

# Dave Ward Drive Pedestrian Overpass

Schematic Study Report



Prepared For:

**City of Conway**

February 2017





# **Dave Ward Drive Pedestrian Overpass**

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## **Schematic Study Report**

**City of Conway**

**Conway Job No. 14-118**

**AHTD Job No. 080522**

Prepared by:



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**February 2017**

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## **1.0 Introduction**

The City of Conway desires to construct a pedestrian bridge over Highway 60 (Dave Ward Drive) along the existing Stone Dam Creek Trail. This schematic study report includes a summary of the development and analysis of design alternatives. The results of the study can be used by the City to determine a preference to move forward into preliminary and final design. The following sections include existing conditions, planning level schematics, concept renderings of alternatives, and an opinion of probable construction costs.

### **1.1 Purpose and Need**

The project purpose is to provide a safe pedestrian overpass of Dave Ward Drive for Stone Dam Creek Trail users.

The need for the proposed action is as follows:

- Increased Development South of Dave Ward Drive
- Walkable Access to the University of Central Arkansas (UCA)
- Inadequate Major Arterial Pedestrian Crossing - 30,000 Vehicles Per Day (VPD)
- Fulfillment of the City of Conway Trails and Bicycle Master Plan

The following sections provide an evaluation of the existing conditions and conceptual layouts of proposed alternatives that fulfill the project needs as stated above.

### **1.2 Desired Objectives**

The desired objectives of the project, as determined through early scoping meetings with the City of Conway, include providing:

- A Prefabricated Steel Truss over Dave Ward Drive
- Clear Line of Sight to The Shoppes at Centerstone Development
- Symmetry on the North and South sides of Dave Ward Drive
- Aesthetic Enhancements to Complement UCA Architecture
- At-Grade Trail Access to Sidewalks at Dave Ward Drive

Each alternative evaluated and presented within the following sections is based on the desired objectives.

## **2.0 Existing Conditions**

The Stone Dam Creek Trail alignment currently follows the existing creek channel within the study area. The trail currently terminates at the sidewalks adjacent to Highway 60 (Dave Ward Drive) on the north and south sides of the roadway. In order to continue on the trail in either direction, trail users are forced to utilize pedestrian crosswalks located at the intersections of Farris Road or Donaghey Avenue.



## **2.1 Location**

The project is located approximately 2.5 miles west of Interstate 40 on Dave Ward Drive at the intersection of Stone Dam Creek Trail. The proposed crossing is located approximately 700 feet east of Farris Road and 1,900 feet west of Donaghy Avenue.

## **2.2 Roadway**

Dave Ward Drive is a four lane divided facility which is owned and maintained by the Arkansas State Highway and Transportation Department (AHTD). The roadway consists of two 11 foot lanes in each direction with curb and gutter and a 14 foot wide grassed median. Five foot wide sidewalks are located on both sides and include a Four foot green space from the back of curb. According to 2015 AHTD traffic counts, approximately 30,000 vehicles per day travel this section of Dave Ward Drive.

## **2.3 Trail**

The existing trail is 12 feet wide on the north and south sides of Dave Ward Drive. Both trail approaches consist of asphalt pavement. Although, the north approach consists of a one foot wide concrete shoulder on each side with 10 feet of asphalt pavement in between resulting in a 12 foot total path width.

## **2.4 Drainage**

Stone Dam Creek generally flows from north to south-southeast and flows into Lake Conway approximately 3.7 miles downstream of Dave Ward Drive. The channel flow is conveyed under Dave Ward Drive by a quintuple eight foot by five foot reinforced concrete box culvert and a double seven foot x five foot reinforced box culvert. Surface drainage along Dave Ward Drive is captured by curb inlets and drains to Stone Dam Creek through an 88 inch reinforced concrete pipe from the west and a 42 inch reinforced concrete pipe from the east.

The surface drainage along the south approach of Stone Dam Creek Trail is captured by area inlets and flows underneath the trail through 18 inch reinforced concrete pipes to Stone Dam Creek. The surface drainage along the north approach of the trail is conveyed to Stone Dam Creek by several 30 inch corrugated plastic pipes.



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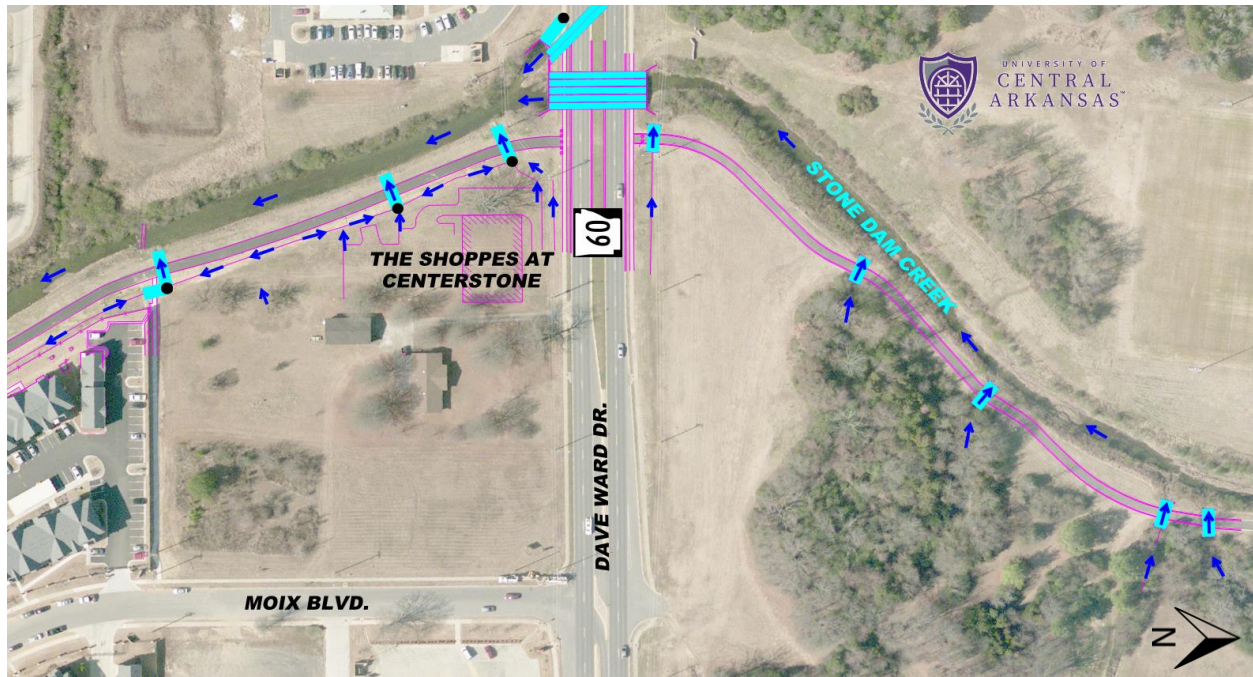


Figure 1: Existing Drainage Patterns

## 2.5 Utilities

Conway Corporation is the major utility provider within the study area. The electric, cable, phone, sanitary sewer, and water utilities are owned and maintained by Conway Corporation. CenterPoint Energy and AT&T own and maintain the gas and fiber optic utilities, respectively. A map depicting the general locations of utilities in the study area is included in **Figure 2**.

