OTHER ROADWAY CONSTRUCTION NOT AFFECTING THE APPEARANCE OR OPERATION OF THE SIGNAL SYSTEM.

NOTE: IF SIGNAL ON Mn/DOT R/W (TRUNK HIGHWAY, INTERSTATE, RAMPS, FRONTAGE ROADS), CONTACT LARS IMPOLA (651-234-7820) FOR MN/DOT REQUIREMENTS.

Process for SJR Approval on “State Aid Projects”



SIGNAL JUSTIFICATION REPORT

CONTENTS

WHAT IS REQUIRED?

- TITLE/SIGNATURE PAGE
see attached example

- INDEX MAP

- INTERSECTION LAYOUT

Existing & Proposed conditions

Show All lanes of approach on all legs of the intersection

- PROJECT DESCRIPTION
see attachment for items needed

- WARRANT ANALYSIS SHEET & WARRANT SUMMARY
** see attached examples**

- JUSTIFICATION STATEMENT

- APPENDIX (Data from studies as appropriate):

Traffic Count Data

24 or 48 hour vehicle traffic volumes and/or 12 hour turning count

3 hour AM & PM Peak Vehicle Turning Movement Count

Pedestrian Count

Accident History Study/Collision Diagram

Pedestrian Gap Study

Delay Study

Heavy Vehicle Survey

Projected Traffic Volumes

Approach Travel Speeds

Other pertinent information (i.e.: letters)

****EACH PROPOSED INSTALLATION SHOULD HAVE A SEPARATE
SJR**

(Title/Signature Page)

SIGNAL JUSTIFICATION REPORT FOR

Roadway Name

AT

Roadway Name

CITY OR COUNTY OF

S.A.P. ____ - ____ - ____

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name	Reg. No.	Date
------	----------	------

APPROVED: _____	Date
City of / or ___ County Engineer	

APPROVED: _____	Date
Metro District – State Aid Engineer	

(if a Trunk Highway is part of the signalized intersection, include the following)

APPROVED: _____	Date
Metro District – Traffic Engineer	

PROJECT DESCRIPTION

This should be a general description of the existing conditions and the proposed project. The idea is to give the reader as thorough a picture of the intersection and project as possible. The following is a list of information that should be presented:

1. INTERSECTION LOCATION
 - Major & Minor streets
 - City & County
 - City population
 - Project Numbers

2. CHARACTER OF THE SITE
 - Function & Importance of the roads
 - Number of lanes
 - Existing & proposed geometrics
 - channelization, grades, parking, speed limits, sight distances, etc.
 - Land use: traffic generators, future development
 - Existing traffic control
 - Adjacent signals
 - Proposed coordination

3. TYPE OF WORK
 - Signal or beacon
 - Temporary or permanent (if temporary, proposed date of removal)
 - Phasing
 - Scope of project—part of larger project?

4. TIME SCHEDULE
 - Proposed letting date
 - Anticipated construction date

5. ESTIMATED PROJECT COST
 - Type of funding
 - Distribution of cost
 - Maintenance responsibilities
 - Who will operate

JUSTIFICATION STATEMENT

This section is an explanation of why the signal is being installed. **Traffic signals are not installed because they meet a warrant, but because engineering judgment has determined that they are needed and justified.**

Why is this signal needed?

NOTE: Warrants should be viewed as guidelines, not as hard and fast values. Satisfaction of a warrant is not a guarantee that the signal is really needed. Conversely, the fact that a warrant is not fully satisfied does not constitute absolute assurance that signalization would not serve a useful purpose. The application of warrants is effective only when combined with knowledgeable engineering judgment and awareness of local conditions.

Engineering judgment must be exercised to assure that the traffic signal will not increase the hazard or cause unnecessary delay to the public.

This section should state what studies were conducted, conclusions reached, and the engineering judgment used. It should also state any city, county and citizen concerns that would affect the decision; where did the concern for this intersection originate.

Who wants the signal?

NOTE: An intersection must meet a signal warrant in order for the traffic signal installation to be eligible for State Aid funding.

Advance Warning Flashers will need to be justified in this section, if installation is proposed. The criteria set forth in the Technical Memorandum No. 86-22-T-7 “Guidelines for the Installation of Advanced Warning Flashers to Alert Motorists to Traffic Signal Change Intervals” must be met. Include the study and analysis in the appendix.

