

CR 80-208

C E R T I F I C A T E

STATE OF WISCONSIN )  
 )  
DEPARTMENT OF TRANSPORTATION ) SS



TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, Lowell B. Jackson, P.E. Secretary of the Department of Transportation and custodian of the official records do hereby certify that the annexed rule relating to the evaluating and selecting of state trunk highway and bridge improvement (construction) projects, (CR 80-208) was duly approved and adopted by this department on August 10, 1981.

I further certify that this copy has been compared by me with the original on file in this Department and that the same is a true copy thereof, and of the whole of such original.



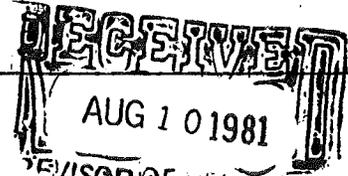
IN TESTIMONY WHEREOF, I have hereunto set my hand and caused to be affixed the official seal of the Department of Transportation at the Hill Farms State Office Building in the City of Madison, this 10<sup>th</sup> day of August, 1981.

Lowell B. Jackson  
Lowell B. Jackson, P.E.  
Secretary  
Wisconsin Department of Transportation

10-1-81

OFFICE OF THE SECRETARY

CR 80-208



A rule to create TRANS 209, Wis. Admin. Code, relating to the evaluation and selection of state trunk highway and bridge improvements (construction) projects.

ORDER ADOPTING RULE

Analysis of Rule Prepared By the Department of Transportation

General summary of the proposed rule. The recently enacted Wisconsin Statute 85.025 directs the Wisconsin Department of Transportation to set forth the criteria for evaluating and selecting state trunk highway and bridge improvements.

The Department selects and evaluates highway and bridge improvement projects through a multi-year programming process that was initiated in 1978. The multi-year improvement program process was developed over a two year period of extensive study of the existing conditions and deficiencies on the State Trunk Highway System and an evaluation of alternative programs to address these deficiencies. The present Department improvement program addresses a six year period,

The Department is composed of a central office located in Madison and eight transportation district offices located throughout the state. This organizational structure allows the multi-year program development process to combine the advantages of centralized decision making, that ensures consistency with statewide goals, along with decentralized decision making which permits responsiveness to local needs.

Generally the district offices, with guidance from the central office, take the lead role in formulating a program. Once the districts submit a program recommendation, the central office reviews and evaluates it and suggests revisions. Many iterations of development and review are often necessary to produce a final program.

The objective of the programming activity is to develop a schedule of projects related to available revenues over some intermediate period (e.g., 6-10 years). The program must reflect the results of policy and system planning, the constraints imposed by the budget, and the lead time required to prepare projects for construction. In short, the program must translate broad policy and more detailed planning guidance into a practical and realistic near term course of action for the Department. The program forms the basis for developing the biennial budget request and provides one measure of Departmental performance. The first two years in a program can be specified with some certainty largely because most such projects have gone through portions of the detailed facilities development process. However, the later years must be viewed as more tentative and will have to be periodically updated and revised as new information becomes available.

The programming process seeks to optimize the use of state and federal funds. Therefore, depending upon potential federal funding sources and the requirements associated with these funds, the project improvement levels, project choices and subsequent program recommendations can vary greatly. The state funding is utilized to match and supplement available federal funds and to provide some flexibility in selecting project improvement levels.

The basic steps in the programming function include: an analysis of existing conditions and deficiencies to identify problems with the current system and to determine the priorities for using scarce budget resources; the development and evaluation of a range of alternative approaches for improving the system, which might reflect different funding levels, areas of emphasis, design criteria, and policy directions; and an analysis of alternative program data to determine a recommended program and for development of a budget submittal. Once a budget is approved, the program must be adjusted to be consistent with the approved funding level. Continual monitoring and periodic updating is required to keep the program current and to provide a basis for the preparation of the Department's next budget submittal.