### 2.5.1 Electric

Overhead electric lines are located on the north and south sides of Dave Ward Drive.

### 2.5.2 Sanitary Sewer

There are several sanitary sewer lines within the study area. A 21 inch main runs along the east side of Stone Dam Creek and crosses underneath Dave Ward Drive. The main line cross underneath the existing trail on both sides of Dave Ward Drive. Several service lines connect to the main throughout the study area.

### 2.5.3 Water

An eight inch water line is located on the south side of Dave Ward Drive and passes underneath the trail and Stone Dam Creek.

### 2.5.4 Gas

A gas utility runs along the south side of Dave Ward Drive.





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### 2.5.5 Fiber Optic

Fiber optic cable is located on the north and south sides of Dave Ward Drive.

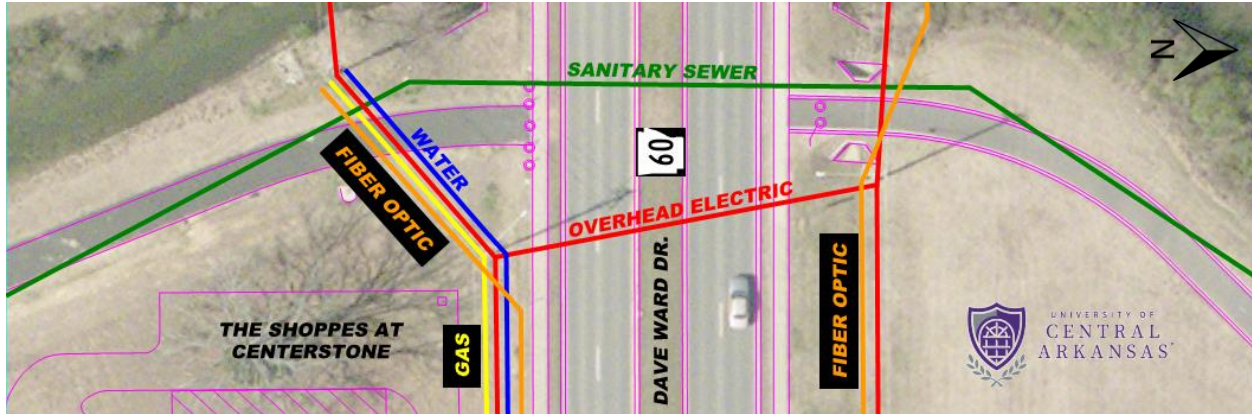


Figure 2: Utilities Map

## 2.6 Right of Way

### 2.6.1 AHTD Right of Way

AHTD has variable width right-of-way along Dave Ward Drive. **Figure 3** shows the limits of AHTD right of way within the study area.

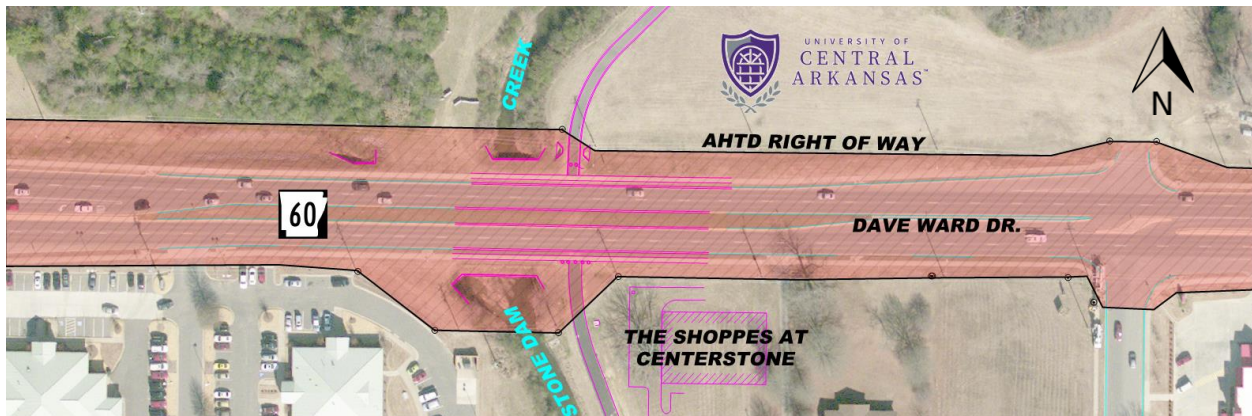


Figure 3: AHTD Right of Way

### 2.6.2 Local Easement

The City of Conway has a variable width drainage, utility, and pedestrian easement along the east side of Stone Dam Creek south of Dave Ward Drive. **Figure 4** shows the City of Conway easement limits within the study area.

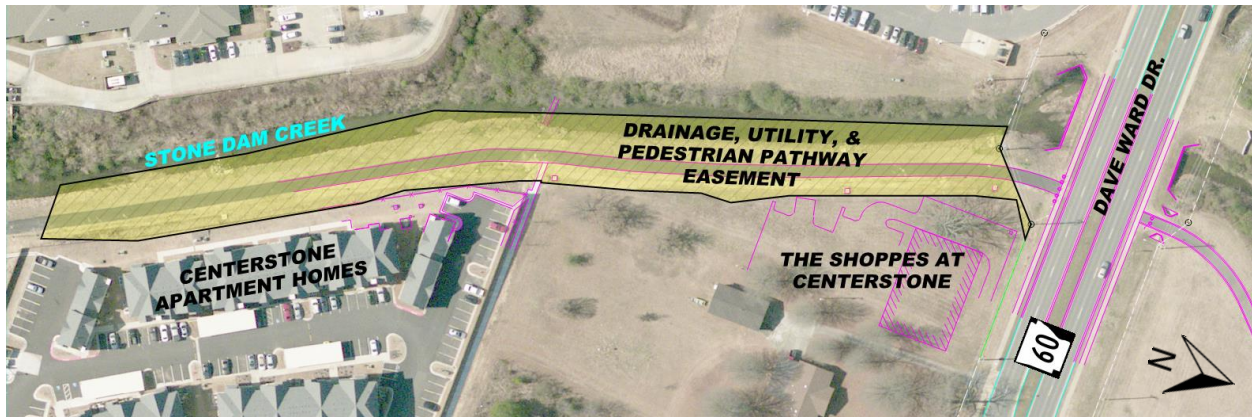


Figure 4: Pedestrian Pathway Easement

### 3.0 Environmental Clearance

The National Environmental Policy Act (NEPA), passed in 1969, is the federal law that established the decision-making process that agencies must follow prior to the design and construction of transportation projects which use federal funding or require federal approval. The significance of the environmental impacts of a project determine what level of documentation, public involvement, and coordination are required.

