

1. Scope

1.1. Data Collection

1.1.1. Site Evaluation

Site evaluation will consist of a visual observation of the intersection; making sure to note the surrounding infrastructure, current signage, property lines, all right of ways, and any obstruction that could be within the given site.

1.1.2. Topographic Survey

Topographic survey will be conducted to gather existing contours and existing features of the area, such as trees, bushes, buildings, walkways, manholes, and utility poles. Data will then be used to create the base map for the design phase.

1.2. Roadway Design Guidelines

1.2.1. Research Guidelines

The sight distance, warrants, drainage, striping and signage will comply with the 2009 MUTCD and the City of Flagstaff roadway guidelines. The research that will be provided by the above ordinances are needed to ensure that the roundabout will meet the correct specs and requirements.

1.3. Data Analysis

1.3.1. Traffic Statistics

Traffic statistics that will be collected include traffic volumes, crash data, and turning movement count of the existing intersection. This is needed to help determine the size, design details, and location for the installation of the roundabout. This data will also be used when calculating the benefit cost ratio which can be seen later in the proposal.

1.3.2. Survey Data

Survey data will be imported into AutoCAD Civil 3D which will create a base map. This specific base map will be used as the basis for all the design criteria and will ensure that the chosen roundabout will fit within the allotted spacing.

1.3.3. Level of Service (LOS)

The roadway level of service will be found using Highway Capacity Software and the data collected; traffic volumes, crash data, and turning movement counts. The LOS using the field data will help determine whether a single or double lane roundabout is needed for the location. A population growth will also be considered when deciding how many lanes should be installed.

1.4. Site Design

1.4.1. Roundabout

1.4.1.1. Geometry

The geometry of the intersection can be seen in the site design. It will ensure that the intersection will have to proper amount of spacing and that it will comply with all regulations.

1.4.1.2. Grading

The grading will be done by the contractor in accordance with the site design plans. The grading of the site will also insure that the roundabout is installed at the correct elevation to improve drainage and efficiency of the roundabout.

1.4.1.3. Signing

The signing in and around the roundabout will be in accordance with City of Flagstaff Roadway Manual and the MUTCD Manual. This will ensure that the proper signs are in the correct location and distance from the road.

1.4.1.4. Striping

The striping will be in accordance with the City of Flagstaff Roadway Manual and the MUTCD Manual. This will ensure that the road lines are place in the correct spot so the vehicles using the roundabout will know where to travel.

1.4.2. Site Development

1.4.2.1. Drainage

The drainage for this site will be specified in the site design plans. The drainage system that is put in is to eliminate stagnate water along the road which will decrease erosion and the life of the road.

1.4.2.2. Landscape

The landscape of the project is to make sure that the site is esthetically pleasing to the eye after the roundabout is installed.

1.4.2.3. Pedestrian Consideration

Pedestrian consideration will be implemented within the site design. It will make sure the pedestrians that are entering and leaving the intersection will have a safe and efficient route around the roundabout.

1.5. Economics

1.5.1. Benefits

Benefits may include left hand crashes and delay reduction. A benefit cost ratio will be created to justify the creation of the roundabout over other alternatives.

1.5.2. Impacts

We will have to look into and discuss the different impacts that the installation of this roundabout will have on the community and the surrounding area.

1.5.3. Construction Pricing

Total construction cost will include excavation, roundabout construction, drainage, and signage. This will create the cost portion of the benefit cost ratio. The construction cost will also be used during the contractor bidding process.

1.6. Exclusions

1.6.1. Survey Data

Lidar data along with some surveying data is going to be provide by the City of Flagstaff.

1.6.2. Property Acquisition

This team will provide the City of Flagstaff with the areas that need to be acquired for the construction of this project. All other parts of the property acquisition will be the responsibility of the City of Flagstaff. This will ensure that the proper sized roundabout can be installed.

1.6.3. Geotech Reports

Reports will be provided by a geotech engineering firm, to ensure that the soil can be used or excavated during the construction of the roundabout.

1.6.4. Utility Relocation

The City of Flagstaff and the utilities companies will be responsible for locating and moving utility lines prior to construction. This will be coordinated between the contractor, the city, and the utility company to make sure that it gets done within a proper amount of time.

1.6.5. Traffic Analysis

Traffic analysis will be collected by others, and provide to us for analysis.

1.7. Project Management

1.7.1. Project Schedule

The project schedule will be used to organize the design process, keep tasks, goals, and staffing within the given scheduled time. This will help the project not go over budget and keep it within the given time frame. See 6.0 Schedule for more details.

1.7.2. 50% Design Report

This report will include a 50% completed roundabout design. This will be used to show the progress that is being made on the design. The 50% Design Report will also be used to verify that the project is moving in the right direction.

1.7.3. Final Design Report and Presentation

This report will include the full roundabout design. This will be used to show the finished design. The finished design will also be presented to show how it will be an improvement to the intersection.

1.7.4. Website

The website will be created to showcase the design process and the final design plans.