**Requirement:** The [systems engineering analysis (SEA)](https://www.codot.gov/programs/intelligent-transportation-systems/systems-engineering-analysis-sea/systems-engineering-analysis-sea) process is required per [23 CFR 940](https://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0940.htm). The SEA is the project delivery process for the technology element of the project. If the project does not have technology, the project still needs documentation that the scope was evaluated and no additional SEA documentation is required beyond section two of this form. As a matter of policy, CDOT has committed to following the intent and requirements of the SEA process for all transportation projects, regardless whether the project is state or federally funded.

**Purpose:**  The SEA is intended to help design a robust and sustainable technology system. The SEA prompts discussions during design with stakeholders and is intended to document those critical discussions. Since technology does require maintenance and has relatively short life cycles, the SEA also helps projects plan for how to keep the system maintained and operating after construction is completed.

**Who is responsible:** The local agency will be required to complete this form. This form shall be submitted to CDOT a minimum of two weeks prior to the FOR meeting. It must be reviewed and approved prior to receiving CDOT Concurrence to Advertise for construction. The ITS & Network Services Branch needs at least two weeks to review documents.

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| Section 1 - Project Overview |
| 1.1 Local Public Agency Project Manager and Contact Information |
|  |
| 1.2 Consultant Project Manager and Contact Information (☐ N/A) |
|  |
| 1.3 CDOT Project Manager and Contact Information |
|  |
| 1.4 Project Location, Route Beginning and Ending MM, or Nearest Intersection |
|  |
| 1.5 Project Description, Title, and Type of Work – This should include identification of the problem and the purpose of the project |
|  |
| 1.6 CDOT Project Number and Sub Account Code |
|  |
| 1.7 Federal-Aid  Yes  No |
|
| 1.8 Is the project within CDOT’s Right of Way (ROW)?  Yes  No |
| 1.9 Funding and Source of Each (Including State and Federal) |
|  |
| 1.10 Fiscal Year of Funding: |

|  |  |
| --- | --- |
| Section 2 - SEA Required? | |
| Federal Requirement: 23 CFR 940.11 Project Implementation | |
| **2.1 Are there any technology elements included in the scope of the project?**  The [National Regulation (23 CFR 940)](https://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0940.htm) defines ITS as “electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.” An ITS project is “any project that in whole or in part funds the acquisition of technologies or systems of technologies that provide or significantly contribute to the provision of one or more ITS user services as defined in the National ITS Architecture.”  Technology includes any type of device or system that is used to improve the roadways. This could include, but is not limited to, intelligent transportation systems devices. Examples are CCTV, DMS, VTMS, VSL, wrong way detection, RWIS, connected vehicles, [non-traditional signals](https://www.codot.gov/programs/intelligent-transportation-systems/systems-engineering-analysis-sea/signals-and-the-sea) (click on link to understand which signals projects require an SEA), on board equipment in vehicles, and anything that has to be communicated to ATMS or other traffic management systems. Additionally, creating or modifying systems and software that impacts the roadway is included in the SEA classification. If there is still confusion on what is classified as technology, please reach out to the ITS & Network Services Branch. | |
| Yes  No | |
| If the answer to 2.1 is **“yes”** then a **SEA is required**.    If the answer to 2.1 is **“no”** then a **SEA is not required** and the rest of this form does not need to be completed, but Sections 1 and 2 will need to be submitted for documentation purposes. | |
| **2.2 Which SEA process should be followed?** | |
| Yes  No | Will the system be owned, operated, or maintained by CDOT? |
| Yes  No | Does the project involve CDOT technology assets? |
| Yes  No | Will the project connect to the CDOT network? |
| Yes  No | Will the project be on CDOT right of way? |
| Yes  No | Does the project involve multiple municipalities? |
| If “**yes**” is selected for any of the above questions, then the [Robust SEA Process](https://www.codot.gov/programs/intelligent-transportation-systems/systems-engineering-analysis-sea/systems-engineering-analysis-sea) needs to be followed and this form is no longer applicable.    If “**no**” is selected for all questions, then completing this entire form will fulfill the [23 CFR 940](https://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0940.htm) requirements for local agency projects only. | |