According to 40 CFR 1508.4, a Categorical Exclusion (CE) is “a category of actions which do not individually or cumulatively have a significant effect on the human environment... and for which, therefore, neither an environmental assessment nor an environmental impact statement is required”. The purpose of a CE document is to describe the existing social, economic, and environmental conditions within the project corridor, to identify and evaluate the impacts to these by the proposed project, and to identify and recommend measures to minimize and/or mitigate these impacts that could be incorporated into the design of the project.

A Categorical Exclusion (CE) is being drafted that will include an evaluation of potential social, natural resource, and built environment impacts. Coordination is taking place with the US Army Corps of Engineers (USACE), the US Fish & Wildlife Service (USFWS), the State Historical Preservation Office (SHPO), and Tribes expressing interest in the region. Currently, a wetland delineation, a phase I cultural resources survey, a wildlife habitat assessment, and a database review of hazardous materials have been completed. A public meeting is anticipated to gather input from the citizens who will be directly affected by and those who are interested in the proposed project. The draft CE is approximately 75-80% complete at the time of this study and will be submitted to the City for review, then to the Arkansas State Highway and Transportation Department (AHTD) for coordination of approval with the Federal Highway Administration (FHWA). A 404 Permit from the USACE is not anticipated. However, a Storm Water Pollution Prevention Plan (SWPPP) and potentially a Short Term Activity Authorization (STAA) from the Arkansas Department of Environmental Quality (ADEQ) will be required.





## 4.0 Drainage Study

### 4.1 Stone Dam Creek Analysis

The proposed pedestrian bridge is planned to be built over Dave Ward Drive as part of the Stone Dam Creek Trail. This trail runs adjacent to Stone Dam Creek and is within the Federal Emergency Management Agency (FEMA) effective floodplain for the creek as shown in **Figure 5**. Stone Dam Creek generally flows from north to south-southeast and flows into Lake Conway approximately 3.7 miles downstream of Dave Ward Drive.

As part of the schematic study for the pedestrian overpass, a preliminary hydraulic study was performed to demonstrate that the proposed alternatives presented in this report would not cause a rise over 0.0 foot to the 100-year (1% annual exceedance) flood event along Stone Dam Creek. Since a no-rise condition was desired for the proposed structure, no Letter of Map Revision (LOMR) was necessary and no FEMA submittal is required for the project.

Upon selection of an alignment and aesthetic style by the City of Conway, the hydraulic model will be updated accordingly. The final analysis for the selected alternative will be included in a separate hydraulic report and, if applicable, accompanied by a no-rise certification. Finally, a floodplain development permit application for the City of Conway will also be completed and submitted with the final hydraulic report.

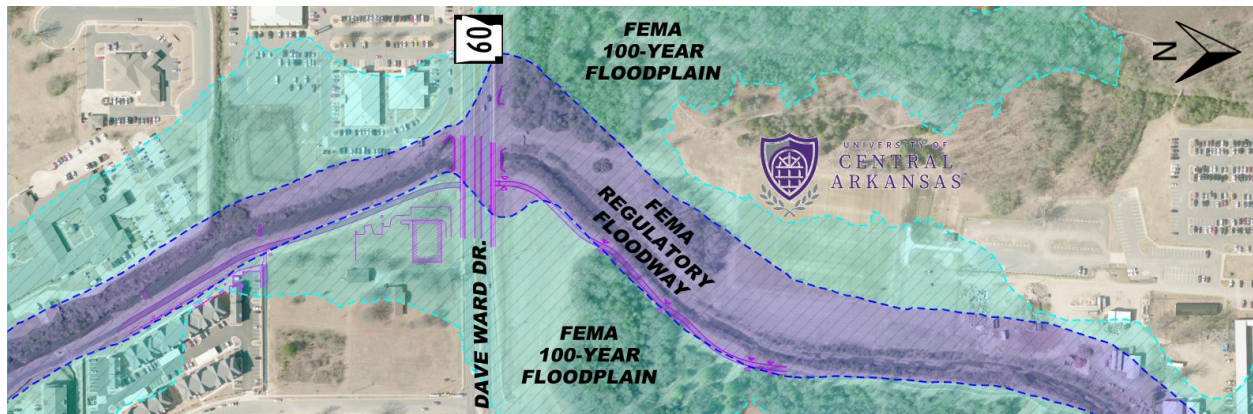


Figure 5: FEMA Floodplain

## 5.0 Description of Design Alternatives

A number of design alternatives were considered in the schematic study based on desired objectives provided by the City of Conway. The following sections summarize the alternatives that were considered for trail alignment and bridge type. **Figure 6** identifies key segments and **Figure 7** defines bridge substructure and superstructure elements that are referenced in the descriptions below.



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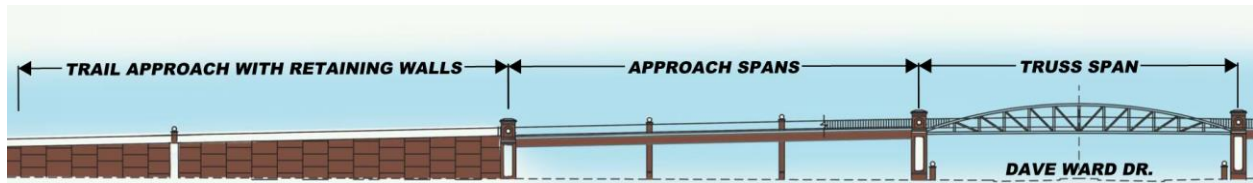


Figure 6: Key Segments

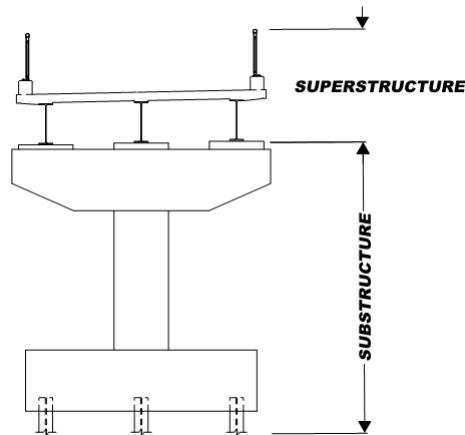


Figure 7: Bridge Elements

## 5.1 Trail

The proposed trail section consists of a 12 foot asphalt paved path with three foot graded shoulders. Within the limits of retaining walls, the trail section is proposed to be 12 feet wide with a one foot shoulder or buffer to pedestrian railing on each side. The proposed design criteria for the trail is located in **Appendix A** and are based on the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, 2012.

