

Nebraska Board of Public Roads Classifications and Standards

An INTRODUCTION to MULTI-PROJECT PROGRAMS OR STRATEGIES using Practical, Flexible, or Context Sensitive Design

The purpose of this document is to provide background information on multi-project programs or strategies, involving design approaches termed “practical”, “flexible” or “context sensitive.” In common parlance these may be called “flexible design” or “practical design.” In this document the term “roadway” is used in a general sense referring to state highways, county roads and municipal streets, the term “program” means a program or a strategy, and the term “project” means any roadway work or project.

Acronyms Used

AASHTO American Association of State Highway Transportation Officials

B-LS Boards Liaison Services Section

NAC Nebraska Administrative Code

NBCS Nebraska Board of Public Roads Classifications and Standards

NDOT Nebraska Department of Transportation

TRB Transportation Research Board

What Is a Multi-Project Program and What Is Its Statutory Basis?

A multi-project program in this context involves more than one roadway project (as the name suggests), focusing on the primary problem or need, extending the life of assets, and/or fitting the roadway’s surroundings while providing an overall benefit to the public, and does not meet all Nebraska Board of Public Roads Classifications and Standards (NBCS) standards as set out in Title 428 Nebraska Administrative Code (NAC) Chapter 2 ([428 NAC 2](#)). Nebraska revised statute [§39--2113\(7\)](#) requires the NBCS to work with the proponent (the NDOT, counties, and municipalities) to establish a program. This is different than a relaxation of standards request, which applies to only one project and, for counties and municipalities, must conform to regulation [428 NAC 2-004](#).

MULTI-PROJECT PROGRAMS (continued)

Multi-project programs addressed herein reflect a **performance-based** approach to the design of highways, roads, and streets. It is more flexible than strict reliance on criteria-based geometric standards (roadway cross section, gradient, and linear curvature). The performance-based approach has been implemented nationally in the past few years. Some reasons for this are as follows.

- Research supports this approach. Keys to its acceptance are improved knowledge of the relationship between geometric design features and
 - traffic operations, as reflected in the Transportation Research Board's (TRB) *Highway Capacity Manual*, and
 - crash frequency and severity, as reflected in the *Highway Safety Manual* from the American Association of State Highway Transportation Officials (AASHTO).
- To meet today's transportation needs and challenges, such as funding and right-of-way constraints, in a safe manner.

Roadway project development is more than geometric design, which is the basis of the current NBCS standards design criteria. Design standards are a good starting point for design decisions. However, it may not always be beneficial or reasonable to construct all roadways to meet all standards. Projects on existing roadways often are limited in scope and available funds. Utilizing performance-based flexible design is intended to help stakeholders make the most of project investments, ultimately for the public's benefit. The 7th Edition (2018) of *A Policy on Geometric Design of Highways and Streets* from AASHTO, commonly known as the "Green Book" lists and explains factors, beyond geometric design, that are considered during project development. Its policy explains the evolution of design indicating that AASHTO now "encourages flexible design, which emphasizes the role of the planner and designer in determining appropriate design dimensions based on project-specific conditions and existing and future roadway performance than on meeting specific nominal design criteria. . . . this may have led to overdesign, constructing projects that were more costly than they needed to be or were inappropriate for the roadway context."

Multi-project programs or strategies are allowed in Nebraska since the passage of [LB82](#) by the 2019 Nebraska Legislature; specifically, Section 5 of that bill which is encoded now in the statute [§39--2113\(7\)](#) as follows.

(7) In cooperation with the Department of Transportation, counties, and municipalities, the board is authorized to develop, support, approve, and implement programs and project strategies that provide additional flexibility in the design and maintenance standards. Once a program is established, the board shall allow project preapproval for all projects that conform to the agreed-upon program. The programs shall be set out in memorandums of understanding or guidance documents and may include, but are not limited to, the following:

MULTI-PROJECT PROGRAMS (continued)

(a) Practical design, flexible design, or similar programs or strategies intended to focus funding on the primary problem or need in constructing projects that will not meet all the standards but provide substantial overall benefit at a reasonable cost to the public;

(b) Asset preservation or preventative maintenance programs and strategies that focus on extending the life of assets such as, but not limited to, pavement and bridges that may incorporate benefit cost, cost effectiveness, best value, or lifecycle analysis in determining the project approach and overall benefit to the public; and

(c) Context sensitive design programs or similar programs that consider the established needs and values of a county, municipality, community, or other connected group to enable projects that balance safety while making needed improvements in a manner that fits the surroundings and provides overall benefit to the public.