WARRANT SUMMARY

(Required)

_____ at _____

This traffic control signal meets the following MMUTCD warrants:

Warrant No. 1 – Eight Hour Vehicular Volume	met for _____ hours
Condition A-Minimum Vehicular Volume	met for _____ hours
Condition B-Interruption of Continuous Traffic	met for _____ hours
Warrant No. 2 – Four Hour Vehicular Volume	met for _____ hours
Warrant No. 3 – Peak Hour	met for _____ hours
Warrant No. 4 – Pedestrian Volume	met for _____ hours
Warrant No. 5 – School Crossing	(met) (does not meet)
Warrant No. 6 – Coordinated Signal System	(met) (does not meet)
Warrant No. 7 – Crash Experience	(met) (does not meet)
Warrant No. 8 – Roadway Network	(met) (does not meet)

Note: All background supporting data for met warrants is included in the Appendix of this report.

This flashing beacon meets the following Mn/DOT warrants:

Warrant No. 1 – Limited Visibility	(met) (does not meet)
Warrant No. 2 – Accident Rate	(met) (does not meet)
Warrant No. 3 – School Crossing	(met) (does not meet)
Warrant No. 4 – Rural Trunk Highway Junctions	(met) (does not meet)

Note: All background supporting data for met warrants is included in the Appendix of this report.

ROUNABOUT JUSTIFICATION REPORT

(RJR)

Here are some elements to consider when choosing a roundabout. This information was taken from NCHRP Report 672 Roundabout Guide.

A roundabout feasibility study report may include the following elements:

- Identify why a roundabout is being considered as an improvement alternative at this intersection.
- Identify the current status of traffic operations and safety at the intersection for comparison with expected roundabout performance.
- Identify a conceptual roundabout configuration, which includes the number of lanes on each approach and the designation of those lanes.
- Demonstrate whether an appropriately sized and configured roundabout can be implemented feasibly.
- Identify all potential complicating factors, assess their relevance to the location, and identify any mitigation efforts that might be required.

Where more complete or formal rationale is necessary, the roundabout feasibility study report may also include the following additional considerations:

- Demonstrate institutional and community support, indicating that key institutions (e.g. police, fire department, and schools) and key community leaders have been consulted.
- Give detailed performance comparisons (including delay, capacity, emissions, and/or interaction effects with nearby intersections) of the roundabout with alternative control modes.
- Include an economic analysis indicating that a roundabout compares favorably with alternative control modes from a benefit-cost perspective.
- Include a detailed discussion about potential trade-offs between safety, operations, and design.
- Include detailed appendices containing traffic volume data, signal or all-way stop-control warrant analysis, and so on.

RJR's are similar to ICE reports process so here is a link for ICE process: <http://www.dot.state.mn.us/trafficeng/safety/ice/index.html>

*RJR requirements are still being discussed and will include more information as it becomes available

STATE AID STORM SEWER REVIEW

Please submit plans to:

Juanita Voigt
Office of Bridges and Structures
Hydraulics Unit
3485 Hadley Avenue N.
Oakdale, MN 55128
651-366-4469
Fax: 651-366-4497
Email: Juanita.Voigt@state.mn.us

STORM SEWER SUBMITTAL INFORMATION

Plans will be submitted for Hydraulic review when the project consists of any of the following:

- A mainline pipe is being replaced or a new system is being installed.
- There is work proposed on catch basins and leads (jobs that consist entirely of catch basins and leads will be 100% eligible for State Aid funding).
- When an outlet pipe to an existing or proposed State Aid storm sewer.

If a Hydraulic review is needed, the following should be submitted:

- A drainage area map showing land use and an area to each inlet.
- Drainage calculations
 - Storm sewer computations, including pipe sizing, grades and invert elevations
 - Drainage structure data, including design type, size, invert elevations and type of casting assembly
 - Hydraulic design data, i.e. frequency event, time of concentration, etc.
- Catch basin spread computations
 - Run by, depth at gutter line and width of spread on pavement (reference the State Aid Manual Table A 5-892.605)
- Plan Sheets
 - Title sheet, showing job limits, ADT & design speed.
 - Estimate, with participating storm sewer items in a separate column.
 - Typical Sections with right of way limits, lane and shoulder widths, and slopes shown.
 - Drainage tabulations, notes and details (if other than Standard Plates).
 - Sewer profiles with pipe sizes, lengths, grades and inverts, structure locations, types and elevations, and existing and proposed utilities.
 - Plan view showing proposed and existing sewer lines and pipe lengths, sizes and grades.
- Engineer's Estimate

PAVEMENT DESIGN

The use of R-values as a basis for pavement design is encouraged in the State Aid Manual because it provides a more economical and appropriate pavement design structure. This method should be used for the design of all 10-ton pavements. The Mn/DOT Geotechnical and Pavement Manual provides information for using this method of pavement design, along with information on computing the ESAL Factor to be used in conjunction with the R-value. The following tables are taken from the Geotechnical Manual to aid you in your design.