The evaluation and selection of candidate projects for programming can be accomplished in many ways. The two extremes are, on the one hand, a non-structured, decentralized and judgmental procedure (performed in district offices) and, on the other, a centralized, rigid formula process that reduces all relevant factors to numbers (performed in the central office). Within this spectrum are countless combinations of the two.

The process utilized by the Department does not rely on either extreme. Rather, the goal has been to achieve a structured, comprehensive and documented way of making program decisions responsive to new or changing national as well as state policy directions. A combination of both quantitative information and qualitative professional judgments are needed to compare the merits of projects and programs, and to achieve statewide consistency in meeting objectives.

It is necessary to have complete, consistent, and current technical information as input to the programming process. For example, the collection of consistent and comparable data, the application of benefit-cost analysis, and the establishment of general threshold criteria for project selection based on identification of increasing amount and severity of deficiencies, are ways the Department has developed and used objective information in the process of formulating highway programs. However, there comes a point where further summarization of technical (and non-technical) information in priority indices or numerical ranking schemes ceases to be meaningful because it hides more than it clarifies. Ultimately, decisions have to be made by weighing a variety of inputs. While consistency may be achieved in the information presented, the complexity of difficult choices cannot be avoided.

The department's process ensures that citizens, local units of government, special interest groups, legislators and other agencies are informed of highway investment options and have an opportunity to influence them. Not only does the public have the opportunity to influence the set of projects recommended for inclusion in the highway program, but also the funding emphasis within and between such program areas as Resurface, Recondition and Reconstruction (RRR) work, Major Projects, Bridges and Interstate improvements. In addition, the public is encouraged to provide input on the nature of the programming process.

Public involvement in the programming activity is accomplished through methods unique to the process itself and through other ongoing procedures for involving citizens and local governmental units in Departmental decision making. The methods and procedures are extensive and include:

- (1) public review and comment on the multi-year highway program document every two years;
- (2) hearings and meetings on individual projects;
- (3) continued close, day-to-day working relationships with local units of government and planning agencies;
- (4) a policy inviting the public to express their concerns about the program at any time;
- (5) citizen input into other levels of decision making which either feed into highway programming or follow from it; and
- (6) coordinated planning with metropolitan areas.

Authority for rule. Section 85.025, Stats., as cited above, provides the statutory authority for this rule.

Fiscal estimate. There will be no fiscal effect on the state or local units of government through adoption of this rule.

This analysis has been prepared under the direction of Thomas J. Hart, Director of the Bureau of Program Management, 608-266-2914.

OFFICE OF THE SECRETARY

---

TEXT OF PROPOSED RULE

---

Pursuant to authority vested in the Department of Transportation by ss. 110.06(1), 227.014 and 85.025, Stats., the Department of Transportation hereby proposes to adopt rules (Chapter TRANS 209) interpreting s. 85.025, Stats., as follows:

PROJECT SELECTION PROCESS

TRANS 209.01 PURPOSE. In accordance with s. 85.025, Stats., this rule sets forth the process and criteria used by the department of transportation for evaluating and selecting state trunk highway and bridge improvement (construction) projects.

TRANS 209.02 APPLICABILITY. The procedures in this rule are to be applied so as to avoid conflict with the special statutory obligations of the department to comply with criteria and standards of federal agencies for obtaining and using federal funds (ss. 84.015, 84.03, Stats.).

TRANS 209.03 DEFINITIONS. (1) "Central Office" means the transportation administrative office located in Madison.

(2) "Deficiency" means a less than standard condition in one or more of a number of highway or bridge physical or operating conditions or characteristics.

(3) "Department" means the Wisconsin department of transportation.

(4) "Federal Aid" means the aids that the federal government makes available to Wisconsin for highways.

(5) "Geometrics" means the horizontal (width, curvature) and vertical (grade) design elements of highway and bridge facilities.

(6) "Improvement Level" means the type of construction improvement. It can range from resurfacing to complete reconstruction of a highway and either rehabilitation or replacement for bridges.

