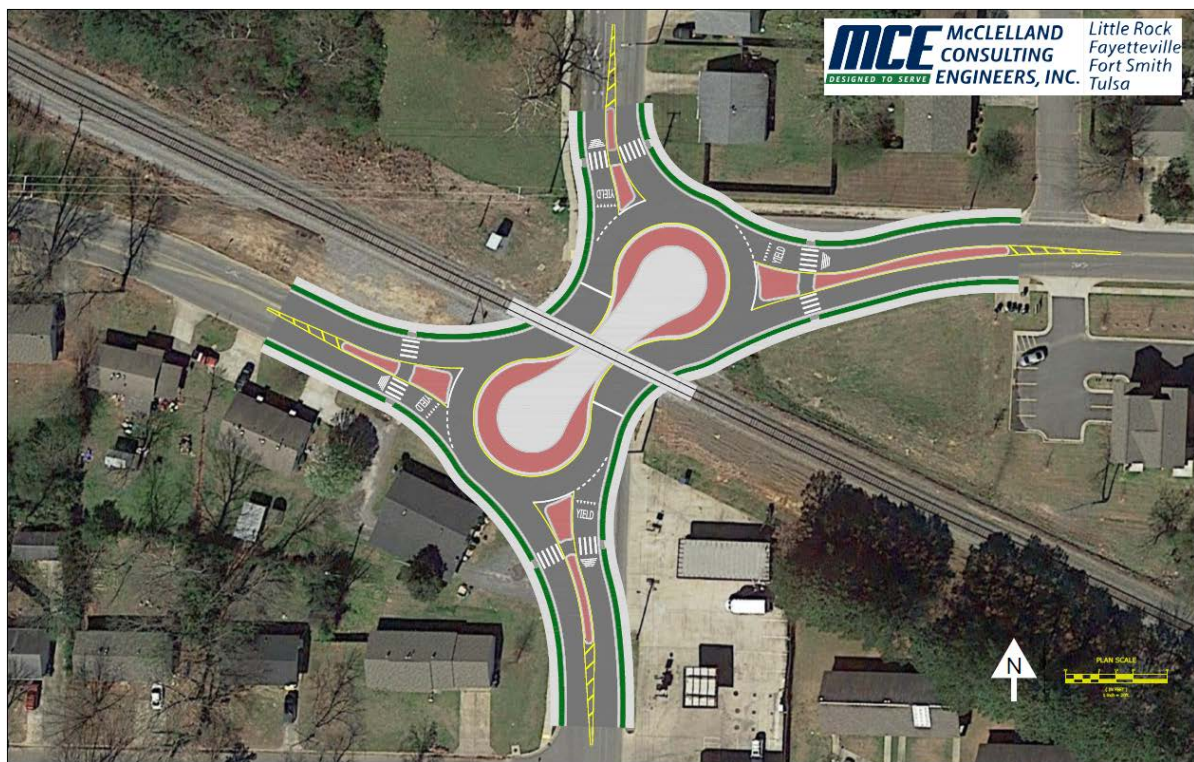


The City of Conway, Arkansas

Tyler/Donaghey Railgrade Crossing Improvement Project

FY2020 Consolidated Rail Infrastructure and Safety Improvements (CRISI)



Submitted by:

Conway Transportation Department
Office of the Mayor
1201 Oak Street
Conway, AR 72032

www.conwayarkansas.gov



The City of Conway, Arkansas

Tyler/Donaghey Railgrade Crossing Improvement Project FY 2020 Consolidated Rail Infrastructure and Safety Improvements (CRISI)

Table of Contents:

Narrative.....	1-14
Benefit/Cost Analysis_Summary Table.....	15
Statement of Work.....	16
Funding Commitment Letter.....	23
Resolution R-19-53.....	24
Support Letter Congressmen French Hill.....	25
Support Letter Conway Public Schools.....	26
Detailed Project Schedule Conway Tyler & Donaghey.....	27
Union Pacific Letter.....	28
Support Letter Metroplan.....	29
FIRM Map.....	30
Wetlands Map.....	31
Conceptual Plans.....	32
Construction Budget.....	35
Notes To Benefit/Cost Analysis.....	36

CRISI Grant application

I. Tyler/Donaghey Railgrade Crossing Improvement Project

Applicant	City of Conway, Arkansas
Project Track	Tracks 2 and 3
Federal Grant Previously Submitted	No
Name in Previous Application	n/a
Rural Project	No
Project Location	Conway, Arkansas
Urbanized Area	Little Rock-North Little Rock- Conway MSA
Is Project Programmed	No

II. Project Summary

This innovative rail safety project will improve roadway approaches to the at-grade crossing at the intersection of Tyler Street and Donaghey Avenue in Conway, Arkansas, by constructing a peanut-shaped roundabout to re-orient the roadway more perpendicular to the tracks, in addition to continued use of crossing gates and flashers. The City of Conway has a long history of using roundabouts to successfully solve many transportation problems in town.

The project will improve approach angles in order to increase visibility at this heavily-traveled crossing, where the tracks intersect the roadway at extremely skewed angles. There are numerous reports of vehicles becoming stuck on the tracks as they make a westbound left turn from northbound Donaghey. In February 2019, this problem led to a truck-train collision when a truck stalled on the tracks after missing the roadway. Because Tyler Street and Donaghey are key arterials in Conway, complete closure of the crossing is not possible; because of how the roadways intersect the track, two overpasses might be required to improve the problem, which would be cost prohibitive. An innovative, relatively low-cost solution like a roundabout is greatly needed for this crossing.

Safety benefits will occur because the project will correct the geometric deficiencies by designing the vehicular crossing to be perpendicular to the tracks. Further, by using the roundabout design, vehicles will only cross the tracks as two movements, as opposed to the ten movements the existing traffic has as a possible conflict with the railway. The “peanut” design of the roundabout shortens the distance the train will need to traverse in order to clear the intersection.

In addition to improving safety at the intersection, congestion and travel times will be reduced for car and truck traffic. Because of the way the roadways intersect, signalization is complicated and leads to lengthy delays, which are exacerbated when the train interrupts the signal process. The roundabout configuration will eliminate the need for signals, thereby eliminating the time required for the signals to re-set and reducing vehicular delays caused by the train.

The image below shows how the traffic backs up at the intersection, also shown at:

<https://youtu.be/UBUIFSwsYX8>



III. Project Funding

Task	Task #	Cost	% of Total Cost
Environmental Assessment & Clearance Documentation	1	\$55,000	2.0%
Field Surveys and Mapping	2	\$8,000	.3%
Geotechnical Investigations	3	\$7,500	.2%
Preliminary Design (Roadway & Rail)	4	\$93,000	3.0%
Final Design (Roadway & Rail)	5	\$166,398	5.0%
Utility Coordination and Relocation Design	6	\$194,880	6.0%
Right of Way and Easement Documents	7	\$200,000	6.5%
Advertisement, Bids, Contract, Construction, Observation	8	\$2,329,219	76.0%
Total Project Cost		\$3,053,997	
Federal Funds Received from Previous Grant		n/a	n/a
CRISI Federal Funding Request		\$2,287,294	75%
Non-Federal Funding/Match		\$571,823 \$194,880	25%
Portion of Non-Federal Funding From Private Sector	0		
Portion of Total Project Costs Spent in a Rural Area	0		
Pending Federal Funding Requests	0		

A funding commitment letter from Mayor Castleberry is attached (Attachment A), along with a resolution from the Conway City Council approving expenditures for the project (Attachment B). Conway Corp., the city’s public utility, will assume the cost of utility relocation.

IV. Applicant Eligibility

The City of Conway is a political subdivision of the State of Arkansas, and is eligible under Category E.

V. Project Eligibility

This project is eligible under Category V, Highway-Rail Grade Crossing Improvement Project. It provides an innovative solution to improve safety and efficiency of a heavily traveled rail-grade crossing.

VI. Detailed Project Description

A. Grade Crossing Information

The Tyler/Donaghey Public Highway-Rail Crossing is #434243C. Union Pacific is the railroad. Only one track is at this location, with 12 trains per day; maximum speed is 45 mph. According to the Web Accident Prediction System 2019, AADT is 4,000 vehicles; however, according to the Arkansas Department of Transportation GIS system, ADT is much higher:

Southbound	8,300
Northbound	12,000
Westbound	7,700
Eastbound	7,800

According to the City's September 4, 2019 count, ADT is:

Southbound	9,296
Northbound	12,633
Westbound	8,510
Eastbound	8,549

A 2019 U.S. DOT Crossing Inventory Form states that the crossing is not regularly used by school buses. This is incorrect as can be seen on the video in this application. The Conway Public School Transportation Supervisor says 7 or 8 buses regularly cross the tracks at this intersection.

B. Heavily Traveled Rail Corridor, If Applicable

N/A

C. PTC Information, If Applicable

N/A

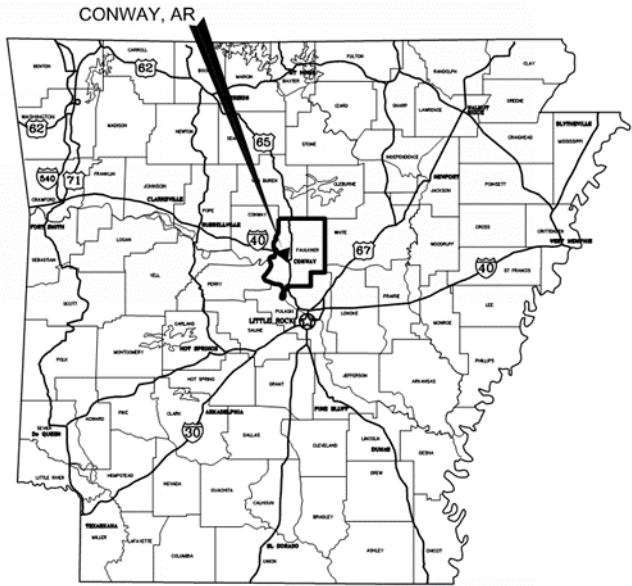
VII. Project Location

The project is located in Conway, Arkansas (Faulkner County), which is located in the 2nd Congressional district. A letter of support from Congressman French Hill is attached (Attachment C).

35° 06' 10.43" N

92° 27' 11.86" W

Railroad Milepost 0374.420



D. Performance Measures

Measure	Unit Measured	Temporal	Primary Strategic Goal	Description
# and Severity of Vehicle Accidents	Accidents	Annual	Safety	Arkansas State Police Crash reports supplied by Metroplan will be analyzed annually to determine the extent of vehicular crash reductions post-project.
# and Severity of Vehicle/Rail Accidents	Accidents	Annual	Safety	FRA Accident Reports and Arkansas State Police Crash reports supplied by Metroplan will be analyzed annually to determine the extent of vehicle/rail crash reductions post-project.

VIII. Evaluation and Selection Criteria

Project Benefits

A. Effects on System and Service Performance

Benefits to the railroad will result because the risk of a crash or derailment will be lessened by the project, resulting in less downtime and costs to the railroad. Numerous factors influence the

cost of at-grade highway rail crossing crashes, but they are rarely inexpensive. According to *NCHRP Report 755*, although the number of grade crossing collisions is relatively small compared to other crash types, the impacts are often much greater due to the damage to rail equipment and infrastructure, potential disruptions to passenger services, and in the case of the subject intersection, logistics and supply chains, and the potential for rare catastrophic events like multi-passenger casualties or hazardous material spills.¹ One study that attempted to estimate the cost of the mean at-grade highway rail crossing crash found it to be \$805,675.² At this rate, the cost of the planned intersection improvements can be outweighed in a relatively short period of time.

