

City of Fayetteville, Arkansas

113 West Mountain Street

Fayetteville, AR 72701

(479) 575-8323



Transportation Committee Agenda

Tuesday, April 29, 2025

5:30 PM

**City Hall Annex
Rock Street Meeting Room**

Council Members

Council Members:

Ms. Sarah Bunch

Mr. Robert Stafford

Ms. Sarah Moore - Committee Chair

Min. Monique Jones

City Staff:

Chris Brown, Public Works Director/City Engineer

Terry Gulley, Asst. PW Director for Operations/Transportation Services Director

New Business

Reports and Presentations

- 1. Safe Streets For All Project Update**
Safe Streets For All Project Update -
- 2. Traffic Calming Policy**
Discussion of the Traffic Calming Policy and when measures are considered. -

Informational Items

- 1. Flintco, LLC Change Order #1 Maple Street**
Change Order #1 to RFP# 24-15 contract with Flintco, LLC for the Maple Street Improvements Project -
- 2. Arkansas And Missouri Railroad Agreement Amendment**
An amendment to Resolution 232-22, which authorized an agreement with the Arkansas and Missouri Railroad (AMRR) for the modifications required for the Razorback Rd. Intersection Project
-

Adjourn

Zoom Information:

- 1. [HTTPS://US06WEB.ZOOM.US/WEBINAR/REGISTER/WN 2EZLCORLQTOGUBVKAN1QJW#/R](https://us06web.zoom.us/webinar/register/wN2EZLCORLQTOGUBVKAN1QJW#/R)**



Public Works Department
Policy & Procedures

Standard Operating Procedure (SOP) for Traffic Calming Requests

EFFECTIVE DATE

March 17, 2021 – Following the approval of the Traffic Calming Policy on March 16, 2021 by the City Council, all traffic calming requests are subject to the procedures set forth in this SOP.

PURPOSE

Create a process to be used by the Engineering and Transportation Divisions' within the Public Works Department, the Police Department, and Fire Marshal's Office when requests for traffic calming are received.

POLICY

It is the policy of the Public Works Department that staff follow standard operating procedures summarized below for requests, review, and approval of traffic calming internally, as well as prioritizing requests approved for implementation by the Transportation Committee. *The Traffic Calming Policy is attached and is to be used in conjunction with this SOP.*

BACKGROUND

Prior to adoption of this policy, traffic calming requests would be received by multiple divisions and departments throughout the City. Depending on the division or department contacted, traffic speed and volume data would be collected, or speed enforcement would occur in the subject area, but no long-term solutions were implemented. There was also minimal communication between divisions and departments on these requests. The procedure outlined below is an effort to combine the process to follow when a request is received and how traffic calming projects will be implemented.

PROCEDURE

1. All requests for traffic calming received are to be sent to the Engineering Division (engineering@fayetteville-ar.gov) to be addressed by the appropriate staff member.
 - a. In instances where the Police Department conducts enforcement after receiving a request, the Police Department should notify the Engineering Division that it will be conducting enforcement and of the findings at the end of the enforcement period.
2. Following receipt of a traffic calming request, the designated Engineering staff member will conduct an initial review of the request to determine if it falls into Tier 1 or 2 of the Traffic Calming Policy for further consideration. Requests falling into Tier 3 will generally not be considered for traffic calming.

- a. For requests falling into Tier 1 or 2, Engineering staff will reach out to the citizen(s) requesting traffic calming to define the area included in the request for staff to determine the extent of the study area.
 - b. Once the area has been defined, Engineering staff will advise the citizen of the need for neighborhood consensus of 70% of residents/property owners in the study area in order for a traffic study to be conducted.
3. Traffic calming requests receiving affirmative response by 70% of residents/property owners in the study area will be put in the queue for Engineering or Transportation staff to collect traffic speed and volume data.
 - a. Data is to be collected for a minimum of two consecutive weekdays at a minimum of one location within the study area.
 - i. Staff should coordinate to determine the appropriate duration and location(s) for each request to obtain the most accurate representation of traffic speed and volume within the study area.
4. Once data has been collected, Engineering staff will score the street(s) based on the point metric set forth in the Traffic Calming Policy.
 - a. Any street(s) not meeting the minimum total points or speed required for traffic calming implementation will generally not receive further consideration.
5. When traffic data supports the implementation of traffic calming, staff will present traffic calming options for the study area to be considered by the affected property owners. The Engineering and Transportation Divisions', Police Department, and Fire Marshal will work together to verify that the options presented will not create adverse impacts.
 - a. When less than 60% of property owners approve of the proposed traffic calming measures, no further action will be taken unless other circumstances warrant this requirement be waived.
6. Traffic calming measures receiving 60% affected property owner approval will be prioritized by City staff based on the rating system defined in the Traffic Calming Policy.
7. The City Engineer will present prioritized traffic calming projects to the Transportation Committee for approval to be implemented, up to the approved City Council budget.
 - a. When the budget does not allow for implementation of all requests meeting the requirements of the policy, locations not selected will remain in consideration for up to three years.
8. Following Transportation Committee approval, selected traffic calming projects will be added to the Transportation Division's work plan to be constructed.
9. Where traffic calming has been implemented, staff may conduct a follow-up study six months after installation to determine if the traffic calming features have achieved the initial purpose of the project.
 - a. Corrective measures may be taken when unacceptable impacts are identified.
 - b. After the evaluation period, traffic calming may be removed for reasons as outlined in the policy.



TRAFFIC CALMING POLICY

EFFECTIVE MARCH 17, 2021

INTRODUCTION

Excessive traffic speeds in neighborhood areas is an issue of concern to citizens in Fayetteville. This policy addresses a procedure through which neighborhoods can be considered for traffic calming measures. Traffic calming is the management of traffic through the use of roadway design features. Traffic management through traffic calming is most effective if the features are both warranted and properly designed.

Traffic calming solutions may be warranted where there is a demonstrated need for traffic calming, and where solutions can be identified that may address the need. Not only must the needs be perceived by the neighborhood, but they must also be documented to be substantive. In order for traffic calming strategies to be effective, traffic data collection and analysis must validate that calming needs are legitimate. These traffic studies may include:

1. Speed studies
2. Vehicle and pedestrian counts
3. Through-traffic surveys
4. Accident records

Effective solutions for valid needs also require that the selected traffic calming strategy be appropriate for the need. Once an effective strategy for traffic calming has been selected, it should be properly designed in accordance with the relevant design parameters. These should include consideration of:

1. Traffic volume
2. Design speed
3. Design vehicle characteristics
4. Emergency services

Although warranted and properly designed traffic calming strategies can have the desired benefits of managing traffic, they also can create disadvantages to adjacent streets and neighborhoods and to the traveling public at large. Traffic calming can have the potential of shifting an existing traffic problem to another street or neighborhood. Traffic calming may also increase delay for emergency response vehicles and can increase long term maintenance costs for the City. Because of the controversy and potential disadvantages, traffic calming should be implemented only with the majority consent of those directly impacted.

This policy therefore provides guidelines for the following traffic calming activities:

1. Requests for traffic calming consideration
2. Prioritization of requests

3. Identification and approval of traffic calming strategies
4. Programming of traffic calming improvements
5. Design of traffic calming projects
6. Evaluation of traffic calming projects

REQUESTS FOR TRAFFIC CALMING CONSIDERATION

Requests for traffic calming received will be catalogued, and will be assigned to one of three tiers:

Tier 1: Proximity to Schools (1/2-mile walkshed) or other significant points of interest

Tier 2: Obvious cut-through opportunities (based on engineering best judgement, could be supplemented with traffic count study)

Tier 3: Dead-end or disconnected areas of the transportation network

If a citizen requests police patrol enforcement, the request will be forwarded to the Police Department for possible enforcement action.

Requests from multiple streets may be grouped together and/or staff may add streets that may be impacted by traffic calming to requests. If such grouping occurs, the requirements of the next section will apply to the grouped streets.

PRIORITIZATION OF TRAFFIC CALMING REQUESTS

Locations assigned to Tier 1 or Tier 2 will be scheduled for further study upon receipt by the City Engineer of a petition or other affirmative response by at least one member of seventy percent (70%) of the property ownerships facing the street(s) on which the traffic calming study is requested.

A block shall consist of every developed property having frontage on the street to be studied between successive intersecting streets. A typical traffic calming petition shall include, at a minimum, a description of the street or streets which are to be included in the calming study and the signature or other written evidence of approval of at least 70% of the property owners on those street(s). Where more than one person is listed as owner for each property, only one person shall be entitled to vote or sign a petition. Likewise, if multiple properties are owned by the same person or persons, the owner(s) will only be entitled to one vote or signature on the petition. This definition of property owner shall apply throughout this policy document.

The City staff assigned to administer traffic calming studies will review the request for validity and will assess whether other streets may be impacted by implementation of traffic calming strategies.

City staff will define the area of potential impact resulting from the traffic calming implementation on a case by case basis.

Relevant data to be collected for the study includes:

1. Speed and volume counts
2. Accident experience

3. Distance to schools and other pedestrian generators
4. Pedestrian facilities

This data will be used to assign a point value to each Tier 1 and Tier 2 location, as follows:

Speed	Per Calc.	5pts for each MPH > 5MPH above 25 mph, or the posted speed if above 25 mph
Volume	Per Calc.	ADT/100
Sidewalks	0-5	5pts if no continuous sidewalk, 2.5pts if one side
Accidents	0-5	1pt for each accident/year at one location
School Walkshed	0-10	10pts within quarter-mile radius, 7.5pts if between quarter- and half-mile radius, 5pts within half-mile radius, 2.5pts if partially in half-mile radius

Locations receiving a minimum of 35 points, or that have 85th percentile speeds above 35 mph will receive further consideration for traffic calming under this program. Locations with 85th percentile speeds not exceeding 5 mph over the speed limit or below 25 mph will not receive further consideration regardless of score.

Streets that do not meet these minimum criteria, and dead-end or disconnected streets that are placed in Tier 3 generally will not be considered for structural traffic calming, but may be considered for enforcement and are eligible for consideration of tactical urbanism permits.

IDENTIFICATION OF TRAFFIC CALMING STRATEGIES

City staff shall present to the residents living within the area of potential impact the results of the traffic calming study and rating. Where traffic calming may be appropriate, staff will present options for traffic calming in the affected area. Sixty percent (60%) or more of the property owners in the area of potential impact must support the proposed strategy option(s) before the City will give further consideration to traffic calming implementation.

In certain circumstances, the 60% requirement may be waived. These circumstances may include locations that have disinterested owners (e.g. locations with a large percentage of rental properties or locations adjacent to a single multifamily apartment complex) or other situations that are deemed necessary for public safety by the City.

PROGRAMMING OF TRAFFIC CALMING IMPROVEMENTS

Periodically, but not less than once each year, City staff will prioritize those traffic calming strategies within the City that have been approved within their area of impact. Prioritization will be based on the rating system. The City Council Transportation Committee will approve projects to be implemented, up to the yearly budget as determined by City Council. Those traffic calming improvement locations not selected, will remain in consideration for up to three years.

City ward boundaries should be considered so that projects affecting each ward can be implemented.

DESIGN OF TRAFFIC CALMING PROJECTS

The design of traffic calming devices must meet the following criteria:

1. Only residential links or urban center streets are eligible.
2. The street shall have an ADT of less than 4,000.
3. Limited to streets having only one lane of through traffic in each direction.
4. Streets must not be primary emergency routes, as determine by the Police and Fire Departments.
5. At the discretion of the City Engineer, certain traffic calming measures may not be used if they would create an unsafe condition for motorists driving at normal speeds under average driving conditions.
6. Streets must not be through truck routes unless an acceptable alternative route is identified and approved. Design of traffic calming features shall accommodate a single unit truck.

EVALUATION OF TRAFFIC CALMING PROJECTS

Six months following the completion of the traffic calming improvements, City staff may undertake a follow-up study to determine if the traffic calming features have achieved the initial purpose of the project. If unacceptable impacts are identified, corrective measures may be taken. Traffic calming measures may be removed after the evaluation period for any of the following reasons:

1. Emergency response is significantly impacted.
2. The problem for which the traffic calming was implemented has been transferred to another street.
3. At least sixty percent (60%) of the property owners in the defined area of impact sign a petition to remove the traffic calming measures. This option will result in complete removal of all measures. Where traffic calming measures are removed by petition, a period of at least 3 years must pass before future petitions for traffic calming measures will be considered on the same street(s).



MEETING OF APRIL 29, 2025

TO: Mayor Rawn and City Council
THRU: Chris Brown, Public Works Director
Keith Macedo, Interim Chief of Staff
FROM: Matt Mihalevich, Active Transportation Manager
SUBJECT: **FLINTCO, LLC. (CHANGE ORDER #1):**

RECOMMENDATION:

Staff recommends approval of Change Order #1 to RFP# 24-15 contract with Flintco, LLC for the Maple Street Improvements Project in the amount of (\$xx,xxx,xxx), approval of a project contingency of \$xxx,xxx and approval of a budget adjustment.

