


 **FEASIBILITY REPORT**

US-69 THRU CITY OF MUSKOGEE
EC-1576 | Muskogee County | JP27108(04)

 **OKLAHOMA**
Transportation



 **Able**
CONSULTING

Welcome to the Oklahoma Department of Transportation’s virtual Open House for the United State Highway 69 improvement project located in Muskogee County.

As part of our efforts to keep the public informed about transportation improvements, we developed this slide presentation. Normally, we would host an in-person Open House, but due to ongoing concerns about COVID-19, we opted to host a virtual Open House to protect public safety.

Please take a moment to review this presentation, and feel free to contact us with questions, concerns, and comments. If you would like to view the project in more detail, please visit the Interactive Map on the virtual Open House webpage.

PURPOSE OF THE VIRTUAL OPEN HOUSE

End Project just south of Okmulgee Ave.

PROJECT LOCATION


Begin Project near Haddock Drive (Southgate Addition).

Shawnee Bypass

City of Muskogee

Peak Blvd.

PURPOSE OF THE OPEN HOUSE
TO PRESENT THE FINDINGS OF THE US-69 FEASIBILITY REPORT AND OBTAIN STAKEHOLDER INPUT.



Project Location:

The project begins north of the US-69/Peak Boulevard Interchange near Haddock Drive and extends approximately 2.5 miles north to Okmulgee Avenue. Review the map on this slide for a depiction of the general project location.

Purpose of the Virtual Open House:

- The purpose of this virtual Open House is to provide an update on the proposed highway improvements. Specifically we wanted to:
- Present the findings of the US-69 Feasibility Report & proposed improvements;
- Describe the potential environmental impacts;
- Obtain public input; and
- Outline the next steps and the proposed project schedule.

PURPOSE OF THE PROJECT

THE PURPOSE & NEED FOR THIS PROJECT IS TO PROVIDE OPERATIONAL IMPROVEMENTS INCLUDING:

- IMPROVEMENTS TO A PEDESTRIAN BRIDGE (ABANDONED RAILROAD OVERPASS)
- EXTENSION OF AN EXISTING RECTANGULAR CONCRETE BOX BRIDGE OVER COODY CREEK
- RECONSTRUCTION OF PAVEMENT
- OPTIMIZATION OF SIGNALIZED INTERSECTIONS



The purpose and need for this project is to provide operational improvements including:

- Improvements to a pedestrian bridge, the abandoned railroad overpass;
- The extension of an existing rectangular concrete box bridge over Coody Creek;
- Reconstruction of pavement; and
- The optimization of signalized intersections.

EXISTING ROADWAY



The existing roadway through the project corridor consists of two different typical sections.

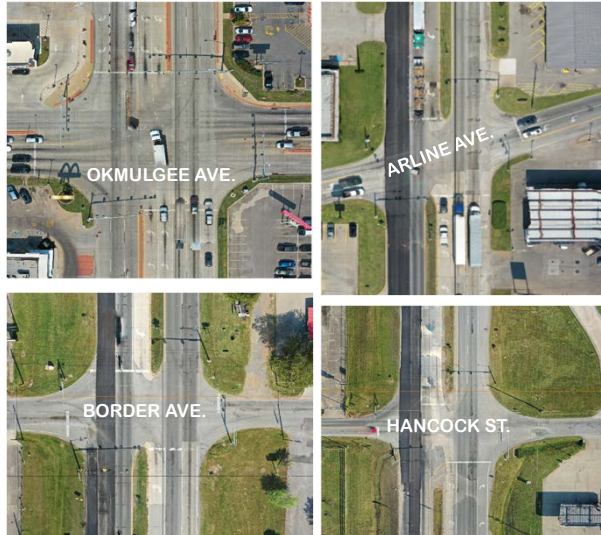
From the beginning of project to Border Avenue is an open section divided 4-lane roadway consisting of 12' lanes with 4' outside and 10' inside shoulders.

From Border Avenue to the end of project is a curb & gutter with raised median 4-lane roadway consisting of 12' lanes with 8' outside shoulders.

INTERSECTIONS

• CURRENTLY THERE ARE FOUR SIGNALIZED INTERSECTIONS ON US-69 WITHIN THE PROJECT EXTENTS AT:

- OKMULGEE AVENUE
- ARLINE AVENUE
- BORDER AVENUE
- HANCOCK STREET



There are four signalized intersections on US-69 within the project corridor:

- Okmulgee Avenue
- Arline Avenue
- Border Avenue
- Hancock Street

TRAFFIC VOLUMES

CURRENT TRAFFIC CONDITIONS
APPROX 25% ARE TRUCKS

YEAR	LOCATION			
	SOUTH OF PROJECT	BEGINNING OF PROJECT	END OF PROJECT	NORTH OF PROJECT
	S. OF PEAK BLVD (SH-165)	NEAR HADDOCK DRIVE (SOUTHGATE ADDITION)	OKMULGEE AVENUE (US-62/SH-16)	DENISON STREET (NEAR BANK OF OK)
	VEHICLES PER DAY	VEHICLES PER DAY	VEHICLES PER DAY	VEHICLES PER DAY
2019	20,100	23,000	20,600	23,700
2018	19,600	21,000	20,900	25,800
2017	19,800	20,800	23,900	25,600
2016	19,200	20,100	23,200	24,800
2015	18,600	19,600	22,500	24,000

DATA GATHERED FROM ODOT'S ONLINE PUBLIC DATABASE.



This table shows historic traffic volumes in the corridor. The table is comprised of data gathered from ODOT's online public database from 2015 to 2019. Approximately 25% of the vehicles are trucks.



COLLISION DATA

FEBRUARY 1, 2014 THRU DECEMBER 31, 2019

Three fatalities in the study period were found:

- Pedestrian collision near Inman Street, 4-13-2014
- Right angle collision (front to side) with vehicle crossing median near Arline Avenue, 5-7-2016
- Head-on collision (front to front) near Haddock Drive, 11-17-2019

Collisions from Border Ave. to Okmulgee Ave. (CS 56, MP 14.61 to CS 18, MP 0.00)					
Location	Collisions	Possible Injury	Non-Incapacitating Injury	Suspected Serious Injury	Fatality
Denver	18	4	1	-	-
Elgin	4	1	1	-	-
Estelle	9	1	-	1	-
Okmulgee	54	4	4	-	-
Arline	36	5	4	-	1
Border	30	6	2	-	-
US-69	50	5	4	2	-

* This data is dependent on various local and state agency incident reports and descriptions.