B. Effects on Safety, Competitiveness, Reliability, Trip or Transit Time, and Resilience

The Donaghey Avenue/Tyler Street at-grade crossing is very dangerous primarily because of the extremely skewed angles at which cars approach the railroad. This has led to many reports of cars turning onto the tracks, and at least one has been struck by a train recently.

¹ Brod, et al. (2013). *Comprehensive Costs of Highway-rail Grade Crossing Crashes*. NCHRP 755, Washington, D.C.

² Khattak and Thompson (2012), "Development of a Methodology for Assessment of Crash Costs at Highway-Rail Grade Crossings in Nebraska, found at <https://trid.trb.org/view.aspx?id=1148241>.

Figure 1 Scene of Truck-Train Crash February 22, 2019



The situation the truck encountered is the same all northbound Donaghey drivers who wish to turn left (westbound onto Tyler) encounter—instead of making a more normal and more expected right angle turn, they turn ONTO and then closely parallel to the tracks for a short time at a about a 255° angle before moving further away from the tracks. With this situation, it is therefore, relatively easy to mistakenly stay on the tracks instead of the roadway. The silver vehicle shown in Figure 2 courtesy of Google Earth is, or will shortly be, on the tracks.

Figure 2 Westbound Driver on Tracks



Figure 3 provides an aerial view of the problem:

Figure 3 Aerial View of Westbound Problem



The proposed peanut-shaped roundabout will provide safety benefits will because it will correct the geometric deficiencies by designing the vehicular crossing to be perpendicular to the tracks.

Further, by using the roundabout design, vehicles will only cross the tracks as two movements, as opposed to the ten movements the existing traffic has as a possible conflict with the railway. The “peanut” design of the roundabout shortens the distance the train will need to traverse in order to clear the intersection.

Shown in Figures 4 and 5 are the existing and proposed configurations:

Figure 4 Existing Intersection

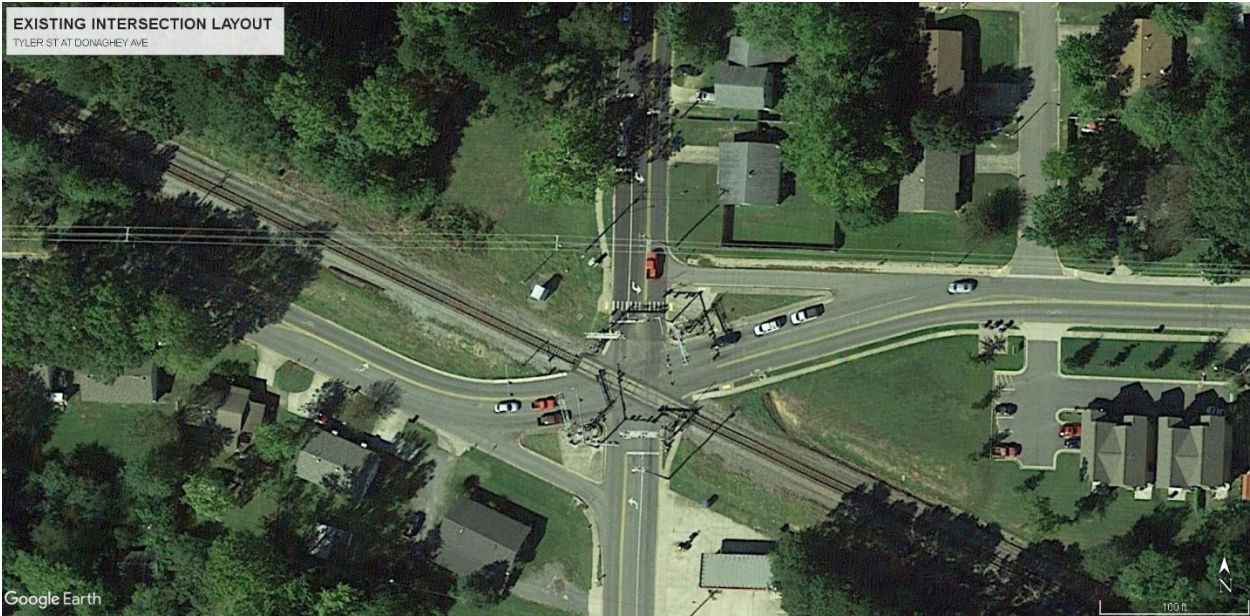
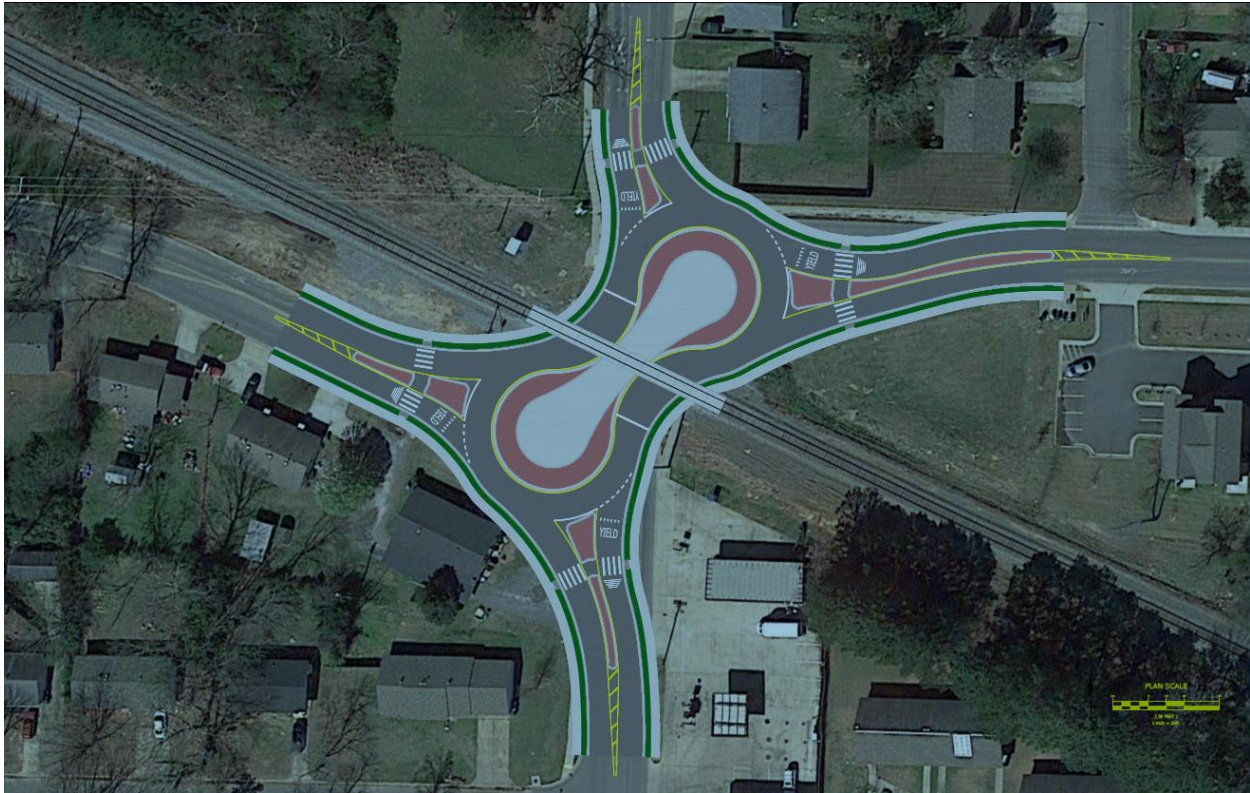


Figure 5 Proposed Peanut Roundabout



As Conway grows and traffic increases, the likelihood that a serious accident, even fatality, will occur, goes up. According to NCHRP Report 755, “less than one percent of police-reported highway crashes involve fatalities compared with roughly ten per cent of highway-rail crashes.² The crossing is regularly used by school buses at both the morning and afternoon peak times, so the likelihood that a number of children will be involved in crashes is high.

Safety benefits from the project will accrue from the improved approach angle, but also from the use of the roundabout in general, as roundabouts have a proven safety record in every setting they have been used, including at rail crossings. Although there are certainly design and operational challenges that need to be addressed in using a roundabout in this setting, the partnership with Union Pacific in addressing these challenges will help to ensure maximum safety benefits from the project.

C. Efficiencies from Improved Integration with Other Modes

The project’s main transportation system benefits will accrue to vehicles, as their wait times at this intersection will be greatly reduced. With current traffic, the project will reduce the average morning peak delay around 16 seconds and reduce delay 12 seconds in the afternoon peak over a signalized intersection; by 2040, the project will reduce the average morning peak delay approximately 17 seconds and reduce the afternoon peak delay by 9 seconds. These numbers do not take into account the amount of time drivers are delayed at the intersection when the train comes through 12 times per day. The typical train blocks the intersection 2 to 5 minutes per trip, plus it takes the traffic signal up to 2 minutes to re-set. The roundabout will reduce the time

required to purge the intersection of cars and move people to their destinations more quickly. Also, the reduction in time spent idling at the intersection will improve air quality.

D. Ability to Meet Existing or Anticipated Demand

The roundabout aspect of the project has the ability to manage greater volumes of traffic more effectively than a signalized intersection because of the limitations of this narrowly confined space where adding lanes or an overpass would be cost prohibitive. This ability to move more cars through the intersection more quickly will mean better public acceptance of delays caused if additional trains need to travel through Conway in the future. Delays caused by the train can be quite a burden on drivers, and even causes problems with getting students to school on time. A letter of support from Conway Public Schools is found in Attachment D.

E. Life-Cycle Cost

Roundabouts have proven to be much less expensive than traffic signals, with the major expenses coming from mowing and landscape maintenance, if there is any landscaping, plus the cost of periodic repaving and marking. The City of Conway will bear all such costs for the life of the project and beyond.

IX. Project Implementation and Management

The City of Conway is growing, with a population increase of 13% since the 2010 U.S. Census. This rapid increase has led to many transportation improvement projects managed by the Conway Department of Transportation. Many of these have been funded solely by the City and others have been federal aid projects through the Arkansas Department of Transportation. The most recent federally funded project completed was the Dave Ward Drive Pedestrian Overpass, a \$3.2 million project. A combination of city engineers, on-call engineers and project-specific engineers manage various projects, with a particular expertise in roundabouts—the City of Conway currently has 27 roundabouts. The most recent audit of the Dave Ward Drive Pedestrian Overpass was without findings, found at:

https://docs.google.com/gview?url=https://media.conwayarkansas.gov/conwayarkansas-media/documents/City_of_Conway_Issued_2018_Report.pdf

City of Conway engineers and project engineers will work with Union Pacific officials to produce a design that will meet their criteria for construction.

The City's grant administrator has managed federal grant reporting directly under a U.S. Department of Transportation Maritime Administration TIGER grant. Additionally, the City receives other federal grants with similar reporting requirements.

The project is relatively straightforward, with design through construction expected to be completed within 15 months of completion of a signed grant agreement.