BACKGROUND:

The City of Fayetteville and the University of Arkansas have been working together over the past seven years toward a common goal of improving the section of Maple Street from the Razorback Greenway west to Garland Avenue. The goal is to create a multi-modal street with a focus on the safety of all users.

On March 31, 2020, the Transportation Committee reviewed the Maple Street project and forwarded a recommendation to the City Council to apply for grant funding and to authorize the allocation of 2019 bond funds as matching funds for the project. Committee members expressed support for the vegetation buffer and recommended wider crosswalk striping.

On December 4, 2024, Resolution 301-24 was approved to accept federal aid funding in the amount of \$25,000,000 from the U.S. Department of Transportation's Federal Highway Administration through the Safe Streets and Roads for All (SS4A) program. This funding will support five construction projects with a focus on safety. The Maple Street Improvements will be the first of the five projects to begin construction, with the goal of starting work when University of Arkansas students are out for the summer in 2025.

A Request for Proposals (RFP #24-15) was advertised in late 2024, and qualifications were received from four construction management companies. On February 24, 2025, a selection committee composed of City of Fayetteville staff and non-voting members from the University of Arkansas selected Flintco, LLC, for construction management of the Maple Street Improvements.

In March 2025, the City Council approved Resolution 76-25 for a contract with Flintco, LLC, through RFP #24-15 to provide construction manager-at-risk pre-bidding services for the Maple Street project. These services have included working closely with Olsson on phasing plans, traffic control, evaluating optimal construction methods, and bidding the project to establish the Guaranteed Maximum Price (GMP) for construction.

DISCUSSION:

The proposed improvements to Maple Street include 2,475 linear feet of new roadway surface, upgraded traffic

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signals, storm drainage, 8-foot-wide "senior walk" sidewalks on both the north and south sides, and a separated two-way cycle track along the south side extending from the Razorback Greenway to Garland Avenue.

Maple Street has been identified as a catalyst project in the Northwest Arkansas Regional Bicycle and Pedestrian Master Plan. Currently, bicycle access to the University of Arkansas campus core and surrounding neighborhoods is limited. The addition of the Maple Street connection will greatly improve trail system accessibility for faculty, staff, students, and visitors.

Safety upgrades will include a low vegetation buffer between the cycle track and the roadway. Additionally, enhanced mid-block crosswalks are proposed, featuring decorative pavement markings and passive detection bollards for beacon activation.

This change order will initiate the construction phase of the Maple Street Improvements. Flintco, LLC, has provided a Guaranteed Maximum Price of **(\$xx,xxx,xxx)** for the ten bid packages required to complete the project. Construction is expected to take 16 months. With approval of this contract, construction is scheduled to begin May 12—following the end of the Spring 2025 semester—and continue through the summer of 2026, with minimal closures during the Fall 2025 and Spring 2026 semesters.

BUDGET/STAFF IMPACT:

The City has been awarded federal funding for this project through the Safe Streets and Roads for All (SS4A) program, as approved by Resolution 301-24. With this change order, the total contract amount will be **(\$xx,xxx,xxx)**. The required 25% match will be shared between the University of Arkansas and the City.

\$x,xxx,xxx has been budgeted through the 2019 Transportation Street Bond for the city's portion of this match. . The University of Arkansas will contribute the remaining \$x,xxx,xxx in matching funds toward the Maple Street Project.

ATTACHMENTS: SRF (#3) , BA (#4), 76-25 Resolution (#5), 301-24 Resolution (#6)

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City of Fayetteville, Arkansas

113 West Mountain Street
Fayetteville, AR 72701
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Legislation Text

File #: 2025-474

FLINTCO, LLC. (CHANGE ORDER #1):

A RESOLUTION TO APPROVE CHANGE ORDER NO. 1 TO THE CONTRACT WITH FLINTCO, LLC IN THE AMOUNT OF \$_____.00 FOR THE MAPLE STREET IMPROVEMENTS PROJECT, TO APPROVE A PROJECT CONTINGENCY IN THE AMOUNT OF \$_____.00, AND TO APPROVE A BUDGET ADJUSTMENT

WHEREAS, on December 4, 2024 City Council approved Resolution 301-24 accepting federal aid funding in the amount of \$25,000,000.00 from the Safe Streets and Roads for All program; and

WHEREAS, on March 18, 2025, city Council approved Resolution 76-25 for a contract with Flintco, LLC to provide construction manager-at-risk pre-bidding services for the Maple Street project; and

WHEREAS, Change Order No. 1 will initiate the construction phase of the Maple Street Improvements.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF FAYETTEVILLE, ARKANSAS:

Section 1: That the City Council of the City of Fayetteville, Arkansas hereby approves Change Order No. 1 with Flintco, LLC in the amount of \$_____.00 for the Maple Street Improvements project, and further approves a project contingency in the amount of \$_____.00.

Section 2: That the City Council of the City of Fayetteville, Arkansas hereby approves a budget adjustment, a copy of which is attached to this Resolution.

City of Fayetteville Staff Review Form

2025-474

Item ID

5/6/2025

City Council Meeting Date - Agenda Item Only
N/A for Non-Agenda Item

Matt Mihalevich

4/16/2025

ENGINEERING (621)

Submitted By

Submitted Date

Division / Department

Action Recommendation:

Staff recommends approval of Change Order #1 to RFP# 24-15 contract with Flintco, LLC for the Maple Street Improvements Project in the amount of (Cost to be provided April 29th), approval of a project contingency of \$300,000.00 and approval of a budget adjustment.

Budget Impact:

2235.900.9223-5814.05

Safe Streets and Roads Grant

Account Number

Fund

32401.9223

Safe Streets and Roads Grant - W Maple St

Project Number

Project Title

Budgeted Item? Yes

Total Amended Budget

\$ 26,250,000.00

Expenses (Actual+Encum)

\$ -

Available Budget

\$ 26,250,000.00

Does item have a direct cost? Yes

Item Cost

\$ -

Is a Budget Adjustment attached? Yes

Budget Adjustment

\$ -

Remaining Budget

\$ 26,250,000.00

Purchase Order Number: 2025-432

Previous Ordinance or Resolution # 301-24 & 76-25

V20221130

Change Order Number: 1

Approval Date: 3/18/2025

Original Contract Number: 2025-18

Comments:



113 West Mountain Street
Fayetteville, AR 72701
(479) 575-8323

Resolution: 76-25

File Number: 2025-292

FLINTCO, LLC. (SERVICE CONTRACT):

A RESOLUTION TO AWARD RFP 24-15 AND APPROVE A CONTRACT WITH FLINTCO, LLC. IN THE AMOUNT OF \$1.00 TO PROVIDE CONSTRUCTION MANAGER AT RISK SERVICES FOR IMPROVEMENTS TO MAPLE STREET

WHEREAS, the City and the University of Arkansas have been working together over the past 7 years toward a common goal of improving the section of Maple Street from the Razorback Greenway west to Garland Avenue to create a multi-modal street with a focus on safety of all users; and

WHEREAS, on March 31, 2020, the Transportation Committee recommended the City Council apply for grant funding and authorize the allocation of 2019 bond funds as matching funds for the project; and

WHEREAS, on December 4, 2024 City Council approved Resolution 301-24 that accepted Federal aid funding in the amount of \$25,000,000.00 from the Department of Transportation Federal Highway Administration through the Safe Streets and Roads for all program; and

WHEREAS, Maple Street has been identified as a catalyst project in the NWA Regional Bicycle and Pedestrian Master Plan and the addition of the Maple Street connection will greatly improve the accessibility from the trail system to this major destination for the campus's faculty, staff, visitors and students; and

WHEREAS, the proposed improvements to Maple Street include 2,475-linear feet of new roadway surface, upgraded traffic signals, storm drainage, 8-foot-wide senior walk sidewalks, a separated two-way cycle track, enhanced mid-block crosswalks with decorative pavement markings and passive detection bollards for activation of beacons; and

WHEREAS, a request for proposals for construction manager at risk services was advertised in late 2024 and on February 24th, 2025, a selection committee composed of staff representatives from the City of Fayetteville and non-voting members from the University of Arkansas selected Flintco, LLC for the construction management of the Maple Street Improvements; and

WHEREAS, the initial contract consists of pre-construction services including working closely with design engineer Olsson, Inc. on phasing plans, traffic control, evaluate best construction methods and bidding of the project to provide a Guaranteed Maximum Price (GMP).

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF FAYETTEVILLE, ARKANSAS:

Section 1: That the City Council of the City of Fayetteville, Arkansas hereby awards RFP 24-15 and authorizes Mayor Rawn to sign a contract with Flintco, LLC in the amount of \$1.00 to provide construction manager at risk services for improvements to Maple Street.

PASSED and APPROVED on March 18, 2025

Approved:



Molly Rawn, Mayor

Attest:



Kara Paxton, City Clerk Treasurer



113 West Mountain Street
Fayetteville, AR 72701
(479) 575-8323

Resolution: 301-24

File Number: 2024-747

SAFE STREETS AND ROADS FOR ALL PROGRAM (GRANT ACCEPTANCE):

A RESOLUTION TO AUTHORIZE ACCEPTANCE OF A DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION GRANT IN THE AMOUNT OF \$25,000,000.00, THROUGH THE SAFE STREETS AND ROADS FOR ALL PROGRAM, TO APPROVE A GRANT AGREEMENT WITH THE FEDERAL HIGHWAY ADMINISTRATION, TO APPROVE TWO NEW FULL TIME STAFF POSITIONS TO MANAGE THE FEDERAL-AID FUNDING REQUIREMENTS, AND TO APPROVE A BUDGET ADJUSTMENT ESTABLISHING A NEW FUND TO ACCOUNT FOR THE PROCEEDS OF THE GRANT

WHEREAS, the Bipartisan Infrastructure Law (BIL) established the new Safe Streets and Roads for All (SS4A) discretionary program, with \$5 billion in appropriated funds over 5 years, 2022-2026 to the U.S. Department of Transportation's National Roadway Safety Strategy and our goal of zero roadway deaths; and

WHEREAS, Fayetteville was awarded Federal funding in the amount of \$25 million through the SS4A program in December 2023 for Fayetteville's Vision Zero Strategy which focuses on five infrastructure projects as well as community education and awareness programming to be implemented over a five-year period; and

WHEREAS, the University of Arkansas will be contributing half of the required matching funds for the Maple Street Project in the amount of \$1,250,000.00; and

WHEREAS, the five street sections identified on the high injury network for safety improvements funded through the SS4A grant are: West Maple Street Garland Avenue to Gregg Avenue, North College Avenue (Sycamore Street to Township Street), South School (M.L.K. Blvd to 15th Street), North Gregg Avenue (North Street to Drake Street) and East Joyce Boulevard (College Avenue to Crossover Road) using the Safe System Approach to reduce and eliminate fatal and serious injury crashes on our transportation system; and

WHEREAS, in addition to infrastructure improvements, the SS4A funding includes \$500,000.00 for education and awareness. This funding will be used for a variety of safety outreach programs including strategic marketing campaigns, bicycle safety equipment, crosswalk awareness, professional training and resources for a vision zero task force; and

WHEREAS, due to the large scale of this program, two full-time staff positions are needed to support the federal grant administration and project coordination of the Safe Streets and Roads for All grant; and

WHEREAS, the required 25% match of \$7,250,000.00 has been budgeted through the Street Bond.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF FAYETTEVILLE,

ARKANSAS:

Section 1: That the City Council of the City of Fayetteville, Arkansas hereby authorizes Mayor Jordan to accept a grant from the Department of Transportation (USDOT) Federal Highway Administration (FHWA) in the amount of \$25,000,000.00.

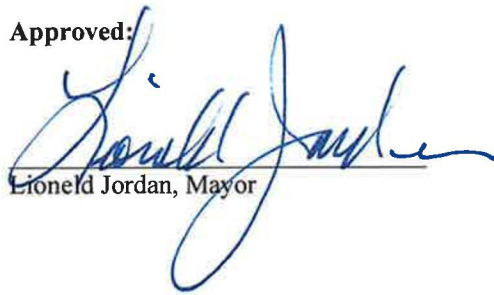
Section 2: That the City Council of the City of Fayetteville, Arkansas hereby authorizes Mayor Jordan to sign a Grant Agreement with the Federal Highway Administration to implement the Safe Streets and Roads for Fayetteville, Arkansas – Accelerating Change Toward Vision Zero Project and further authorizes the Mayor to sign additional documents as necessary to receive the grant funds.

Section 3: That the City Council of the City of Fayetteville, Arkansas hereby authorizes and approves the addition of two full-time staff positions to manage the federal-aid funding requirements.

Section 4: That the City Council of the City of Fayetteville, Arkansas hereby approves a budget adjustment, a copy of which is attached to this Resolution, establishing a new fund (2235) to account for the proceeds of the grant.