(a) "Resurfacing" means placing a new surface on existing roadway to provide a better all weather surface, a better riding surface, and to extend or renew the pavement life. It generally involves no improvement in capacity or geometrics. Resurfacing may include some elimination or shielding of roadside obstacles, culvert replacements, signals, marking, signing and intersection improvements. Usually no additional right-of-way is required; except possible minor acquisition for drainage and intersection improvements.

(b) "Recondition" means work in addition to resurfacing. Minor reconditioning includes pavement widening and shoulder paving. Major reconditioning includes improvement of an isolated grade, curve, intersection or sight distance problem to improve safety. Major recondition projects may require additional right-of-way.

(c) "Reconstruction" means total rebuilding of an existing highway to improve maintainability, safety, geometrics and traffic service. It is accomplished basically on existing alignment, and major elements may include flattening of hills and grades, improvement of curves, widening of the roadbed, and elimination or shielding of roadside obstacles. Normally reconstruction will require additional right-of-way.

(d) "Bridge Rehabilitation" means the preservation or restoration of the structural integrity of an existing bridge as well as work to correct safety defects.

(e) "Bridge Replacement" means the building of a new bridge to replace an existing bridge.

(7) "Interstate Project" means projects constructed on an interstate designated highway.

(8) "Major Project" means projects that result in new or significantly altered highways. Such projects typically involve the continuous relocation of a highway segment 2.5 miles or more in length; the addition of traffic lanes 2.5 miles or more in length; or unusually high cost.

(9) "Pavement Serviceability Index" (PSI) means a numerical measure of the quality of a car ride on a given pavement as determined by an electro/mechanical instrument. It ranges from poor (0-1) to excellent (4-5).

(10) "Policy Planning" means the analysis of the many issues that may affect the State's transportation system and the development of the department's policies in regard to those issues.

(11) "Program" means a multi-year schedule of proposed projects.

(12) "Programming Process" means the detailed assessment of specific policy and program choices necessary to develop a program.

(13) "Project" means a proposed improvement to a segment of a state trunk highway or a bridge.

(14) "Project Alternatives" means the varying improvement levels that are identified as relevant for a project.

(15) "Project Development" means the process from inception of a project to the contracting for construction of the project. It includes data collection, deficiency analysis, surveys, design, preparation of plans and contract documents and right of way acquisition.

(16) "Secretary" means the secretary of the department of transportation.

(17) "System Planning" means system-wide analysis of highway facilities and assessment of system deficiencies and potential improvements in light of a range of assumptions about the future.

(18) "Transportation District Office" means one of the departmental administrative offices under the division of districts located throughout the state.

TRANS 209.04 POLICY GOALS. (1) The overall goal for the department shall be to address highway transportation needs as efficiently as possible to achieve optimum utilization of available funds. This shall be accomplished by:

(a) Maximizing the use of existing highways and bridges and thus minimizing the need for new highways and facilities.

(b) Utilizing a highway's surface life before improving the facility, where practical.

(c) Determining the appropriate level of improvement to achieve optimum effectiveness from the highway system.

(d) Emphasizing the correction of safety-deficient segments of the highway system.

(e) Seeking to resolve facility-related problems that inhibit economic vitality and growth.

(f) Encouraging the staging of improvement projects to minimize the initial investments required while maintaining flexibility to meet longer range needs at a later date.

(g) Utilizing federal aids to the greatest extent reasonable.

(h) Minimizing negative effects on the surrounding communities and on the natural environment.