PROPOSED PROJECT SCHEDULE - TYLER ST/ DONAGHEY AVE ROUNDABOUT																	
TASK #	PROJECT TASK	2020				2021				2022							
		SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
1	Environmental Assessments and Clearance Documentation																
	Data Collection and Review																
	Agency Coordination																
	Preparation of Categorical Exclusion Document																
	Submit to City and ARDOT for Review and Approval																
2	Field Surveys and Mapping																
	Topographic Survey																
	Boundary Survey and Property Ownership Determination																
3	Geotechnical Investigations																
	Field Investigation and Interim Report of Findings																
	Final Report with Pavement Recommendations																
4	Design (Roadway)																
	30% Preliminary Design Plans																
	60% Roadway Design Plans - Submittal and Review																
	90% Roadway and Bridge Design Plans - Submittal and Review																
	100% Roadway and Bridge Design Plans																
5	Utility Coordination and Relocation Design																
	Utility Partnering Meeting																
	Preliminary Utility Relocation Plans																
	Final Utility Relocation Plans																
	Utility Relocations (Construction)																
6	Right of Way and Easement Documents																
	Right of Way Plans Submittal to ARDOT and Review/Approval																
	Preparation of ROW & Easement Documents and Approval																
	Acquisitions and ROW Certification																
7	Bidding and Advertising																
	Advertise and Open Bids																
	Preconstruction Meeting																
8	Preliminary Construction Schedule (To Start in June 2022, will take approximately 10 months to complete)																

A more readable Project Schedule is attached (Attachment E).

X. Planning Readiness

Union Pacific employees initially brought the project to the City as one of three intersections needing improvement in Conway. Numerous exchanges of information on the project have taken place over the course of several years, and the City has provided Union Pacific with several alternatives for review. Union Pacific has agreed to work with the City of Conway to produce an acceptable design (Attachment F). Until the CRISI grant became a possibility, though, funding has not been available, so that the project has not been specifically addressed by Metroplan, the metropolitan planning organization for the Little Rock-North Little Rock-Conway MSA or other transportation planning venues.

The project is, however, in line with two of the seven focus areas of Map-21 (Moving Ahead for Progress in the 21st Century), namely improving safety and reducing congestion, and with Metroplan’s long range transportation plan, *Central Arkansas 2050: Sustaining Our Future* (December 2018). Goal 6.4 of *Central Arkansas 2050* addresses System Safety and Reliability and Crash Reduction, with

6.4.1 Develop infrastructure systems that provide reliability, and a transportation system that minimizes delays, and

6.4.2 Design and operate the metropolitan transportation system to reduce the likelihood of crashes and correct dangerous situations where they exist.

A letter of support for the project from Metroplan is attached to this application. (Attachment G.)

XI. Environmental Readiness

This project will take place largely within the existing road and rail confines so that no environmental or historic preservation issues are expected. The project area does not lie in a floodplain and no wetlands or environmentally sensitive areas appear to be in the vicinity. Therefore, a Categorical Exclusion is anticipated. The FIRM and wetlands maps are provided in Attachments H and I. Conceptual plans and construction budget can be found in Attachments J and K.

Based on the conceptual design, one house will need to be acquired and relocated. This will take place in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act. Initial consultation has been made with Conway Corp., the public utility serving Conway, about making the required utility relocations.

The City of Conway and project engineers will work to ensure that design and construction meet the requirements of Union Pacific.

Additional Elements

I. Statement of Work – See Attachment 3

II. Results of Benefit Cost Analysis –

The table below shows the results of the Benefits/Cost Analysis for two scenarios, one more conservative showing results from vehicle-crashes only, and the other more moderate, with results that included estimates of vehicle-train crashes, plus an operational benefit of reduced vehicle-train crashes. Notes to explain assumptions and other data used in the Benefit/Cost Analysis can be found in Attachment L.

	Moderate Scenario	Conservative Scenario
Total Discounted Benefits	\$5,550,880	\$3,455,906
Total Discounted Costs	\$2,901,666	\$2,901,666
Benefit/Cost Ratio	1.912997482	1.191007618

List of Attachments

Attachment A	Funding Commitment Letter
Attachment B	Resolution R-19-53
Attachment C	Support Letter from Congressman French Hill
Attachment D	Support Letter from Conway Public Schools
Attachment E	Project Schedule
Attachment F	Commitment letter from Union Pacific
Attachment G	Support Letter from Metroplan
Attachment H	FIRM Map
Attachment I	Wetlands Map
Attachment J	Conceptual Plans
Attachment K	Construction Budget
Attachment L	Notes to Benefit/Cost Analysis

BCA_Summary Table

	Moderate Scenario	Conservative Scenario
Total Discounted Benefits	\$5,550,880	\$3,455,906
Total Discounted Costs	\$2,901,666	\$2,901,666
Benefit/Cost Ratio	1.912997482	1.191007618

STATEMENT OF WORK

City of Conway, Arkansas

Tyler/Donaghey Railgrade Crossing Improvement Project

2020 Consolidated Rail Infrastructure and Safety Improvements Program

I. AUTHORITY

Authorization	Section 11301 of FAST Act, PL 114-94 (2015); 49 U.S.C. 22907
Funding Authority/Appropriation	2020 Appropriation of Section 11301 of FAST Act, PL 114-94 (2015); 49 U.S.C. 22907
Notice of Funding Opportunity	Consolidated Rail Infrastructure and Safety Improvements for Fiscal Year 2020 Appropriation, Federal Register Vol. 85, No. 76 / Monday, April 20, 2020 /Notices

II. BACKGROUND

The Project will improve safety by constructing a peanut-shaped roundabout to re-align roadway approaches to the at-grade crossing at the intersection of Tyler Street and Donaghey Avenue (DOT Crossing Inventory #434243C) in Conway, Arkansas, along with continued use of crossing gates and flashers.

The Project will improve approach angles in order to increase visibility at this heavily-traveled crossing, where the tracks intersect the roadway at extremely skewed angles. Numerous reports have been made of vehicles becoming stuck on the tracks as they make a westbound left turn from northbound Donaghey. In February 2019, this problem led to a truck-train collision when a truck stalled on the tracks after missing the roadway. Because Tyler Street and Donaghey are key arterials in Conway, complete closure of the crossing is not possible; because of how the roadways intersect the track, two overpasses might be required to improve the problem, which would be cost prohibitive. An innovative, relatively low-cost solution like a roundabout is greatly needed for this crossing.

Safety benefits will occur because the Project will correct geometric deficiencies by designing the vehicular crossing to be perpendicular to the tracks. Further, by using the roundabout design, vehicles will only cross the tracks as two movements, as opposed to the ten movements the

existing traffic has as a possible conflict with the railway. The “peanut” design of the roundabout shortens the distance the train will need to traverse in order to clear the intersection.

In addition to improving safety at the intersection, congestion and travel times will be reduced for car and truck traffic. Because of the way the roadways intersect, signalization is complicated and leads to lengthy delays, which are exacerbated when the train interrupts the signal process. The roundabout configuration will eliminate the need for signals, thereby eliminating the time required for the signals to re-set and reducing vehicular delays caused by the train.

Only conceptual plans and cost estimates have been developed at this time; a Categorical Exclusion is expected, as this location has been developed for many years.

III. OBJECTIVE

The objective of the Project is to improve safety and reduce delay at the railgrade crossing (Union Pacific Railroad) at the intersection of Donaghey Avenue and Tyler Street in Conway, Arkansas, by constructing a peanut-shaped roundabout with appropriate gates and flashers.

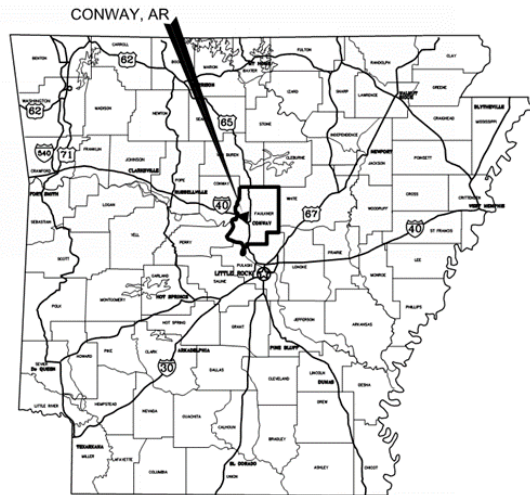
IV. PROJECT LOCATION

The project is located at the intersection of Donaghey Avenue and Tyler Street, both heavily traveled roadways in Conway, Arkansas (Faulkner County). Conway is located in the 2nd Congressional district.

35.1026916
-92.4533158

Railroad Milepost 0374.420

DOT Crossing Inventory #434243C



IV. DESCRIPTION OF WORK

Task 1: Detailed Project Work Plan, Budget, and Schedule

The City of Conway Department of Transportation and Project Engineer will coordinate with representatives of Union Pacific Railroad to complete the project using the following tasks and schedule:

TASK #	PROJECT TASK	Timeframe (assumes project start Sep. 2020)
1	Environmental Assessments and Clearance Documentation	
	Data Collection and Review	Sep/Oct 2020
	Agency Coordination	Nov 2020
	Preparation of Categorical Exclusion Document	Nov/Dec 2020
	Submit to City, ARDOT, FRA for Review and Approval	Jan/Feb 2021
2	Field Surveys and Mapping	
	Topographic Survey	Sep/Oct 2020
	Boundary Survey and Property Ownership Determination	Sep/Oct 2020
3	Geotechnical Investigations	
	Field Investigation and Interim Report of Findings	Sep/Oct 2020
	Final Report with Pavement Recommendations	Nov 2020
4	Preliminary Design (Roadway and Rail)	
	30% Preliminary Design Plans	Oct-Dec 2020
5	Final Design (Roadway and Rail)	
	60% Roadway & Rail Design Plans - Submittal and Review	Jan-May 2021
	90% Roadway & Rail Design Plans - Submittal and Review	Jun-Aug 2021
	100% Roadway & Rail Design Plans	Sep 2021
6	Utility Coordination and Relocation Design	
	Utility Partnering Meeting	Sep 2021
	Preliminary Utility Relocation Plans	Jan-Apr 2021
	Final Utility Relocation Plans	May/June 2021
	Utility Relocations (Construction)	Jul-Dec 2021
7	Right of Way and Easement Documents	
	ROW Plans Submittal to FRA/ARDOT Review/Approval	Jan-Apr 2021
	Preparation of ROW & Easement Documents and Approval	Apr-June 2021
	Acquisitions and ROW Certification	Jul-Dec 2021
8	Advertisement, Bids, Contract, Construction, Construction Observation	
	Advertise and Open Bids	Jan/Feb 2022
	Preconstruction Meeting	Apr 2022
	Construction & Construction Observation	Jun 2022- Mar 2023

Deliverables:

Task #	Deliverable Name	Due Date
1	Completed NEPA Investigation (Categorical Exclusion)	Feb 20, 2021
2	Completed surveys and property ownership determination	Oct 28, 2020
3	Completed Final Geotechnical Report with Pavement Recommendations	Nov 28, 2020
4	Completed 30% Preliminary Design Plans	Dec 30, 2020
5	Completed 100% Design Plans	May 31, 2021
6	Completed Utility Relocation	Dec 31, 2021
7	Completed ROW/Easement Acquisition	Dec 31, 2021
8	Construction Substantially Complete	Mar 31, 2023
	Period of Performance End Date	Apr 30, 2023
9	Planned Project Closeout Date/Final Performance Report	Jun 30, 2023

Task 1: Environmental Assessments and Clearance Documentation

Data Collection and review, agency coordination, preparation of Categorical Exclusion Document, and submission to City, FRA and ArDOT for review and approval.