[§39-2113\(7\)](#) is about achieving appropriate final designs, using public funds effectively, and providing an overall benefit to the public. An implied outcome is applying any cost savings of such multi-project programs to other parts of the roadway network, i.e., putting money where it is most needed.

The Bigger Picture

There are three ways of dealing with any roadway design and maintenance activity that does not meet NBCS standards:

- A. Relaxation of Standards (for a specific project or work)
- B. Multi-Project Program or Strategy
- C. Change the standards

There are regulated processes for A ([428 NAC 2-004](#), for counties and municipalities) and C (rulemaking), but not for B.

How Is a Multi-Project Program Different Than Relaxation of Standards?

Although a multi-project program may seem like a relaxation of standards because they both involve requests to not meet Board standards, they are different. A multi-project program request

1. Is not regulated by the relaxation of standards process for counties and municipalities as defined in [428 NAC 2-004](#).
2. Applies to multiple projects or works, while a relaxation of standards typically applies to only one work or project or a phased work or project.

Regarding #2 above, if a request involves only one project or work, counties and municipalities must use the relaxation of standards process set out in [428 NAC 2-004](#). For some multi-project program proposals, it may ultimately be determined, through the process of cooperation

MULTI-PROJECT PROGRAMS (continued)

between the NBCS and the program proponent(s), that it would be more appropriate to bring each project to the NBCS individually.

Who Can Work with the NBCS to Establish a Multi-Project Program?

The NDOT, any County or any Municipality can apply for a multi-project program, as is the case for a relaxation of standards request.

Why Request a Multi-Project Program?

If an entity has a recurring situation where meeting NBCS standards is more costly than the benefit of meeting them, then the entity can consider applying for a multi-project program. There are different reasons to request multi-project programs, such as when:

- There is little or no gain building a roadway to an NBCS standard criterium or criteria. If there is no significant, relevant crash history, and there are no anticipated significant changes to the function served or traffic volumes, this avoids building to a geometric standard just for the sake of building to the standard, i.e., “if it ain’t broke don’t fix it.”
- The program is believed to not substantially or materially reduce the overall safety performance, driver expectancy and uniformity across the entire roadway network. Mitigation features may offset the change in performance resulting from not meeting the standard.
- Community needs and values are important considerations, such as context sensitive design. The benefits of context sensitive design are often more qualitative than quantitative.

The above list is not comprehensive.

How Does the NDOT, County or Municipality Request a Multi-Project Program?

A request for a multi-project program is submitted to the NDOT Boards Liaison Services Section (B-LS), the same as for relaxation of standards requests, but the process is different. Much of the same information required for a relaxation of standards request is also required for a multi-project program but unlike a relaxation of standards request, there is an application form to facilitate gathering as much information as possible up front.

It is important to include enough information for the NBCS to make an informed decision. Requests and presentations need to be thorough and objective, providing facts, supporting data, and justification. There needs to be more justification than simply not being able to afford to build to standards. An overall benefit to society must be demonstrated and reasonably justified.

MULTI-PROJECT PROGRAMS (continued)

How Does the NBCS Process a Multi-Project Program Request?

A committee composed of NBCS Board members reviews the request. The committee makes a recommendation at a meeting of the full Board. If the request moves forward, a memorandum of understanding is drafted and signed by the NDOT, county and/or municipality. Then the NBCS Board signs, most likely at the next Board meeting.

What Does the NBCS Consider When Working with an Applicant?