Table 4-4.2. Vehicle classification volumes.
Revised February 1, 1997

VEHICLE CLASS PERCENT OF AADT <i>Analysis of 1983-1989 Data</i>							
Vehicle Classes	Trunk Highways Greater Minnesota			Trunk Highways Mpls/St. Paul Seven County Area			Rural CSAH or County Road
	Average	Min/Max	95% of data sites	Average	Min/Max	95% of data sites	Average
Autos, pickups	89			93			94.1
2 ax, 6 tire SU	2.7	.4 / 9.3	< 4.9	2.2	.8 / 7.6	< 3.6	2.6
3 + ax SU	1.5	0 / 28.7	< 4.1	1.0	0 / 8.9	< 2.8	1.7
3 ax TST	.1	0 / 1.1	< .3	.2	0 / 1.2	< .4	0.0
4 ax TST	.2	0 / 1.6	< .6	.2	0 / 1.1	< .6	0.1
5 + ax TST	6.1	0 / 31.0	< 15.5	3.2	0 / 22.6	< 10.6	0.5
Buses, Trucks w/Trailers	.4	0 / 3.9	< 1.2	.3	0 / 2.7	< .9	1.0
Twin Trailers	.1	0 / 1.0	< .3	.0	0 / .4	< .2	0.0
Total Number of Sites	N = 837			N = 239			1977 County Road Study

SU = Single Unit Trucks
TST = Tractor Semi-Trailer
ax = axle

Table 4-4.3. Average ESAL factors by vehicle classification from WIM.
Revised February 1, 1997

Flexible ESAL Factors for the Design-Lane						
		TH 99	I-494	I-94	TH 2	I-94
Vehicle Class	Default	a	b	c	d	MNROAD
Cars, Pick-ups	.0007					c
2 ax 6 tire SU	.25	.26	.13	.22	.26	.25
**3+ ax SU	.58	.51	.63	.44	.71	.61
3 ax TST	.39	.26	.21	.55	.36	.59
4 ax TST	.51	.57	.35	.47	.50	.60
5+ax TST	1.13	.92	1.14	1.00	1.74	.99
*(6 ax TST)	.78	.42	.74	.64	.69	.69
T w/tr, buses	.57					
MTC buses	1.25					
Twin Trailers	2.40	.49	.77	2.16	1.90	3.15
Rigid ESAL factors for the Design-Lane						
Vehicle Class	Default	a	b	c	d	c
Cars, Pick-ups	.0007					
2 ax 6 tire SU	.24	.25	.12	.21	.25	.24
**3+ ax SU	.84	.73	.93	.62	1.09	.90
3 ax TST	.37	.25	.20	.53	.34	.56
4 ax TST	.53	.60	.35	.49	.52	.63
5+ax TST	1.89	1.52	1.90	1.66	2.94	1.64
*(6 ax TST)	.80	.51	.89	.77	.83	.83
T w/tr, buses	.74					
MTC buses	1.23					
Twin Trailers	2.32	.47	.73	2.09	1.84	3.06
Vehicle Classes:		Data Taken From Years:				
SU = Single Unit Trucks		a = 1985, 1990				
TST - Tractor Semi-trailer		b = 1982-1985, 1990				
ax = axle		c = 1990				
WIM = Weighing-in-Motion (fixed sites)		d = 1984, 1985, 19				
T w/tr = Trucks with trailers						
MTC = Urban transit buses						
* - This vehicle class is not usually considered separately in an ESAL forecast.						
**- Use 0.91 if the route is a sugar beet hauling route.						