Deliverable: Completed NEPA investigation.

Task 2: Field Surveys and Mapping

Topographic survey, boundary survey and property ownership determination.

Deliverable: Completed Surveys and Property Ownership Determination

Task 3: Geotechnical Investigations

Field investigation and interim report of findings, production of final report.

Deliverable: Completed Final Geotechnical Report with Pavement Recommendations

Task 4: Preliminary Design (Roadway and Rail)

Deliverable: Completed 30% Preliminary Design Plans

Task 5: Final Design (Roadway and Rail)

Production of 60%, 90% and 100% roadway and rail plans for review and approval.

Deliverable: Final Designs for Roadway and Rail

Task 6: Utility Coordination and Relocation Design

Utility partnering meeting, preliminary and final utility relocation plans, plus utility relocations (construction).

Deliverable: Completed Utility Relocation

Task 7: Right of Way and Easement Documents

Documents prepared for ArDOT and FRA review, acquisition made.

Deliverable: Completed ROW/Easement Acquisition

Task 8: Advertisement, Bids, Contract, Construction and Construction Observation

Advertise and open bids, hold preconstruction meeting, construction and construction observation.

Deliverable: Construction Substantially Complete

Task 9: Planned Project Closeout Date

Deliverable: Final Performance Report

VI. PROJECT BUDGET

• **Project Budget by Task**

Task #	Task	Budgeted Amount
1	Environmental Assessments and Clearance Documentation	\$55,000
2	Field Surveys and Mapping	\$8,000
3	Geotechnical Investigations	\$7,500
4	Preliminary Design (Roadway and Rail)	\$93,000
5	Final Design (Roadway and Rail)	\$166,398
6	Utility Coordination and Relocation Design	\$194,880
7	Right of Way and Easement Documents	\$200,000
8	Advertisement, Bids, Contract, Construction, Observation	\$2,329,219
	Total	\$3,053,997

Project Budget by Source

Funding Source	Project Contribution Amount	% of Total Cost
FRA	\$2,287,294	75%
City of Conway	\$571,823	19%
Conway Corp.	\$194,880	6%
Total	\$3,053,997	100%

V. PROJECT COORDINATION

The Grantee shall perform all tasks required for the Project through a coordinated process, which will involve affected railroad owners, operators, and funding partners, including:

- Conway Department of Transportation staff
- Project engineers
- Union Pacific Railroad
- Federal Railroad Administration
- ArDOT, as needed
- Conway Corp. (public utility in Conway)
- Private utilities
- Conway Grant Administrator

Conway Department of Transportation staff or Project engineers will initiate meetings and other coordination efforts with the necessary parties.

VI. PROJECT MANAGEMENT

The Grantee is responsible for facilitating the coordination of all activities necessary for implementation of the Project. Upon award of the Project, the Grantee will monitor and evaluate the Project's progress through regular meetings scheduled throughout the Project Performance Period. The Applicant/Grantee will:

- Participate in a project kickoff meeting with FRA
- Complete necessary steps to hire a qualified consultant/contractor to perform required Project work
- Hold regularly scheduled Project meetings with FRA
- Inspect and approve work as it is completed
- Review and approve invoices as appropriate for completed work
- Perform Project close-out audit to ensure contractual compliance and issue close-out report
- Submit to FRA all required Project deliverables and documentation on-time and according to schedule, including periodic receipts and invoices
- Comply with all FRA Project reporting requirements, including, but not limited to:
 - a. Status of project by task breakdown and percent complete
 - b. Changes and reason for changes in and updated versions of Detailed Project Work Plan, Budget, and Schedule
 - c. Description of unanticipated problems and any resolution since the immediately preceding progress report
 - d. Summary of work scheduled for the next progress period

- Read and understand the Terms and Conditions of this Agreement (Attachment 1)
- Notify FRA of changes to this Agreement that require written approval or modification to the Agreement

Performance Measures

Conway Department of Transportation staff, in coordination with the Grant Administrator, will collect data for identified performance measures and report as required by the grant agreement. Arkansas State Police crash reports may only be available on an annual basis.

Measure	Unit Measured	Temporal	Primary Strategic Goal	Description
# and Severity of Vehicle Accidents	Accidents	Annual	Safety	Arkansas State Police Crash reports supplied by Metroplan will be analyzed annually to determine the extent of vehicular crash reductions post-project.
# and Severity of Vehicle/Rail Accidents	Accidents	Annual	Safety	FRA Accident Reports and Arkansas State Police Crash reports supplied by Metroplan will be analyzed annually to determine the extent of vehicle/rail crash reductions post-project.



City of Conway, Arkansas
Office of the Mayor

Mayor Bart Castleberry

www.conwayarkansas.gov

June 19th, 2020

The Honorable Elaine Chao
Secretary of Transportation
U.S. Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, D.C. 20590

Re: Conway, Arkansas, CRISI Grant Application

Dear Secretary Chao:

The City of Conway is proposing a rail safety project that will improve roadway approaches to the at-grade crossing at the intersection of Tyler Street and Donaghey Avenue by utilizing a peanut-shaped roundabout to re-orient the roadway more perpendicular to the tracks. Conway has a long history of using roundabouts to successfully solve many transportation problems in town and we are confident this design will prove effective by improving approach angles in order to increase visibility at this heavily-traveled crossing. There are numerous reports of vehicles becoming stuck on the tracks as they make a westbound left turn from northbound Donaghey. In February 2019, this problem led to a truck-train collision when a truck stalled on the tracks after missing the roadway. Because Tyler Street and Donaghey are key arterials in Conway, complete closure of the crossing is not possible; because of how the roadways intersect the track, two overpasses might be required to improve the problem, which would be cost prohibitive. An innovative, relatively low-cost solution like a roundabout is greatly needed for this crossing.

In addition to improving safety at the intersection, congestion and travel times will be reduced for car and truck traffic. Because of the way the roadways intersect, signalization is complicated and leads to lengthy delays, which are exacerbated when the train interrupts the signal process. The roundabout configuration will eliminate the need for signals, thereby eliminating the time required for the signals to re-set and reducing vehicular delays caused by the train.

This letter is to document the City of Conway's commitment to provide 20% of the funding (\$571,823) for the \$2,859,117 project. The City Council Resolution R-19-53 verifying the commitment is attached to our application.

Thank you for consideration of this important safety project.

Sincerely,

Bart Castleberry
Mayor



**City of Conway, Arkansas
Resolution No. R-19-53**

A RESOLUTION APPROVING THE SUBMITTAL OF AN APPLICATION FOR THE CONSOLIDATED RAIL INFRASTRUCTURE AND SAFETY IMPROVEMENT GRANT (CRISI) FOR THE CONWAY TRANSPORTATION DEPARTMENT; AND FOR OTHER PURPOSES

Whereas, the City of Conway Transportation Department has an opportunity to apply for the Consolidated Rail Infrastructure and Safety Improvement Grant (CRISI) that could be used to improve the intersection of Tyler Street and Donaghey Avenue; and

Whereas, the CRISI grant is an 80/20 grant, requiring a 20% commitment from the City of Conway Transportation Department; and

Whereas, the Engineer's estimate for this project is \$2,859,117, and the City of Conway estimated match would be \$571,823.

NOW THEREFORE BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CONWAY, ARKANSAS THAT:

Section 1. The City of Conway shall authorize the submittal of the application for the Consolidated Rail Infrastructure and Safety Improvement (CRISI) Grant and commitment of the match funding from the Conway Transportation Department.

Section 2. All ordinances in conflict herewith are repealed to the extent of the conflict.

PASSED this 8th day of October 2019.

Approved:

Mayor Bart Castleberry

Attest:

**Michael O. Garrett
City Clerk/Treasurer**



Congress of the United States
House of Representatives
Washington, DC 20515

October 16, 2019

The Honorable Elaine Chao
Secretary of Transportation
U.S. Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, D.C. 20590

Dear Secretary Chao:

I write to you today to express support for the City of Conway, Arkansas's application for Consolidated Rail Infrastructure and Safety Improvements (CRISI) grant funding to improve the at-grade railroad crossing at the heavily traveled intersection of Donaghey Avenue and Tyler Street. Currently, the railroad intersects with the two roadways at an extremely skewed angle, causing confusion and visibility problems for drivers. For example, in February 2019, a westbound driver mistakenly turned onto the tracks and got stuck, leading to a truck-train collision.

Due to constraints of the project area, most solutions to the problem are very costly. Therefore, the City is proposing to construct a relatively inexpensive peanut-shaped roundabout that will realign the crossing and improve sight angles. The peanut shape will also improve safety by reducing the points of train-vehicle contact from 10 to 2, plus shortening the distance a train needs to traverse to clear the intersection. In addition to improving safety for both train operators and drivers, use of the roundabout rather than a traffic signal will reduce the amount of delay at the intersection for both regular traffic and after a train. The City of Conway has extensive experience using roundabouts to solve many transportation problems, with 27 currently operational across the city.

I applaud the City of Conway for their proposal to improve safety and traffic congestion at the intersection in such an innovative and cost-efficient way. I ask that you give their application full and fair consideration as it moves through the process. Please keep Anna Reckling in my Little Rock office apprised of its progress. Anna can be reached by phone at (501) 324-5941 or by email at anna.reckling@mail.house.gov.

Sincerely,

French Hill
Member of Congress



CONWAY PUBLIC SCHOOLS

ADMINISTRATION OFFICE

October 14, 2019

The Honorable Elaine Chao
Secretary of Transportation
U.S. Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, D.C. 20590

Re: Conway, Arkansas CRISI Grant application

Dear Secretary Chao:

I would like to write in support of the City of Conway, Arkansas, application for CRISI grant funding to improve the at-grade railroad crossing at the intersection of Donaghey Avenue and Tyler Streets. Seven school buses run that route two times a day and safety is a particular concern at that crossing because of the extreme angles with which the roads intersects the track. Additionally, traffic is quite heavy at that intersection, particularly in the afternoons. The buses experience some lengthy delays if a train comes through in the peak transport times because of the time it takes the signal to re-set. A roundabout would be helpful to keep the traffic moving.

We would appreciate your assistance granting funds for the project.