Meeting all NBCS standards is not always consistent with flexible or practical design. Design considerations, including purpose and need, may create a focus on one or two standards that are difficult to meet. There needs to be a balance between public safety, the uppermost concern of the NBCS, and any allowance of flexibility in the Board's standards. Agreeing to a multi-project program, or a relaxation of standards request is not done lightly. **Using a safety conscious design process, maintaining uniformity throughout the road network, being strategic with taxpayers' money, and improving the overall network are cornerstone principles of this process.**

State statute [§39-2113\(7\)](#) addresses general types of programs or strategies such as practical design, asset preservation and context sensitive design. In deciding whether or not to approve such requests, the NBCS has many things to consider – the current status of the roadway(s), functional classification, traffic volumes, compliance with driver expectancy and system safety and uniformity, estimated overall benefit(s) to the traveling public, good use of taxpayer money with the assumption that any cost savings will be applied to maintain or improve other parts of the network, and other considerations.

The applicant describes benefits that the public can expect from the program. There may be features (improved roadway geometry, signing, delineation, roadside safety, etc.) added to mitigate the effects of not meeting a design criterium; these are typically the result of integrating safety conscious design into the engineering phase of the project(s).

A multi-project program can be more complicated than a one-project relaxation of standards. The NBCS wants to be careful to avoid unintended consequences or set precedents that could be problematic later.

MULTI-PROJECT PROGRAMS (continued)

Checklist – Primary Considerations for the Board to consider a Multi-Project Program or Strategy – each item explained below the checklist

- 1. Achieves an overall benefit to the public.
- 2. Roadway is already reasonably improved.
- 3. Focuses funding on the primary problem or need.
- 4. Reasonably consistent with driver expectancy and system uniformity.
- 5. Results in cost savings that could be applied toward other capital and/or system preservations improvements.

See below for more explanation.

1. Achieves an overall benefit to the public.

Nebraska law requires that a program will provide an overall benefit. To meet this requirement it must include roadway improvements or features that will leave the roadway in a “better” or improved condition, with no drop off in safety. Obtaining this result is likely to require the balancing of meeting standards and making more direct improvements in exchange for the reduced cost of meeting the standard in question. Programs can be creative in utilizing roadway improvements that have been shown by experience or research to bring more benefit for the cost. An example would be a rumble strip outside the edge line.

Accordingly, the program applicant must clearly identify the benefits and show that when compared to the elements that will not meet standards, the program has a an overall benefit to the public.

2. Roadway is already reasonably improved.

NBCS standards arose out of a societal desire for the State’s highways, roads and streets to be designed and constructed with a focus on obtaining as much safety/uniformity as possible at a cost the governing entity could afford. Roadways that have been constructed in compliance with the historic design standards (whether New or Reconstructed or 3R) and the industry’s prevailing standard of care at the time it was constructed may meet that societal balance. That is, roadways in the proposed program are consistent with other roadways within the same functional classification across the network.

Accordingly, the description of the program should make it clear that it only applies to roadways that have been previously constructed to meet standards, criterium or formal guidelines that were in effect when the roadway or group of roadways were improved.

MULTI-PROJECT PROGRAMS (continued)

3. Focuses Funding on the Primary Problem or Need.

Nebraska law states that a flexible or practical (or similar) program is intended to focus funding on the primary problem or need in constructing projects. If a segment of roadway has a reasonably improved cross section, a program can allow analysis of the primary problem or need for that segment. For example, a program could be structured with a focus on the condition of the surfacing without meeting all standards. Other improvements to be made along with surfacing improvements could be used to meet the net positive benefit requirement.

Accordingly, programs should describe how the program is focused on a primary problem or need.

4. Reasonably consistent with Driver Expectancy and System Uniformity.

The original mission of the NBCS also related to developing a system where roads used for similar purposes would be uniform throughout the State. That means not surprising or confronting the road user with something not consistent with similarly classified roads in the network, something unfamiliar or uncharacteristic. A local road in Box Butte County should look much the same to a motor vehicle operator as a local road in the same classification in Dakota County. Applicants must assure that driver expectancy will be reasonably maintained with the program. Justification (analysis, industry guidelines and standards of care, research) should be provided for each non-standard value. For example, conformity to guidelines adopted by the AASHTO. For NDOT programs and strategies, refer to State statute [§39-1316](#).

