

# NDDOT ITS PROJECT/ARCHITECTURE CHECKLIST SYSTEMS ENGINEERING COMPLIANCE (Ver. 5.0)

North Dakota Department of Transportation, Maintenance  
SFN 60212 (8-2017)

For All ITS Projects, a Systems Engineering Checklist must be submitted for review and approval **prior to approval of Federal funds (23 CFR 940.13)**. If the ITS portion of the project **≥\$5M**, the FHWA must approve the Systems Engineering Checklist; allow an additional two weeks for FHWA approval. Attach or make available any documents referenced in this form when submitting.

## Section 1 Project Information

Agency Name		Project Champion		
Address		City	State	ZIP Code
Telephone Number		Email Address		
Brief Description (Purpose of ITS project including list of ITS elements)				<input type="checkbox"/> See Attachment
New Project or Modification <input type="checkbox"/> New Project <input type="checkbox"/> Modification to existing project		Total Funds (ITS only) <input type="checkbox"/> State _____ <input type="checkbox"/> Fed _____ <input type="checkbox"/> Other _____		
Project Number	PCN	Project Location	Bid Letting Date	Construction Year
Nature of Work				
<input type="checkbox"/> Scoping <input type="checkbox"/> Design Software/Integration <input type="checkbox"/> Construction <input type="checkbox"/> Planning <input type="checkbox"/> Maintenance (Equipment Replacement) <input type="checkbox"/> Operations <input type="checkbox"/> Evaluations <input type="checkbox"/> Other - Specify _____				
Relationship to Other ITS Projects and Phases				<input type="checkbox"/> See Attachment

**Section 2 Needs Assessment (940 requirement)**

What is / are the current problem(s) with the current situation?	<input type="checkbox"/> See Attachment
What needs does this project address?	<input type="checkbox"/> See Attachment
How were these needs identified? <b>Must describe functional needs to meet portions of architecture identified in Section 3 on next page.</b> **Reference any relevant documentation	<input type="checkbox"/> See Attachment

**Section 3 Regional ITS Architecture (940 requirement)**

Portions of the Regional ITS Architecture being implemented									
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;"><input type="checkbox"/> Archived Data Management</td> <td style="width: 33%;"><input type="checkbox"/> Traffic Management</td> <td style="width: 33%;"><input type="checkbox"/> Maintenance &amp; Construction Management</td> </tr> <tr> <td><input type="checkbox"/> Traveler Information</td> <td><input type="checkbox"/> Public Transportation</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Commercial Vehicle Operations</td> <td><input type="checkbox"/> Emergency Management</td> <td></td> </tr> </table>	<input type="checkbox"/> Archived Data Management	<input type="checkbox"/> Traffic Management	<input type="checkbox"/> Maintenance & Construction Management	<input type="checkbox"/> Traveler Information	<input type="checkbox"/> Public Transportation		<input type="checkbox"/> Commercial Vehicle Operations	<input type="checkbox"/> Emergency Management	
<input type="checkbox"/> Archived Data Management	<input type="checkbox"/> Traffic Management	<input type="checkbox"/> Maintenance & Construction Management							
<input type="checkbox"/> Traveler Information	<input type="checkbox"/> Public Transportation								
<input type="checkbox"/> Commercial Vehicle Operations	<input type="checkbox"/> Emergency Management								
New ITS Project or element described here									

Service Packages - Attach all applicable market packages from Turbo or Regional Architecture; attach flow diagram (940 requirement) [NDDOT Service Packages Link](#)

Service Package	Flow Diagram Attached
	<input type="checkbox"/> No <input type="checkbox"/> Yes
	<input type="checkbox"/> No <input type="checkbox"/> Yes
	<input type="checkbox"/> No <input type="checkbox"/> Yes
	<input type="checkbox"/> No <input type="checkbox"/> Yes
	<input type="checkbox"/> No <input type="checkbox"/> Yes

Inventory elements from the Architecture being implemented <a href="#">NDDOT Elements Link</a>

Participating Agency Roles and Responsibilities (940 Requirement) <a href="#">NDDOT Operational Concept Link</a>

Regional Architectures impacted by the project

[ND Statewide](#)   
  [Minnesota](#)   
  [Bismarck/Mandan MPO](#)   
  [Grand Forks/East Grand Forks MPO](#)  
 [South Dakota](#)   
  Montana   
  [FM COG](#)   
  Other \_\_\_\_\_

Changes recommended to NDDOT/Regional Architectures due to the project   
 No     Yes

If Yes, Provide ND Statewide-ITS Architecture Change Request ([SFN60213](#))   
 Attached     To Be Completed

National ITS Standards Incorporated (**940 Requirement**)

Yes ([Standards Link](#))   
 No, MUST Explain

\*Test procedures must be included (see below)

**Project Matrix Documentation** (Should be completed by someone familiar with the SE. Some projects have multiple ITS elements only some of which will have the required documentation, reference all that apply to the project.)