Sincerely,



Dr. Greg Murry
Superintendent
Conway Public Schools

PROPOSED PROJECT SCHEDULE - TYLER ST/ DONAGHEY AVE ROUNDABOUT																												
TASK #	PROJECT TASK	2020				2021								2022														
		SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER
1	Environmental Assessments and Clearance Documentation																											
	Data Collection and Review	■	■																									
	Agency Coordination			■																								
	Preparation of Categorical Exclusion Document			■	■																							
	Submit to City and ARDOT for Review and Approval					■	■																					
2	Field Surveys and Mapping																											
	Topographic Survey	■	■																									
	Boundary Survey and Property Ownership Determination	■	■																									
3	Geotechnical Investigations																											
	Field Investigation and Interim Report of Findings	■	■																									
	Final Report with Pavement Recommendations			■																								
4	Design (Roadway)																											
	30% Preliminary Design Plans		■	■	■																							
	60% Roadway Design Plans - Submittal and Review					■	■	■	■	■																		
	90% Roadway and Bridge Design Plans - Submittal and Review										■	■	■															
	100% Roadway and Bridge Design Plans											■																
5	Utility Coordination and Relocation Design																											
	Utility Partnering Meeting	■																										
	Preliminary Utility Relocation Plans					■	■	■	■																			
	Final Utility Relocation Plans									■	■																	
	Utility Relocations (Construction)										■	■	■	■	■	■	■											
6	Right of Way and Easement Documents																											
	Right of Way Plans Submittal to ARDOT and Review/Approval					■	■	■	■																			
	Preparation of ROW & Easement Documents and Approval									■	■	■																
	Acquisitions and ROW Certification										■	■	■	■	■	■												
7	Bidding and Advertising																											
	Advertise and Open Bids																	■	■									
	Preconstruction Meeting																		■									
8	Preliminary Construction Schedule (To Start in June 2022, will take approximately 10 months to complete)																											



BUILDING AMERICA®

October 16, 2019

Mr. Ronald Batory
Administrator
Federal Railroad Administration
U.S. Department of Transportation
1200 New Jersey Avenue SE
Washington, DC 20590

**RE: 2019 Consolidated Rail Infrastructure and Safety improvement (CRISI)
Grant Application**

Dear Administrator Batory:

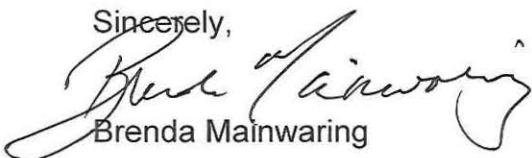
The City of Conway is proposing to construct a roundabout to improve roadway approaches to the at-grade crossing at the intersection of Tyler Street and Donaghey Avenue (DOT Crossing Inventory Number 434243C). The intersection is of concern because of the skewed angles at which the roadways approach the Union Pacific track.

Safety benefits will occur because the project will correct geometric designs for the vehicular crossing so that it is perpendicular to the tracks. Further, by using the roundabout design, vehicles will only cross the tracks as two movements, as opposed to the ten movements that currently exist. The roundabout shortens the distance the train will need to traverse in order to clear the intersection.

Construction of this project will require close coordination of Union Pacific with the City of Conway and project engineers to ensure that the design appropriately meets all safety criteria and will perform as expected. UP will work with the City of Conway to produce a design that meets our criteria.

Thank you for consideration of this project.

Sincerely,



Brenda Mainwaring



METROPLAN

SMART PLANNING MAKES SMART PLACES.

October 17, 2019

The Honorable Elaine Chao
Secretary of Transportation
U.S. Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Dear Secretary Chao:

Metroplan, the Metropolitan Planning Organization (MPO), for the Little Rock/North Little Rock/Conway Urbanized Area, expresses support for the application by the City of Conway, Arkansas for the Consolidated Rail Infrastructure and Safety Improvements Grant. If selected, the grant will be used to improve the at-grade railroad crossing that traverses the intersection of Donaghy Avenue and Tyler Street in Conway.

Metroplan has had a long history of supporting improvements to the at-grade intersections of railroads and streets in Central Arkansas and is embarking on the 10th and 11th overpasses constructed in the past 20 years. The public has identified safety and delay with the at-grade crossings as a principal concern for residents.

The railroad crossing at Tyler Street and Donaghy Avenue intersection requires a unique approach to address safety and delay concerns due to the complexity of it also being located at the intersection of two major roadways. This innovative rail safety project will improve roadway approaches to the at-grade crossing by utilizing a peanut-shaped roundabout (re-orienting the roadway to the tracks) and in addition will utilize crossing gates and flashers. The City of Conway has a history of using roundabouts to successfully solve many transportation problems in town.

Metroplan is committed to supporting this innovative and cost-effective project envisioned by the City of Conway. If you have questions, I may be reached at 501 372-3300 or ccovington@metroplan.org.

Sincerely,

Casey R. Covington, PE, AICP
Deputy Director

National Flood Hazard Layer FIRMette



Legend

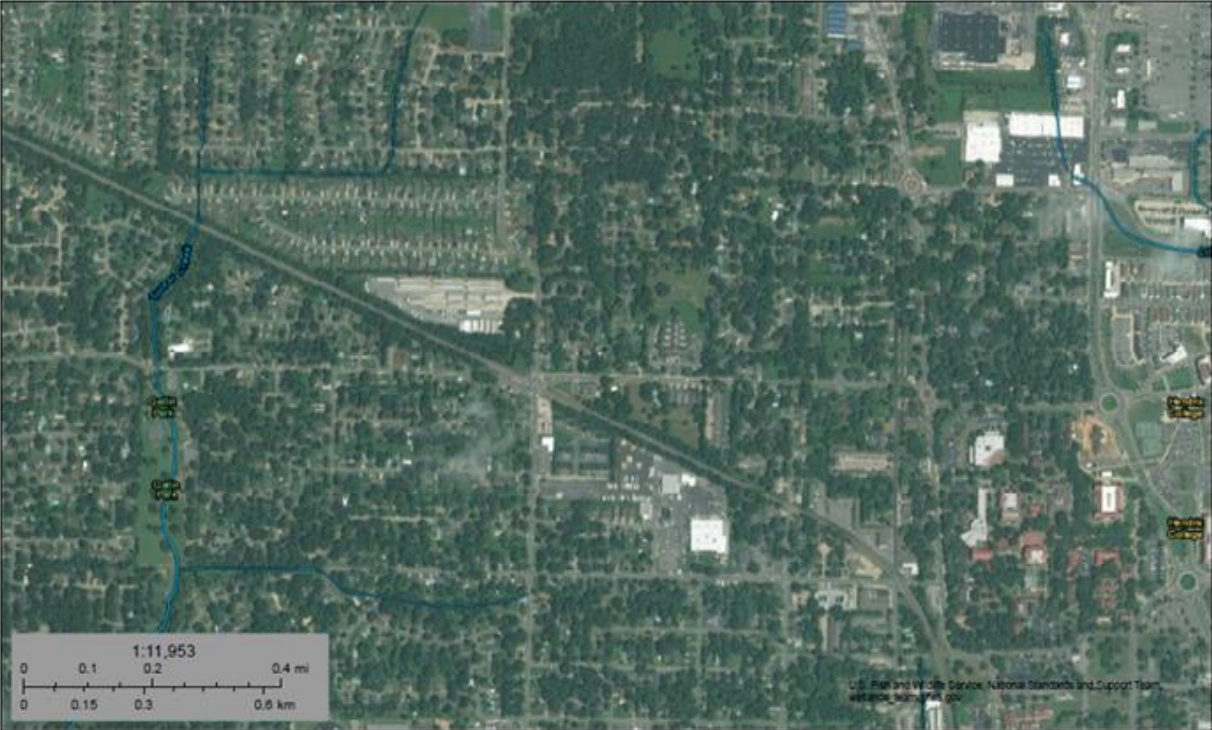
SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) <i>Zone A, X, AE, AH</i>
	With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone D</i>
	Future Conditions 1% Annual Chance Flood Hazard <i>Zone F</i>
	Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone E</i>
	Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS	Area of Minimal Flood Hazard <i>Zone X</i>
	Effective LOMRs
OTHER AREAS	Area of Undetermined Flood Hazard <i>Zone D</i>
	GENERAL STRUCTURES
	Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall
OTHER FEATURES	Cross Sections with 1% Annual Chance Water Surface Elevation
	Coastal Transect
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
OTHER FEATURES	Coastal Transect Baseline
	Profile Baseline
MAP PANELS	Digital Data Available
	No Digital Data Available
	Unmapped
	The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.








This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/14/2019 at 2:41:55 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



October 14, 2019

- Wetlands**
- | | | | | | |
|-------------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------|----------|
|  | Estuarine and Marine Deepwater |  | Freshwater Emergent Wetland |  | Lake |
|  | Estuarine and Marine Wetland |  | Freshwater Forested/Shrub Wetland |  | Other |
| | |  | Freshwater Pond |  | Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

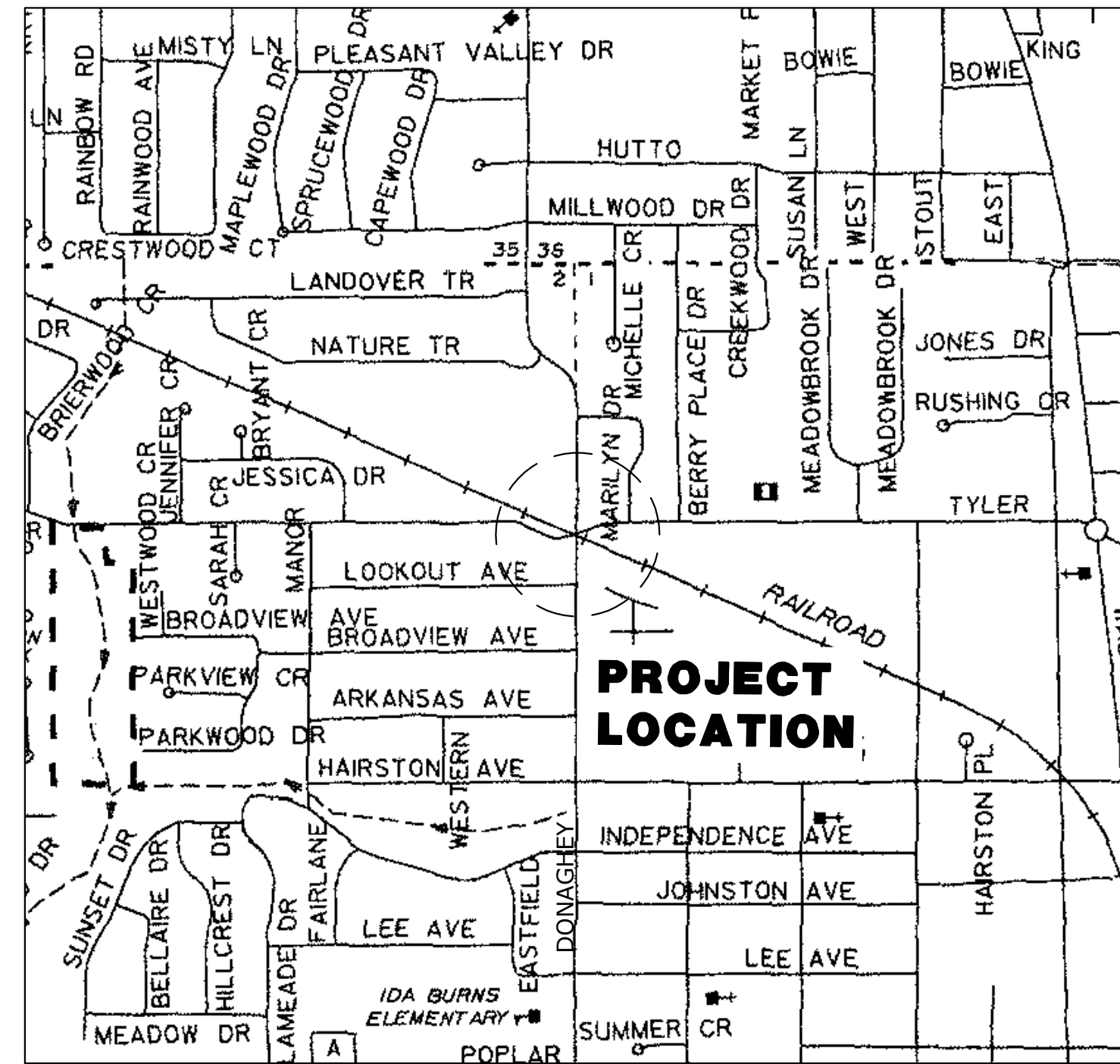
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