### 5.1.1 Alternative Alignments

The bridge superstructure types evaluated for the approach spans within the schematic study require a slightly different alignment based on design and easement restrictions. The steel superstructure alternative can be constructed at a much smaller horizontal radius than the concrete superstructure alternative. In addition to superstructure type, the alternative alignments vary from being built along the existing trail alignment to an eastern offset where the existing path is retained in place as a connection to the sidewalks at Highway 60 (Dave Ward Drive). Schematic plans showing the four alternative alignments is included in **Appendix B**.





#### 5.1.1.1 *Alternative 1*

Alternative 1 consists of a steel superstructure for the approach spans with a proposed alignment located along the existing trail on the south side. On the north side, the retained embankment for the trail approach was shifted east to remain outside of the floodway boundary. In order to provide a perpendicular crossing of Dave Ward Drive with the truss span, a 200 foot horizontal curve radius is proposed on the south approach spans and a 180 foot radius is proposed on the north approach spans. The adjacent at-grade trail is located on the east side of the proposed bridge approaches and the width is restricted to eight feet maximum to remain within the existing pathway easement.

#### 5.1.1.2 *Alternative 2*

Alternative 2 represents the second steel superstructure alignment and is offset to the east of the existing trail. The alignment geometry is very similar to Alternative 1 with the exception of smaller curve radii on the approach spans. A 170 foot horizontal curve radius is proposed on both the north and south approach spans. The adjacent at-grade trail essentially remains in place on both sides of Dave Ward Drive. Although, similar to Alternative 1, the at-grade trail width on the south approach must be reduced to eight feet maximum to remain within the existing pathway easement. A majority of the existing trail on the north approach is expected to remain and be used in place without reconstruction due to impacts from building the new structure.

#### 5.1.1.3 *Alternative 3*

Alternative 3 consists of a concrete superstructure on the approach spans and follows the existing trail alignment. The alignment geometry is very similar to Alternative 1 with the exception that Alternative 3 includes a 400 foot horizontal curve radius that extends across Dave Ward Drive. The larger horizontal curve, in lieu of the two smaller curves on the steel superstructure alternatives, allows the use of prestressed concrete girders. The prefabricated truss is required to be built along the curve in order to keep the approach spans within the existing pathway easement.

#### 5.1.1.4 *Alternative 4*




Alternative 4 represents the second concrete superstructure alignment and is offset to the east of the existing trail. The alignment geometry is very similar to Alternative 3 with the exception of a slightly sharper curve over Dave Ward Drive. To remain within the existing pathway easement, Alternative 4 requires a 350 foot horizontal curve radius to extend across the highway. The prefabricated truss would be constructed along the horizontal curve similar to Alternative 3.

#### 5.1.2 Impact Analysis

As part of the schematic study, an impacts analysis was performed on each of the proposed alignment alternatives. **Table 1** provides a summary that compares the level of impact to various elements within the project limits.



Table 1: Impacts Analysis

Impacts		Alignment Alternatives			
		1	2	3	4
Utilities*	 Sanitary Sewer	Red	Yellow	Red	Yellow
		Red	Red	Red	Red
	Water	Green	Green	Green	Green
	 Fiber Optic	Green	Green	Yellow	Yellow
	 Gas	Green	Green	Green	Green
Environmental		Yellow	Yellow	Yellow	Yellow
**Existing Easement		Green	Yellow	Green	Yellow
Existing Storm Sewer		Red	Yellow	Red	Yellow
Existing Trail		Red	Yellow	Red	Yellow

\* Assumes a vertical clearance of 15 feet from low beam to existing ground is adequate for future access  
 \*\* Temporary construction easements may be necessary east of the alignment, south of Dave Ward Drive

## 5.2 Bridge

The schematic study includes the conceptual development and analysis of a prefabricated steel truss over Dave Ward Drive and three alternative approach span superstructure types. A combination of retaining walls and approach spans are anticipated to elevate the proposed trail from the existing trail to the truss span over Dave Ward Drive.

An overall bridge length that provides clear sight lines to and from The Shoppes at Centerstone development was desired by the City. A sight line analysis was completed utilizing an eastbound commuter on Dave Ward Drive stopped at the Farris Road traffic signal. A line was taken from the stopped commuter location to the back corner of the commercial building. The resulting minimum length from the end of truss span was approximately 150 feet. During early scoping meetings, the City expressed a desire to match the same approach span length on the north side of Dave Ward Drive to provide symmetry of the overall structure. Therefore the minimum approach spans on the north and south



sides of Dave Ward Drive were set at 150 feet. The minimum approach spans were utilized as a starting point for evaluating the impacts to the 100 year flood elevation.

### 5.2.1 Superstructure

Three approach span types, which include composite steel plate girders, prestressed concrete girders, and slab spans have been compared and evaluated in the following sections.

#### 5.2.1.1 Composite Steel Plate Girders

Composite Steel Plate Girders were evaluated utilizing span lengths of 70 feet. The use of steel girders corresponds to alignment Alternatives 1 and 2 which include smaller horizontal curves before and after the proposed truss span. Plate girders were considered in lieu of rolled beams due to the significant horizontal curvature anticipated on the approach spans. The steel plate girder alternatives were not vetted in the hydraulic model at this schematic stage of development. The steel superstructure alternatives will require a least one less pier than the concrete superstructure options since the spans are longer in comparison. Fewer piers results in less impact to the 100 year flood elevation. Therefore, the concrete superstructure alternatives were used as a conservative basis for the needed length of approach spans. A 210 foot (70'-70'-70') steel girder approach span on the north and south sides of Dave Ward was considered for the purposes of the schematic study.

#### 5.2.1.2 Prestressed Concrete Girders

Prestressed concrete girders were evaluated utilizing a span length of 50 feet. The use of concrete girders corresponds to the alignment Alternatives 3 and 4 which include a flatter horizontal curve that continues through the truss span. Concrete girders cannot be curved horizontally or vertically, like a steel girder, to match the geometry of the trail. Placing the girders in chords along a horizontal curve requires a significantly larger radius as compared to steel girders or slab spans. Due to the narrow trail easement and location of Stone Dam Creek, the truss would also need to be constructed along the same horizontal curve in order to utilize concrete girder approach spans. Several iterations of differing overall lengths of concrete girder approach spans have been input into the preliminary hydraulic model to define the impacts to the 100 year flood elevation. The preliminary model runs show that a 200 foot (50'-50'-50'-50') concrete girder approach span on the north and south sides of Dave Ward Drive appears to result in a no-rise to the flood elevation. Further evaluations and cost estimates in the following sections are based on the resulting 200 foot approach span configuration.