PASSED and APPROVED on December 4, 2024

Approved:


Lionel Jordan, Mayor

Attest:


Kara Paxton, City Clerk Treasurer





MEETING OF APRIL 29, 2025

TO: Mayor Rawn and City Council
THRU: Keith Macedo, Interim Chief of Staff
Chris Brown, Public Works Director
FROM: Matt Casey, Engineering Design Manager
SUBJECT: **ARKANSAS AND MISSOURI RAILROAD (AGREEMENT AMENDMENT):**

RECOMMENDATION:

Staff recommends approval of an amendment to Resolution 232-22, which authorized an agreement with the Arkansas and Missouri Railroad (AMRR) for the modifications required for the Razorback Rd. and 15th St. Intersection Project, and approval of a budget adjustment.

BACKGROUND:

The intersection of Razorback Road and 15th Street is a large intersection with multiple lanes entering the intersection on each leg. The intersection was controlled as a four way stop with stop signs on each leg. Being located in close vicinity of the Baum-Walker Stadium, Pinnacle Foods, and multiple apartment complexes, this intersection sees a high volume of traffic. Improvements to this intersection were identified as a priority project in the 2019 Transportation Bond Program.

The City of Fayetteville Engineering Division evaluated both a roundabout and signal design for this location. Concepts for both options were presented to the Transportation Committee in October of 2019. Due to the higher cost of construction for the roundabout and the potential for high pedestrian traffic, it was decided to move forward with the signal design.

With the proposed road widening and sidewalk installation, some modifications were required for the railroad crossing. The improvements included widening of the crossing as well as new crossing gates and lights that were interconnected with the new traffic signal. In October of 2022, the City of Fayetteville City Council approved an agreement (Resolution 232-22) with AMRR for the design work and the construction necessary for the improvements and widening of the railroad crossing in the amount of \$839,774.60. The construction of this project was completed in 2024.

DISCUSSION:

The approved agreement with AMRR was based on an estimated cost of \$839,774.60, but states that the City is responsible for actual costs associated with the design and construction. The City council also approved an additional \$80,000 in project contingency to cover cost overruns. The cost estimate for these improvements was prepared in 2022. Unfortunately, the work did not take place until 2024. During this time, AMRR was faced with higher costs than previously estimated. AMRR has submitted a final invoice for the work which is a total of \$934,912.66. This is an increase of \$95,138.06, which is \$15,138.06 above the contingency amount previously approved by council. This request is to approve payment of the actual cost and approve a budget

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adjustment to cover the additional construction costs associated with this work.

BUDGET/STAFF IMPACT:

The cost for this request will be paid for with the funds from the 2019 Transportation Bond Fund.

ATTACHMENTS: SRF (#3) , BA (#4), Invoice - 0136959 (#5), 232-22 Resolution (#6)

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City of Fayetteville, Arkansas

113 West Mountain Street
Fayetteville, AR 72701
(479) 575-8323

Legislation Text

File #: 2025-526

ARKANSAS AND MISSOURI RAILROAD (AGREEMENT AMENDMENT):

A RESOLUTION TO APPROVE AN AMENDMENT TO RESOLUTION 232.22 AND AUTHORIZE THE PAYMENT OF AN ADDITIONAL \$15,138.06 TO THE ARKANSAS AND MISSOURI RAILROAD FOR RAILROAD CROSSING MODIFICATIONS REQUIRED FOR THE RAZORBACK ROAD AND 15TH STREET INTERSECTION PROJECT, AND TO APPROVE A BUDGET ADJUSTMENT - 2019 STREET IMPROVEMENT BOND PROJECT

WHEREAS, Razorback Road and 15th Street intersection improvements were identified as a priority in the 2019 Street Improvement Bond Program; and

WHEREAS, on October 4, 2022, City Council approved Resolution 232-22 that authorized an agreement for the design work and construction necessary for the improvements and widening of the railroad crossing in the estimated amount of \$839,774.60 with an additional \$80,000.00 in project contingency to cover cost overruns; and

WHEREAS, the cost estimate for the project was prepared in 2022, but the work did not take place until 2024 and the actual costs exceeded the original estimate and contingency by \$15,138.06.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF FAYETTEVILLE, ARKANSAS:

Section 1: That the City Council of the City of Fayetteville, Arkansas hereby amends Resolution 232.22 and approves the payment of the additional amount of \$15,138.06 to the Arkansas and Missouri Railroad for railroad crossing modifications required for the Razorback Road and 15th Street Intersection Project.

Section 2: That the City Council of the City of Fayetteville, Arkansas hereby approves a budget adjustment, a copy of which is attached to this Resolution.

City of Fayetteville Staff Review Form

2025-526

Item ID

5/6/2025

City Council Meeting Date - Agenda Item Only
N/A for Non-Agenda Item

Matt Casey

4/15/2025

ENGINEERING (621)

Submitted By

Submitted Date

Division / Department

Action Recommendation:

Amendment to the approval of the agreement with the Arkansas and Missouri Railroad (AMRR) for the modifications required for the Razorback Rd. and 15th St. Intersection Project and approval of a budget adjustment

Budget Impact:

4702.860.7222-5809.00

Streets Project (2022 Bonds)

Account Number

Fund

46020.7222

15th St. / Razorback Rd. Intersection

Project Number

Project Title

Budgeted Item? Yes

Total Amended Budget

\$ 397,760.00

Expenses (Actual+Encum)

\$ 113,367.08

Available Budget

\$ 284,392.92

Does item have a direct cost? Yes

Item Cost

\$ 95,138.06

Is a Budget Adjustment attached? Yes

Budget Adjustment

\$ -

Remaining Budget

\$ 189,254.86

V20221130

Purchase Order Number: 2022-00000819

Previous Ordinance or Resolution # 232-22

Change Order Number: 1

Approval Date: _____

Original Contract Number: 2022-00000061

Comments:



Arkansas & Missouri Railroad
 306 East Emma
 Springdale, AR 72764
 Questions? Call: (479) 751-8600

Bill To:
 CITY OF FAYETTEVILLE
 ATTN: CHRIS BROWN
 ENGINEERING DEPARTMENT
 113 W. MOUNTAIN ST.
 FAYETTEVILLE, AR 72701

INVOICE

Invoice Number: 0136959-IN
Invoice Date: 2/13/2025

Customer Number: 00-CTYFAY
Customer P.O.:

Terms: NET 30 DAYS

Item Code	Description	UM	Quantity	Price	Amount
Hwy 16 (Razorback Rd/15th St) - Progress Billing #4 Final Invoice					
OTH		EACH	1.000	934,912.66	934,912.66
Labor & Services					

If you receive a request to change banking or remit to address, contact us immediately via phone

Subtotal	934,912.66
Grand Total	934,912.66
Paid	726407.52
Due:	\$208,505.14



113 West Mountain Street
Fayetteville, AR 72701
(479) 575-8323

Resolution: 232-22

File Number: 2022-0884

RAILROAD CROSSING UPGRADE COST AND MAINTENANCE AGREEMENT:

A RESOLUTION TO WAIVE COMPETITIVE BIDDING AND AUTHORIZE A RAILROAD CROSSING UPGRADE COST AND MAINTENANCE AGREEMENT WITH THE ARKANSAS AND MISSOURI RAILROAD IN THE AMOUNT OF \$839,774.60 FOR MODIFICATIONS REQUIRED FOR THE RAZORBACK ROAD AND 15TH STREET INTERSECTION PROJECT, TO APPROVE A PROJECT CONTINGENCY IN THE AMOUNT OF \$80,000.00, AND TO APPROVE A BUDGET ADJUSTMENT - 2019 STREET IMPROVEMENT BOND PROJECT

WHEREAS, Razorback Road and 15th Street intersection improvements were identified as a priority in the 2019 Transportation Bond Program; and

WHEREAS, the Engineering Division has completed the design and is in the process of permitting this project through ArDOT and the railroad; and

WHEREAS, Arkansas and Missouri Railroad (AMRR) presented an agreement to the City for the design work and construction necessary for improvements to and widening of the railroad crossing; and

WHEREAS, pursuant to the terms of the Railroad Crossing Upgrade Cost and Maintenance Agreement, the City will reimburse the AMRR for the full cost of labor and materials for installation of the crossing signal, panels, and appurtenances necessary for a fully operational crossing, which is estimated to be \$839,774.60; and the City and AMRR agree to equally share the cost of repairs or major maintenance; and

WHEREAS, it is not feasible or practical to competitively bid such a project because the land over

which the crossing is proposed is owned and controlled by the Arkansas and Missouri Railroad, which has the sole power to authorize and construct new crossings; and


NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF FAYETTEVILLE, ARKANSAS:

Section 1: That the City Council of the City of Fayetteville, Arkansas hereby determines an exceptional situation exists in which competitive bidding is deemed not feasible or practical and therefore waives the requirements of formal competitive bidding and authorizes Mayor Jordan to sign the Railroad Crossing Upgrade Cost and Maintenance Agreement with Arkansas and Missouri Railroad for modifications required for the Razorback Road and 15th Street Intersection Project, and further approves a project contingency in the amount of \$80,000.00 for a total estimated project cost of \$919,775.00.

Section 2: That the City Council of the City of Fayetteville, Arkansas hereby approves a budget adjustment, a copy of which is attached to this Resolution.


PASSED and APPROVED on 10/4/2022

Approved:



Lioneld Jordan, Mayor

Attest:



Kara Paxton, City Clerk Treasurer





City of Fayetteville, Arkansas

113 West Mountain Street
Fayetteville, AR 72701
(479) 575-8323

Text File

File Number: 2022-0884

Agenda Date: 10/4/2022

Version: 1

Status: Passed

In Control: City Council Meeting

File Type: Resolution

Agenda Number: A.15

RAILROAD CROSSING UPGRADE COST AND MAINTENANCE AGREEMENT:

A RESOLUTION TO WAIVE COMPETITIVE BIDDING AND AUTHORIZE A RAILROAD CROSSING UPGRADE COST AND MAINTENANCE AGREEMENT WITH THE ARKANSAS AND MISSOURI RAILROAD IN THE AMOUNT OF \$839,774.60 FOR MODIFICATIONS REQUIRED FOR THE RAZORBACK ROAD AND 15TH STREET INTERSECTION PROJECT, TO APPROVE A PROJECT CONTINGENCY IN THE AMOUNT OF \$80,000.00, AND TO APPROVE A BUDGET ADJUSTMENT - 2019 STREET IMPROVEMENT BOND PROJECT

WHEREAS, Razorback Road and 15th Street intersection improvements were identified as a priority in the 2019 Transportation Bond Program; and

WHEREAS, the Engineering Division has completed the design and is in the process of permitting this project through ArDOT and the railroad; and

WHEREAS, Arkansas and Missouri Railroad (AMRR) presented an agreement to the City for the design work and construction necessary for improvements to and widening of the railroad crossing; and

WHEREAS, pursuant to the terms of the Railroad Crossing Upgrade Cost and Maintenance Agreement, the City will reimburse the AMRR for the full cost of labor and materials for installation of the crossing signal, panels, and appurtenances necessary for a fully operational crossing, which is estimated to be \$839,774.60; and the City and AMRR agree to equally share the cost of repairs or major maintenance; and

WHEREAS, it is not feasible or practical to competitively bid such a project because the land over which the crossing is proposed is owned and controlled by the Arkansas and Missouri Railroad, which has the sole power to authorize and construct new crossings; and

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF FAYETTEVILLE, ARKANSAS:

Section 1: That the City Council of the City of Fayetteville, Arkansas hereby determines an exceptional situation exists in which competitive bidding is deemed not feasible or practical and therefore waives the requirements of formal competitive bidding and authorizes Mayor Jordan to sign the Railroad Crossing Upgrade Cost and Maintenance Agreement with Arkansas and Missouri Railroad for modifications required for

the Razorback Road and 15th Street Intersection Project, and further approves a project contingency in the amount of \$80,000.00 for a total estimated project cost of \$919,775.00.

Section 2: That the City Council of the City of Fayetteville, Arkansas hereby approves a budget adjustment, a copy of which is attached to this Resolution.

City of Fayetteville Staff Review Form

2022-0884

Legistar File ID

10/4/2022

City Council Meeting Date - Agenda Item Only
N/A for Non-Agenda Item

Matt Casey

9/15/2022

ENGINEERING (621)

Submitted By

Submitted Date

Division / Department

Action Recommendation:

Staff recommends approval of a Railroad Crossing Agreement with the Arkansas and Missouri Railroad (AMRR) in the amount of \$839,774.60 for the modifications required for the Razorback Rd. and 15th St. Intersection Project, approval of a project contingency of \$80,000.00, and approval of a budget adjustment.