NOTE: Items in <b>red</b> are required, while those marked with an * are needed based on project complexity and risk	REFERENCES: Include full name of the document; date the document was prepared; and the heading or section number within the document where the information is provided. If not previously documented, this documentation <u>must be included with this System Engineering Checklist</u>	Date Verified
<b>Concept of Operations</b>		<input type="checkbox"/> See Attachment
<b>Requirements</b>		<input type="checkbox"/> See Attachment
<b>Alternatives Analysis</b>		<input type="checkbox"/> See Attachment
<b>Test Plan</b>		<input type="checkbox"/> See Attachment
Detailed Design		<input type="checkbox"/> See Attachment
Integration Plan*		<input type="checkbox"/> See Attachment
System Acceptance Plan*		<input type="checkbox"/> See Attachment

**Section 4 Procurement (940 requirement)**

Procurement Methods (Should correspond with project complexity)

**Low Bid with DOT Design** - typical for construction projects DOT design (low bid contractor)  
 **Low Bid with Consultant Design** - typical for construction projects consultant design (low bid contractor)  
 **System Manager** - manager responsible for delivering an operational system (quality based selection; RFP)  
 **Commodity Supplier** - off-the-shelf ITS products (low bid selection of pre-qualified packages)  
 **Consultant** - supplement in-house capabilities or consultant/manager selection (qualifications based; RFP)  
 **Outsourcing** - for a capability of function rather than a specific system (best value or low bid; RFP)  
 **Other**

Comments

**Spare Parts**

Additional equipment (spare parts) requested?   
 Yes     No

If Yes, please complete Attachment A:   
 Attached     To Be Completed

**Section 5 Operations and Maintenance (940 requirement)**

Procedures and Resources Needed for Operation
Estimated Annual Operations Maintenance Costs
Stakeholder(s) responsible for maintenance and funding source

**Section 6 Agreements**

List any agreements needed or utilized for this project
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**Section 7 Acceptance**

Approved

NDDOT ITS Engineer	Date
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Not Approved

Comments
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**FHWA Approval (ITS ≥\$5M)**

FHWA Division Administrator	Date
FHWA Division ITS Engineer	Date

**Attachment A - ITS Spare Parts Eligibility Assessment**

For this project, which products are intended to be purchased beyond the quantities required for initial installation?	
a.	
b.	
c.	

Do you certify that the agency responsible for hardware maintenance on this facility has a system for inventory tracking of these products which includes at least purchase dates, unique part identification, and quantity?

Yes  No

How, or by whom, may this inventory be located?

For the types of spare parts requested, what is the quantity of spare parts currently available by the agency responsible for maintenance?

a.		Newest part purchase date	
b.		Newest part purchase date	
c.		Newest part purchase date	

Do you certify that:

- Yes  No    The type(s) of spare parts requested are essential for the safe and successful operation of the system (system-critical)?
- Yes  No    The agency responsible for hardware maintenance on this facility has a system for inventory tracking of these products, which includes at least purchase dates, unique part identification, and quantity?
- Yes  No    Replacement of these parts is above and beyond what is expected of typical system "routine maintenance" (i.e., paint jobs, de-icing)?
- Yes  No    The order quantity of the spare parts is consistent with both the expected failure rate for those parts and the expected service life for the associated project function.
- Yes  No    The estimated purchase costs of the spare parts alone is less than 10% of the estimated total project cost?
- Yes  No    The time to purchase replacement equipment for these spare parts in the event of a failure would cause an unacceptable disruption to the safety or efficiency of the system?

If the answer to any of the above questions is "no," the purchase of these three spare parts may still be eligible for Federal-aid reimbursement a public interest finding (PIF). Please coordinate with the NDDOT Maintenance Division ITS Engineer for submission of a PIF application in this regard.

- Yes  No    Is a PIF required for this purchase?
- Yes  No    If a PIF is required, has it been approved by NDDOT ITS Engineer?

For more information on Federal-aid eligibility of spare parts, please see the following Memoranda from FHWA:  
 "INFORMATION: Eligibility of Replacement Parts for Safety-related Hardware," March 18, 2008  
 "INFORMATION: Guidance on Federal-aid Eligibility of Operating Costs for Transportation Management Systems," January 3, 2000