TRANS 209.05 PROCESS OBJECTIVES. (1) The department shall perform project evaluation and selection as a necessary component of its programming process in the following general areas: bridge projects, 3R (resurfacing, recondition and reconstruction) highway projects, interstate projects, and major projects. The objectives of the programming process shall be to:

- (a) Provide policy and program choices for the department by evaluating and comparing the benefits and costs of various alternatives for preserving, rehabilitating and improving the highway system.
- (b) Furnish information to assess whether available revenues can provide adequate highway and bridge facilities over the long term.
- (c) Define a specific program as a target for departmental efforts that ensures efficient use of staff and funds and which accounts for the lead times involved in project development.
- (d) Ensure that investment decisions are consistent with statewide objectives by developing systematic criteria and procedures for identifying deficiencies, developing proposed solutions, and selecting projects.
- (e) Facilitate the implementation of the department's policy and system plans.
- (f) Inform the public of the department's intentions and provide an opportunity for public review and comment.
- (g) Provide a basis for coordinating the department's efforts with the planning, programming and budget activities of other state, national, regional, and local agencies.

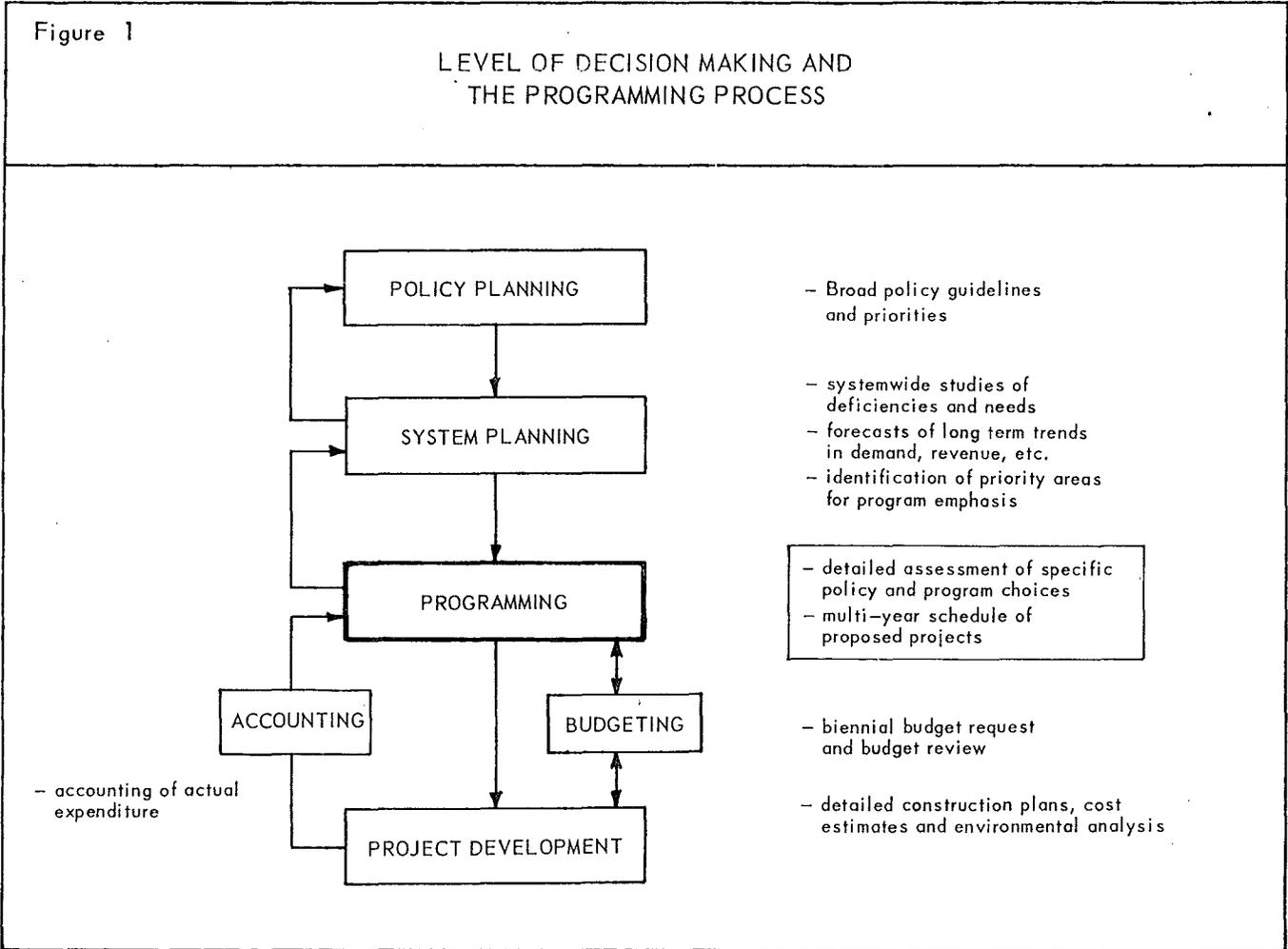
TRANS 209.06 PROGRAMMING GUIDELINES. (1) The department shall develop a program within estimated levels of revenue for a prescribed time period as part of a four level decision-making process that includes broad policy planning, system planning, programming and project development (Figure 1).