Budget Impact:

4702.860.7222-5809.00

Streets Project (2019 Bonds)

Account Number

Fund

46020.7222

15th St. / Razorback Rd. Intersection

Project Number

Project Title

Budgeted Item? Yes

Current Budget \$ 21,218,438.00

Funds Obligated \$ 18,159,282.70

Current Balance **\$ 3,059,155.30**

Does item have a cost? Yes

Item Cost \$ 919,774.60

Budget Adjustment Attached? Yes

Budget Adjustment \$ 919,775.00

Remaining Budget **\$ 3,059,155.70**

V20210527

Purchase Order Number: _____

Previous Ordinance or Resolution # _____

Change Order Number: _____

Approval Date: _____

Original Contract Number: _____

Comments:



MEETING OF OCTOBER 4, 2022

TO: Mayor and City Council

THRU: Susan Norton, Chief of Staff
Chris Brown, Public Works Director

FROM: Matt Casey, Engineering Design Manager

DATE: September 15, 2022

SUBJECT: **Railroad Crossing Agreement with the Arkansas and Missouri Railroad (AMRR) in the amount of \$839,774.60 for the modifications required for the Razorback Rd. and 15th St. Intersection Project, approval of a project contingency of \$80,000.00, and approval of a budget adjustment**

RECOMMENDATION:

Staff recommends approval of a Railroad Crossing Agreement with the Arkansas and Missouri Railroad (AMRR) in the amount of \$839,774.60 for the modifications required for the Razorback Rd. and 15th St. Intersection Project, approval of a project contingency of \$80,000.00, and approval of a budget adjustment

BACKGROUND:

The intersection of Razorback Road and 15th Street is a large intersection with multiple lanes entering the intersection on each leg. The intersection is currently controlled as a four way stop with stop signs on each leg. Being located in close vicinity of the Baum-Walker Stadium, Pinnacle Foods, and multiple apartment complexes, this intersection sees a high volume of traffic. Improvements to this intersection were identified as a priority project in the 2019 Transportation Bond Program.

The City of Fayetteville Engineering Division evaluated both a roundabout and signal design for this location. Concepts for both options were presented to the Transportation Committee in October of 2019. Due to the higher cost of construction for the roundabout and the potential for high pedestrian traffic, it was decided to move forward with the signal design. The Engineering Division has completed the design and is in the process of permitting this project through ArDOT and the railroad.

DISCUSSION:

With the proposed road widening and sidewalk installation, some modifications are required for the existing railroad crossing. The improvements include widening of the crossing as well as new crossing gates and lights that will be interconnected with the new traffic signal. AMRR has presented an agreement to the City for the design work and the construction necessary for the improvements and widening of the railroad crossing in the amount of \$839,774.60.

BUDGET/STAFF IMPACT:

The design and construction for this project will be paid for with the funds from the 2019 Transportation Bond Fund.

Attachments:

AMRR agreement

**RAILROAD CROSSING UPGRADE COST
AND MAINTENANCE AGREEMENT**

This Agreement, made and entered into this 4th day of October, 2022, by and between the **City of Fayetteville, Arkansas** (hereinafter “City”) and **The Arkansas & Missouri Railroad Company**, (hereinafter “AMRR”),

WITNESSETH:

WHEREAS, City is in the process of planning an upgrade to the existing warning system (gates and lights) at the railroad crossing intersecting 15th Street (also known as Highway 16) and Razorback Road within the City limits at railroad milepost 354.07 which is DOT Project # 667203Y. The City proposes, for the benefit of the public, to upgrade this crossing, pursuant to the Exhibits referenced below, all of which are incorporated herein by reference; and

WHEREAS, it is understood that the contemplated crossing upgrade will be financed solely from funds appropriated by City and expended under its regulations.

NOW, THEREFORE, in consideration of the covenants and agreements contained in this agreement, subject to the provisions of the recitals above, it is agreed by and between the parties hereto as follows:

1. AMRR has provided an estimate for the cost of the crossing upgrade which is attached as Exhibit 1. The parties understand that the estimate is \$839,774.60 and the parties acknowledge that the ultimate cost of the crossing upgrade could be under or over this estimate. Upon final completion of the project, all said materials and crossing equipment shall become the property of AMRR.

2. AMRR shall be reimbursed 100% of the actual cost (labor and material) for installing the new equipment and its invoices will be paid promptly. Material will be billed as it is ordered by AMRR. The City acknowledges that any work within 25 feet of the tracks requires a Flagging Services Agreement for railroad track protection, including, but not limited to, railroad flagging which is charged at the rate of \$150 per hour. A Flagging Services Agreement will be executed simultaneously with the execution of this Agreement.

3. Maintenance and Repairs. The parties acknowledge that the crossing and equipment will require maintenance and repairs due to normal wear and tear and possibly damage from accidents, negligence or acts of nature. The City will not be liable for any damages caused solely by the negligence of AMRR. If damages are caused to the crossing and/or equipment by the acts of 3rd parties, AMRR and the City will coordinate to pursue any cause of action against said 3rd parties to recover the costs of repairs and any amount recovered will be applied accordingly. If the recovery is less than the cost of repairs then AMRR and the City of Fayetteville agree to share in the cost of needed repairs.

The crossing shall be maintained until such time as the parties mutually agree otherwise or upon a date certain that the crossing should be closed.

4. Incorporated Documents: The following documents are attached as Exhibits 1, 2 and 3 respectively and are incorporated herein by reference as if set forth herein word for word:

Exhibit 1: Estimate of costs;

Exhibit 2: Review of grade crossing performed by Alfred Benesch and Company for the City, dated October 7, 2021 and Revised July 20, 2022;

Exhibit 3: Plans and specifications prepared by the Engineering Division of the City.

5. Entire Agreement. This Agreement constitutes the entire agreement between the parties with respect to its subject matter and may not be modified or amended orally.

6. Governing Law. This Agreement shall be construed in accordance with and governed by the laws of the State of Arkansas.

7. Binding Effect. The provisions of this Agreement shall be binding upon and inure to the benefit of each of the parties and their respective heirs, successors and assigns.

8. Both parties acknowledge that the signatories below have the appropriate authority to sign on behalf of the party they represent.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals this 4 day of October, 2022.

THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK

CITY OF FAYETTEVILLE, ARKANSAS

Approved by: *Lionel Jordan*
Signature

Lionel Jordan
Print Name

Mayor
Title

ACKNOWLEDGMENT

STATE OF ARKANSAS)
COUNTY OF Washington) §§

On this 14th day of October, 2022, before me, the undersigned, a Notary Public, duly commissioned, qualified, and acting, within and for said County and State, appeared in person, Lionel Jordan, to me personally well-known who stated that he/she is the Mayor for the **CITY OF FAYETTEVILLE, ARKANSAS**, and is duly authorized in his/her capacity to execute the foregoing instrument and for and in the name and behalf of the City of Fayetteville, Arkansas, and further stated and acknowledged that he/she had so signed, executed, and delivered said foregoing instrument for the consideration, uses, and purposes therein mentioned and set forth.


IN TESTIMONY WHEREOF, I have hereunto set my hand and seal the day and year stated above.

Kimberly D. Johnson
Notary Public

My Commission Expires:
8-10-2032



ARKANSAS & MISSOURI RAILROAD COMPANY

Approved by: 
Signature

CAREN L. KRASKA
Print Name

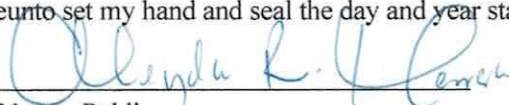
President _____
Title

ACKNOWLEDGMENT

STATE OF ARKANSAS)
) §§
COUNTY OF Washington)

On this 19th day of October, 2022, before me, the undersigned, a Notary Public, duly commissioned, qualified, and acting, within and for said County and State, appeared in person, **CAREN L. KRASKA**, to me personally well-known who stated that she is the President of **ARKANSAS & MISSOURI RAILROAD COMPANY** and is duly authorized in her capacity to execute the foregoing instrument and for and in the name and behalf of Arkansas & Missouri Railroad Company, and further stated and acknowledged that she had so signed, executed, and delivered said foregoing instrument for the consideration, uses, and purposes therein mentioned and set forth. •

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal the day and year stated above.


Notary Public

My Commission Expires:
02/12/2029

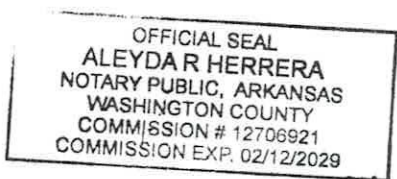


Exhibit 1



Arkansas & Missouri Railroad
 306 E. Emma Ave
 Springdale, AR 72764

Date: August 23, 2022

To: City of Fayetteville
 Attn: Matt Blanchard - Matt Casey

Job: 15th (HWY 16) and Razorback Rd. New crossing warning system (interconnected), new road crossing, 2 turnouts.

Prepared by: Jeromy Houchin

Material					
Item #	Qty	Description	Unit	Unit Price	Line Total
1	2	RH 115# #9 Turnouts RBM Insulated	EA	\$ 85,025.00	\$ 170,050.00
2	12.000	115# New to 1/4" Worn - Transition Rail	EA	\$ 1,100.00	\$ 13,200.00
3	150.000	#4 Mainline Railroad Ballast	TN	\$ 25.00	\$ 3,750.00
4	8.000	115# Bars - Pair	EA	\$ 85.00	\$ 680.00
5	1.000	Bolts	KG	\$ 290.00	\$ 290.00
6	50.000	Lock Washers	EA	\$ 0.38	\$ 19.00
7	26.000	115# Welding Kits	EA	\$ 135.00	\$ 3,510.00
8	56.875	Concrete Crossing Panels	FT	\$ 215.00	\$ 12,228.13
9	3.1	115# Rail	TN	\$ 1,500.00	\$ 4,650.00
10	50	Pre-Plated Ties	EA	\$ 224.50	\$ 11,225.00
11	225	Pandrol Clips	EA	\$ 3.90	\$ 877.50
12	4	Transition Rails	EA	\$ 2,450.00	\$ 9,800.00
13	8	Welding Kits	EA	\$ 200.00	\$ 1,600.00
14	150	Ballast	TN	\$ 19.00	\$ 2,850.00
15	20	Asphalt	TN	\$ 100.00	\$ 2,000.00
					\$ 236,729.63
				Tax	\$ 23,081.14
				Shipping	\$ 7,500.00
				Subtotal (material)	\$ 267,310.76
Labor & Services					
Item #	Qty	Description	Unit	Unit Price	Line Total
1	1	Engineering Design	LS	\$ 5,000.00	\$ 5,000.00
2	2	Construct, Install and Surface #9 Turnout	EA	\$ 25,000.00	\$ 50,000.00
3	1	CWS - Riotech (Engineering, Material and Labor)	LS	\$ 291,001.40	\$ 291,001.40
4	15	Flagging	DY	\$ 1,250.00	\$ 18,750.00
5	5	4 Person Crew	DY	\$ 3,950.00	\$ 19,750.00
6	2	2 Person Surfacing Crew	DY	\$ 3,500.00	\$ 7,000.00
7	5	Operator	DY	\$ 1,500.00	\$ 7,500.00
8	1	Oversized Load Permit Fees	LS	\$ 1,000.00	\$ 1,000.00
9	1	Asphalt Contractor	LS	\$ 25,000.00	\$ 25,000.00
10	1	Road Closure	LS	\$ 7,500.00	\$ 7,500.00
				Subtotal (Labor)	\$ 432,501.40
				Contingency	\$ 139,962.43
				Total	\$ 839,774.60

Review of Interconnected Highway-Rail Grade Crossing

DOT# 667203Y

West 15th Street (State Highway 16)

Fayetteville, AR

Arkansas & Missouri Railroad

MP 354.07, 1st Subdivision

**Prepared by Alfred Benesch & Company for
City of Fayetteville**

October 7, 2021

Revised July 20, 2022

Review of Interconnected



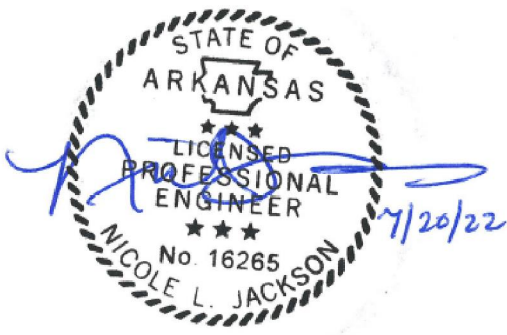
Copyright 2021, of Alfred Benesch & Company. All rights reserved [17 U.S.C.]. This report and its content are the property of Alfred Benesch & Company. Use, reuse, reproduction or modification of this plan or design information, or any part thereof, is strictly prohibited, except by written permission of this firm. This document is governed by 23 U.S.C. § 409.

Highway-Rail Grade Crossing

DOT# 667203Y
West 15th Street (State Highway 16)
Fayetteville, Arkansas
Arkansas & Missouri Railroad
MP 354.07, 1st Subdivision

Prepared by:

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Arkansas. This report represents an electronic version of the original hard copy report, sealed, signed and dated by Nicole L. Jackson, PE, PTOE. The content of the electronically transmitted report can be confirmed by referring to the original hard copy that will be kept on file with Alfred Benesch & Company.