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Collision data from February 1, 2014 thru December 31, 2019 is shown in the table. It is important to note that this data is dependent on various local and state agency incident reports and descriptions.

Three fatalities in the study period were found:

- A pedestrian collision near Inman Street,
- A right angle collision (front to side) with a vehicle crossing the median near Arline Avenue
- A head-on collision near Haddock Drive

PROJECT BACKGROUND

- 2014 - HOLLOWAY, UPDIKE & BELLEN, INC. (HUB) WAS TASKED WITH DESIGNING UPGRADES TO THE CORRIDOR INCLUDING WIDENING PORTIONS TO 6 LANES, REPLACING THE RAILROAD PEDESTRIAN BRIDGE AND UPDATING TRAFFIC SIGNALS TO MATCH ASPECTS ALONG US-69 FROM OKMULGEE AVE. NORTH TO SHAWNEE BYPASS, WHICH WAS COMPLETED IN 2006.
- 2017 - HUB WAS DIRECTED TO CEASE DESIGN WORK AS THE OKLAHOMA DEPARTMENT OF TRANSPORTATION (ODOT) DECIDED TO EXPLORE REALIGNMENT OF US-69 TO LOOP AROUND THE WEST SIDE OF MUSKOGEE. THIS REALIGNMENT CAME WITH OPPOSITION FROM THE CITY OF MUSKOGEE, AS WELL AS NUMEROUS RESIDENTS AND PROPERTY OWNERS ALONG THE EXISTING CORRIDOR.
- 2020 - ODOT HAS REFOCUSSED ATTENTION ON UPDATING THE EXISTING CORRIDOR AND TASKED HUB TO RESUME DESIGN WORK.



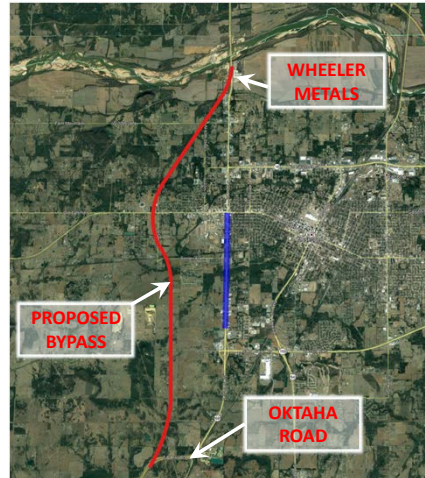
Project Background:

- 2014 - Holloway, Updike & Bellen, Inc. (HUB) was tasked with designing upgrades to the corridor including widening portions to 6 lanes, replacing the railroad pedestrian bridge, and updating traffic signals to match aspects along US-69 from Okmulgee Ave. North to Shawnee Bypass, which was completed in 2006.
- 2017 - HUB was directed to cease design work as the Oklahoma Department of Transportation (ODOT) decided to explore realignment of US-69 to loop around the west side of Muskogee. This realignment came with opposition from the city of Muskogee, as well as numerous residents and property owners along the existing corridor.
- 2020 - ODOT has refocused attention on updating the existing corridor and tasked HUB to resume design work.



BYPASS INVESTIGATION

- THE PROPOSED BYPASS WOULD BEGIN SOUTH OF MUSKOGEE AND TIE BACK INTO US-69 JUST SOUTH OF THE ARKANSAS RIVER CROSSING.
- THERE WOULD BE LIMITED ACCESS ALONG THE NEW CORRIDOR WITH INTERCHANGES AT THE TIE-IN POINTS, OKMULGEE AVE.(US-62) AND POTENTIALLY PEAK BLVD (SH-165).



The proposed bypass would begin south of Muskogee and tie back into US-69 just south of the Arkansas River crossing. There would be limited access along the new corridor with interchanges at the tie-in points, Okmulgee Ave.(US-62) and potentially Peak Boulevard (SH-165).

PROJECT STAKEHOLDER MEETING

A Stakeholder meeting was held November 2, 2020 via Zoom including a slideshow presentation by HUB and Able Consulting. After the slide presentation a question-and-answer session was held. Below is a list of attendees.

Elected Officials

ODOT Commissioner Bob Coburn
State Representative Avery Frix
County Commissioner Ken Doke
County Commissioner Kenny Payne

City of Muskogee

Mr. Mike Miller, City Manager
Mr. Gary Garvin, Assistant City Manager
Mr. Mike Stewart, Public Works Director
Mr. Marlon Coleman, Mayor
Ms. Jaime Stout, City Council Ward 2
Mr. Alex Reynolds, City Council Ward 2
Ms. Traci McGee, City Council Ward 4

ODOT

Chris Wallace, ODOT District 1
Kathy Koon, ODOT Environmental
Siv Sundaram, ODOT Environmental
Steven Gauthé, ODOT Environmental
Leslie Novotny, ODOT Environmental
Brian Linam, ODOT Project Management
Jenny Droscher, ODOT Environmental
Kenna Mitchel, ODOT Media
Cody Hamblin, ODOT Traffic
Montie Smith, ODOT Legislative Liaison
Jamie Malmstrom, ODOT District 1
Lauren Ludwig, ODOT Traffic
Kevin Burns, ODOT Traffic

Consultants

Wes Stewart, HUB
Jennifer Koscelny, Able Consulting



A Stakeholder meeting was held November 2, 2020 via Zoom including a slideshow presentation by HUB and Able Consulting. After the slide presentation a question and answer session was held.