ARKANSAS DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLANS

TYLER ST./DONAGHEY AVE.
INTERSECTION IMPROVEMENTS
(CONWAY) (S)

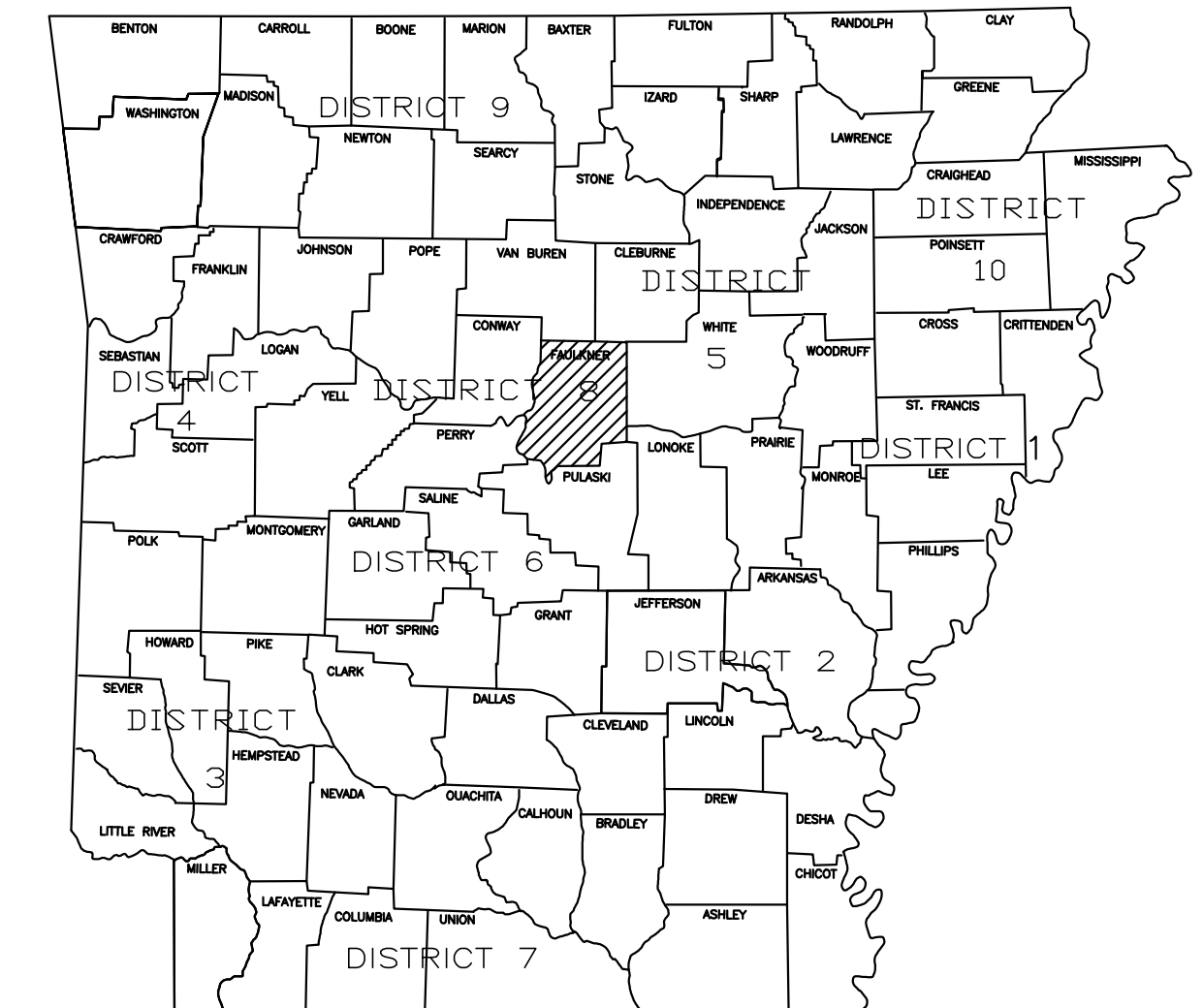
MCE JOB NO. 19-5812

15% DESIGN
OCTOBER 14, 2019
NOT TO SCALE



VICINITY MAP

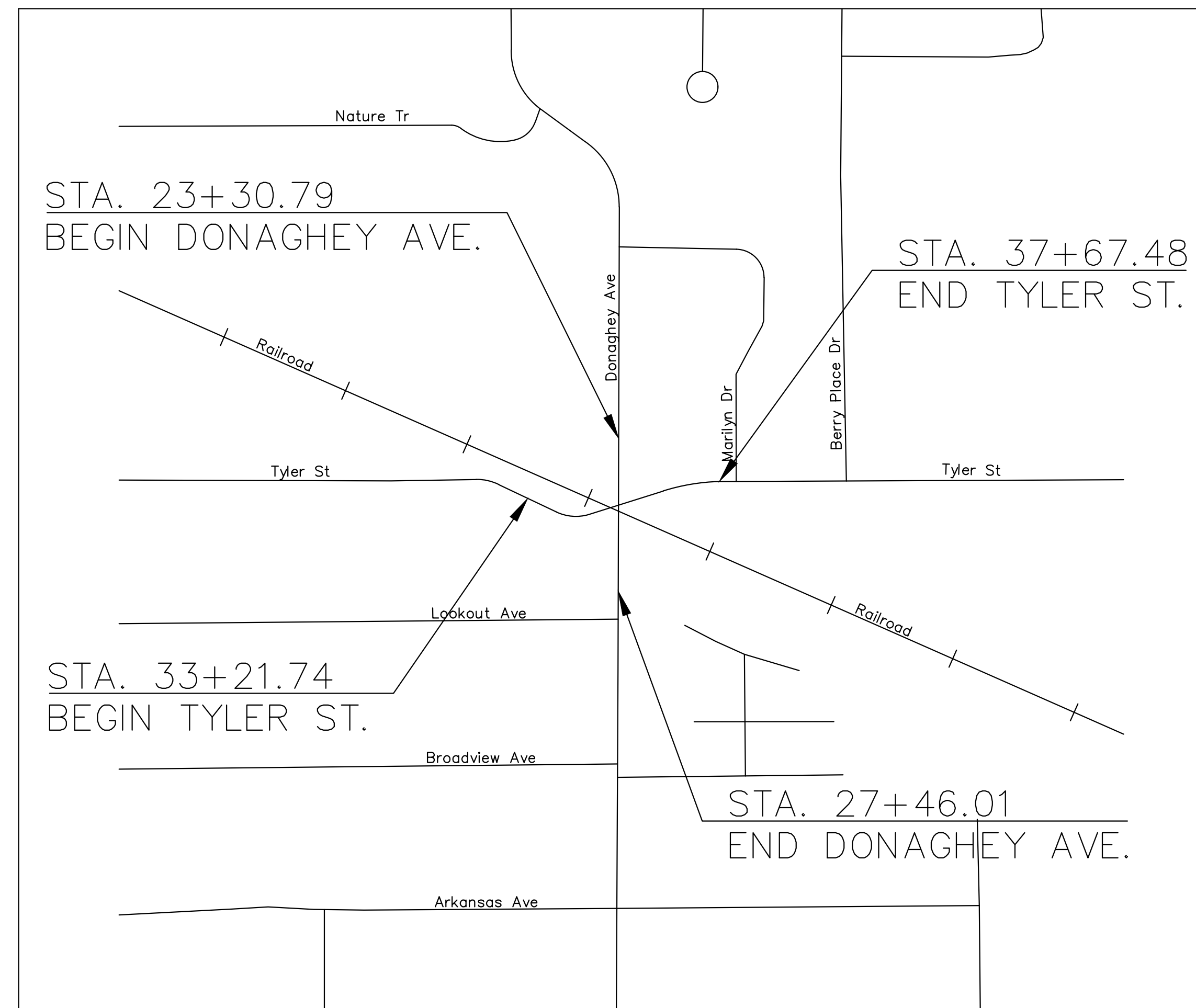
DATE REVISED	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
						JOB NO.	19-5812	3
						2 TYLER ST./DONAGHEY AVE. INTR. IMPVTS.		



ARK. HIGHWAY DIST. 8

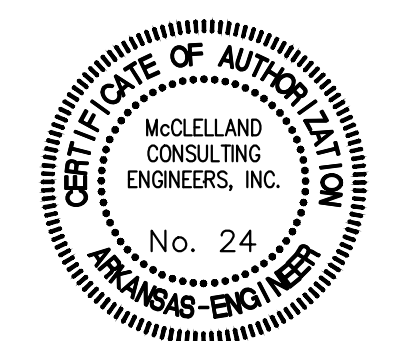
DESIGN TRAFFIC DATA

DESIGN YEAR.....	2041
2021 ADT.....	8550
2041 ADT.....	10450
DIRECTIONAL DISTRIBUTION.....	0.50
TRUCKS.....	1%
DESIGN SPEED.....	15 MPH



GROSS LENGTH OF PROJECT.....	860.96 FT. OR 0.16 MILES
NET LENGTH OF ROADWAY.....	860.96 FT. OR 0.16 MILES
NET LENGTH OF BRIDGES.....	0.00 FT. OR 0.00 MILES
NET LENGTH OF PROJECT.....	860.96 FT. OR 0.16 MILES

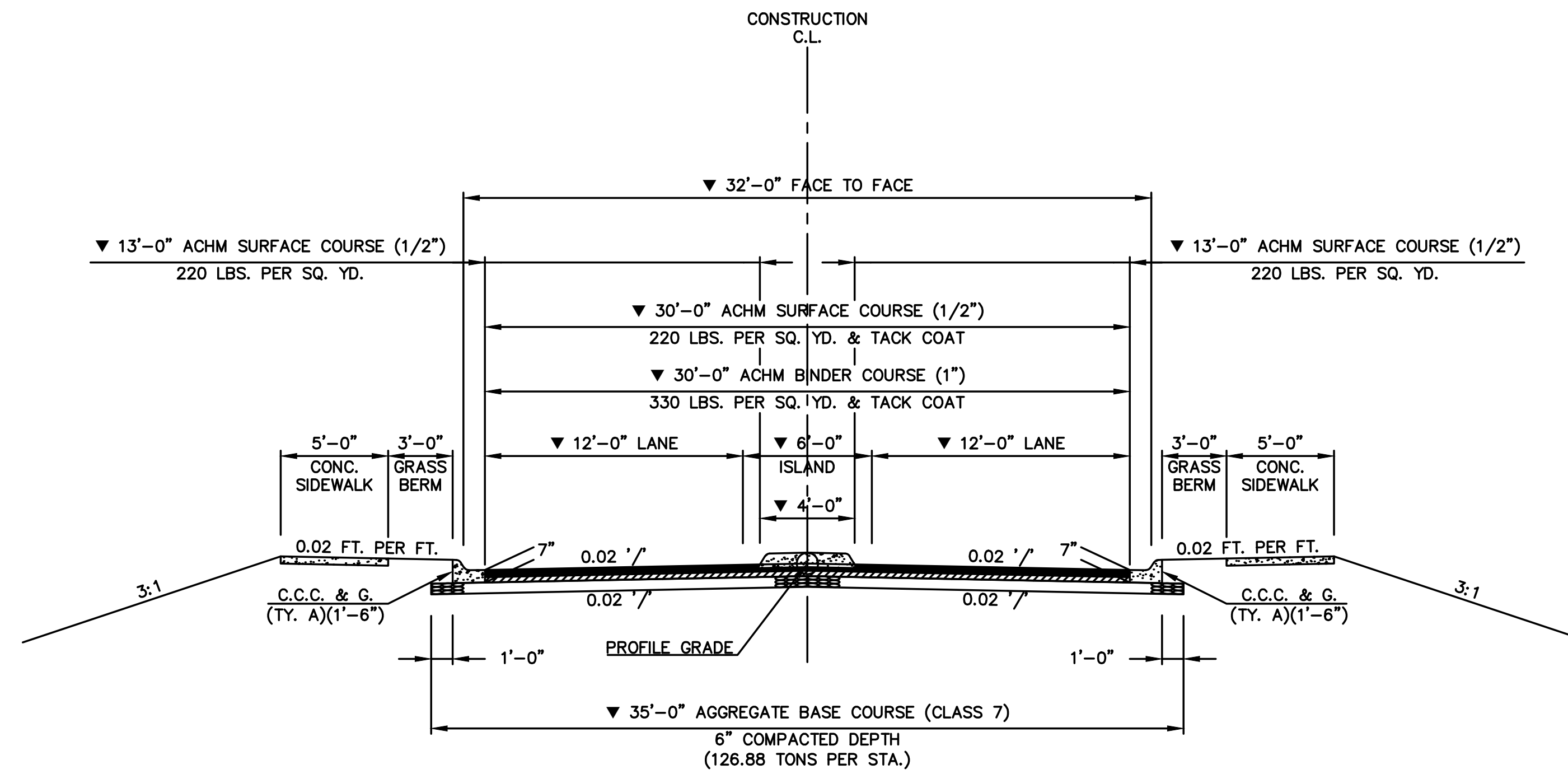
	BEGIN PROJECT	MID-POINT PROJECT	END PROJECT
LATITUDE	N 35° 06' 11.68"	N 35° 06' 09.70"	N 35° 06' 06.01"
LONGITUDE	W 92° 27' 11.87"	W 92° 27' 11.95"	W 92° 27' 12.02"



