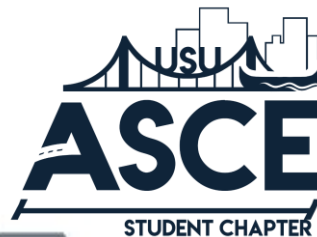




Transportation Design  
ISWS 2024 Technical Event

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# **ISWS 2024**

## **Transportation Design Rules**

### **April 11<sup>th</sup>–13<sup>th</sup>, 2024**

#### **Objective**

The objectives of this year's transportation competition are to introduce real world applications of transportation planning, traffic operational analysis, and conceptual traffic design to student teams. Student teams will prepare a document that shows the impacts of future traffic in the central valley of Cache County and contains recommended system improvements to mitigate the identified impacts. Teams will identify improvements to three Logan, UT Main St. intersections including: the convergence of US 89 and SR-165, or "Y" intersection, and US 89 intersections at 200 North and 400 North. Teams are encouraged to be creative and exercise their engineering judgment.

#### **Participant Rules**

Each university may enter only one team.

Each team must consist of a minimum of three members and a maximum of eight members.

All team members must be present during the poster presentations.

Each team must have at least one male and at least one female.

All team members must be a registered participant of ISWS 2024

#### **Background**

Each student team has been hired by the Utah Department of Transportation (UDOT) to determine the traffic impacts and associated roadway improvements for Hwy 89/91 (Main St.) from 1200 South to 2500 North in Logan, UT. This corridor has been studied various times over the last 30 years, however, due to a lack of consensus on how to proceed, no solutions have been able to move forward. A map for the study area is found in Appendix A. Baseline Traffic Counts are provided in the Required Project Information Section.



## Scope of Work

The Utah Department of Transportation has asked your firm to provide a traffic impact analysis and solutions to the challenges of future growth and associated traffic that contain the following information:

1. Project Description
2. Perform a more detailed analysis for the 3 intersections identified below:
  - a. US Highway 89 Southbound/Northbound and 400 North
  - b. US Highway 89 Southbound/Northbound and 200 North
  - c. US Highway 89 Southbound/Northbound and SR-165 (the “Y” intersection)

Include Existing Conditions and Future Conditions (2050) for the following:

- Lane Configurations
  - Traffic Volumes
  - Left turn lane storage lengths
  - Right turn lane storage lengths
  - Thru lane storage lengths
  - Intersection level of service
3. Recommended Mitigation Measures (i.e., develop innovative solutions for transportation infrastructure and operational improvements)
  4. Develop a system of corridors within the city that will be able to support the future volumes of traffic
  5. Estimated Public Transportation Ridership in the corridor
  6. Recommended Active Transportation improvements in the corridor
  7. Pedestrian Connectivity Analysis
  8. Transportation Demand Management Strategy recommendations



# Project Requirements

## Written/Design Report

Submit an electronic version of your report (in PDF Format) via email to [isws.usu.2024@gmail.com](mailto:isws.usu.2024@gmail.com) with the subject line “Transportation Report – [YOUR SCHOOL NAME]” by no later than 11:59 PM on Thursday, March 28, 2024. A hard copy submission is not required.

## Formatting


**Report Cover Page:** Must include name of institution, names of all team members, title of report: “2024 ASCE ISWS Student Transportation Competition”, and the date submitted.

**Table of Contents:** Must have a page number assigned to the following sections. Subsections can be made and included if you choose to do so.

Introduction: This section should include a brief description and purpose of your project, design constraints and parameters affecting your planning process associated with it.

Design: Provide a conceptual exhibit of the proposed intersection and roadway network improvements. The design should follow UDOT and Logan City standard requirements and guidelines where appropriate. Include any striping and signing in design. Keep in mind that existing structures and plans can be incorporated in the team’s proposal; however, the team may make recommendations to alter the existing design (i.e. access, circulation, structure locations). Design shall accommodate modes of transportation not limited to buses, trucks, motor vehicles, and any other modes of transportation accounted for in your design, etc. A submission of the plan view is recommended.

Level of Service Analysis: Teams will provide a level of service analysis. Teams will explain the process used to complete the analysis. Teams should also include how their design improved traffic congestion and compensated for increasing growth in traffic.



Pedestrian/Transit analysis: Provide an analysis and discussion of transit and active transportation options and accommodations. Estimated ridership and design elements should be included.

References: List all references utilized throughout the design and analysis process in this section.

Technical Appendices: Provide results that must be displayed through figures, tables, hand calculations, or software output with reference to the appropriately utilized manuals in the Technical Appendices section of the report before the team's filter loading phase.

## **Presentation**

### **Time and Schedule**

Teams will have a minimum of 15 minutes to present, as well as 5-10 minutes to answer questions from judges. Please note that if the presentation is significantly under 15 minutes the team will be penalized according to the judge's preference. In addition, any presentation that goes over 20 minutes will earn a 0 for the presentation portion of the overall scoring. Presentation order and scheduled presentation times will be randomly selected before the competition begins and will be provided no later than the time of check-in.

### **Presenters**

Presenters include those with speaking parts and individuals operating the computer. Presenters must meet the requirements listed under the "Participants" section. A minimum of two people must speak during the presentation. The use of videos will not be permitted. Teams must not pre-record any speaking parts. No handouts or other materials are to be given to the judges as part of the oral presentation. All team members participating in the presentation must be on stage and available for the judge's questions.

## Scoring Summary Table

Category	Sub-Category	Maximum Points
Written Design Report	Cover Page	/5
	Table of Contents	/5
	Introduction	/10
	Recommendations	/20
	Design	/30
	Level of Service Analysis	/35
	Pedestrian / Transit Analysis	/20
	Innovation	/5
	References	/5
	Technical Appendices	/5
	Clarity and Quality of Technical Writing	/5
	Neatness of Formatting	/5
	<b>Subtotal</b>	<b>/150</b>
Presentation	Quality of Presentation Delivery and Aesthetics	/15
	Quality of Presentation Content	/20
	Quality of Judge Question Answers	/15
	<b>Subtotal</b>	<b>/50</b>
	<b>Total</b>	<b>/200</b>

## Suggested References

1. [ITE Trip Generation Manual](#), 10th edition
2. [ITE Traffic Engineering Handbook](#), 7th edition
3. [UDOT standard drawings](#)
4. [UDOT Roadway design manual, 2021](#)
5. A Policy on Geometric Design of Highways and Streets, 7th Edition (AASHTO Green Book)
6. [UDOT Traffic Analysis Guideline](#)
7. [NACTO Urban Street Design Guide](#)
8. [UDOT Traffic Modeling Guidelines](#)
9. [Traffic impact study guidelines](#)
10. [CITY OF LOGAN PUBLIC WORKS DESIGN STANDARDS](#)



## Request for Information (RFI)

Requests for information (RFI) are to be directed via email to [isws.usu.2024@gmail.com](mailto:isws.usu.2024@gmail.com), with the subject line: RFI\_Transportation Design - [School Name]. Official responses will be sent to the individuals requesting the information and uploaded onto the ISWS 2024 website for further viewing leading up to the day of the event. The final cut-off date for submitting an RFI is Thursday, March 14, 2024. All RFI responses are considered part of the competition rules, and it is the responsibility of the participating teams to check for RFI responses.

## Required Project Information

1. [Vicinity Map](#)
2. [Traffic Volumes Location Map](#)
3. [Baseline Traffic Study Volumes \(Series of Spreadsheets\)](#)
4. [Traffic Modeling Information](#)