#### 5.2.1.3 Slab Spans

A slab span consists of a thickened reinforced bridge deck that acts as a beam without the need for conventional girders as discussed in previous sections. An economical span length of 35 feet was utilized for evaluation which requires additional piers within the bridge footprint as compared to concrete or steel superstructure spans. As a result of increased obstructions within the floodplain of Stone Dam Creek, the hydraulic study showed that the slab span bridge would cause an unacceptable rise in the 100 year flood elevations. The additional spans, in comparison to the concrete or steel girders, needed to meet a no-rise would increase the overall bridge length and total project cost. Therefore, the slab span approach type is not considered for further evaluation or cost estimates.



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### 5.2.2 Substructure

The substructure was evaluated based on the use of, at a minimum, single column piers with consideration of two-column piers for aesthetic enhancement options. The foundation type was considered by comparing the use of drilled shafts versus driven steel H-piles. Preliminary boring logs were used to estimate required lengths for comparison purposes. As a result, H-piles proved to be more economical and were selected to be used to develop the cost estimates.

### 5.3 Drainage

The proposed drainage is anticipated to convey local flow in a similar manner as existing. Depending on what alignment alternative is selected, existing drainage structures will be modified or replaced with similar applications as existing.

## 6.0 Aesthetics

Aesthetics were evaluated based on the desired objectives provided by the City of Conway. Various truss styles and concept alternatives are presented in the following sections to assist the City in reaching their goal of providing a functional overpass that acts as an appealing structure for the City.

### 6.1 Truss Styles

A prefabricated steel truss is proposed to span Highway 60 (Dave Ward Drive). The piers at the end of the truss span are proposed to be constructed within the Arkansas State Highway and Transportation Department (AHTD) right of way and will be located to meet AHTD's desirable horizontal offset. In order to provide a minimum 15 foot distance between the back of curb on Dave Ward Drive and the face of pier, A 100 to 110 foot truss span is anticipated. The truss will span the travel lanes, median, and existing sidewalks adjacent to Dave Ward Drive without the need for a support within the median.

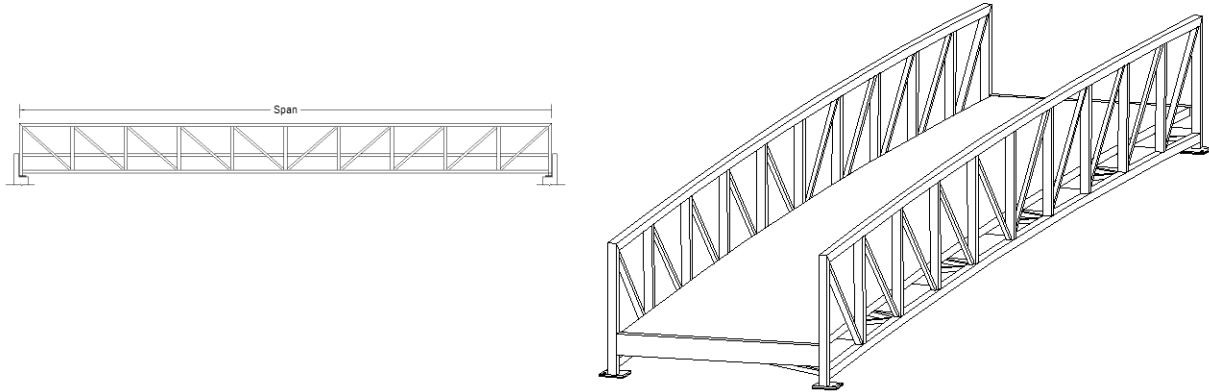
The following truss styles were evaluated based on typical styles produced by most manufacturers to minimize impact to budget while providing an aesthetically pleasing structure. Truss styles are interchangeable with all options shown in the schematic study report.



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### 6.1.1 Standard

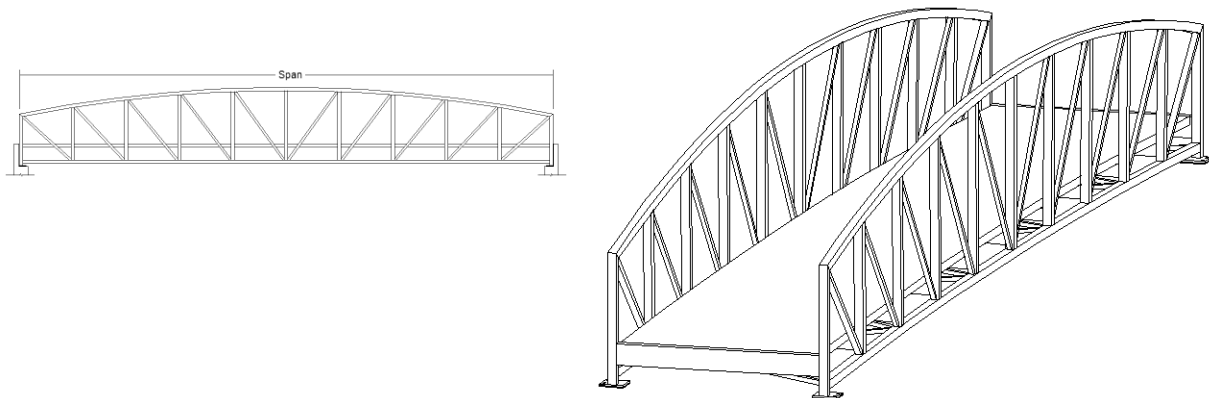
The standard prefabricated truss style with parallel top and bottom chords is the most economical style. This style provides a simplistic enhancement to a conventional steel or concrete girder superstructure.



**Figure 8: Standard Truss**

### 6.1.2 Modified Bowstring

The modified bowstring prefabricated truss style is a more economical choice when an arched top chord is desired. The less pronounced arch adds visual appeal to the superstructure in comparison to the standard truss style.



**Figure 9: Modified Bowstring Truss**



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### 6.1.3 Bowstring

The bowstring prefabricated truss style consists of an arching top chord that connects to the bottom chord at the truss ends. This style is the most visually appealing but is the most expensive style presented for incorporation on the project.