Table 4-4.4. Sample ESAL calculation.
Revised February 1, 1997

Example 20-Year Design Lane Cumulative ESAL Calculation (Use only if you do not have access to the MNESALS electronic spreadsheet)						
Vehicle Classes	Base Year AADT (Two- Way)	Flexible ESAL Factors	=	Base Year ADL	Design Year AADT (Two- Way)	Design Year ADL
Cars and Pick-ups	1207	x .0007	=	.8	1690	1.2
2 ax, 6 tire SU	98	x .25	=	24.5	137	34.2
3 + ax SU	34	x .58	=	19.7	48	27.8
3 ax TST	6	x .39	=	2.3	8	3.1
4 ax TST	8	x .51	=	4.1	11	5.6
5 + ax TST	120	x 1.13	=	135.	168	189.8
Buses, Trucks w/Trailers	25	x .57	=	14.2	35	20
Twin Trailers	2	x 2.40	=	4.8	3	7.2
TOTAL	1500			206	2100	288.9

ADL = Average Daily Load

$(\text{Base Year ADL} + \text{Design Year ADL}) / 2 = (206 + 288.9) / 2 = 247$ (rounded)

Number of days in 20 years x 247 = 7300 x 247 = 1,804,335

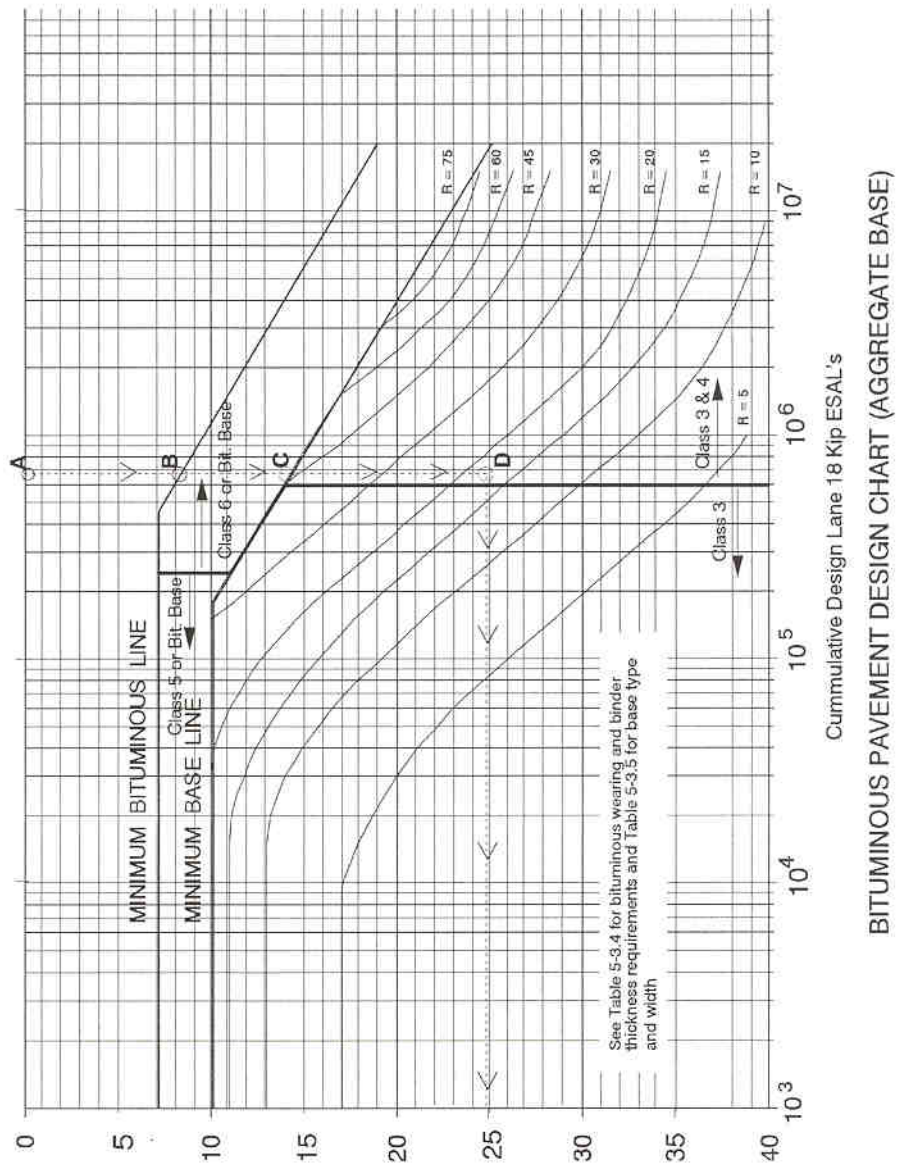
Design Lane Factor (if 4 lane) x 1,804,335 = .45 x 1,804,335 = 811,951

Load limit increase factor x 811,951 = 1.12 x 811,951 = 909,385

Cumulative 20-Year Design Lane Flexible ESAL (rounded) = 909,000

Procedures for calculating a cumulative 20-year Design Lane Rigid ESAL are the same as above except rigid ESAL factors are used in place of the flexible ESAL factors.