Nicole L. Jackson, PE, PTOE
Arkansas License No. 16265

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4	REQUESTED RAILROAD PREEMPTION TIME	7
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1 INTRODUCTION

1.1 Project Information

Alfred Benesch & Company (Benesch) conducted a review of the highway-rail grade crossing (DOT# 667203Y) on the Arkansas & Missouri Railroad (Railroad), 1st Subdivision located near the intersection of West 15th Street (State Highway 16) and Razorback Road (State Highway 112) in Fayetteville, Arkansas. The review incorporates an analysis of the preemption calculations and additional design documents provided by the City of Fayetteville (Agency) and the Railroad.

FIGURE 1 – W 15TH ST (SH 16) @ RAZORBACK RD (SH 112), DOT# 667203Y



The Agency requested advance preemption time for this highway-rail grade crossing. This report expands on the proposed preemption time requirements and provides recommendations to improve the preemption operations in accordance with the referenced material, MUTCD and industry best practices.

Benesch and the Railroad recognize that the decision to incorporate any recommendations made within this report is determined by the highway agency or authority with jurisdiction and the regulatory agency with statutory authority (where applicable) in accordance with requirements set forth in the 2009 MUTCD Second Edition, Section 8A.01. The actions of the Railroad are limited.

1.2 References

The following documents were submitted by the Agency and Railroad to assist in the review:

- ❖ TXDOT Preemption Calculation Form dated June 17, 2022
- ❖ Razorback Rd (Hwy 112) & 15th St (Hwy 16) intersection Improvements Pavement Marking and Signage Plans dated February 23, 2021
- ❖ Razorback Rd (Hwy 112) & 15th St (Hwy 16) intersection Improvements Traffic Signals, Signals, Mast Arms and Conduit Plan dated March 30, 2021
- ❖ Preemption Request Form dated July 6, 2022

Appendix A contains additional documents, reference material and manuals on recommended practices which were utilized to further evaluate the interconnection design and operation of the highway-rail grade crossing.

2 PARTIES OF INTEREST

The main contact information for each entity during the preemption review process is outlined below:

TABLE 1 - CONTACT INFORMATION

Agency:	Matt Blanchard, PE Staff Engineer	City of Fayetteville 125 West Mountain Street Fayetteville, AR 72701	mblanchard@fayetteville-ar.gov 479-575-8205
ARDOT:	Paulette Rice, PMP Railroad Coordinator	Arkansas Department of Transportation PO Box 2261 Little Rock, AR 72203	paulette.rice@ardot.gov 501-569-2557
Railroad:	Jeromy Houchin Chief Engineer	Arkansas & Missouri Railroad 306 East Emma Avenue Springdale, AR 72764	jeromyh@amrailroad.com 479-790-0647

3 RAILROAD PREEMPTION DESIGN ELEMENTS

The Agency must take into account a number of design elements when providing preemption control¹ by interconnecting the railroad active warning system with the traffic signal equipment. The grade crossing circuit design, roadway layout and traffic signal design all provide information on the existing and any proposed characteristics for the grade crossing and adjacent intersection. The following sections outline the railroad and traffic characteristics that were identified during the review.

NOTE: Benesch has not field verified the values presented on the preemption calculation form. However, an overview of the grade crossing through Google Earth and the plans provided was conducted to review the measurements and values.

3.1 Railroad Characteristics

- ❖ The Railroad operates on one main line track siding track through the grade crossing.
- ❖ Flashing-light signals with automatic gates are proposed at the grade crossing.
- ❖ Overhead flashing-light signals are provided for the eastbound and westbound approach on West 15th Street (State Highway 16).
- ❖ Pedestrian flashing-light signals with automatic gates are proposed on the pedestrian pathways in all quadrants.

3.2 Traffic Characteristics

- ❖ The roadway consists of three lanes proposed over the tracks approaching the intersection with Razorback Road (State Highway 112).
- ❖ The proposed traffic signal controller is McCain ATC eX2.
- ❖ The proposed traffic signal controller firmware is Omni eX.
- ❖ The clear storage distance² (CSD) is 166 feet.
- ❖ The minimum track clearance distance³ (MTCD) is 38 feet.
- ❖ The design vehicle⁴ is a 75-foot tractor trailer.

¹ **Preemption Control** – A special sequence of signal phases and timing to expedite and/or provide additional clearance time for vehicles to clear the tracks prior to the arrival of rail traffic (MUTCD 2009 Second Edition, Chapter 4D, Section 4D.03).

² **Clear Storage Distance** – The distance available for vehicle storage measured between 6 feet from the rail nearest the intersection to the intersection stop line or the normal stopping point on the highway (MUTCD 2009 Second Edition, Chapter 1A, Section 1A.13).

³ **Minimum Track Clearance Distance** – For standard two-quadrant warning devices, the minimum track clearance distance is the length along a highway at one or more railroad or light rail transit tracks, measured from the highway stop line, warning device, or 12 feet perpendicular to the track center line, to 6 feet beyond the furthest track(s) measured perpendicular to the far rail, along the center line or edge line of the highway, as appropriate, to obtain the longest distance (MUTCD 2009 Second Edition, Chapter 1A, Section 1A.13).

⁴ **Design Vehicle** – The longest vehicle permitted by statute of the road authority (State or other) on that roadway (AREMA, Part 3.3.10, D. 4.).

- ❖ The approach grade is indicated to be 0.9% in the preemption calculations.
- ❖ The proposed right-of-way transfer time⁵ (RWTT) for APT is as follows:

TABLE 2 - RIGHT OF WAY TRANSFER TIME

		Traffic Signal Preemption Timing Values
Preempt Delay Time ⁶		0.0
Controller Response Time to Preempt ⁷		0.0
	Minimum Green Time	5
	Other Green Time	0
	Yellow Change Time	4.0
	Red Clearance Time	+ 4.3
<i>Total Vehicle Interval Time</i>		<i>13.3</i>
	Minimum Walk Time	0
	Pedestrian Change (PC) Time	0
	Yellow Change Time	0
	Red Clearance Time	+ 0
<i>Total Pedestrian Interval Time</i>		<i>0</i>
Max: <i>Total Vehicle or Total Pedestrian Interval Time</i>		13.3
Additional RWTT		+ 0
Maximum RWTT		13.3

⁵ **Right-of-Way Transfer Time** – The maximum amount of time needed for the worst-case condition, prior to the display of the track clearance green interval. This includes any railroad or light rail transit or highway traffic signal control equipment time to react to the preemption call, and any traffic control signal green, pedestrian walk and clearance, yellow change, and red clearance intervals for conflicting traffic (MUTCD 2009 Second Edition, Chapter 1A, Section 1A.13).

⁶ **Preempt Delay Time** – The amount of time, in seconds, that the traffic signal controller is programmed to wait from the initial receipt of a preempt call until the call is “verified” and considered a viable request for transfer into preemption mode. Preempt delay time should be a whole number value entered into the controller unit for purposes of preempt call validation, and may not be available on all manufacturer’s controllers (TXDOT, July 2017, *Form 2304 Instructions*).

⁷ **Controller Response Time to Preempt** – The time that elapses while the controller unit electronically registers the preempt call. The controller manufacturer should be consulted to find the correct value (in seconds) for use (TXDOT, July 2017, *Form 2304 Instructions*).

4 REQUESTED RAILROAD PREEMPTION TIME

The table below summarizes the railroad preemption time proposed for the highway-rail grade crossing:

TABLE 3 - RAILROAD PREEMPTION VALUES

	Preemption Values
Minimum Time (MT) ⁸	20
Clearance Time (CT) ^{9*}	+ 1
Prescribed Warning Time ¹⁰ (MT + CT)	21
Buffer Time (BT) ^{11*}	5
Advance Preemption Time (APT)	+ 24
Programmed System Design Time (SDT) ¹² minus Equipment Response Time (ERT) ^{13*} [SDT – ERT] (Subject to AREMA 50-second limitation)	50
Equipment Response Time (ERT) [*]	+ 5
Total Approach Time or System Design Time (SDT)	55
*To Be Confirmed by Railroad during Approach Design	

The Agency requests 24 seconds of APT (see Appendix D for more information on the preemption values).

⁸ **Minimum Time (MT)** – Grade crossing warning devices shall operate for a minimum of 20 seconds for normal operation of through trains (49 C.F.R. 234.225, AREMA, Part 3.3.10, C. 1.).

⁹ **Clearance Time (CT)** – If the MTCD exceeds 35 feet, clearance time is one second for each additional 10 feet, or portion thereof, over 35 feet. (AREMA, Part 3.3.10, C.2a)

¹⁰ **Prescribed Warning Time [Minimum Warning Time] (PWT)** – For through train movements, prescribed warning time (minimum warning time) is the least amount of time active warning devices shall operate prior to the arrival of a train at a grade crossing (AREMA, Part 3.3.10, D. 8.).

¹¹ **Buffer Time (BT)** – Buffer Time is discretionary and may be provided in addition to MT, CT and EGCT to accommodate for minor variations in train handling, track circuit variability and allowable tolerances within locomotive speed measurement apparatus (AREMA, Part 3.3.10, C. 5.).

¹² **System Design Time (SDT)** – The sum of the Prescribed Warning Time, BT, Equipment Response Time (ERT-A, C and D) and APT. (AREMA, Part 3.3.10, C. 10.)

¹³ **Equipment Response Time**– This parameter is the time provided in accordance with the manufacturers recommendations for equipment acquisition (response) time for train detection (AREMA, Part 3.3.10, C. 6a.).

5 RECOMMENDATIONS

The following recommendations have been proposed to improve the railroad preemption operations and overall safety of the grade crossing in accordance with any applicable federal, state or local regulations/guidelines and industry best or recommended practice. The MUTCD provides that the Agency has sole responsibility in determining the operational design and any time required for railroad preemption operations at an interconnected grade crossing. The Agency should carefully review each recommendation, as numerous solutions may exist for any problem identified.

MUTCD 2009 Second Edition, Chapter 8C, Section 8C.09, Paragraph 6:

“The highway agency or authority with jurisdiction and the regulatory agency with statutory authority, if applicable, should jointly determine the preemption operation and the timing of traffic control signals interconnected with highway-rail grade crossings adjacent to signalized highway intersections.”

5.1 Design Recommendations

- ❖ **The Agency has requested the following interconnection circuits^A on the attached Traffic Signal Preemption Request Form (ITE). The Agency shall ensure the circuitry involving both the traffic signal and railroad are fully operational at the time of implementation:**
 - **Advance Preemption Circuit^B**
 - **Supervised Circuit^C**
 - **Crossing Active Circuit^D**
 - **Gate Down Circuit^E**
 - **Traffic Signal Health Circuit^F**

NOTE: Descriptions for each interconnection circuits and configuration along with some example interface methods^G can be found in Appendix B.

- ❖ **The Agency has specified, on the attached Preemption Request Form, an interconnection cable adequate for the requested interconnection circuits and configuration (ITE 2019).** The Agency is responsible for providing and maintaining the interconnection cable, pull boxes and conduit needed for the requested preemption operations from the traffic signal equipment to the Railroad equipment house. All equipment must be installed prior to the Railroad construction phase. For safety purposes, it is recommended that the interconnection power provided by the Agency for the interconnection be limited to a maximum of 28 Vac or Vdc.
- ❖ **Determine an adequate preemption clearance interval minimum time^H that allows sufficient opportunity for a design vehicle to clear the grade crossing (TRB 2017).** The preemption clearance interval is the programmed minimum time and phases in the preemption plan settings of the traffic signal controller that are displayed for highway users which may be stopped in the MTCD and CSD.

While normally displayed as green indications and frequently referred to as track clearance green, the preemption clearance interval may be displayed as all-red indications or some combination of flashing and steady indications based on site specific needs. The amount of traffic clearance green time for this grade crossing is dependent on the interconnect circuits chosen for the grade crossing:

- **A gate down circuit is proposed in the traffic signal design.** Since the Agency has elected to request a gate down circuit from the railroad, the preemption clearance interval programmed as track clearance green should be displayed a minimum of 27 seconds which is the queue clearance time¹⁴ determined by the preemption calculations.

Due to the length of the CSD, the Agency should consider extending the track clearance green by a minimum of 5 seconds after receipt of the gate down indication from the grade crossing warning system.

- ❖ **Implement a maximum preemption timer¹ (ITE 2019).** If, for any reason, the traffic signal controller preemption remains active for an extended period of time, this timer allows the controller to exit the preemption plan and enter an all-red flash mode.
- ❖ **Consider providing a back-up power supply for the traffic signal equipment (MUTCD 2009 Second Edition).** Traffic signal systems interconnected to grade crossing warning systems should be provided with a back-up power supply. In doing so, the traffic signal controller is equipped for continued operation in the event of power outages and a track clearance interval can be provided during a train event under these conditions.
- ❖ **Consider relocating the proposed left and right and through arrow pavement markings a minimum of 100 feet in advance of the grade crossing (FHWA 2019).** Drivers may interpret the highway-rail grade crossing as a highway-highway intersection in certain situations if the arrow pavement markings are installed too close to the grade crossing (low light, poor visibility due to fog or other, impaired driver) and can increase the potential for drivers to turn onto the tracks. These arrow markings should be placed further away from the grade crossing so that drivers do not associate the arrow markings with the highway-rail grade crossing.
- ❖ **Consider installation of “DO NOT STOP ON TRACKS” (R8-8) sign downstream of the grade crossing (MUTCD 2009 Second Edition).** These signs should be installed when the potential for vehicles to stop

¹⁴ **Queue Clearance Time** – The time required for the design vehicle of maximum length stopped just inside the MTCD to start up and move through and clear the entire MTCD. If pre-signals are present, this time shall be long enough to allow the vehicle to move through the intersection, or to clear the tracks if there is sufficient CSD. If a four-quadrant gate system is present, this time shall be long enough to permit the exit gate arm to lower after the design vehicle is clear of the MTCD (MUTCD 2009 Second Edition, Chapter 1A, Section 1A. 13).

on the grade crossing is significant. The signs provide warning to the drivers that they must not stop on the grade crossing and remind them that it is prohibited to do so.