DESIGN OPTIONS BEING CONSIDERED

- HUB WAS TASKED WITH EVALUATING THE FEASIBILITY OF THREE DESIGN OPTIONS
- OPTION 1: CONSTRUCTION OF 6-LANE CURB & GUTTER WITH RAISED MEDIAN.
- OPTION 2: CONSTRUCTION OF 7-LANE CURB & GUTTER WITH CONTINUOUS TWO-WAY LEFT TURN LANE.
- OPTION 3: RECONSTRUCT THE EXISTING 4-LANE CURB & GUTTER WITH RAISED MEDIAN.
- ALL OPTIONS WOULD MAINTAIN THE EXISTING ARRANGEMENT FROM THE BEGINNING OF PROJECT TO BORDER AVENUE CONSISTING OF AN OPEN SECTION DIVIDED 4-LANE ROADWAY

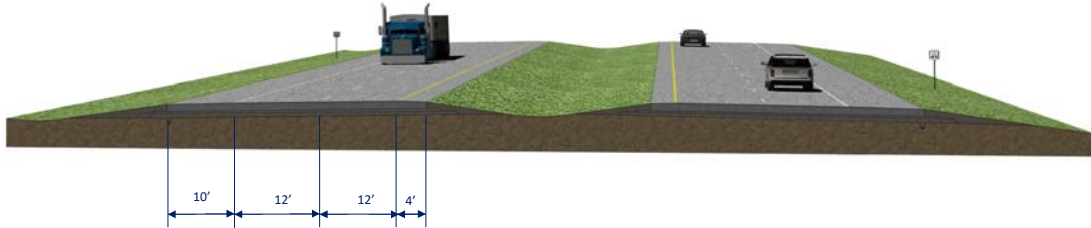


HUB was tasked with evaluating the feasibility of three design options:

- Option 1: Construction of 6-lane curb & gutter with raised median.
- Option 2: Construction of 7-lane curb & gutter with continuous two-way left turn lane.
- Option 3: Reconstruct the existing 4-lane curb & gutter with raised median.
- All options would maintain the existing arrangement from the beginning of project to Border Avenue consisting of an open section divided 4-lane roadway

TYPICAL OPEN ROADWAY SECTION

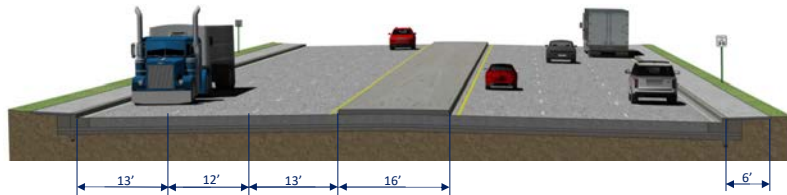
FROM HADDOCK DRIVE (SOUTHGATE ADDITION) NORTH TO BORDER AVENUE THE ROADWAY WILL BE RECONSTRUCTED IN ITS CURRENT CONFIGURATION. THE ROADWAY WILL FEATURE 2-12' DRIVING LANES, 4' INSIDE SHOULDERS AND 10' OUTSIDE SHOULDERS FOR NORTHBOUND AND SOUTHBOUND DIRECTIONS.



From Haddock Drive (Southgate Addition) north to Border Avenue the roadway will be reconstructed in its current configuration. The roadway will feature 2-12' driving lanes, 4' inside shoulders and 10' outside shoulders for northbound and southbound directions.

OPTION 1: 6-LANE WITH RAISED MEDIAN

- COMPLETE RECONSTRUCTION OF OPEN SECTION DIVIDED 4-LANE ROADWAY FROM BOP TO BORDER AVE. AND CONSTRUCTION OF 6-LANE CURB & GUTTER WITH RAISED CONCRETE MEDIAN FROM BORDER AVE. TO EOP.
- THE CONSTRUCTION, RIGHT-OF-WAY, AND UTILITY COST ESTIMATE FOR THIS ALTERNATIVE IS \$35,926,000.

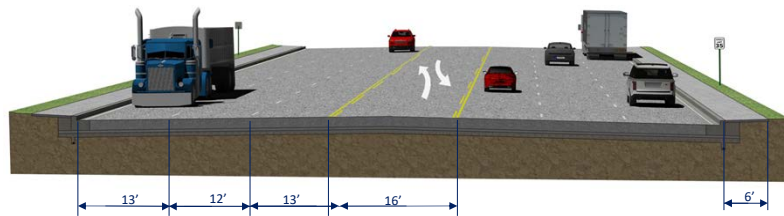


Option 1: 6-Lane with raised median:

- Option 1 includes complete reconstruction of the open section divided 4-lane roadway from beginning of project to Border Ave., and construction of a 6-lane roadway with curb & gutter and a raised concrete median from Border Ave. to the end of project.
- The construction, right-of-way, and utility cost estimate for this alternative is \$35,926,000.

OPTION 2: 7-LANE W/CONTINUOUS TWLTL

- COMPLETE RECONSTRUCTION OF OPEN SECTION DIVIDED 4-LANE ROADWAY FROM BOP TO BORDER AVE. AND CONSTRUCTION OF 7-LANE CURB & GUTTER WITH CONTINUOUS CENTER TURN LANE FROM BORDER AVE. TO EOP.
- THE CONSTRUCTION, RIGHT-OF-WAY, AND UTILITY COST ESTIMATE FOR THIS ALTERNATIVE IS \$35,607,000.

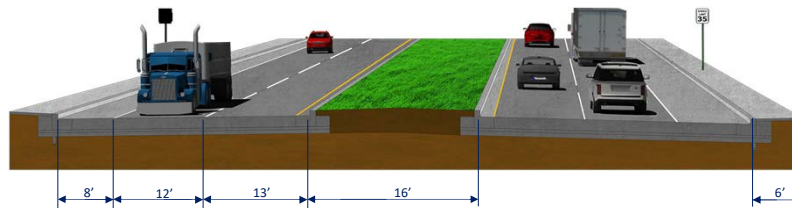


Option 2: 7-lane with continuous two-way left turn lane:

- Option 2 includes complete reconstruction of the open section divided 4-lane roadway from the beginning of project to Border Ave., and construction of 7-lane curb & gutter with a continuous center turn lane from Border Ave. to the end of project.
- The construction, right-of-way, and utility cost estimate for this alternative is \$35,607,000.