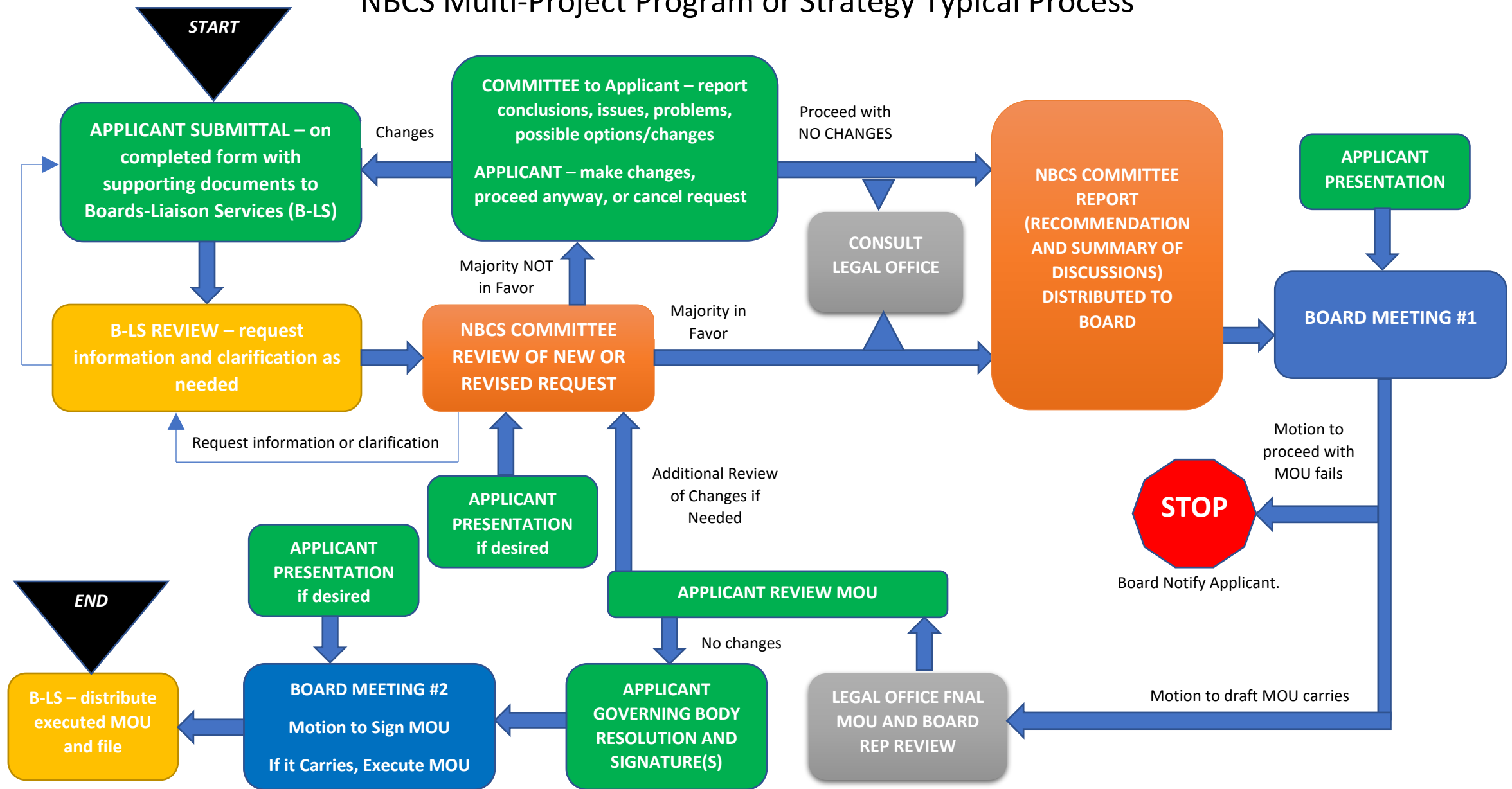
Accordingly, a program should result in roadways that are reasonably consistent with driver expectancy and uniformity within the system.