DATE	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
JOB NO.						19-5812	2	3

▼ VARIABLE LANE AND ISLAND WIDTHS. REFER TO ROUNDABOUT SPECIAL DETAIL SHEET

② TYPICAL SECTIONS OF IMPROVEMENT



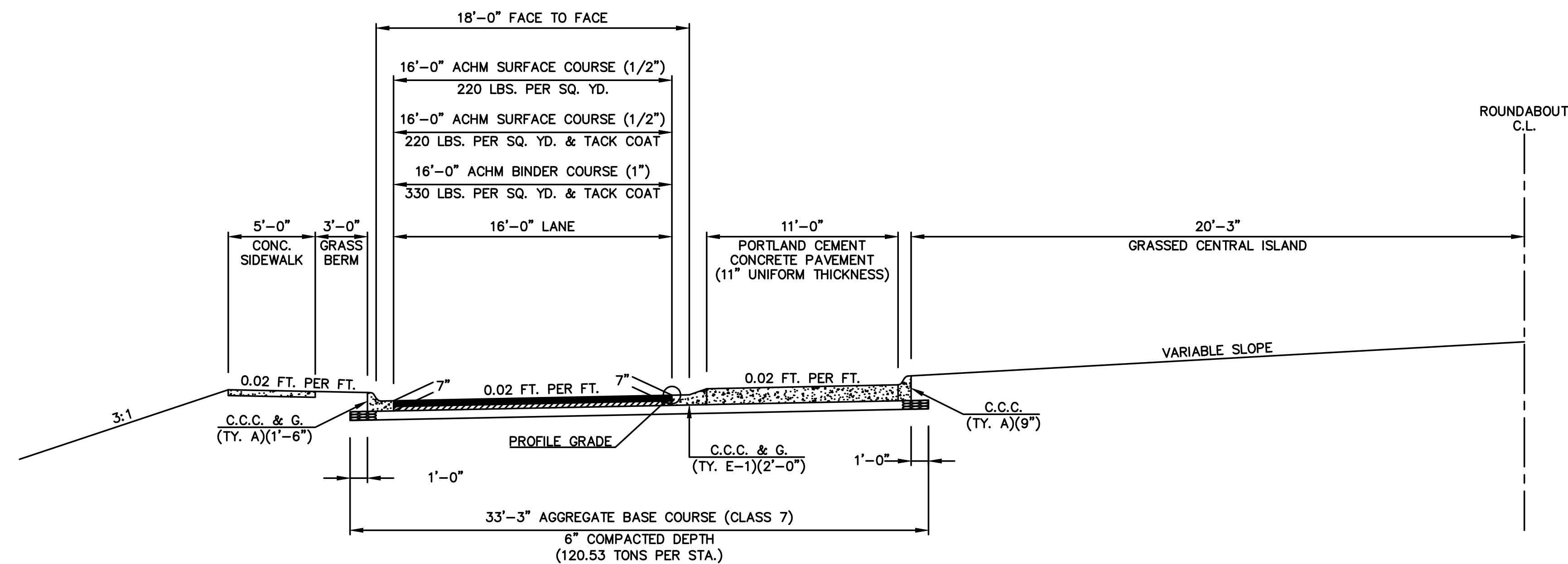
TYPICAL SECTION OF IMPROVEMENT
DONAGHEY AVE. STA. 23+30.79 TO STA. 24+49.89
DONAGHEY AVE. STA. 25+50.00 TO STA. 27+46.01
TYLER ST. STA. 33+21.74 TO STA. 34+50.00
TYLER ST. STA. 35+50.04 TO STA. 37+67.48

PRIOR TO AND DURING PLACEMENT OF PAVEMENT IN FROM OF THE CURB AND GUTTER, THE CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AT ALL TIMES. THE METHOD(S) USED SHALL BE APPROVED BY THE ENGINEER. PAYMENT FOR THIS WORK SHALL BE CONSIDERED INCLUDED IN THE PRICE BID FOR THE VARIOUS CONTRACT ITEMS.

REFER TO CROSS SECTIONS FOR DEVIATIONS FROM NORMAL SLOPES. NO CHANGES SHALL BE MADE FROM THE PLANNED SLOPES WITHOUT THE APPROVAL OF THE ENGINEER.

THE THICKNESS OF AGGREGATE BASE COURSE SHALL BE WITHIN PLUS OR MINUS ONE INCH OF THE PLAN THICKNESS SHOWN. THE CONTRACTOR WILL CORRECT ANY DEFICIENT THICKNESS THAT DOES NOT MEET TOLERANCE INDICATED. PAYMENT WILL NOT BE MADE FOR MATERIAL PLACED IN EXCESS OF TOLERANCE INDICATED.

THE FINAL 2" OF SURFACE COURSE IS TO BE PLACED AFTER ALL OTHER COURSES HAVE BEEN LAID. LONGITUDINAL JOINTS SHALL BE AT LANE LINES.

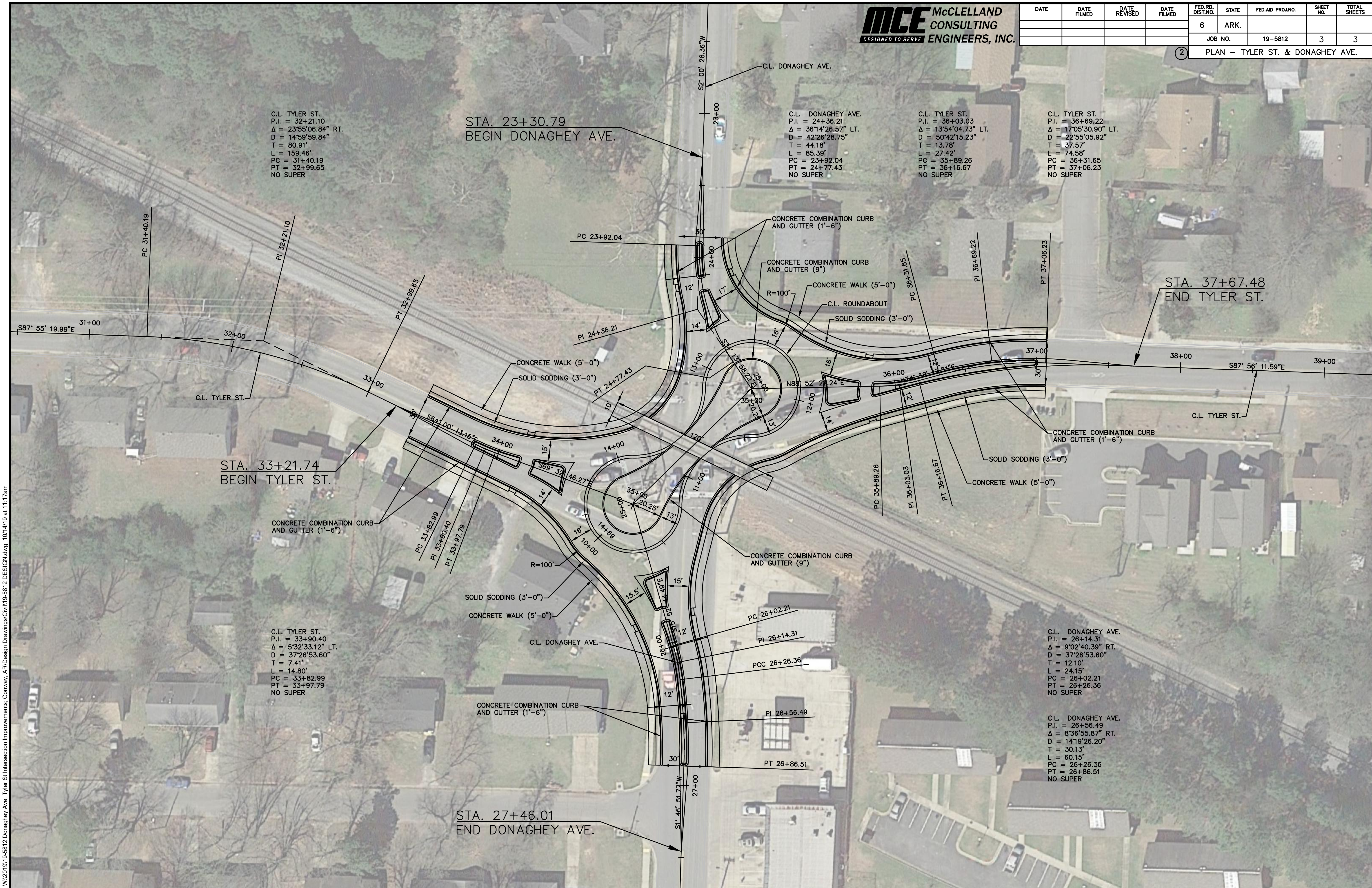


TYPICAL SECTION OF IMPROVEMENT
ROUNDABOUT STA. 10+00.00 TO STA. 14+68.94

TYPICAL SECTIONS OF IMPROVEMENT

DATE	DATE FILMED	DATE REVISED	DATE FILMED	FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
				6	ARK.			
				JOB NO.	19-5812		3	3

② PLAN - TYLER ST. & DONAGHEY AVE.