OPTION 3: 4-LANE WITH RAISED MEDIAN

- COMPLETE RECONSTRUCTION OF OPEN SECTION DIVIDED 4-LANE ROADWAY FROM BOP TO BORDER AVE. AND RECONSTRUCTION OF EXISTING 4-LANE CURB & GUTTER WITH RAISED MEDIAN FROM BORDER AVE. TO EOP.
- THE CONSTRUCTION, RIGHT-OF-WAY, AND UTILITY COST ESTIMATE FOR THIS ALTERNATIVE IS \$27,277,000.



Option 3: 4-lane with raised median:

- Option 3 includes complete reconstruction of the open section divided 4-lane roadway from the beginning of project to Border Ave., and reconstruction of the existing 4-lane curb & gutter with raised median from Border Ave. to the end of project.
- The construction, right-of-way, and utility cost estimate for this alternative is \$27,277,000.

ALTERNATIVE COST COMPARISON

ALTERNATIVE COST COMPARISON			
	OPTION 1 (6-Lane)	OPTION 2 (7-Lane)	OPTION 3 (4-Lane)
ROADWAY	\$ 22,850,000	\$ 22,350,000	\$ 19,400,000
BRIDGE A	\$ 385,000	\$ 385,000	\$ 385,000
BRIDGE B	\$ 880,000	\$ 880,000	\$ 880,000
CONST. TRAFFIC CONTROL	\$ 750,000	\$ 750,000	\$ 750,000
SIGNING & STRIPING	\$ 150,000	\$ 155,000	\$ 150,000
TRAFFIC SIGNALS	\$ 1,450,000	\$ 1,450,000	\$ 1,450,000
TRAFFIC LIGHTING	\$ 600,000	\$ 600,000	\$ 600,000
STAKING	\$ 220,000	\$ 220,000	\$ 220,000
MOBILIZATION	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000
CONSTRUCTION TOTAL	\$ 28,285,000	\$ 27,790,000	\$ 24,835,000
RIGHT-OF-WAY	\$ 5,642,000	\$ 5,818,000	\$ 443,000
UTILITIES	\$ 1,999,000	\$ 1,999,000	\$ 1,999,000
TOTAL	\$ 35,926,000	\$ 35,607,000	\$ 27,277,000



The alternative cost comparison is shown in the table. Options 1 & 2 have similar pavement typical sections and construction footprints, therefore they also have similar overall construction costs. Option 3, has considerably less right-of-way impacts, and thus it will also have a lower overall cost.

LEVEL OF SERVICE COMPARISON

- LEVEL OF SERVICE(LOS) IS A TERM USED TO QUALITATIVELY DESCRIBE THE OPERATING CONDITIONS OF A ROADWAY BASED ON FACTORS SUCH AS SPEED, TRAVEL TIME, MANEUVERABILITY, DELAY AND SAFETY. FACILITIES ARE DESIGNATED WITH A LEVEL OF SERVICE RATING RANGING FROM A TO F, WITH A REPRESENTING THE BEST OPERATING CONDITIONS AND F THE WORST.
- SINCE THE INITIAL ANALYSIS, THE 7-LANE OPTION WAS INTRODUCED. BECAUSE OF THIS, ODOT TRAFFIC DIVISION WAS TASKED WITH UPDATING ANALYSIS COMPARING THE THREE OPTIONS.
- DESIGN TRAFFIC FOR THE CORRIDOR FOR YEARS 2018 AND 2050 WERE PROVIDED BY ODOT'S STRATEGIC ASSET AND PERFORMANCE MANAGEMENT DIVISION FROM 2018. THESE YEARS AND VOLUMES ARE THE BASIS OF ODOT'S OPERATIONAL ANALYSIS.
- KEY DATA AND RESULTS GLEANED FROM THE ANALYSIS ARE ILLUSTRATED IN TABLES 6, 7, 8 AND 9. TABLES 6 AND 7 SHOW ARTERIAL LEVEL OF SERVICE INFORMATION WHILE TABLES 8 AND 9 INCLUDE INTERSECTION LEVEL OF SERVICE INFORMATION. NOTE THAT THE 6-LANE AND 7-LANE OPTIONS ARE REPORTED AS THE SAME COLUMN IN THE TABLES.
- FROM AN OPERATIONS/ANALYTICAL PERSPECTIVE THERE IS LITTLE DIFFERENCE BETWEEN THESE OPTIONS.
- THE V/C RATIO IN TABLES 8 AND 9 IS DERIVED BY THE VOLUME OF TRAFFIC DIVIDED BY THE CAPACITY OF THE ROADWAY. V/C RATIOS BELOW 0.95 ARE IDEAL, BUT V/C ≤ 1.05 DURING OUT YEAR PEAK IS LIKELY ACCEPTABLE SINCE DESIGN TRAFFIC NUMBERS USUALLY REPRESENT WORST-CASE CONDITIONS.



Level of service(LOS) is a term used to qualitatively describe the operating conditions of a roadway based on factors such as speed, travel time, maneuverability, delay and safety. Facilities are designated with a level of service rating ranging from A to F, with A representing the best operating conditions and F the worst.

Since the initial analysis, the 7-lane option was introduced. Because of this, ODOT updated the analysis comparing the three options. Design traffic for the corridor for years 2018 and 2050 were used as the basis of ODOT's operational analysis.

Key data and results are shown in tables 6, 7, 8 and 9 to follow. Tables 6 and 7 show arterial level of service information while tables 8 and 9 include intersection level of service information. Note that the 6-lane and 7-lane options are reported as the same column in the tables. From an operations perspective there is little difference between these options.

The V/C ratio in tables 8 and 9 is derived by the volume of traffic divided by the capacity of the roadway. V/C ratios below 0.95 are ideal, but a V/C ratio over 1 in future years is likely acceptable since design traffic numbers usually represent worst-case conditions.

ARTERIAL LEVEL OF SERVICE

Several signals were identified with malfunctioning or broken loops. They are being repaired now(10-14-2020).