(2) The programming process shall define a means of project evaluation and selection utilizing the following basic guidelines where appropriate:

- (a) Considering alternative program levels to illustrate the cost impacts and benefits of varying program levels.
- (b) Utilizing indicators that measure deficiencies to identify candidate improvement projects and the appropriate level of improvement, considering the variation in fund availability.
- (c) Achieving adequate surface renewal projects to preserve the overall system serviceability and rideability. The level of surface renewal mileage is defined through analysis of the pavement serviceability index and pavement age.
- (d) Replacing or rehabilitating deficient bridges by considering load carrying capacity, physical condition and restrictive or dangerous widths, clearances or approach roadways and coordination with other programmed work.
- (e) Distributing funds equitably statewide.

Figure 1

### LEVEL OF DECISION MAKING AND THE PROGRAMMING PROCESS



(f) Considering major projects where benefit/cost analysis is favorable, where there is the possibility of significant social and economic benefits and where there is a high degree of public support and acceptability.

TRANS 209.07 CANDIDATE PROJECT IDENTIFICATION PROCESS. (1) GENERAL DESCRIPTION. Candidate project identification is accomplished within the overall framework of developing the highway and bridge improvement program. The department shall identify both the surface, structure, safety, geometric or capacity deficiencies, singly or in combination, and the alternative improvement levels to correct or reduce the deficiencies.

(2) RESPONSIBILITIES. The transportation district offices, with the guidance from the central office, shall take the lead role in identifying candidate projects for the resurfacing, reconditioning, reconstruction, interstate, major and bridge program areas. The districts shall provide the regional and local viewpoints and knowledge of unique local conditions to program development.

(3) COLLECT AND DEVELOP DATA. The department shall maintain a system of uniform data collection for segments of the highway system. This data shall be used for comparison and evaluation purposes to assist in determining that the most appropriate and beneficial candidate projects and improvement levels are selected. This data shall be updated, as necessary, for the recycling of the program. The following data will be collected and developed where appropriate:

(a) Highway Data

1. Pavement surface type
2. Year surfaced
3. Widths: right of way, travel lane, pavement, shoulders, median, and parking lane
4. Lanes: travel and parking
5. Driveways
6. Posted speed
7. Pavement serviceability index (PSI)
8. Accident information
9. Curves with limited stopping sight distance
10. Steep grades
11. Percent no passing zone
12. Average daily traffic
13. Forecast average daily traffic
14. Hourly vehicle data and hourly capacity
15. Parking restrictions
16. Terrain
17. Access control
18. Maintenance problems

(b) Bridge Data

1. Deck condition: expansion and construction joints
2. Superstructure: main load carrying members, floor system
3. Substructure condition: abutments, piers, bents

4. Waterway condition: adequacy of opening, flooding, debris present.
5. Approaches condition: roadway condition, horizontal and vertical sight distance
6. Capacity condition: design, inventory and operating load, posting, maximum vehicle weight, load rating basis, overburden depth
7. Field inspection and office appraisal rating