- ❖ **Evaluate placement of the detectable warning surfaces at the pedestrian flashing-light signals with automatic gates.** In the plans provided, the detectable warning surfaces are planned to be placed 12 feet from the near rail. Ensure the placement of the detectable warning surfaces at each pedestrian flashing-light signal with automatic gates is placed 2 feet in advance of the automatic gate. (ATBCB, 2013)
- ❖ **Consider installation of a warning label for the traffic signal cabinet to notify personnel that the traffic signal is interconnected with the grade crossing warning system (US DOT TWG 1997).**
- ❖ **Develop and follow a preemption operation and maintenance program¹.** The railroad preemption system should be tested on an annual basis. The Federal Railroad Administration (FRA) Safety Advisory 2010-02, details recommendations for annual joint testing of interconnected Railroad and Traffic Signal Systems. MUTCD 4D.02 also provides operation and maintenance guidance. The Railroad will work with the Agency to ensure that the interconnected traffic signal continues to operate as design and requests that any future changes are discussed and jointly approved in a collaborative manner.

The Agency should develop a special preemption operation program in the event of operational failure of traffic signals or other events that may affect the operation of the interconnected highway by causing extended queues across the tracks. The events that could require use of this plan are emergency or planned construction and special events. The plan should include notifying the railroad and proceeding forward with a traffic management plan to mitigate the possible traffic queues across the tracks.

5.2 Implementation Recommendations

The Agency and Railroad should perform thorough joint testing upon implementation of the preemption timing and operation to confirm that the traffic signal controller hardware and firmware is operating according to the design. Some of the testing that should be conducted are outlined below.

- ❖ **Thoroughly test the programming of the traffic signal controller during advance preemption to ensure the total right-of-way transfer time does not exceed 13.3 seconds (see preemption calculation form in appendix D).** If the Agency elects to make timing adjustments to the programmed minimum green time, yellow change time or red clearance time, the combined sum must not exceed the maximum right-of-way transfer time established on the preemption calculation form. If it is determined that additional right-of-way transfer time is needed, the Agency must request an increase in APT from the Railroad.
- ❖ **Thoroughly test the programming of the traffic signal controller during railroad preemption to ensure the preemption clearance interval minimum time is in accordance with the design plans.** The preemption clearance interval is the programmed minimum time and phases in the preemption plan settings of the traffic signal controller that are displayed for highway users which may be stopped in the MTC and CSD. While normally displayed as green indications and frequently referred to as track

clearance green, the preemption clearance interval may be displayed as all-red indications, or some combination of flashing and steady indications based on site specific needs.

- ❖ **Confirm traffic signal controller can respond in a train restart.** A train has the potential of stopping and restarting within the grade crossing circuitry approach. In addition, nearby switching operations are characteristics of this location and may result in multiple preemption and warning system activations within a short period of time. After receiving the preemption call from the first train event, the traffic signal controller must be able to return to the track clearance interval and provide an opportunity to clear a design vehicle from the MTCD during any subsequent train event. Additional logic may be required depending on the traffic signal controller hardware and firmware.
- ❖ **Thoroughly test all interconnection circuits to ensure the circuitry involving both the traffic signal and railroad are fully operational at the time of implementation.** Testing should be conducted to evaluate communications between the traffic signal and railroad circuitry and ensure the requested circuits operate as designed.

6 CONCLUSION

Benesch is providing this report as recommendations for improvements to the traffic signal and railroad operations at this grade crossing location in regard to railroad preemption. Further discussion and collaboration should take place between the Agency and Railroad in order to address the concerns discussed in this report. Future changes in design outside the scope of this report or upgrades after implementation of the recommendations put forth in this report will require further collaborative work and review by the Agency and Railroad.

The Railroad respectfully requests that the Agency continue to consult and partner with them in this process. The Railroad requests that the Agency provide the traffic signal timing and wiring information with the construction schedule at least two months prior to the traffic signal controller bench testing (if required) and four months prior to the proposed cutover with the Railroad.

APPENDIX A – REFERENCES

- ❖ 23 C.F.R. 646, Subpart B, Railroad-Highway Projects. Code of Federal Regulations (C.F.R.)
- ❖ 49 C.F.R. 392.10, Railroad Grade crossings; Stopping Required. Code of Federal Regulations (C.F.R.)
- ❖ 17 U.S.C., Copyright. United States Code (U.S.C.)
- ❖ 23 U.S.C. 409, Discovery and admission as evidence of certain reports and surveys. United States Code (U.S.C.)
- ❖ AREMA (2019). *Manual for Communications and Signals, Volume 1, Section 3 (C&S Manual)*. Landover, MD: American Railway Engineering and Maintenance-of-Way Association (AREMA).
- ❖ ATBCB (2013). *Public Rights-of-Way, Accessibility Guidelines*. Architectural and Transportation Barriers Compliance Board (ATBCB).
- ❖ FHWA (May 2012). *2009 Manual on Uniform Traffic Control Devices (MUTCD) - Revision 2*. Federal Highway Administration (FHWA).
- ❖ FHWA (2019). *Highway-Rail Crossing Handbook – 3rd Edition*. Federal Highway Administration (FHWA).
- ❖ FRA (July 25, 2012). *Technical Bulletin S-12-01, Guidance Regarding the Appropriate Processes for the Inspection of Highway-Rail Grade Crossing Warning System Pre-emption Interconnections with Highway Traffic Signals*. Federal Railroad Administration (FRA).
- ❖ FRA (October 1, 2010). *Federal Register Volume 75, Issue 190 - Safety Advisory 2010-02, Signal Recording Devices for Highway-Rail Grade Crossing Active Warning Systems that are Interconnected with Highway Traffic Signal Systems*. Federal Railroad Administration (FRA).
- ❖ ITE (April 2019). *Preemption of Traffic Signals Near Railroad Crossings*. Washington, DC. Institute of Transportation Engineers (ITE).
- ❖ NTSB (2003). *Collision Between Metrolink Train 210 and Ford Crew Cab, Stake Bed Truck at Highway-Rail Grade Crossing in Burbank, California, on January 6, 2003, Highway Accident Report NTSB/HAR-03/04*. Washington, DC: National Transportation Safety Board (NTSB).
- ❖ TRB (2015). *National Cooperative Highway Research Program (NCHRP), Report 812, Signal Timing Manual, Section 6.1.3.2 - Minimum Green Based on Driver Expectancy*. Transportation Research Board (TRB)
- ❖ TRB (2003). *National Cooperative Highway Research Program (NCHRP), Report 493, Evaluation of Traffic Signal Displays for Protected/Permissive Left-Turn Control*. Transportation Research Board (TRB).
- ❖ TRB (2017). *National Cooperative Highway Research Program (NCHRP), Synthesis 507, Traffic Signal Operations near Highway-Rail Grade Crossings*. Transportation Research Board (TRB).
- ❖ TTI (March 2002). *Report 1752-9, The Preempt Trap: How to Make Sure You Do Not Have One*. Texas A&M Transportation Institute (TTI).
- ❖ TXDOT (March 2009). *Form 2304 Instructions, Instructions for the Guide for Determining Time Requirements for Traffic Signal Preemption at Highway Grade Crossings*. Texas Department of Transportation (TXDOT).
- ❖ TXDOT (March 2009). *Form 2304, Guide for Determining Time Requirements for Traffic Signal Preemption at Highway Grade Crossings*. Texas Department of Transportation (TXDOT).
- ❖ USDOT–TWG (June 1, 1997). *Implementation Report of the USDOT Grade Crossing Safety Task Force*. Department of Transportation – Technical Work Group (DOT-TWG).

APPENDIX B – END NOTES

^A **Interconnection Circuits:**

The interconnection is the means by which information is shared between a grade crossing warning system and a traffic control device. While the most frequent use of an interconnection is for preemption of a traffic signal controller, other uses involve train activated advance warning beacons, illumination of blank-out signs, remote notification of a crossing occupied by a train or activation of a wayside horn.

Interconnection circuits are most commonly found as a combination of various individual control functions necessary to implement the desired preemption operation. They typically use one or more conductors in a cable to deliver the required function. However, some agencies utilize safety-critical data circuits to provide the interconnection. In some cases, these data circuits contain the vehicle and pedestrian signal status as a part of the message. This type of circuit is more commonly found where advanced monitoring or automated testing of the preemption operation is desired.

Excluding the data circuits, discrete interconnection circuits require a source of power from the traffic signal controller to operate. The power for the interconnection circuits should meet the following criteria:

- Applied energy should not exceed 28 Vac or Vdc. While many interconnection circuits have historically used 120 Vac, this presents a potential safety hazard to maintenance personnel in the railroad warning system enclosure.
- Applied energy should be from an isolated (non-grounded) source.
- Applied energy should be over-current protected, especially if a potential greater than 28 V is used.

The use of a simple 120 Vac to 24 Vac transformer or a DC power supply that incorporates a step-down transformer will satisfy the first two bullet points listed above.

The following is a listing of the most commonly encountered interconnection circuits in use. Because each grade crossing has preemption needs based on site-specific conditions, not all the circuits are used at every location. It is also possible that based on a specific need, an interconnection circuit other than those identified here may be implemented. Regardless, every circuit should be evaluated for necessity and where a special circuit is implemented, a hazard analysis should be performed to assess the failure modes and effects.

In reviewing the advance preemption circuits, three circuit types are identified, APP, AVP and AP. The actual usage is typically AP alone or AVP and APP together. Generally, the time provided by the grade crossing warning system where an AP circuit is used equals the sum of the time where an APP and AVP circuit are used. In many cases, where the preemption operation necessitates that additional time be provided for pedestrian change interval, separating the APP from AVP provides a means to maintain the AVP preemption time under the AREMA 50 second time limit for SDT – ERT.

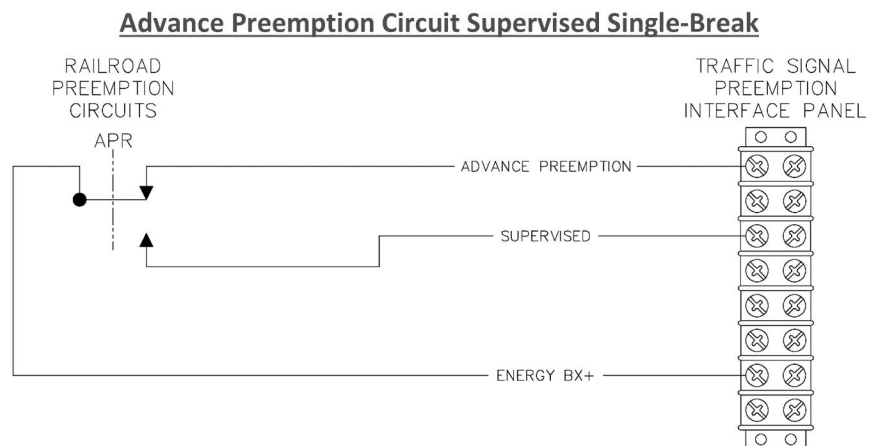
^B **Advance Preemption Circuit:**

The Advance Preemption (AP) circuit provides an input to the traffic signal controller to initiate preemption operation a calculated amount of time before activation of the grade crossing warning devices. The time between when the preempt call is made to the traffic signal controller and when the warning devices become

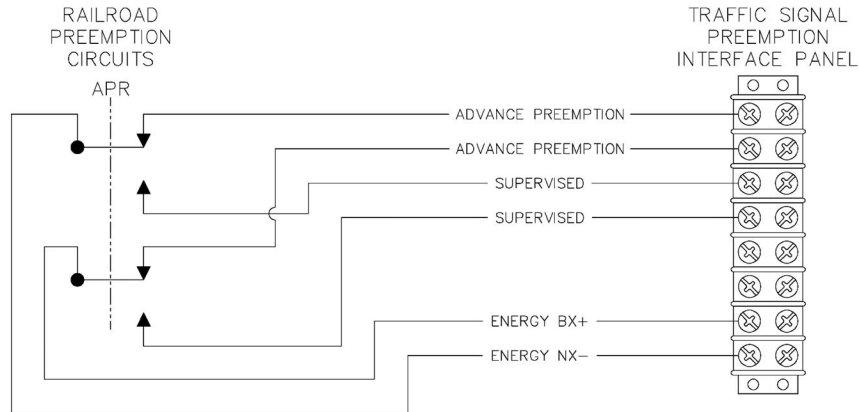
active is known as Advance Preemption Time (APT). The AP circuit is used to terminate any active non-Preemption Clearance Intervals and transition to the programmed Preemption Clearance Interval.