Table 6. 2018 Arterial Level of Service / Arterial Speed (mph) / Travel Time (min' sec)

Direction	Period	Repaired Signals	4-Lane Divided Option	6- and 7-Lane Options
NB	AM Peak	B / 28 / 09' 27	B / 29 / 09' 06	B / 29 / 09' 00
SB	AM Peak	B / 30 / 08' 33	B / 30 / 08' 24	B / 31 / 08' 13
NB	PM Peak	C / 27 / 09' 41	C / 27 / 09' 31	C / 28 / 09' 25
SB	PM Peak	C / 28 / 09' 05	B / 29 / 08' 48	B / 29 / 08' 42

Table 7. 2050 Arterial Level of Service / Arterial Speed (mph) / Travel Time (min' sec)

Direction	Period	Maintained Signals	4-Lane Divided Option	6- and 7-Lane Options
NB	AM Peak	E / 13 / 20' 02	E / 14 / 18' 48	E / 16 / 16' 31
SB	AM Peak	E / 15 / 17' 10	E / 16 / 16' 11	E / 19 / 13' 20
NB	PM Peak	F / 11 / 22' 53	F / 12 / 21' 47	E / 14 / 19' 17
SB	PM Peak	F / 10 / 25' 00	F / 11 / 22' 51	E / 15 / 16' 58



Several signals were identified with malfunctioning or broken loops. They were repaired during the recent pavement maintenance project on the corridor (October 2020).

The “Direction” columns are northbound or southbound traffic.

The “Period” columns are morning peak traffic and evening peak traffic.

The data in “Repaired Signals”, “4-lane divided option” & “6 and 7-lane options” is level of service rating, arterial speed in miles per hour, and travel time through the corridor in minutes and seconds.

Table 6 illustrates minimal improvements with the 6 and 7-lane options for current traffic volumes.

Table 7 illustrates a substantial improvement with the 6 & 7-lane options for future 2050 traffic volumes.



INTERSECTION LEVEL OF SERVICE

Table 8. 2018 Intersection LOS – Maximum v/c Ratio for All Options

Intersection	2018 AM Repaired	2018 PM Repaired	2018 AM 4-Lane	2018 PM 4-Lane	2018 AM 6-/7-Lane	2018 PM 6-/7-Lane
US-69 & Fern Mountain/Harris	D-0.88	D-0.94	D-0.88	D-0.94	D-0.88	D-0.94
US-69 & Shawnee	D-0.98	E-1.05	D-0.98	E-1.05	D-0.98	D-1.05
US-69 & Military/ Tahlequah	B-0.74	B-0.79	B-0.74	B-0.79	B-0.74	B-0.79
US-69 & Broadway	C-0.97	C-0.94	C-0.97	C-0.94	C-0.98	C-0.94
US-69 & Okmulgee	D-0.96	D-1.04	D-0.96	D-1.04	C-0.91	D-0.95
US-69 & Arline	B-0.77	C-0.99	B-0.77	C-0.98	B-0.63	C-0.74
US-69 & Border	C-0.89	C-0.91	B-0.77	C-0.78	B-0.74	B-0.61
US-69 & Hancock	C-0.79	C-0.85	B-0.74	C-0.80	B-0.55	B-0.73

Table 9. 2050 Intersection LOS – Maximum v/c Ratio for All Options

Intersection	2050 AM Maintained	2050 PM Maintained	2050 AM 4-Lane	2050 PM 4-Lane	2050 AM 6-/7-Lane	2050 PM 6-/7-Lane
US-69 & Fern Mountain/Harris	F-1.37	F-1.52	F-1.37	F-1.52	F-1.37	F-1.52
US-69 & Shawnee	F-1.37	F-1.56	F-1.37	F-1.56	F-1.37	F-1.56
US-69 & Military/ Tahlequah	B-0.98	D-1.07	B-0.98	D-1.07	B-0.98	D-1.07
US-69 & Broadway	F-1.27	F-1.31	F-1.27	F-1.31	F-1.27	F-1.31
US-69 & Okmulgee	F-1.32	F-1.50	F-1.32	F-1.50	F-1.20	F-1.33
US-69 & Arline	E-1.31	F-1.41	E-1.31	F-1.41	C-0.92	E-1.09
US-69 & Border	F-1.37	F-1.52	F-1.32	F-1.34	D-0.97	C-1.00
US-69 & Hancock	D-1.23	F-1.30	C-1.04	D-1.13	C-0.89	C-0.91



These tables illustrate level of service and V/C ratios for 2018 and 2050 traffic volumes. Again, V/C is volume divided by capacity. So as volume of traffic increases and capacity of the roadway stays constant then the V/C ratio will increase.

The lower half of each table are the intersections in the project corridor: Okmulgee Avenue, Arline Avenue, Border Avenue and Hancock Street.

Table 8 with 2018 traffic volumes shows good level of service and V/C ratios in the project corridor with minimal changes between the different options.

Table 9 with 2050 traffic volumes we start to see level of service issues with current and 4-lane configurations. The 6 and 7-lane options deviate from the 4-lane and offer much better performance for future traffic.



ACCESS REVIEW

THE SECTION BETWEEN BORDER AVENUE AND OKMULGEE AVENUE CONTAINS 29 DRIVEWAYS ON THE WEST SIDE AND 31 DRIVEWAYS ON THE EAST SIDE, APPROXIMATELY 1 DRIVEWAY EVERY 70 FEET.



The blue dots represent commercial or private driveway entrances. The section between Border Avenue and Okmulgee Avenue contains 29 driveways on the west side and 31 driveways on the east side, approximately 1 driveway every 70 feet

ACCESS REVIEW

THE SECTION BETWEEN OKMULGEE AVENUE AND SHAWNEE CONTAINS 18 DRIVEWAYS ON THE WEST SIDE AND 10 DRIVEWAYS ON THE EAST SIDE, APPROXIMATELY 1 DRIVEWAY EVERY 189 FEET. SOME OF THESE DRIVEWAYS ARE RESTRICTED BY THE CENTER MEDIAN. THE DRIVEWAY DENSITY FOR THE SECTION WITH THE TWO-WAY LEFT TURN LANE IS 1 DRIVEWAY EVERY 175 FEET.