(c) Historically Collected Environmental, Social and Economic Data

1. Land Use
2. Right-of-way required
3. Housing and business units required
4. Farms affected
5. Land required: agricultural, wetland and upland habitat
6. Habitat replaced
7. Endangered species
8. Air quality effects
9. Noise level impacts
10. Energy consumption

(4) IDENTIFY CANDIDATE PROJECTS. Candidate projects may originate from the following sources:

(a) Segments which have one or more deficiencies based on the analyses of the data collected and developed.

(b) Projects considered or included in the last programming cycle.

(c) Projects which address problem areas identified by departmental staff.

(d) Projects recommended by elected officials, citizens, local units of governments, regional planning commissions, county highway committees, county traffic safety commissions, etc.

(e) Projects coordinated with planned development.

(f) Projects that must be coordinated with other projects.

(g) Projects identified as a part of the interstate cost estimate.

(h) Projects which constitute a gap in an existing system.

(i) Projects in high priority corridors with large past investment.

(j) Projects that are eligible for special discretionary federal funding.

(k) Projects that are compatible with and serve to implement state or local transportation plans.

(5) PROJECT DEFICIENCY ANALYSIS. Candidate projects shall be analyzed at the transportation district office for resurfacing, reconditioning and reconstruction projects and at the central office for bridge, interstate and major projects. Primary criteria used to indicate deficiencies on candidate projects are:

(a) Accident rate or occurrence that is greater than the statewide average.

(b) Volume to capacity ratio that is greater than .8 in the 100th hour at level of service 'C'.

(c) No passing zone that is greater than 50% of the project length.

(d) Pavement serviceability index that is less than 2.5 on the interstate system, less than 2.25 on a road functionally classified principal arterial or less than 2.0 on all other roads.

(e) Pavement age that is more than 20 years on portland cement concrete or more than 15 years on bituminous pavements.

(f) Pavement width that is less than 21 feet.

(g) Shoulder width that is less than 4 feet.

(h) Bridges that have a sufficiency rating less than 50 or have a condition or load rating of 3 (basically intolerable condition requiring high priority of repair).

(6) DEVELOP ALTERNATIVE PROJECT IMPROVEMENT TYPES AND COST ESTIMATES. The department shall identify a range of practical improvement types for each candidate project. The range of alternatives for highway projects may include: patching and maintenance resurfacing (the equivalent of the "no build" option); improvement resurfacing; minor and major reconditioning; and reconstruction (See Figure 2). Alternatives for bridges shall be: maintenance; rehabilitation; or replacement.

(a) The department shall consider the following factors for the range of alternative improvement levels of a given project:

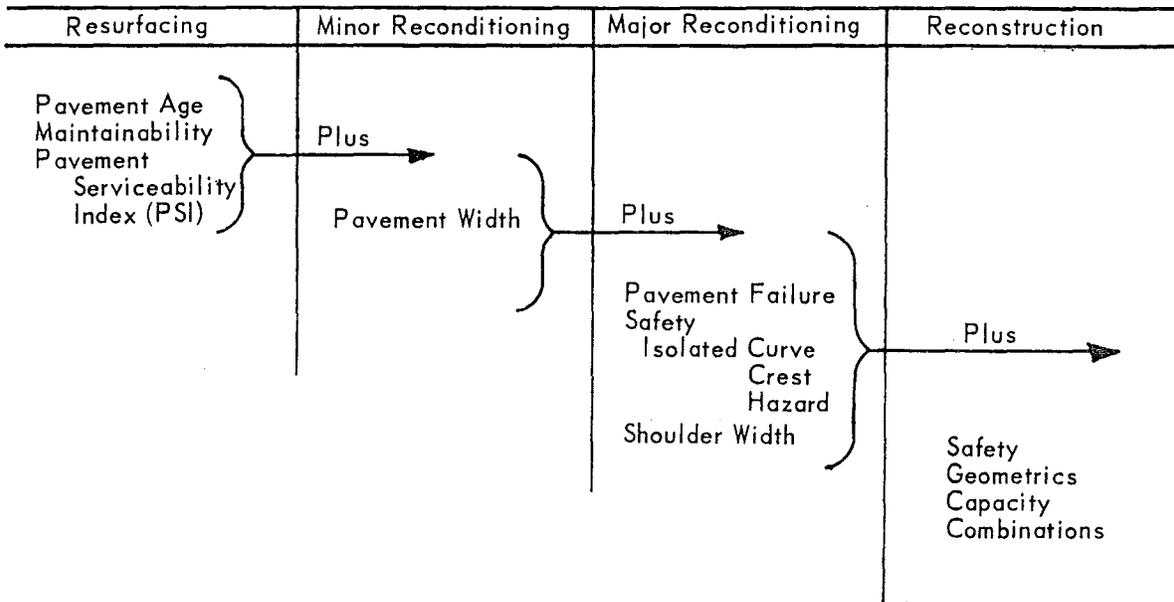
1. the nature, number and severity of the deficiencies present;
2. the overall budget available;
3. the cost estimate for each alternative;
4. the associated federal-aid eligibility requirements;
5. the existence of other related projects;
6. the probable project effects concerning safety, energy consumption, economic development and the social and natural environment;
7. the traffic volumes served by the proposed project.

TRANS 209.08 PROJECT EVALUATION AND SELECTION CRITERIA. The evaluation and selection of projects shall be directed toward preserving, rehabilitating, and improving the physical condition and serviceability of the state trunk

Figure 2

### IMPROVEMENT LEVEL THRESHOLD DEFICIENCY GUIDELINES

#### LEVELS OF IMPROVEMENT: STH



highways and bridges. A combination of both quantitative information and professional judgment shall be used to compare the merits of projects and improvement levels to achieve appropriate statewide consistency. Candidate projects shall be initially evaluated at the district level. At this level, projects are analyzed based on an assessment of local conditions and needs in accordance with the district target mileage guideline and the funding allocation. The candidate projects shall be evaluated by the following criteria where appropriate:

(1) Accomplishing sufficient surface renewal mileage necessary to preserve system serviceability and rideability. The target level of mileage renewal is established by the pavement serviceability index, pavement age and engineering field evaluation. The goal is to maintain an overall average pavement serviceability index of 3.0.

(2) Limiting the more extensive reconditioning, reconstruction, and new facility development projects to those projects where the number or severity of deficiencies exceed statewide averages for safety, geometry or capacity, or where roadbeds are so deficient structurally that resurfacing or minor reconditioning is not a feasible alternative.

(3) Correcting safety problems as defined by accident occurrences and rates exceeding the statewide average or to sites with severe accident potential.

(4) Maximizing the utilization of existing facilities through use of low capital investment projects or transportation system management techniques such as signalization, channelization, access control, park and ride lots, etc.

(5) Selectively rehabilitating or replacing, as appropriate, those bridges:

(a) with posted weight restrictions;

(b) that cannot be effectively maintained, based on the field inspections and office appraisals;

(c) that are functionally obsolete (geometric deficiencies of narrow width, restricted clearance, poor alignment, general safety) or expected to become unsatisfactory in structural or condition rating within the program period.

(6) Considering the project development lead time of 2-10 years and the complexity of the project.

(7) Utilizing the results of benefit-cost analysis or other cost effectiveness techniques to establish funding priorities for safety projects and for evaluating alternatives and relative merits of competing major projects.

(8) Determining the extent of public acceptability or local support through such things as informational hearings, local governmental meetings and correspondence.

(9) Identifying the nature and extent of environmental, energy, social and economic effects on high level recondition and reconstruction projects on an overall basis.