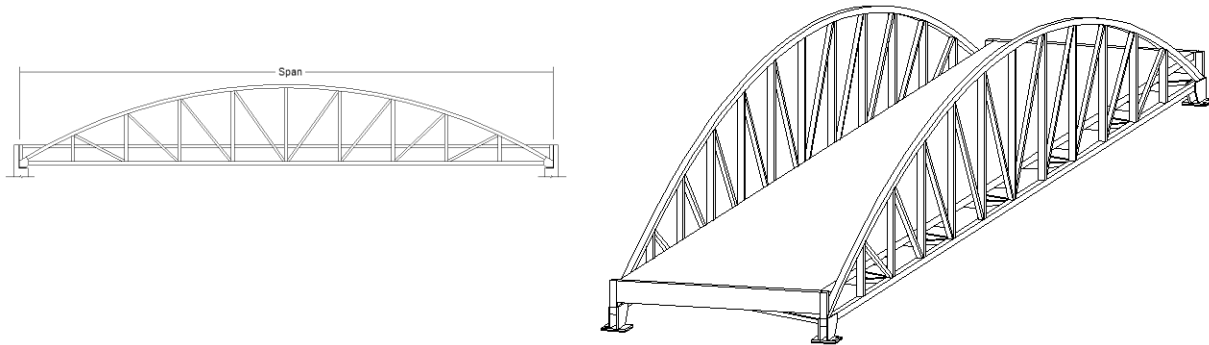


Figure 10: Bowstring Truss

## 6.2 Concept Alternatives

Aesthetic concepts were developed for three unique styles and enhancement alternatives. Renderings and material palettes of each concept are included in **Appendix C**. A brief description of each concept is provided in the following sections.

### 6.2.1 Simplicity

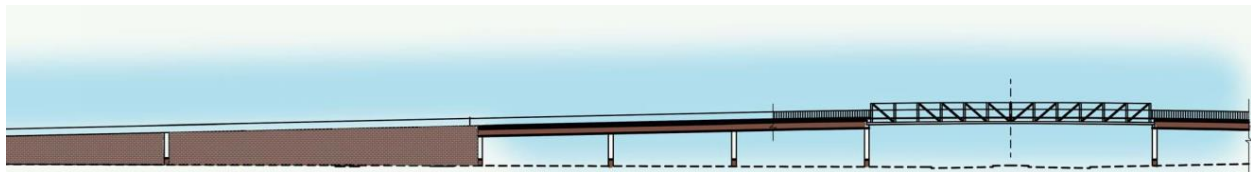


Figure 11: Simplicity Concept

The Simplicity concept serves as the base alternative that includes the minimum desired objectives expressed by the City of Conway during initial scoping meetings. Key features of the Simplicity concept are listed below.

Truss	Standard Style - Painted
Pier Type	Single-Column @ All Locations
Pier Finish	Brick/Stone Finish w/Color Texture Coating
Retaining Wall Finish	Brick Finish w/Color Texture Coating
Railing	Standard Railing
Trail Lighting	Match Existing - Standard Conway Corp. Fixture



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### 6.2.2 Stonecraft

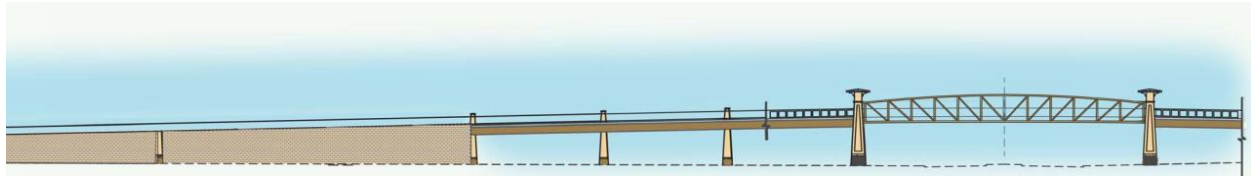


Figure 12: Stonecraft Concept

The Stonecraft concept draws influence from The Plaza at Centerstone development near the project site and provides a completely contrasting style for consideration. Key features of the Stonecraft concept are listed below.

Truss	Modified Bowstring Style - Painted
Pier Type	Two-Column w/Enhanced Pilasters @ Truss Ends Single-Column @ Intermediate Locations
Pier Finish	Ledgestone/Cut Stone Finish w/Color Texture Coating
Retaining Wall Finish	Ledgestone/Cut Stone Finish w/Color Texture Coating
Railing	Vertical Elements w/Contrasting Color Texture Coating
Trail Lighting	Mesh Panel Railing w/Intermediate Concrete Pedestals Match Existing - Standard Conway Corp. Fixture

### 6.2.3 Classic

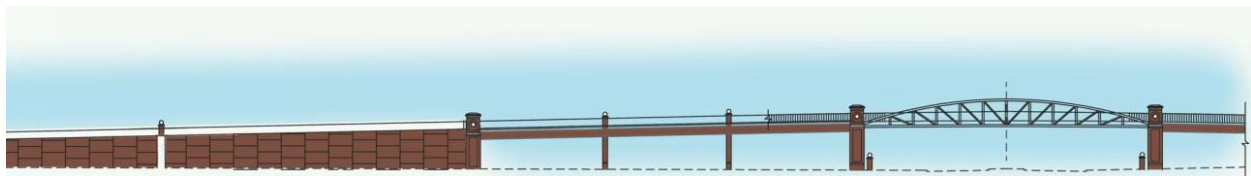


Figure 13: Classic Concept

The Classic concept was developed based on the existing architecture located on the University of Central Arkansas (UCA) Campus. Key features of the Classic concept are listed below.

Truss	Bowstring Style - Painted
Pier Type	Two-Column w/Enhanced Pilasters @ Truss Ends Single-Column @ Intermediate Locations Joint Covers w/Pre-Cast Sphere Extending Above Railing
Pier Finish	Red Brick Masonry/Cut Stone Facade
Retaining Wall Finish	Brick Finish w/Color Texture Coating Faux Pilasters to Mimic Truss Ends
Railing	Vertical Elements w/Contrasting Color Texture Coating Decorative Railing w/Intermediate Concrete Pedestals
Trail Lighting	Decorative LED Acorn Fixture (Conway Corp. Approved)





### 6.3 Accent Lighting

The City of Conway requested that accent lighting be evaluated to illuminate the truss at night for additional aesthetic appeal. A linear LED wall grazing fixture capable of changing colors was selected for cost estimating purposes. Structure color plays a significant role in the reflection of the light and will need to be considered if accent lighting is incorporated into the project. **Figure 14** depicts a rendering of a white bowstring arch with accent lighting installed. The rendering also shows additional lighting that accents the approach span girders with color.