c Supervised Circuit:

The supervised circuit is used to safeguard the reliability of railroad preemption activations by monitoring the integrity of the interconnection cable between the grade crossing warning system and the traffic signal system. While any interconnection circuit can include a Supervised Circuit, it is typically only implemented with the highest priority preemption interconnection circuit. The supervised circuit does not provide any operational control functions in the normal preemption sequence or timing. During railroad preemption activations, the Advance Preemption (AP) circuit or Advance Vehicle Preemption (AVP) circuit (advance preemption operation to Preemption Clearance Interval) or the crossing active circuit (simultaneous preemption operation to Preemption Clearance Interval) opens upon notification of a train approaching the crossing, while the corresponding supervised circuit closes. Under normal conditions, the supervised circuit is out-of-correspondence with its associated preemption circuit. In other words, one circuit is closed and the other is open. In the event of a failure of the interconnection cable or system, the supervised circuit will be in-correspondence with the associated preemption circuit, where both circuits are either open or both circuits are closed. The in-correspondence condition indicates that an interconnection fault has occurred to the traffic signal controller. These types of system failures can be caused by a number of differing conditions, including but not limited to, underground excavation work exposing the cable and cutting the railroad interconnect cable, loose connections in either the traffic signal cabinet interconnection system or the railroad cabinet, and potential shorted or open circuits between conductors in the interconnection cable. When a failure is indicated by the supervised circuit, the traffic signal controller must be capable of acknowledging the fault and the Agency must program the necessary response in the traffic signal controller. The programming should provide for appropriate preemption operations while also considering the need for a system inspection with the information provided by the supervised circuit. For example, with an interconnection fault indicated by the Supervised Circuit, consider serving the programmed Preemption Clearance Interval and then proceeding to an all-red flashing condition. This setting will provide a gradual transition by allowing vehicle movements to clear the tracks prior to proceeding to a state in which the Agency can be notified of a malfunction that must be addressed and repaired before the traffic signal can be restored to normal operation. The supervised circuit maybe used in both single-break and double-break configurations.



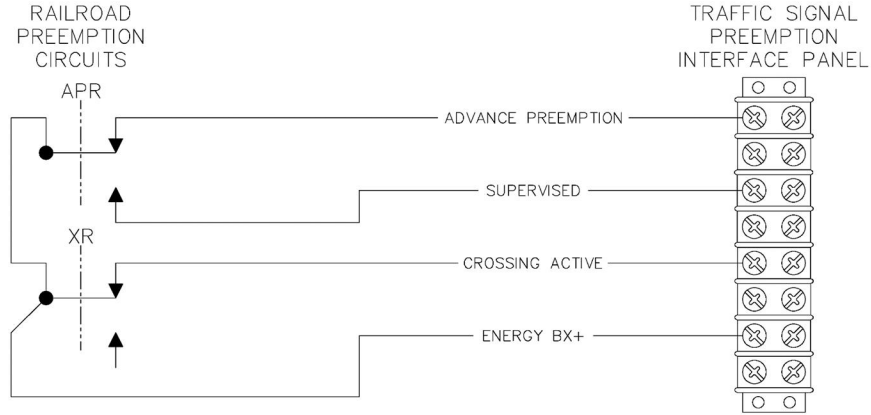
Advance Preemption Circuit Supervised Double-Break



^D Crossing Active Circuit:

The crossing active circuit, commonly referred to as the “XR” or “XC” circuit, will notify the traffic signal controller at the start of the railroad active warning system operation. The crossing active circuit is used to initiate preemption where simultaneous preemption is used. In advance preemption operation, the crossing active circuit is used to address conditions where the railroad, by nature of its operations, provides less than the calculated preemption time. Various train moves in the vicinity of the crossing may require a different preemption plan in the traffic signal controller that demands a truncated or eliminated minimum green, walk and/or pedestrian clearance time where the preemption time is shortened. The crossing active circuit can be beneficial in accommodating a train restart move or second train event if the crossing has more than one track. For example, if an approaching train stops before reaching the crossing where motion sensing circuits are in place and the train has remained stopped for approximately 20 seconds, the active warning system will recover as long as the train stops short of the island circuit. When this occurs, the gates will ascend, and the preemption call ceases in the traffic signal controller. Once the train resumes movement towards the crossing, the APT can be reduced or even eliminated since the train has already entered the approach and the warning devices will reactivate. In this situation, the traffic signal should attempt to reach the Preemption Clearance Interval in a safe but also prompt manner. Under these circumstances, the railroad operating rules regulate train movements through the crossing which commonly involves the train crew procedure of guaranteeing that the crossing is clear of vehicles and the gates are fully descended before proceeding over the crossing. The crossing active circuit is also commonly used to active blank-out signs used to restrict turns toward the grade crossing.

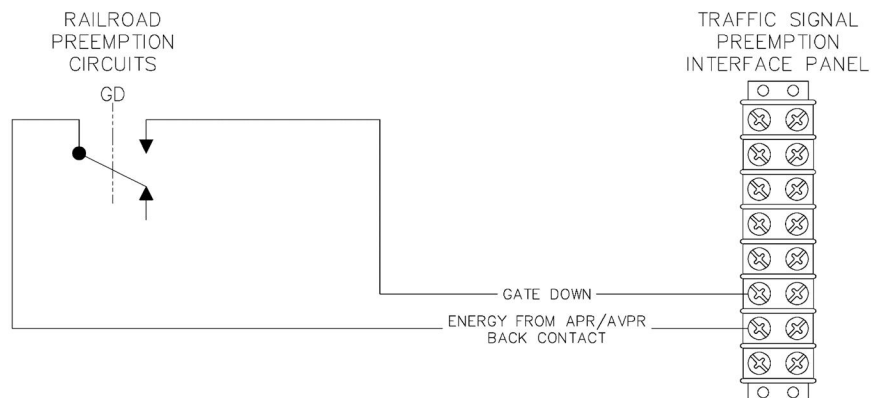
Advance Preemption Circuit Supervised Single-Break with Crossing Active Circuit



^E Gate Down Circuit:

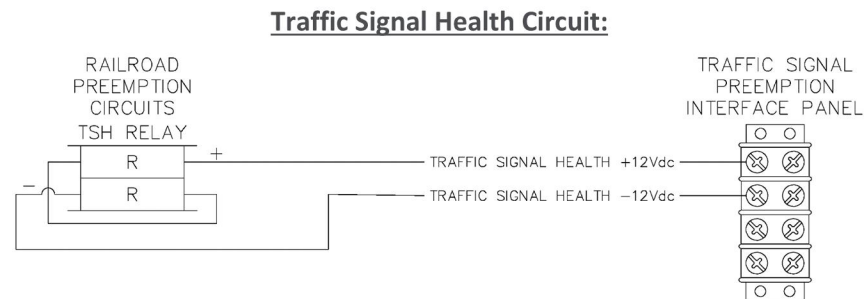
The Gate Down (GD) circuit allows the traffic signal controller to know when the automatic gates are within approximately five (5) degrees of horizontal. This will keep the Preemption Clearance Interval from terminating prior to activation of the warning system and lowering of the automatic gates. The GD circuit plays a vital role in preventing a preempt trap, which may occur following the advance preemption operations due to warning time variabilities that ultimately result in drivers queued onto the tracks (see TTI Report 1752-9). Implementing a GD circuit not only improves grade crossing safety, it also removes the need for excessive Preemption Clearance Interval and furthermore reduces delays for the non-conflicting directions of traffic. Without a GD circuit, the Preemption Clearance Interval time can be significantly longer to account for varying conditions. This could result in the Preemption Clearance Interval holding longer than expected after the gates are horizontal, frustrating drivers on all approaches to the traffic intersection.

Gate Down Circuit:



F Traffic Signal Health Circuit:

A Traffic Signal Health (TSH) circuit notifies the railroad equipment of a failure in the traffic signal control equipment. This is a 12 V dc circuit which is normally energized and fused for 500 mA. In the event the traffic signal enters a flashing state, or the signals are dark (commercial power failure, signals off manually, backup battery system depleted, etc.), this will de-energize the TSH circuit.



G Interface Methods:

When using railroad preemption interconnect circuits, additional equipment is normally required in the traffic signal cabinets. Most traffic signal cabinet manufacturers, equipment manufacturers, and/or dealers can deliver different interconnection methods dependent on the traffic signal cabinet type, controller type/brand, and requested circuits. These methods include relay panels, solid state systems, or isolator cards. The Agency should seek guidance on the types of interconnection systems and components that are available if they are not familiar with current technology.

H Preemption Clearance Interval Minimum Time:

The Preemption Clearance Interval (PCI) is the programmed minimum time and phase(s) in the preempt plan settings of the traffic signal controller that are displayed for highway users which may be stopped in the Minimum Track Clearance Distance (MTCDD) and the Clear Storage Distance (CSD). While normally displayed as green indications and frequently referred to as track clearance green, the PCI may be displayed as all-red indications, or some combination of flashing and steady indications based on site specific needs.

Based on the preemption system design, the minimum time required for the PCI must be adequate for the Design Vehicle (DV) of maximum length to start in motion and clear the Minimum Track Clearance Distance (MTCDD). This period of time is known as the Queue Clearance Time (QCT). In addition, the PCI time must include any Separation Time (ST) required. ST is additional time added to the QCT to permit the DV to travel beyond the MTCDD before an approaching train enters the roadway.

Two different methods are used to determine the PCI based on the interconnect circuits that are installed:

Method 1 – The PCI is the calculated period of time required for the Design Vehicle of maximum length to start in motion and move clear of the Minimum Track Clearance Distance (QCT). The QCT is added to the ST and the sum of the two is the minimum PCI time. When used with Advance Preemption, a Gate Down circuit must be

provided to overcome timing variability resulting from decelerating train moves approaching the grade crossing or Right-of-Way Transfer Time variability known as a preempt trap. This is the most efficient method of implementing the PCI minimum time.

Method 2 - The PCI is based on a combination of fixed time events. This method is also known as Timing Correction. To determine the amount of time necessary, use the GREATER of two options: the QCT which is the calculated time for the design vehicle to start in motion and clear the MTCD **OR** the APT plus an additional 15 seconds (APT + 15). Any desired Separation Time should be added to the result. Timing Correction requires the use of a not-to-exceed advance preempt timer in the railroad warning system control circuits. A Gate Down circuit is not required with Timing Correction. Using Method 2, the APT plus an additional 15 seconds (APT + 15), is approximated based on the operation of the railroad warning system during a train movement. During advance preemption operations, the completion of APT is immediately followed by the activation of the railroad warning devices. From the initiation of the active warning system, it takes approximately 15 seconds from the start of the flashing-lights to the complete descent of the automatic gate arms to a horizontal position. Timing Correction shall not be used if the railroad circuitry does not include a not-to-exceed timer and the RWTT time is not considered to be the maximum value. Timing Correction is only used with Advance Preemption operation. When advance preemption operation is utilized, the recommended best practice method is to use gate down circuitry to terminate the track clearance green interval, since the APT+15 or the queue clearance time methods do not account for variations in the APT because of decelerating or accelerating trains.

I Maximum Preemption Timer:

The maximum preemption timer operates by timing out a preemption call if in excess to the expected or calculated time and allows the traffic signal controller to exit the preemption plan. Since railroad active warning systems are designed to "fail-safe", this timer can help improve traffic signal operations under these conditions. For example, if a railroad warning system fails, the flashing light signals will stay active and the gates will remain lowered indicating to the highway users that it is not safe to use the crossing. In addition, the traffic signal continues to stay in the railroad preemption plan. By implementing a maximum preemption timer, this allows the traffic signal to exit the existing preemption plan and proceed to an all-red flash mode allowing non-conflicting traffic to move thru the intersection. It should be noted that not all traffic signal controllers have the capability to transition to an all-red flashing mode at the expiration of the built-in maximum preemption timer. Various traffic signal controllers will release the preemption call and return to normal operation which is not recommended. Some controllers are limited to a maximum preemption timer value of 255 seconds which could be short of the needed value. Internal controller logic or an external device will be needed to permit these controllers to exit to a "fail-safe" mode. Engineering judgment should be exercised when deciding the appropriate time for the maximum preemption timer. If the timer is programmed too short, the traffic signal could exit preemption to all-red flash while the train is occupying the crossing. It is recommended that the maximum preemption timer be programmed to a value greater than to two times the longest average train movement, including any switching movements.

J Preemption Operation and Maintenance Program:

To conform with the FRA Safety Advisory 2010-02, the Agency and the Railroad should establish a joint program to annually perform an operational test of the preemption system.