W:\2019\19-5812 Donaghey Ave. Tyler St Intersection Improvements Conway, AR\Design Drawings\Civil\19-5812\DESIGN.dwg 10/14/19 at 11:17am

CITY OF CONWAY;
TYLER and DONAGHEY ROUNDABOUT



ESTIMATE OF PROBABLE CONSTRUCTION COSTS						
ITEM NO.	ARDOT ITEM NO.	DESCRIPTION	UNIT	ESTIMATED QUANTITY	ESTIMATED UNIT COST	ESTIMATED COST
1	201	CLEARING AND GRBING TREES	EACH	1.00	\$1,500.00	\$1,500.00
2	202	REMOVAL OF EXISTING RAILROAD EQUIPMENT	LUMP SUM	1.00	\$125,000.00	\$125,000.00
3	210	UNCLASSIFIED EXCAVATION	CU. YD.	1800.00	\$40.00	\$72,000.00
4	210	COMPACTED EMBANKMENT	CU. YD.	150.00	\$61.00	\$9,150.00
5	303	AGGREGATE BASE COURSE (CLASS 7)	TON	1225.00	\$33.00	\$40,425.00
6	309	PORTLAND CEMENT CONCRETE BASE (5" THICK)	SQ. YD.	240.00	\$40.00	\$9,600.00
7	309	PORTLAND CEMENT CONCRETE BASE (6" THICK)	SQ. YD.	390.00	\$74.00	\$28,860.00
8	401	TACK COAT	GAL.	145.00	\$5.40	\$783.00
9	SP, SS, & 406	MINERAL AGGREGATE IN ACHM BINDER COURSE (1")	TON	470.00	\$110.00	\$51,700.00
10	SP, SS, & 406	ASPHALT BINDER (PG 64-22) IN ACHM BINDER COURSE (1")	TON	25.00	\$170.00	\$4,250.00
11	SP, SS, & 407	MINERAL AGGREGATE IN ACHM SURFACE COURSE (1/2")	TON	740.00	\$110.00	\$81,400.00
12	SP, SS, & 407	ASPHALT BINDER (PG 64-22) IN ACHM SURFACE COURSE (1/2")	TON	40.00	\$200.00	\$8,000.00
13	412	COLD MILLING ASPHALT PAVEMENT	SQ. YD.	1120.00	\$17.00	\$19,040.00
14	501	PORTLAND CEMENT CONCRETE PAVEMENT (8" THICK)	SQ. YD.	900.00	\$74.00	\$66,600.00
15	601	MOBILIZATION	LUMP SUM	1.00	\$105,000.00	\$105,000.00
16	603	MAINTENANCE OF TRAFFIC	LUMP SUM	1.00	\$50,000.00	\$50,000.00
17	604	SIGNS	SQ. FT.	576.00	\$25.00	\$14,400.00
18	604	TRAFFIC DRUMS	EACH	1000.00	\$38.00	\$38,000.00
19	604	BARRICADES	LIN. FT.	32.00	\$23.00	\$736.00
20	604	REMOVABLE CONSTRUCTION PAVEMENT MARKINGS	LIN. FT.	5000.00	\$1.30	\$6,500.00
21	604	REMOVAL OF PERMANENT PAVEMENT MARKINGS	LIN. FT.	1600.00	\$2.00	\$3,200.00
22	606	18" REINFORCED CONCRETE PIPE CULVERTS (CLASS III)	LIN. FT.	800.00	\$92.00	\$73,600.00
23	609	DROP INLETS (TYPE MO)	EACH	8.00	\$4,350.00	\$34,800.00
24	609	DROP INLET EXTENSIONS (4')	EACH	8.00	\$1,050.00	\$8,400.00
25	621	SILT FENCE	LIN. FT.	2000.00	\$4.00	\$8,000.00
26	624	SOLID SODDING	SQ. YD.	1000.00	\$7.00	\$7,000.00
27	632	CONCRETE ISLAND	SQ. YD.	300.00	\$72.00	\$21,600.00
28	633	CONCRETE WALKS	SQ. YD.	800.00	\$35.00	\$28,000.00
29	634	CONCRETE COMBINATION CURB AND GUTTER (TYPE A) (1' 6")	LIN. FT.	1350.00	\$21.00	\$28,350.00
30	634	CONCRETE COMBINATION CURB AND GUTTER (TYPE E-1) (2')	LIN. FT.	450.00	\$27.00	\$12,150.00
31	635	ROADWAY CONSTRUCTION CONTROL	LUMP SUM	1.00	\$15,000.00	\$15,000.00
32	641	WHEELCHAIR RAMPS (TYPE 3)	SQ. YD.	40.00	\$175.00	\$7,000.00
33	719	THERMOPLASTIC PAVEMENT MARKING WHITE (4")	LIN. FT.	150.00	\$2.00	\$300.00
34	719	THERMOPLASTIC PAVEMENT MARKING WHITE (8")	LIN. FT.	145.50	\$2.20	\$320.10
35	719	THERMOPLASTIC PAVEMENT MARKING WHITE (12")	LIN. FT.	410.00	\$17.50	\$7,175.00
36	719	THERMOPLASTIC PAVEMENT MARKING YELLOW (4")	LIN. FT.	1655.20	\$2.00	\$3,310.40
37	719	THERMOPLASTIC PAVEMENT MARKING YELLOW (8")	LIN. FT.	105.45	\$2.20	\$231.99
38	719	THERMOPLASTIC PAVEMENT MARKING (WORDS)	EACH	8.00	\$400.00	\$3,200.00
39	719	THERMOPLASTIC PAVEMENT MARKING (ARROWS)	EACH	8.00	\$385.00	\$3,080.00
40	SP & 726	STANDARD SIGN	SQ. FT.	180.00	\$25.00	\$4,500.00
41	SP & 729	CHANNEL POST SIGN SUPPORT (TYPE U-1)	EACH	4.00	\$108.00	\$432.00
42	SP & 729	CHANNEL POST SIGN SUPPORT (TYPE U-2)	EACH	16.00	\$108.00	\$1,728.00
43	SP	RECTANGULAR RAPID FLASHING BEACON	EACH	16.00	\$7,500.00	\$120,000.00
44	SP	ROADWAY LIGHTING SYSTEM	LUMP SUM	1.00	\$125,000.00	\$125,000.00
45	SP	RAILROAD CROSSING SYSTEM; ELECTRICAL, LIGHTING, ARMS, CONCRETE PANELS	LUMP SUM	1.00	\$750,000.00	\$750,000.00
46	SP	RIGHT-OF-WAY	LUMP SUM	1.00	\$200,000.00	\$200,000.00
SUBTOTAL ESTIMATE OF PROBABLE CONSTRUCTION COSTS						\$2,199,321.49
15% CONTINGENCY						\$329,898.22
GRAND TOTAL						\$2,529,219.71

Appendix I

Notes to Benefit/Cost Analysis

Connect Conway Trail Improvement Project

SUMMARY OF RESULTS

A table summarizing the results of the Benefit/Cost ratios is below.

Table 1 Summary of Benefit/Cost Scenarios

	Moderate Scenario	Conservative Scenario
Total Discounted Benefits	\$5,550,880	\$3,455,906
Total Discounted Costs	\$2,901,666	\$2,901,666
Benefit/Cost Ratio	1.912997482	1.191007618

1. This Analysis was performed in accordance with *Benefit-Cost Analysis Guidance for Discretionary Grant Programs*, Office of the Secretary, U.S. Department of Transportation, June 2018.
2. 7% Discount Factors were used per *2018 U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs*.
3. Where necessary, costs were converted to 2017 dollars.
4. Benefits (and maintenance costs) were estimated for 20 years after the expected completion of the project. No residual benefits were calculated for a project that will clearly last many more years.

Current Status— Signalized at-grade crossing at the intersection of Donaghey Avenue and Tyler Street, one through travel lane and left turn lane in all directions, with right turn lane both East and Westbound on Tyler.

Status With Project—Intersection realigned to present vehicular traffic perpendicular to the railroad track by use of a peanut-shaped roundabout, with vehicular traffic controlled by roundabout, gates and flashers.

BENEFIT ESTIMATES

Crash Reduction Benefits

Base data for crash reductions benefits came from Metroplan, which utilized Arkansas State Police crash data for 3 years unless otherwise noted. DOT supplied values were used to monetize reductions. Crash reduction estimates for roundabouts from https://safety.fhwa.dot.gov/intersection/innovative/roundabouts/presentations/safety_aspect_s/long.pdf. These numbers only were used in the Conservative Benefit-Cost Analysis.

The Moderate Benefit-Cost Analysis included an estimate of safety benefits from avoidance of a serious vehicle-train crash that might occur two times over the 20-year life of the project. Train accident history for the crossing provided by the FRA shows 5 since 1976; this list does not include the recent truck-train crash of February 2019. It is reasonable, then, to assume 1 vehicle-train crash every 10 years given the history of this intersection.

Railroad Operational Cost Benefit

Avoidance of the estimated 1 serious vehicle-train crash every 10 years was valued at \$805,675.¹ Because of the numerous unknown factors associated with estimating the cost of a crash, this 2012 cost was not converted to \$2017.

Reduced Delay and Resulting Benefits

Delay analysis was performed by McClelland Consulting Engineers using turning movement counts provided by the Conway Department of Transportation. Delay estimates were performed using HCM 6th Signalized Intersection Capacity Analysis (Synchro) and SIDRA Intersection 8.0. Models used both AM and PM Peak for analysis and assumed a 1.5% traffic increase over the 20-year period based on Metroplan projections. AM/PM peak estimates were increased by 40% to account for off-peak and weekend travel.

Differences in delay with and without the project were used to compute travel time savings, travel cost savings, and air quality benefits per Table 2.

Air Quality Benefits were computed using Argonne National Laboratory Idling Reduction Savings per Vehicle Type, in this case a large sedan. Idling Fuel Use (Gallons Per Hour with No Load) is .39.² Average 2017 price per gallon of \$2.42 was used.³ Other values used came from *2018 U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs*.

¹ Khattak and Thompson (2012), "Development of a Methodology for Assessment of Crash Costs at Highway-Rail Grade Crossings in Nebraska, found at <https://trid.trb.org/view.aspx?id=1148241>.

² Found at www.energy.gov/eere/vehicles/fact-861-february-23-2015.

³ Found at www.statista.com

Value of Reduced Emissions was calculated using Average Idle Rates by Pollutant and type vehicle, in this case, light duty gasoline-powered vehicles, supplied by the EPA.⁴

The rate of emissions (in grams) was multiplied by Total Miles Not Driven to produce a rate per pound that was converted to short tons, then multiplied by USDOT-supplied values.

COST ESTIMATES

Construction, Engineering and Design, Right of Way-- Cost estimates were provided by McClelland Consulting Engineers using current dollars.

Utility Relocation—Cost estimates were provided by Conway Corp., the city’s public utility.

Maintenance Costs were provided by Conway Department of Transportation engineers using current dollars. Maintenance costs include overlay and repainting twice over the life of the project, plus annual mowing/landscaping maintenance.

We were unable to obtain a schedule of maintenance costs from Union Pacific for the rail portion.

Per *2018 U.S. DOT Benefit-Cost Analysis Guidance for Discretionary Grant Programs*, for purposes of calculating Benefit/Cost Ratio, the annual operating costs were carried as a negative in the numerator, rather than with other costs in the denominator. Analysis was also performed with maintenance costs in the denominator.

⁴ U.S. EPA (October 2008). Idling Vehicle Emissions for Passenger Cars, Light-Duty Trucks, and Heavy-Duty Trucks. EPA420-F-08-025.