Figure 5-3.7. Bituminous Pavement Design Chart (Aggregate Base).



ULTIMATE 10 TON STAGED FLEXIBLE PAVEMENT DESIGN USING SOIL FACTORS 1,5

Required Gravel Equivalency (G.E. in inches) for various Soil Factors (S.F.)

For new construction or reconstruction use projected ADT or HCADT; for reconditioning projects use present ADT or HCADT
 Designs shown here are for an initial 9 Ton pavement structure. Agencies can add pavement structure to increase to 10 Tons in the future

9 TON Staged : < 150 HCADT			9 TON Staged: 151 to 300 HCADT			TYPE OF MATERIAL³	SPECIFICATION	G.E. FACTOR	
<u>S.F.</u>	Minimum <u>Bit G.E.</u>	Total <u>G.E.</u>	<u>S.F.</u>	Minimum <u>Bit G.E.</u>	Total <u>G.E.</u>				
50	7	10.3 ⁶	50	7	14	Bituminous Pavement	2360	2.25	
75	7	13.9	75	7	17.5	Cold-Inplace Recycling (CIR)	2331	1.5	
100	7	17.5	100	7	21	Rubblized Concrete	2231	1.5	
110	7	19	110	7	22.4	Full Depth Reclamation	2331	1	
120	7	20.5	120	7	23.8	Aggregate Base class 5 & 6	3138	1	
130	7	22	130	7	25.2	Aggregate Sub-Base class 3 & 4	3138	0.75	
						Select Granular Mat'l	3149.2B2	0.5	
9 TON Staged: 301 to 600 HCADT			9 TON Staged: 601 to 1100 HCADT			AASHTO SOIL CLASS	SOIL FACTOR (S.F.)	ASSUMED R-VALUE	GENERAL⁴ PLASTICITY
<u>S.F.</u>	Minimum <u>Bit G.E.</u>	Total <u>G.E.</u>	<u>S.F.</u>	Minimum <u>Bit G.E.</u>	Total <u>G.E.</u>				
50	7	16	50	8	18.5	A - 1	50 - 75	70 - 75	NP
75	7	20.5	75	8	23.7	A - 2	50 - 75	30 - 70	SP
100	7	25	100	8	29	A - 3	50	70	NP
110	7	26.8	110	8	31.1	A - 4	100 - 130	20	SP
120	7	28.6	120	8	33.2	A - 5	130+	na	na
130	7	30.4	130	8	35.3	A - 6	100	12	P
						A - 7 - 5	120	12	P
						A - 7 - 6	130	8	P
9 TON Staged: 1101 to 1500 HCADT²									
<u>S.F.</u>	Minimum Bit G. E.	Total G.E.							
50	8	20.3							
75	8	26.4							
100	8	32.5							
110	8	35							
120	8	37.4							
130	8	39.8							

Values may not be exact due to rounding

¹For 10 Ton design see page 31 in Mn/DOT Pavement Manual, July 2007, Chapter 5, Section 3, Figure 5-3-7. Bituminous Pavement Design Chart (Aggregate Base)

²For HCADT over 1500 more advanced design procedures should be used; please contact Mn/DOT's Pavement Design Unit

³See page 32 in Mn/DOT Pavement Manual, July 2007, Chapter 5, Section 3, Table 5-3.4 - Granular Equivalent (G.E.) factors

⁴General Plasticity: NP = nonplastic; SP= semi-plastic; P = plastic; na = not applicable (An A-5 soil rarely occurs in Minnesota)

5 Safety edge (30° to 35° wedge) are recommended to minimize edge dropoff. See www.dot.state.mn.us/stateaid/sa_safety_edge.html

6 These GE values are for the finished pavement section. During construction additional GE may be warranted for a construction platform.

SPECIAL PROVISIONS

Here is the link for MnDOT Special Provisions where you can download the latest version of Provision for you project.

<http://www.dot.state.mn.us/pre-letting/prov/index.html>

Traffic Management Plan (TMP)

http://www.dot.state.mn.us/metro/trafficeng/control_striping.html

BIKEWAY DESIGN

For Bikeway design please refer to State Aid Rule for On Road and Off Road Bikeway facilities.