At a minimum the program should:

1. Ensure that no changes have been made to the traffic signal, grade crossing, active warning system, or roadway that would alter operations of the highway grade crossing system or traffic signal from the approved and agreed upon design.
2. Review any recorder logs (where available) to ensure correct operation.
3. Perform a test of the of the system when undergoing the maximum right-of-way transfer time.
4. Representatives from the both the traffic agency and railroad should be accounted for at the joint inspection and test.

During traffic signal failure, the Agency should establish a plan of interim procedures until system issues can be addressed:

1. If the traffic signal is dark due to power loss/manual operation or in a flashing mode, notify the Railroad and provide flagger and/or law enforcement to monitor the grade crossing and ensure that highway users safely travel over the tracks.
2. The Agency should inform the Railroad when the traffic signal has been returned to normal operation.

Contact the Railroad when any changes are made to the traffic signal, roadway geometry, or preemption system. (See MUTCD 2009 Second Edition, Section 8A.02 Paragraph 6)

The Railroad must be notified by the Agency if a joint test will be conducted on the railroad preemption system. If traffic density changes occur downstream of the crossing due to a lane closure or a high traffic volume event which could cause queueing onto the crossing, the railroad should be contacted, and the Agency should provide flagging or a temporary traffic control plan. (See MUTCD 2009 Second Edition, Section 8A.08 for additional Information.)

APPENDIX C – PREEMPTION CALCULATION FORM





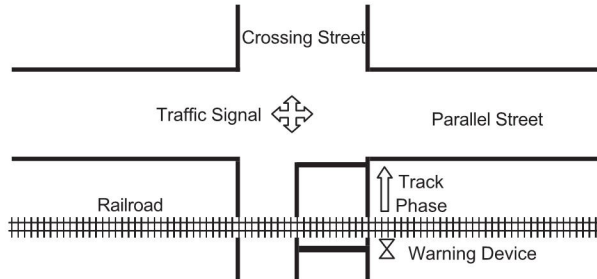
GUIDE FOR DETERMINING TIME REQUIREMENTS FOR TRAFFIC SIGNAL PREEMPTION AT HIGHWAY RAIL GRADE CROSSINGS

City AR, Fayetteville
County Washington
District 4

Date 06/17/2022
Completed by Benesch - Ft Worth
District Approval _____



Show North Arrow



Parallel Street Name
Razorback Rd
Crossing Street Name
SH 16 (W 15th St)

Railroad A&M Railroad
Crossing DOT# 667203Y

Railroad Contact Jeremy Houchin
Phone (479) 790-0647

SECTION 1: RIGHT-OF-WAY TRANSFER TIME CALCULATION

Preempt verification and response time

- 1. Preempt delay time (seconds)1.
- 2. Controller response time to preempt (seconds)2.
- 3. Preempt verification and response time (seconds): add lines 1 and 23.

Remarks
McCain ATC eX2, Omni eX
Controller type: _____

Worst-case conflicting vehicle time

- 4. Worst-case conflicting vehicle phase number4.
- 5. Minimum green time during right-of-way transfer (seconds)5.
- 6. Other green time during right-of-way transfer (seconds)6.
- 7. Yellow change time (seconds)7.
- 8. Red clearance time (seconds)8.
- 9. Worst-case conflicting vehicle time (seconds): add lines 5 through 89.

Remarks

Worst-case conflicting pedestrian time

- 10. Worst-case conflicting pedestrian phase number.....10.
- 11. Minimum walk time during right-of-way transfer (seconds)11.
- 12. Pedestrian clearance time during right-of-way transfer (seconds)12.
- 13. Vehicle yellow change time, if not included on line 12 (seconds)13.
- 14. Vehicle red clearance time, if not included on line 12 (seconds)14.
- 15. Worst-case conflicting pedestrian time (seconds): add lines 11 through 1415.

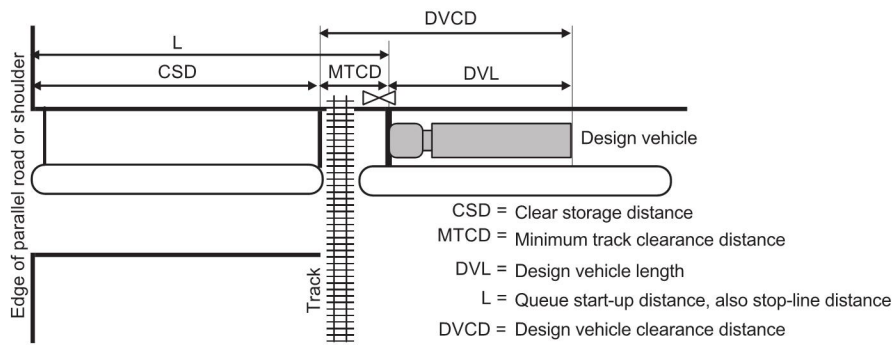
Remarks

Pedestrians omitted per
conference call with City on
3/10/2021

Worst-case conflicting vehicle or pedestrian time

- 16. Worst-case conflicting vehicle or pedestrian time (seconds): maximum of lines 9 and 15.....16.
- 17. Right-of-way transfer time (seconds): add lines 3 and 1617.

SECTION 2: QUEUE CLEARANCE TIME CALCULATION



Remarks

- 18. Clear storage distance (CSD, feet)18.

166

- 19. Minimum track clearance distance (MTCD, feet)19.

38

- 20. Design vehicle length (DVL, feet)20.

75

 Design vehicle type: Tractor-trailer

- 21. Queue start-up distance, L (feet): add lines 18 and 19 21.

204

- 22. Time required for design vehicle to start moving (seconds): calculate as $2+(L+20)$ 22.

12.2

Remarks Line 24-Grade <1.5%
- 23. Design vehicle clearance distance, DVCD (feet): add lines 19 and 2023.

113

- 24. Time for design vehicle to accelerate through the DVCD (seconds) 24.

14.8

 Read from Figure 2 in Instructions.
- 25. **Queue clearance time (seconds): add lines 22 and 24** 25.

27.0

SECTION 3: MAXIMUM PREEMPTION TIME CALCULATION

- 26. Right-of-way transfer time (seconds): line 17 26.

13.3

- 27. Queue clearance time (seconds): line 25 27.

27.0

- 28. Desired minimum separation time (seconds) 28.

4.0

- 29. **Maximum preemption time (seconds): add lines 26 through 28** 29.

44.3

Remarks

SECTION 4: SUFFICIENT WARNING TIME CHECK

- 30. Required minimum time, MT (seconds): per regulations30.

20

- 31. Clearance time, CT (seconds): get from railroad31.

1

- 32. Minimum warning time, MWT (seconds): add lines32.

21

 Excludes buffer time (BT)
- 33. Advance preemption time, APT, if provided (seconds): get from railroad 33.

0

- 34. Warning time provided by the railroad (seconds): add lines 32 and 3334.

21

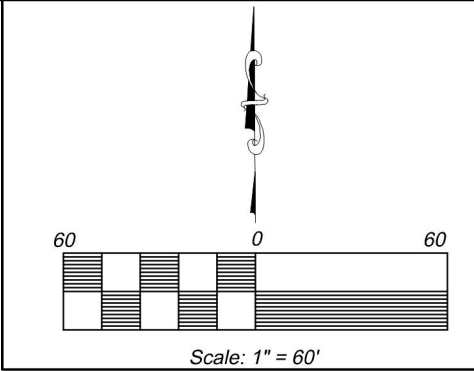
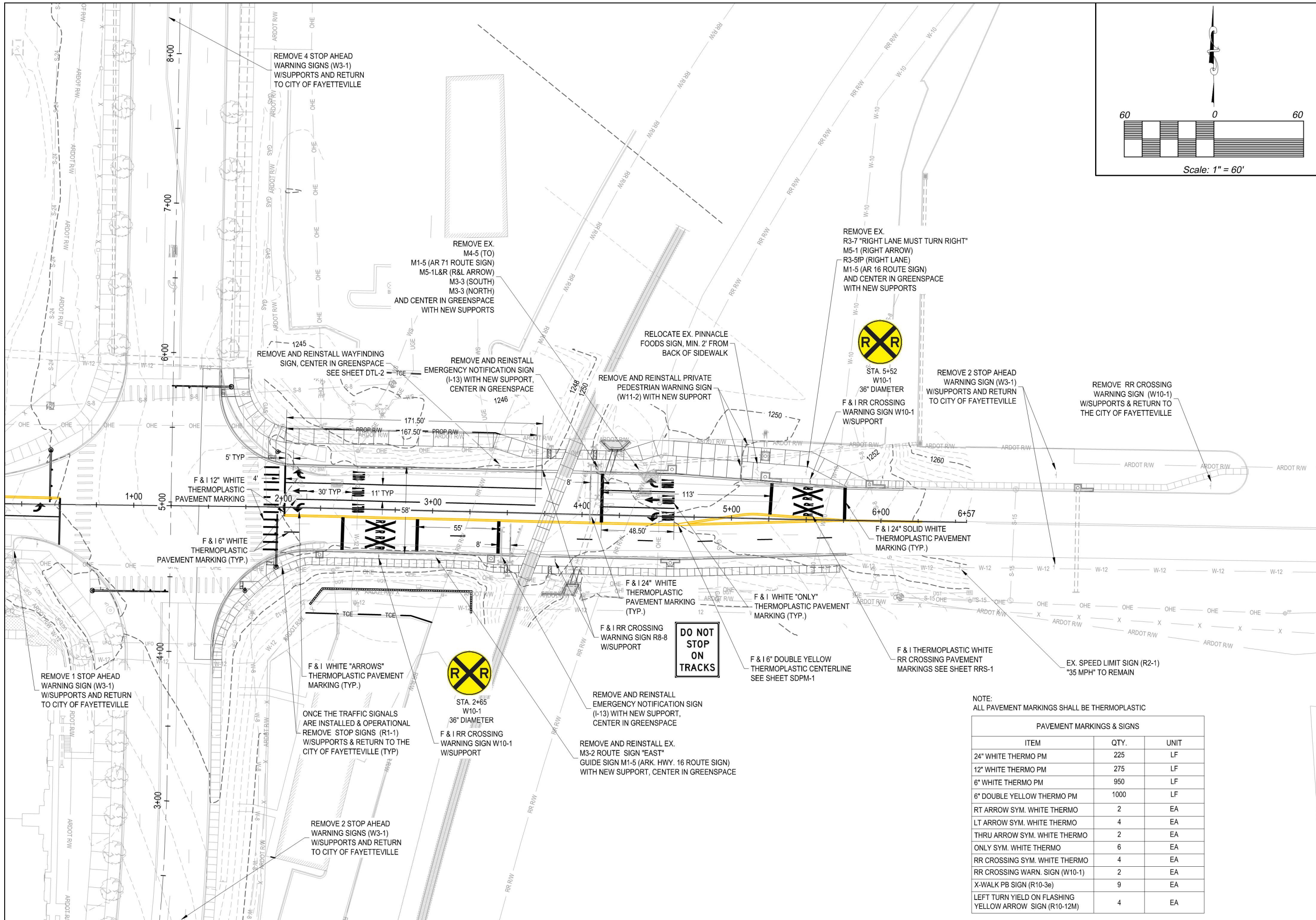
- 35. **Additional warning time required from railroad (seconds): subtract line 34 from line 29, round up to nearest full second, enter 0 if less than 0** 35.

24

Remarks

If the additional warning time required (line 35) is greater than zero, additional warning time has to be requested from the railroad. Alternatively, the maximum preemption time (line 29) may be decreased after performing an engineering study to investigate the possibility of reducing the values on lines 1, 5, 6, 7, 8, 11, 12, 13 and 14.

Remarks: _____



SURVEYED BY: DD
 DRAWN BY: MB
 DESIGNED BY: MC

**RAZORBACK RD. (HWY 112) & 15TH ST.
 (HWY 16) INTERSECTION IMPROVEMENTS
 PAVEMENT MARKING & SIGNAGE PLAN
 EAST LEG**

TITLE:
 REVISED



CITY OF FAYETTEVILLE ARKANSAS

ENGINEERING DIVISION
 113 W. MOUNTAIN STREET
 PHONE NO. (479) 575-8206
 FAX NO. (479) 575-8202

DATE: Nov 08, 2021
 SHEET:

PM-1

DRAWING: Razorback & 15th Traffic Signal Proposed Base Map

NOTE:
 ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC

PAVEMENT MARKINGS & SIGNS		
ITEM	QTY.	UNIT
24" WHITE THERMO PM	225	LF
12" WHITE THERMO PM	275	LF
6" WHITE THERMO PM	950	LF
6" DOUBLE YELLOW THERMO PM	1000	LF
RT ARROW SYM. WHITE THERMO	2	EA
LT ARROW SYM. WHITE THERMO	4	EA
THRU ARROW SYM. WHITE THERMO	2	EA
ONLY SYM. WHITE THERMO	6	EA
RR CROSSING SYM. WHITE THERMO	4	EA
RR CROSSING WARN. SIGN (W10-1)	2	EA
X-WALK PB SIGN (R10-3e)	9	EA
LEFT TURN YIELD ON FLASHING YELLOW ARROW SIGN (R10-12M)	4	EA