5. Results in cost savings that could be applied toward other capital and/or system preservations improvements.

Cost savings alone will not lead to approval of a program request. Practical or flexible design allows limited funding to be spread over more improvement projects. A program proposal should show the link between the program and the benefit to the transportation system. The Board encourages the applicant to apply savings from programs and strategies on other needed capital improvements or system preservation needs.

Accordingly, a program is not approved on cost savings alone but in conjunction with benefits to the entire roadway network.

NBCS Multi-Project Program or Strategy Typical Process



Adopted by the NBCS on April 16, 2021 (note: chart is a guide, and does not preclude adjustments for unique applications)

Request for Multi-Project Program or Strategy
Practical, Flexible or Context Sensitive Design

Review the entire form before filling it out; see attached instructions. Attach additional sheets as needed.

<p>1. <i>Requesting Entity/Entities (NDOT, Counties and/or Municipalities may request)</i></p>
<p>2. <i>Describe the proposed Program or Project Strategy and the implementation timeframe.</i></p>
<p>3. <i>Identify known locations included in this request, and state if they are the only locations being requested.</i></p>
<p>4. <i>Identify conditions, commitments, mitigation strategies and limitations proposed to ensure public safety.</i></p>
<p>5. <i>Describe potential effects on safety, operations, and driver expectations.</i></p>
<p>6. <i>How will the public be served by this proposal? Describe benefits the public can expect.</i></p>

Request for Multi-Project Program or Strategy
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<input type="checkbox"/> <i>State Highway(s)</i> <input type="checkbox"/> <i>County Road(s)</i> <input type="checkbox"/> <i>Municipal Street(s)</i>		
<i>Known Locations are in the following areas*</i> <input type="checkbox"/> Within corporate limits <input type="checkbox"/> Outside corporate limits		
<i>On the National Highway System?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No <i>NDOT only: On Super-two?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No		
Functional Classification (FC) of Highways, Roads and Streets Included in Request*		
<u>National FC</u> <input type="checkbox"/> Interstate <input type="checkbox"/> Other Freeways/Expressways <input type="checkbox"/> Other Principal Arterial <input type="checkbox"/> Minor Arterial <input type="checkbox"/> Major Collector <input type="checkbox"/> Minor Collector <input type="checkbox"/> Local	<u>State FC (Rural or Municipal)</u> <input type="checkbox"/> Interstate <input type="checkbox"/> Expressway <input type="checkbox"/> Major Arterial <input type="checkbox"/> Other Arterial <input type="checkbox"/> Collector <input type="checkbox"/> Local	<u>State FC (Rural Only)</u> <input type="checkbox"/> Scenic Recreation <input type="checkbox"/> Minimum Maintenance <input type="checkbox"/> Remote Residential
Proposed Type of Work*		
<input type="checkbox"/> New and Reconstructed <input type="checkbox"/> 3R <input type="checkbox"/> Maintenance		
Current Traffic Volumes (ADT, in VPD) for Known Locations included in Request*		
<input type="checkbox"/> ≤ 400 <input type="checkbox"/> 401 – 749 <input type="checkbox"/> 750 – 1,999 <input type="checkbox"/> 2,000 – 3,999 <input type="checkbox"/> ≥ 4,000		
Anticipated Posted Speed Limits of Known Locations* <input type="checkbox"/> 45 mph or less <input type="checkbox"/> 50 mph or greater		
Check the NBCS Minimum Design Standards Criteria That May <i>Not</i> be Met*		
<input type="checkbox"/> Design Speed <input type="checkbox"/> Lane Width <input type="checkbox"/> Shoulder Width <input type="checkbox"/> Superelevation <input type="checkbox"/> Horizontal Curve Radius		
K Value: <input type="checkbox"/> Crest <input type="checkbox"/> Sag <input type="checkbox"/> Maximum Grade <input type="checkbox"/> Stopping Sight Distance Cross Slope: <input type="checkbox"/> Lane <input type="checkbox"/> Shoulder		
<input type="checkbox"/> Horizontal Clear Zone <input type="checkbox"/> Vertical Clearance <input type="checkbox"/> Clear Bridge Width <input type="checkbox"/> Design Loading Structural Capacity		
Note Numbers (refer to 428 NAC-2 001.03B, standards are in bold font): <input type="checkbox"/> 2 <input type="checkbox"/> 4 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 21		
428 NAC 2-001.02 only: <input type="checkbox"/> Lateral Offset to Obstruction <input type="checkbox"/> Fixed Obstacle Clearance		
7. Explain the rationale for not meeting NBCS standards.		