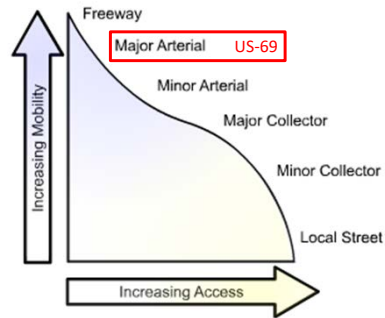


The section between Okmulgee Avenue and Shawnee contains 18 driveways on the west side and 10 driveways on the east side, approximately 1 driveway every 189 feet. Some of these driveways are restricted by the center median. The driveway density for the section with the two-way left turn lane is 1 driveway every 175 feet.

FEDERAL HIGHWAY ADMINISTRATION (FHWA) ACCESS MANAGEMENT

ACCESS MANAGEMENT SHOULD ADDRESS:

- FACILITY HIERARCHY
- TRAFFIC SIGNAL SPACING
- TURNING & AUXILIARY LANES
- INTERSECTION/INTERCHANGE SPACING
- MEDIAN TREATMENTS/OPENINGS
- STREET CONNECTIONS
- DRIVEWAY SPACING



The Federal Highway Administration stipulates that access management should address facility hierarchy, traffic signal spacing, turning/auxiliary lanes, intersection/interchange spacing, median treatments or openings, street connections and driveway spacing.

The graphic illustrates facility hierarchy and associates that with increased mobility or increased access.

US-69 is categorized as a major arterial roadway.



CORRIDOR SAFETY

FACTS TO CONSIDER WHEN CHOOSING ALTERNATIVES REGARDING THE CORRIDOR FROM BORDER AVE. TO OKMULGEE AVE ARE AS FOLLOWS:

- AS ACCESS DENSITY INCREASES CRASH RATES INCREASE.
- ROADWAYS WITH NON-TRAVERSABLE MEDIANS ARE SAFER THAN UNDIVIDED ROADWAYS OR THOSE WITH CONTINUOUS TWO-WAY LEFT-TURN LANES (TWLTL) PER NCHRP REPORT 420, 1999 (TRANSPORTATION RESEARCH BOARD – NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM)
- HIGHWAY FACILITIES WITH NON-TRAVERSABLE MEDIANS HAD AN OVERALL ACCIDENT RATE OF 5.2 PER MILLION VEHICLES MILES TRAVELED (VMT) COMPARED WITH 7.3 PER MILLION VMT ON FACILITIES WITH TWLTLs. AVERAGE CRASH RATES ARE 30% LESS WITH MEDIAN.
- AS TRAFFIC VOLUMES RISE BEYOND 20,000 VEHICLES PER DAY, TWLTLs BEGIN TO DECREASE IN FUNCTIONALITY, RESULTING IN SAFETY PROBLEMS.

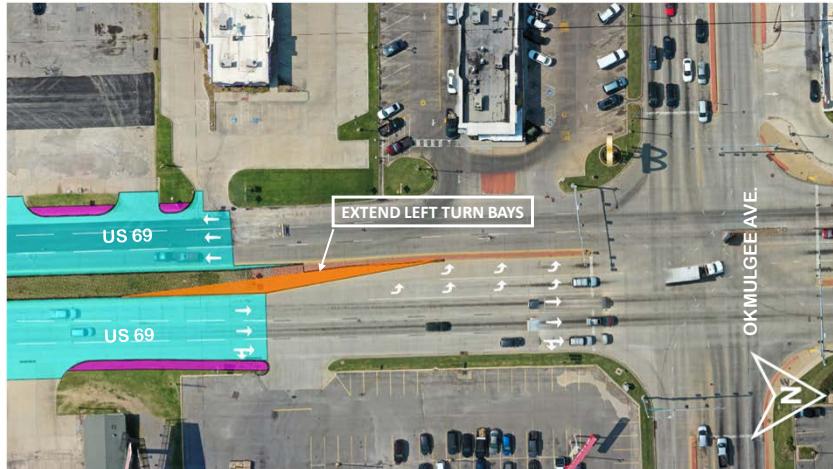


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Facts to consider when evaluating alternatives from Border Avenue to Okmulgee Avenue are as follows:

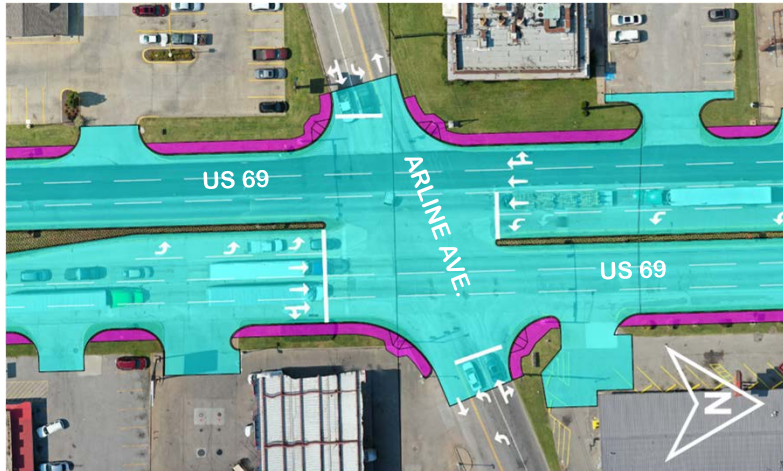
- As access density increases crash rates increase.
- Roadways with raised medians are safer than undivided roadways or those with continuous two-way left-turn lanes
- Highway facilities with raised medians had an overall accident rate of 5.2 per million vehicles miles traveled compared with 7.3 per million vehicle miles traveled on facilities with two way left turn lanes. Average crash rates are 30% less with medians.
- As traffic volumes rise beyond 20,000 vehicles per day, two way left turn lanes begin to decrease in functionality, resulting in safety problems.