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| **Section 3 - ITS Architecture Conformance** | |
| Federal Requirement: 23 CFR 940.11(c)(1) - “Identification of portions of the regional ITS architecture being implemented (or if a regional ITS architecture does not exist, the applicable portions of the National ITS Architecture)” | |
| Per [23 CFR 940](https://www.fhwa.dot.gov/legsregs/directives/fapg/cfr0940.htm), every project has to comply with an ITS Architecture Plan. For background information, there is a [National ITS Architecture Plan](https://local.iteris.com/arc-it/html/servicepackages/servicepackages-areaspsort.html) that is maintained by FHWA. The National Architecture Plan consists of Service Packages that identifies a problem that needs to be solved or a certain application of a technology. A service package states the basic requirements the project must achieve to create consistency. CDOT is then required to select the service packages from the National ITS Architecture Plan that will assist in fulfilling CDOT’s technology vision and make them CDOT specific. From there the local Council of Governments (COG’s) have to make their ITS Architectures as well. The local agencies should use the COG’s architecture plan if one exists. If one does not, the CDOT Architecture Plan should be followed.  Service packages are critical to identify as part of compiling required SEA documentation. Service packages focus on how the technology is being used rather than specific devices. For example, there is no Dynamic Message Sign (DMS) service package. It will be critical to understand the intent of use for the DMS in order to determine the applicable service package(s). A DMS could fall within the TM06 Traffic Information Dissemination if the intent is to provide drivers with information. If a DMS is being installed as part of a tunnel, then it could fall under TM24 Tunnel Management. The key is focusing on what application the DMS is being used in. It is possible for a project to fall within multiple service packages. Please reach out to the ITS & Network Services Branch with any questions. | |
| 3.1 Which architecture plan will be used? | |
| National ITS Architecture | CDOT ITS Architecture |
| COG |  |
| 3.2 If using a COG/MPO/TPR Architecture Plan, what COG? N/A for using the National or CDOT Architecture Plan. | |
|  | |
| 3.3 List service packages that will be implemented on this project: | |
|  | |
| To add additional service packages click in the line item 2 box and hit enter. | |

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| Section 4 - Procurement | |
| Federal Requirement: 23 CFR 940.11(c)(5) Procurement options | |
| 4.1 State the procurement method for the project. | |
| Competitively Bid | Sole Source |
| 4.2 If 4.1 is competitively bid, then what kind is the project delivery method? | |
| Design, Bid, Build | Design Build |
| Construction Manager/General Contractor | Other (Please specify)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| Section 5 - Alternative Analysis | | | |
| Federal Requirement: 23 CFR 940.11(c)(4) - Analysis of alternative system configurations and technology options to meet requirements | | | |
| Instructions: Document alternatives considered. When thinking of alternatives it is important to consider maintenance resources and costs into the selected alternative. An alternative can also include not implementing the project. More rows can be added as needed. | | | |
| Alternative Title | Alternative Description | Selected (Yes/No) | Reason |
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To add additional rows, right click on a row, select “insert”, select “row below”

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| Section 6 - Roles & Responsibilities | | | | |
| Federal Requirement: 23 CFR 940.11(c)(2) - Identification of participating agencies roles and responsibilities | | | | |
| Instructions: Determine roles and responsibilities of the proposed technology system throughout the entire life cycle. More rows can be added as needed. | | | | |
| Agency | Role/Position | Contact Info | Phase\* | Responsibility |
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\*Phase: Design, Construction, Operations

To add additional rows, right click on a row, select “insert”, select “row below”

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| Section 7 - Requirements & Corresponding Standards | |
| Federal Requirement: 23 CFR 940.11(c)(3) Requirements definitions and 23 CFR 940.11(c)(6) Identification of applicable ITS standards and testing procedures | |
| Instructions: Determine the functional requirements of the system and how these requirements will be implemented. Implementation could be specifications or included in the general design of the system. More rows can be added as needed. | |
| Functional Requirement | How is the requirement included in the project? Spec, plan set, etc |
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To add additional rows, right click on a row, select “insert”, select “row below”

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| Section 8 - Devices & System | | | | |
| Federal Requirement: 23 CFR 940.11(c)(6) Identification of applicable ITS standards and testing procedures and 23 CFR 940.11(c)(7) Procedures and resources necessary for operations and management of the system | | | | |
| 8.1 Is a list or a map with all of the proposed devices attached?  ☐ Yes ☐ No | | | | |
| 8.2 Determine how each device type installed or modified on the project will be specified, tested, and operation of the devices documented. If the project is a whole system, then there may need to be a system wide test as well to ensure all devices are working together properly. More rows can be added as needed. | | | | |
| Device and system type included in project | Is there a supporting specification(s)? If yes, give specification title. | Is there a supporting test document? If yes, give testing procedure title. | Is this device documented in a Standard Operating Procedure (SOP) Document? If yes, give SOP title. | Is this device documented in a Maintenance Plan document? If Yes, give maintenance plan title. |
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To add additional rows, right click on a row, select “insert”, select “row below”

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| Section 9 - FHWA Involvement |
| 9.1 Has FHWA classified this project as a Project of Division Involvement (PODI) and requires involvement in the review of SEA documents? |
| Yes  No |

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| Section 10 - Schedule | |
| 10.1 Design Start Date: | 10.2 AD date: |
| 10.3 Construction Start: | 10.4 Construction completion: |
| 10.5 Relationship to other Federal, State, and local projects and phases. Tip: Does this project depend on another project to operate successfully? Is this project one of a series or projects for a phased approach? | |
|  | |