* Check all that apply, refer to Title 428 Nebraska Administrative Code Chapter 2 (428 NAC 2), Sections 001 and 003.

Request for Multi-Project Program or Strategy

Practical, Flexible or Context Sensitive Design

Instructions Applicable to the NBCS form Request for Multi-Project Program or Project Strategy

1. Requesting Entity/Entities. Identify all entities submitting this request. Only NDOT, Counties and Municipalities may apply.
2. Description of the proposed Program or Project Strategy. Describe the program, the need(s) and purpose(s) of the work, and if the intent is to **focus funding on the primary problem or need**. Explain why the program makes good common sense. Include an estimated timeframe for implementation, as appropriate. Use plain language that can be understood by lay people.
3. Known Locations Included in Request. Describe applicable project or work locations; attach map(s) as appropriate. State if these are the only locations being requested or if there may be other locations. If feasible, include all known locations where NBCS minimum design standards will not be met. Note similarities among the locations as appropriate (functional classification, topography, soil type, etc.). **Identify which NBCS standards (year or range of years) the requested locations were built to.**
4. Identification of proposed conditions, commitments, mitigation strategies and limitations. Include details regarding features (improved roadway geometry, signing, delineation, roadside improvements, rumble strips, etc.) that will be changed or added to mitigate the effects of not meeting NBCS standards.
5. Effect on safety, operations, and driver expectancy. Describe how implementation is estimated to affect crashes (frequency and severity) and operations. Compare existing vs. proposed vs. meeting NBCS standards. Explain how safety of the driving public will be affected, and not degraded or made worse. Include a history of crashes and an analysis (trends) as appropriate. The amount of crash data should be consistent with the facility or situation, for example, a low volume road may need five or ten years of data instead of three. **Address the issue of system uniformity, for driver expectancy, after implementation;** it should be substantially like other similar functional classifications across the State.
6. Benefits to the Public. This part can be quantitative or qualitative, or some of each. Benefits (to society, the traveling public and taxpayers) compared to costs may weigh heavily in the Board's decision, possibly more than cost savings. It would be helpful to **explain how those cost savings will be allocated or applied to the transportation network to obtain positive benefits.**
 - a. *Quantitative.* If feasible, quantify **net positive benefits and cost savings** the public can expect. An example is an engineering analysis which includes a direct comparison of estimated costs of the proposed Program/Strategy to the estimated costs of meeting NBCS standards. Show a reasonable level of detail. Typical estimated costs are engineering, construction, right-of-way acquisition, utilities, environmental compliance, contingencies, delay(s), and maintenance and inflation during the delay(s). Use NDOT's latest crash cost figures unless there is justification for using different figures. Benefits and costs may be expressed in terms of unit of length (per mile, etc.) if that is an effective way to express them.
 - b. *Qualitative,* for proposals that cannot reasonably be estimated in terms of dollars, clearly describe benefits to the public. Benefits can be described in terms of community needs and values, or in terms of cost savings that are reasonably demonstrated but infeasible to quantify.
7. Explain the rationale for not meeting NBCS standards. Identify each MDS standard value, the reason(s) for not meeting the standard, along with each requested non-standard value. State the justification (analysis, industry guidelines and standards of care, research) for each requested non-standard value.

NOTE: The NBCS intends to approve only programs or strategies that have an overall benefit to the public.

The NBCS Reserves the Right to Request Additional Information

Adopted by the NBCS on November 18, 2022, and July 21, 2023 (minor revision page 2)