INTERSECTION IMPROVEMENTS OKMULGEE AVE & US-69



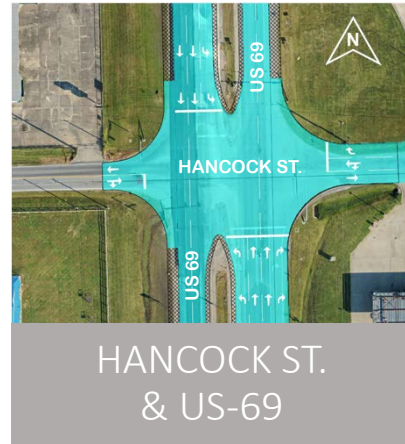
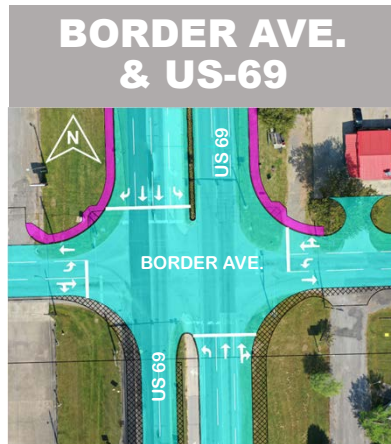
The construction project will end just south of the Okmulgee Avenue intersection. Physical improvements at this location will consist of extending the left turn bays for additional vehicle storage.

INTERSECTION IMPROVEMENTS ARLINE AVE. & US-69



Left turn lanes are already implemented at the Arline Avenue intersection. Improvements here will include sidewalks with wheelchair ramps at pedestrian crossings.

INTERSECTION IMPROVEMENTS BORDER AVE. & US-69, HANCOCK ST. & US-69

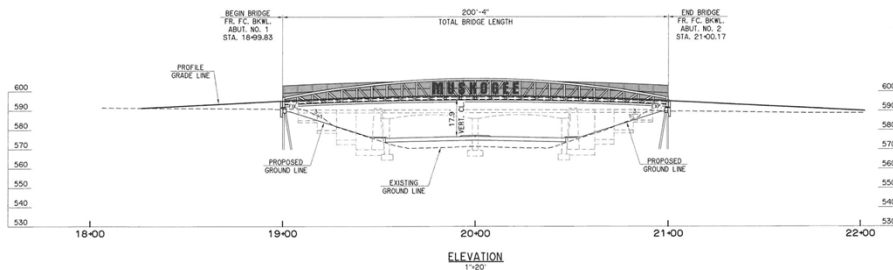


The Border Avenue intersection will receive left turn lanes in the east and west bound directions.

Hancock Street will receive a dedicated right turn lane in the west bound direction.

CENTENNIAL TRAIL OVERPASS BRIDGE

- “MUSKOGEE” SIGNAGE TO BE APPROVED BY CITY OF MUSKOGEE AND COMPLEMENT OTHER SIGNAGE THROUGHOUT CITY
- US-69 GRADE BEING RAISED APPROXIMATELY 5’.
- SECTION 4(F) NEEDS TO BE COMPLETED, TIMELINE TBD



The Centennial Trail Overpass Bridge will be replaced with a steel truss bridge with to compliment other recent aesthetic enhancements made by the city of Muskogee in recent years. Signage is to be approved by the city of Muskogee.

US-69 is being raised approximately 5’ at the overpass to improve drainage.

Section 4(f) will need to be completed prior to construction.

CENTENNIAL TRAIL OVERPASS BRIDGE AESTHETICS



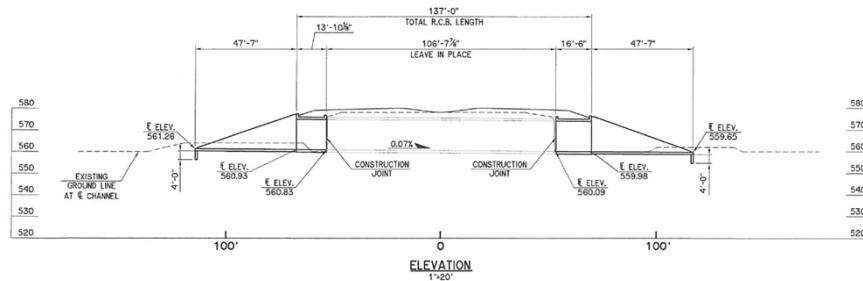
Keystone® Pedestrian Truss



The aesthetic design of the overpass will be the Keystone Pedestrian Truss from Contech Construction Products. This was selected by the city of Muskogee to compliment other features around town. The Keystone Pedestrian Truss also performs well on the long span needed to cross US-69.

COODY CREEK BRIDGE EXTENSION

- THE EXISTING STRUCTURE IS SOUND AND DOES NOT REQUIRE REPLACEMENT.
- THE SECTION OF ROADWAY IN THE VICINITY OF COODY HAS A NARROW MEDIAN THAT WILL BE WIDENED.
- THE VERTICAL GRADE WILL BE RAISED SLIGHTLY TO MAINTAIN MINIMUM COVER OVER THE BRIDGE.
- THIS WILL REQUIRE THE BRIDGE TO BE EXTENDED 13.8' LEFT AND 16.5' RIGHT.



The Coody Creek bridge is sound and does not require replacement; however, the new roadway will be slightly wider than existing requiring the structure to be extended on each end. The vertical grade of US-69 will be raised slightly to maintain minimum cover over the bridge.