Figure 14: Accent Lighting

### 7.0 Construction Cost Estimates

Planning level, or budgetary, construction cost estimates were developed based on the findings of the schematic study phase. Opinion of probable construction costs shown below are based on the published 2015 Arkansas State Highway and Transportation Department (AHTD) weighted average unit prices along with consideration of recent bid tabulations on similar projects in Faulkner County. More detailed cost estimates based on actual plan quantities will be developed once a concept is selected by the City of Conway and the design is advanced in development. The estimated costs included in the schematic study represent construction cost only. Additional costs, including construction inspection and temporary construction easements, may need to be considered to develop a complete project budget. Construction cost estimates based on the two bridge superstructure types developed during the schematic study are provided in **Table 2** and **Table 3**.



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**Table 2: Composite Steel Plate Girder Construction Cost Estimate**

Item	Concept Alternative		
	Simplicity	Stonecraft	Classic
Truss	\$200,000.00	\$210,000.00	\$225,000.00
Approach Spans	\$995,000.00	\$1,005,000.00	\$1,005,000.00
Retaining Walls	\$900,000.00	\$1,060,000.00	\$1,060,000.00
Trail (Grading, Paving, Drainage, Etc.)	\$230,000.00	\$230,000.00	\$230,000.00
Trail Lighting (Security)	\$180,000.00	\$200,000.00	\$200,000.00
Contingency (10%)	\$250,000.00	\$270,000.00	\$270,000.00
<b>Total Estimated Construction Cost</b>	<b>\$2,755,000.00</b>	<b>\$2,975,000.00</b>	<b>\$2,990,000.00</b>

*Notes:*  
 1. Cost estimate includes construction costs only.  
 2. 2015 AHTD weighted average unit prices and recent bid tabulations for similar projects in Faulkner County were utilized to develop estimated costs.  
 2. The costs are inflated for an assumed year of construction, 2018.

**Table 3: Prestressed Concrete Girder Construction Cost Estimate**

Item	Concept Alternative		
	Simplicity	Stonecraft	Classic
Truss	\$315,000.00	\$335,000.00	\$355,000.00
Approach Spans	\$915,000.00	\$925,000.00	\$925,000.00
Retaining Walls	\$900,000.00	\$1,060,000.00	\$1,060,000.00
Trail (Grading, Paving, Drainage, Etc.)	\$230,000.00	\$230,000.00	\$230,000.00
Trail Lighting (Security)	\$180,000.00	\$200,000.00	\$200,000.00
Contingency (10%)	\$255,000.00	\$275,000.00	\$275,000.00
<b>Total Estimated Construction Cost</b>	<b>\$2,795,000.00</b>	<b>\$3,025,000.00</b>	<b>\$3,045,000.00</b>

*Notes:*  
 1. Cost estimate includes construction costs only.  
 2. 2015 AHTD weighted average unit prices and recent bid tabulations for similar projects in Faulkner County were utilized to develop estimated costs.  
 2. The costs are inflated for an assumed year of construction, 2018.

**7.1 Additional Features**

Accent lighting and overlooks were evaluated during the schematic study based on early scoping meetings with the City of Conway. Estimated costs for the additional features may be added to the construction cost if inclusion of the feature is desired by the City. **Table 4** includes estimated construction costs for adding accent lighting to the truss span only or to both the truss and approach spans. Additionally, overlooks were considered for a potential resting area and scenic overlook of Stone Dam Creek.

**Table 4: Additional Features Construction Cost Estimate**

Additional Features	Estimated Construction Cost
Accent Lighting – Truss Span	\$210,000
Accent Lighting – Truss and Approach Spans	\$670,000
Overlook - Each	\$35,000



## **7.2 Customized Concepts**

Multiple alternatives for truss style, aesthetic style, and approach span superstructure type were considered during the schematic study. Therefore, estimates of probable construction costs are presented in a tabular selection format in **Appendix D**. The table allows construction cost estimates to be determined for multiple variations of truss and aesthetics styles based on superstructure type. Custom combinations, in addition to the three concepts developed during the schematic study, can be evaluated by the City of Conway to assist in selection of a design concept to be moved forward into preliminary and final design. An approach superstructure type may be selected first, truss style second, approach span style third, and finally trail approach style to collectively calculate the opinion of probable construction cost.

## **8.0 Coordination**

### **8.1 Arkansas State Highway and Transportation Department (AHTD)**

The design team contacted AHTD to begin coordination on several items relating to the project. Since the project will be constructed within AHTD right of way, AHTD policies and requirements must be met. The sections below provide a summary of coordination that has taken place during the schematic study.

#### **8.1.1 Accent Lighting**

AHTD was notified that the City of Conway desires to add accent lighting to the truss and potentially to the approach spans over Highway 60 (Dave Ward Drive). AHTD had two specific concerns including brightness of the steel affecting driver's vision approaching the overpass and color. For eastbound motorists on Dave Ward Drive, the Farris Road traffic signal heads are approximately 700 feet from the bridge. AHTD is concerned that if the City chooses to light the bridge with red, yellow, or green the background light may obscure the traffic signal heads. AHTD stated that they didn't have any issues with lighting the approach spans.

Additional studies showing impacts to the roadway and driver distraction will be provided to AHTD for further consideration and possible acceptance if the City chooses to incorporate accent lighting on the truss span.

#### **8.1.2 Masonry Façade**

The use of masonry façade on the bridge elements may be desired by the City of Conway to match University of Central Arkansas (UCA) aesthetic style. A façade covering the foundations could potentially be a maintenance or inspection concern. AHTD does not perform structural inspections of pedestrian bridges. The only inspection that will be done is for measurement of vertical and horizontal clearances. AHTD has no concerns with any masonry façade on foundations.

#### **8.1.3 Protective Screening**

AHTD's historic policy and current preference for pedestrian bridges over highway traffic is for semi-circular protective fencing to be installed. If this is not desirable to the City, the current, accepted addition, of the American Association of State Highway and Transportation Officials (AASHTO) Roadside Design



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Guide will be the determining factor for decision making. If the semi-circular fence is not provided and objects are thrown or dropped from the pedestrian structure, the City will be required to add or modify their protective measures in order to stop this from occurring. The agreement will be written in the Air Space Agreement and coordinated with the right of way division.

#### 8.1.4 Pier Location

The piers at the end of the truss span are proposed to be constructed within AHTD right of way and will be located to meet AHTD's desirable offset of 15 feet from back of curb. AHTD planning department confirmed that there are no future plans to widen Dave Ward Drive that should be accommodated with this project.

### 8.2 Conway Corporation

A meeting was held at the Conway Corporation Engineering Department to introduce the project and begin early coordination. Several potential utility conflicts were discussed for evaluation during the schematic study and alignment development. Conway Corporation staff provided location services on their utilities during the topographic survey field work. Additional coordination meetings will be held at each submittal stage of plan development.

### 8.3 University of Central Arkansas (UCA)

The design team and City of Conway met with the interim president, Kelley Erstine, and key staff of UCA to provide a status update and coordinate on funding, safety, and aesthetics. Administrative members present at the meeting preferred the classic concept as it blended with current UCA architecture and style. UCA requested an opportunity to meet with Mayor Castleberry and City officials prior to a selection and advancement to preliminary design.