For additional design guidelines refer to the MnDOT Bikeway Design Guide. <http://www.dot.state.mn.us/bike/designmanual.html>

.6XX Transport List Extensions

For items that are not on the Transport List please use a similar item number and a .6XX extension according to the correct unit of measure. Refer to the list below for measurement extensions.

	<u>English</u>	<u>Metric</u>
.601	Lump Sum	Lump Sum
.602	Each	Each
.603	Lin Ft	m
.604	Sq Yd	m ²
.605	Acre	ha
.606	Gallon	Lump Sum
.607	Cu Yd	m ³
.608	Pound	kg
.609	Ton	t
.610	Hour	Hour
.611	Day	Day
.612	Week	Week
.613	Unit Day	Unit Day
.614	Structure	Structure
.615	Assembly	Assembly
.616	System	System
.617	Sq Ft/Day	m ² /Day
.618	Sq Ft	
.619	Road Sta	
.620	Yard	
.621	Dollar	Dollar
.622	MBM (Thousand Board Feet)	
.623	MGAL (M Gallons)	

General Redline Comments Observed on Plan

General Comments:

- If there is Storm Sewer on a plan, please make sure to include an additional copy of the plan along with Drainage map & calculations for eligibility review.
- If a roadway intersects with a Trunk Highway, please give me a heads up as these reviews take longer and I will let you know if I need extra copies or a pdf of the plan for routing to the functional groups. The number of copies varies depending on the work proposed.
 - Typically a copy is required for:
 - State Aid Review
 - Hydraulics
 - Bridge
 - Unusual Retaining Wall Designs
- If there is a Signal or Signal revisions a SJR or SJL is required.
 - SJR is required when new signals or geometric changes are made to the intersection
 - SJL are for modifications, upgrade to Left Turn Flashing Arrow or Flasher
- Roundabouts require a RJR
- Sometimes a letter of explanation with the final plan submission is helpful to know what changes were made or why something might not have been made.
- If a new person submitting to State Aid, please make sure to include your Name, Phone number and email address.
- On State Aid Check list, please fill in the Rule you are using and do not put “See Table” as I might pick the wrong rule which causes confusion when reviewing the plan and will make my review incomplete until the rule is called out.
- If using MnDOT Lab Services, please submit a hard or electronic copy of the provisions.
- If multiple Agencies on a project and State Aid funds being utilized by one Agency other than lead Agency, then Lead Agency needs to pull a State Aid Project number for tracking purposes.

Title Sheet:

- 2014 Spec note needs to include “STANDARD SPECIFICATIOSN FOR CONSTRUCTION” and “MATERIALS LAB SUPPLEMENTAL” language.
- Specs must be switched over to 2014 at this point for submitted projects, no more 2005 Specs.
- A County/City signature is required if work within County/City R/W limits.
- If there is a Trail on a project, make sure to include Trail Design Designation block.

Estimate Quantities/Tabulations:

- No decimals unless quantity is less than 1 or the following items: Drainage Structure heights, sign panel, acres, tons, & Lump Sum splits.
- No 0 Zero quantities in SEQ or Tabs.
- For State Aid projects, items should be in order according to the Transport list (sequential according to XXXX.XXX/XXXXXX). If Project that go through MnDOT Central Office Review item must be in order according to Transport list.

General Redline Comments Observed on Plan Cont.

Estimate Quantities/Tabulations Cont.:

- Check Transport items #'s and descriptions as some have changed from 2005 to 2014 Spec Book.
- If there are Landscaping items, they must be in a separate Landscape column on the SEQ.
- Salvage items must be reinstalled on the project to be eligible for State Aid funds.

Standard Plates:

- In the description please include number of sheets for plate (X sheets).
- Check MnDOT website for latest plate version.
- FHWA Approval note is missing.

Standard Plans:

- There are new Erosion standard plans are out that for 2014 Spec Book.
- ADA Standard Plans make sure you have the latest approval date of April 10, 2013
- ADA Standard Plans sheets you must include all 5 sheets in the plan.
- Do not call out ADA Standard Plans 5-297.250 in the plan; they must be included in the plan sheets.
- Please make sure to check MnDOT's website to make sure you have the newest version for a Standard Plan sheet as new versions are now available.

Typicals:

- When you draw a typical, make sure to label and dimension lanes, shoulders, parking, curb reaction, trails, trail clear zones.
- Try not to give a var. label for dimensions giving dimension range is preferred for verification purposes.

Plan Sheets:

- Make sure to include Begin and End of State Aid Project limits on all plans sheets including stationing.