(10) Determining the community effects and benefits including traffic service, safety, air and noise quality and overall community improvement.

(11) Identifying the availability of and eligibility for federal, state and local funding to optimize use of all funds.

(12) Improving system continuity and safety.

(13) Ensuring compatibility with various local, regional and state plans through cooperation with local units of government, county and regional planning and review agencies and other state agencies.

TRANS 209.09 PROGRAM DEVELOPMENT AND EVALUATION. (1) The department shall maintain information on a range of alternative dollar level programs. This information illustrates a range of options and offers the secretary, as well as the governor and the legislature, choices as to the appropriate funding levels for the highway program.

(2) Based on the analysis performed in TRANS 209.08, the department shall select candidate projects and the appropriate level of improvement. The level of improvement proposed for a candidate project may vary dependent upon the dollar level of the program.

(3) The department shall accomplish both project level and program level evaluations. Evaluations shall assist in the identification of appropriate projects, improvement levels and program dollar levels.

(4) The central office shall review and evaluate the district's program recommendations with several iterations of development and review necessary to produce a single statewide program.

(5) Project level evaluation shall include comparing the extent and severity of deficiencies:

(a) between projects;

(b) to district and state averages for such deficiencies;

(c) to program level average (district and state) for such deficiencies;

(d) and to the proposed improvement level rationale of Figure 2.

(6) The department shall accomplish program level evaluation statewide and between districts by evaluating the:

(a) extent and severity of project deficiencies corrected;

(b) changes in accident and system capacity that result;

(c) and the environmental and energy implications of the programs.

(7) The department shall maintain a file of information which specifies the deficiencies of projects analyzed for the program.

TRANS 209.10 PROGRAM SELECTION. The alternative programs and their costs and benefits shall be documented and reviewed by the secretary who shall select a program level and recommend it to the governor. After the enactment of the biennial budget by the legislature and the governor, the program shall be adjusted to be consistent with the approved funding level for the current biennium.

TRANS 209.11 PUBLIC REVIEW. (1) The department shall seek public review and comment concerning the program.

(2) Such review shall include an informational presentation of the proposed program of major projects by the department to all transportation related legislative committees at a time mutually agreeable to the department and the committees prior to February 15 of the odd numbered years.

(3) After the enactment of the biennial budget, the department shall make the program document available to interested individuals and organizations and will also inform the general public of this availability. Informational hearings shall be held after the release of the program document at times and locations determined by the secretary and publicized through the local media. These hearings shall serve both to inform the public and to obtain reactions for use in the ongoing program development activities.

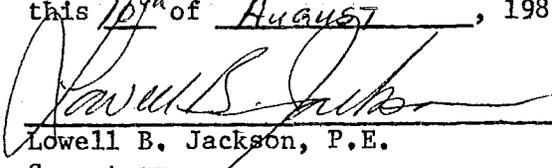
(4) The public review of the program shall be supplemented by public reviews of policy and system planning efforts and of individual projects.

TRANS 209.12 PROGRAM RECYCLE. Program development shall be maintained as a continuous process. Upon the completion of one program cycle, a new program development cycle shall begin. Recycling the program normally involves: extending it two years; updating data, project alternatives, and project cost estimates; reassessing the underlying policies; and refining methods and procedures.

TRANS 209.13 PROGRAM ADJUSTMENTS. Programs are estimates and are not absolute. Adjustments to the program are necessary due to changes in project design, the time to acquire the right of way and obtain the required clearances and completion of the environmental impact statement procedure. These adjustments shall be continual in order to assure the most optimum use of resources. The goal of the adjustments shall be consistent with TRANS 209.04.

The rule contained in this order shall take effect as provided in s. 227.026(1)(intro.), Stats.

Signed at Madison, Wisconsin  
this 10<sup>th</sup> of August, 1981

  
\_\_\_\_\_  
Lowell B. Jackson, P.E.  
Secretary

Wisconsin Department of Transportation