## 9.0 Funding Summary

Several sources of outside funding for the Dave Ward Drive Pedestrian Overpass have been committed as shown below in **Table 5**. Current funding sources include both federal funding and local stakeholder contributions.

### 9.1 Federal Funding

Federal funding is provided from two programs including the Transportation Alternatives Program (TAP) and the Recreational Trails Program (RTP). Both programs were originally funded by the Moving Ahead for Progress in the 21<sup>st</sup> Century (MAP-21) Act and has continued under the most recent Federal transportation funding act, Fixing America's Surface Transportation (FAST) Act. The Federal funds are administered and awarded by the Arkansas State Highway and Transportation Department (AHTD) and Metroplan.

#### 9.1.1 Program Guidelines

The TAP and RTP funding share similar program requirements. A summary of the basic program requirements associated with the Federal funds is shown below.



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- Funding Uses
  - TAP and RTP funds administered by AHTD are for construction only.
  - In addition to construction, TAP funds administered by Metroplan may be used to for right of way acquisition and/or engineering services.
    - Metroplan TAP funds must be obligated by October 2017. This means construction documents, environmental clearance, and right of way certification must be completed and ready to go to construction by the end of September 2017.
  - The City of Conway is responsible for 100% of construction costs above the total award amount.
- Reimbursement Program
  - 80% of the eligible project expenses, up to the Federal award amount, can be reimbursed once approval is given from AHTD/Metroplan and the Federal Highway Administration (FHWA).
- Local Match
  - TAP requires a 20% cash match from the City of Conway.
  - RTP requires a 20% match from the City of Conway.
    - The local share can be in the form of cash, donated funds, or the documented fair market value of any donated materials or services that are accepted and incorporated into the project.
- Fees
  - 1% administrative fee is required on TAP funds administered by AHTD.

## 9.2 Stakeholder Contributions

The University of Central Arkansas (UCA) has committed \$300,000 to funding the project. As a major stakeholder, the pedestrian bridge would provide a safer means of travel for students and others living on the south side of Dave Ward Drive.

**Table 5: Funding Summary**

Date	Type	Source	Amount
2015	RTP	Arkansas State Highway and Transportation Department	\$400,000
2015	TAP	Metroplan	\$150,000
2015	TAP	Metroplan	\$240,000*
2016	TAP	Arkansas State Highway and Transportation Department	\$221,000
	Sponsor Match (20%)	City of Conway	\$252,750
	Stakeholder	University of Central Arkansas	\$300,000
Total			\$1,563,750

\* Originally allocated for the Springfield-Des Arc Bridge



## 10.0 Recommendations

The schematic study report evaluated a number of alignment alternatives, approach span superstructure types, truss types, and aesthetic styles based on desired objectives provided by the City of Conway.

### 10.1 Design Alternatives

Based on the results of the impacts analysis and early coordination with Conway Corporation, **Alternative 2** appears to be the least impactful design alternative. **Alternative 2** utilizes a steel superstructure for the approach spans which results in a slightly lower estimated construction cost as compared to the concrete superstructure alternatives. Although, if the horizontally curved truss is desired for aesthetics, **Alternative 4** would be the recommended design alternative utilizing a concrete superstructure for the approach spans.

### 10.2 Aesthetics

Three aesthetic concepts are presented in the schematic study. The **Classic** concept most closely resembles the conceptual plan rendering that was submitted to the Arkansas State Highway and Transportation Department (AHTD) and Metroplan for funding consideration. The **Classic** concept also aligns with the current architectural style at the University of Central Arkansas (UCA).

### 10.3 Decision Workflow

Figure 15 provides a decision workflow that can be used by the City of Conway to provide the design team with information necessary to begin the preliminary design phase.

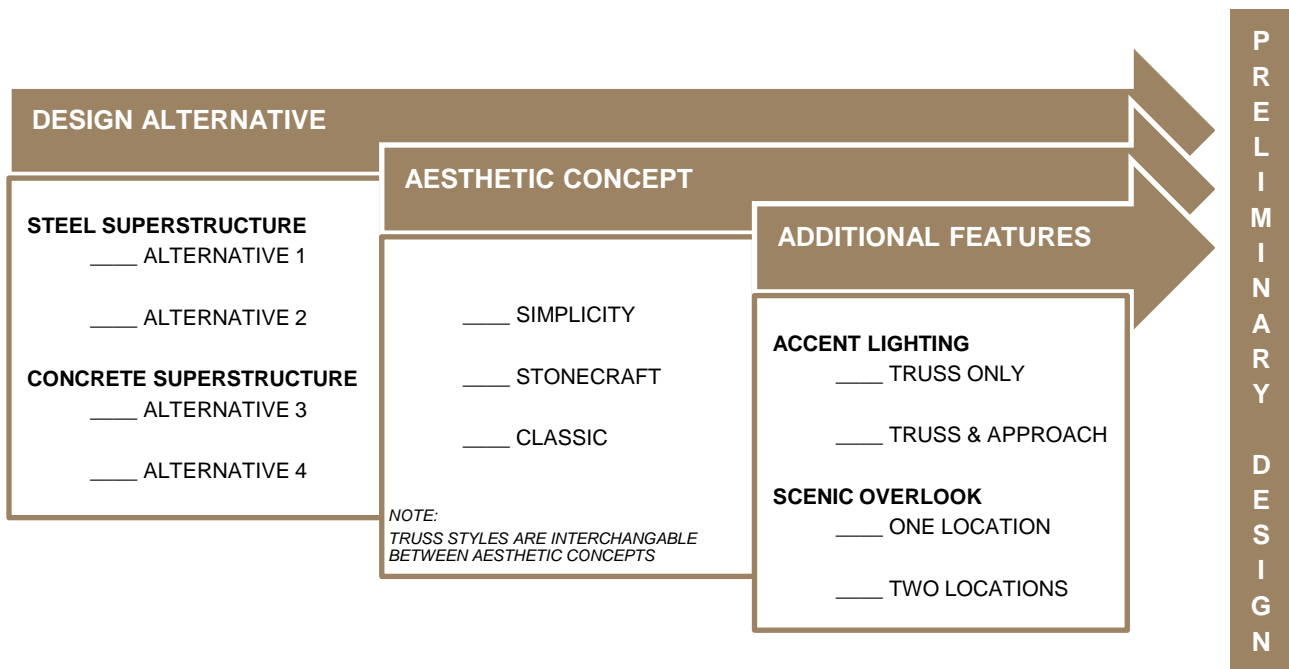


Figure 15: Decision Workflow