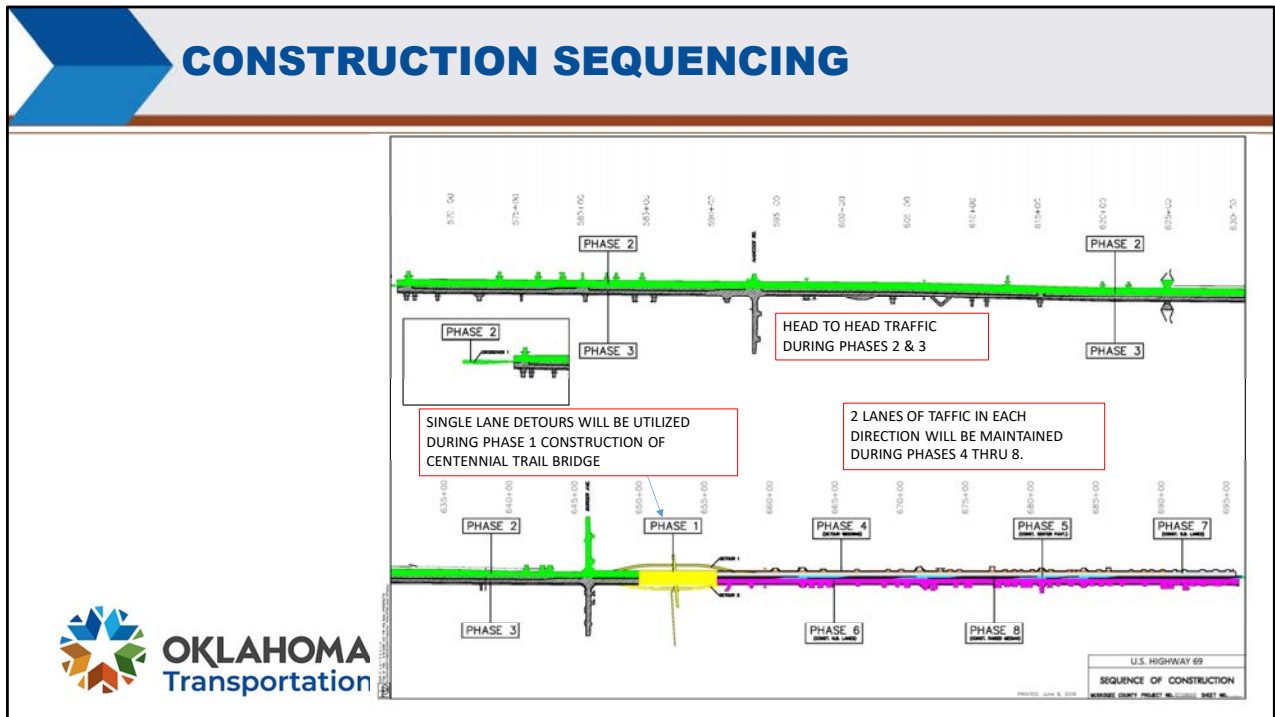
CONSTRUCTION SEQUENCING



- A SMART WORKZONE WITH MESSAGE BOARDS WILL BE UTILIZED DURING CONSTRUCTION.
- THE ROADWAY PROJECT WILL CONSIST OF VARIOUS CONSTRUCTION PHASES.
- RESIDENTIAL & BUSINESS ACCESS DURING CONSTRUCTION WILL BE MAINTAINED BY SEQUENCING DRIVEWAY RECONSTRUCTION TO MINIMIZE DISTURBANCE.



The project will be sequenced in various construction phases. A smart workzone with message boards will be utilized to notify traffic. Residential and business access during construction will be maintained by sequencing driveway reconstruction to minimize disturbance.



Proposed Construction Sequencing is as follows:

Phase 1 will include reconstruction of the Centennial Trail Overpass. One-lane detours will be constructed on each side. The trail in the vicinity will be closed during this phase. It is estimated to take 120 days to complete Phase 1.

Phase 2 and 3 will consist of reconstruction from beginning of project to the overpass location. Traffic will be shifted to one side with one lane in each direction during these phases.

Phase 4 will consist of a temporary widening along the west edge the roadway from the overpass location to end of project near Okmulgee Avenue.

Phase 5 will include paving of the existing raised median. Traffic will be restricted to one lane in each direction and moved to the outside lanes.

Phase 6 will be the construction of the northbound lanes. Traffic will shifted to the newly paved center median and southbound lanes. 2 lanes of traffic in each direction will be utilized.

Phase 7 will be the construction of the southbound lanes. Traffic will shifted to the paved center median and newly paved northbound lanes. 2 lanes of traffic in each direction will be utilized.

Phase 8 consists of the construction of the raised center median.

This sequencing is not final and the construction contractor may have alternative suggestions.

Environmental Studies

Environmental Studies Were Completed in 2015 and Will Be Updated For:

- Cultural Resources (Historic and Archaeological)
 - Waters and Wetlands
 - Threatened and Endangered Species
 - Hazardous Materials Assessment
 - Traffic Noise
 - Floodplains Assessment
- Commitments to avoid and/or minimize impacts to the environment will be included in the project in accordance with the National Environmental Policy Act (NEPA).



ODOT will complete updated detailed environmental studies of the proposed improvement and will consult with the appropriate agencies for approval. Studies of cultural resources, waters and wetlands, threatened and endangered species, hazardous materials, floodplains assessment and traffic noise will be updated. Based on the results of these studies, additional commitments to avoid and/or minimize impacts to the environment will be added to the project. In order to authorize construction of the project, ODOT will complete a Documented Categorical Exclusion for Federal Highway Administration approval.

Environmental Studies

Cultural Resources (Section 106) completed in 2015 Resulted In:

- No effect on Historic Properties.
- The existing pedestrian bridge (built in 1952) was documented and was found to be sufficiently altered and not eligible for inclusion in the National Register of Historic Places.
- No previously recorded archaeological sites or Determination of Eligibility (DOE) sites.
- The study and report was provided to the State Historic Preservation Office and the State Archaeologist.
 - Both agencies agreed with the results that there is no effect on cultural resources.
- The following Tribes were consulted: Caddo Nation, Cherokee Nation, Kialegee Tribal Town, Muscogee Nation, Osage Nation, Thlopthlocco Tribal Town, United Keetoowah Band of Cherokees and Wichita & Affiliated Tribes.

These findings will be confirmed in the study update.



For cultural resources, field studies and reporting to the State Historic Preservation Office and the State Archaeologist were completed that resulted in concurrence from both agencies. The existing pedestrian bridge, built in 1952, was documented and was found to be not eligible for inclusion in the National Register of Historic Places. There will be no effect on historic properties for this segment. The State Historic Preservation Office and the State Archaeologist agreed with this finding. ODOT also consulted with Native American tribes on these findings..

Environmental Studies

Threatened and Endangered Species Study - 2015

- Threatened and Endangered Species completed in 2015 found:
 - Impacts to the American Burying Beetle
 - Impacts to the Northern Long-eared Bat
- Migratory Birds

These findings will be confirmed in a biological study update



Northern Long Eared Bat



American Burying Beetle

An updated biological study will be completed.

In 2015 impacts to American Burying Beetle and Northern long eared bat were found.

Migratory birds are protected by the federal Migratory Bird Treaty Act. Migratory birds were found to be nesting on transportation structures in 2015 and this will be confirmed in the study update.