

**CITY OF BROKEN ARROW
RESOLUTION NO. 1639**

ATTACHMENT A

**Resolution to Request Programming of
Tulsa Urbanized Area Surface Transportation Funds**

WHEREAS, Surface Transportation Program Urbanized Area funds have been made available for transportation improvements within the Tulsa Transportation Management Area, and

WHEREAS, The City of Broken Arrow has selected a project described as follows: Intersection Improvements for Washington Street (91st Street South) and 23rd Street (193rd East Avenue). The project will include widening of Washington Street from approximately 1,700 feet west and 600 feet east of 23rd Street and widening of 23rd Street from 1,150 feet north and 1,750 feet south of Washington Street at the intersection. The project shall include widening the existing 2-lane asphalt roadway to a 3-lane section on Washington Street and a 5-lane section at the immediate north and south legs of the intersection on 23rd Street with the addition of shoulders, open ditch drainage, sidewalk, as well as design of water and sewer line relocations/upgrades as required. Replacement of the existing bridge located on Washington Street west of the intersection and the existing bridge located on 23rd Street south of the intersection, along with miscellaneous structures shall be included in the project. The construction of a new traffic signal at Washington St. and 23rd St. is to be included in this project. If a warrant analysis determines that a roundabout may be feasible for intersection improvements, a conceptual plan graphic will be created and submitted as part of an investigation to determine which intersection design is the most appropriate. The project also includes identification of right-of-way needs, preparation of right-of-way acquisition documents, assistance during acquisition, identification of the need for utility relocations, and the coordination of the utility relocations.

WHEREAS, the selected project is consistent with the local comprehensive plan, including applicable Major Street and Highway Plan Element, and the Regional Transportation Plan; and

WHEREAS, the engineer's preliminary estimate of cost is \$11,460,000.00, and Federal participation under the terms of the Surface Transportation Block Grant Program Urbanized Area funds are hereby requested for funding of 34.9 percent of the project cost; and

WHEREAS, the City of Broken Arrow proposes to use 2018 Streets General Obligation Bond funds for the balance of the project costs; and

WHEREAS, the City of Broken Arrow agrees to provide for satisfactory maintenance after completion, and to furnish the necessary right-of-way clear and unobstructed; and

WHEREAS, the City of Broken Arrow has required matching funds available and further agrees to deposit with the Oklahoma Department of Transportation said matching funds within the time frame as required by the ODOT.

NOW THEREFORE, BE IT RESOLVED: That the Indian Nations Council of Governments is hereby requested to program this project into the Transportation Improvement Program for the Tulsa Transportation Management Area; and should the project be selected for funding; and

BE IT FURTHER RESOLVED: That upon inclusion in the Transportation Improvement Program, the Oklahoma Transportation Commission is hereby requested to concur in the programming and selection of this project and to submit the same to the Federal Highway Administration for its approval.

ATTEST:

Mayor

(SEAL)

Clerk

APPROVED AS TO FORM:

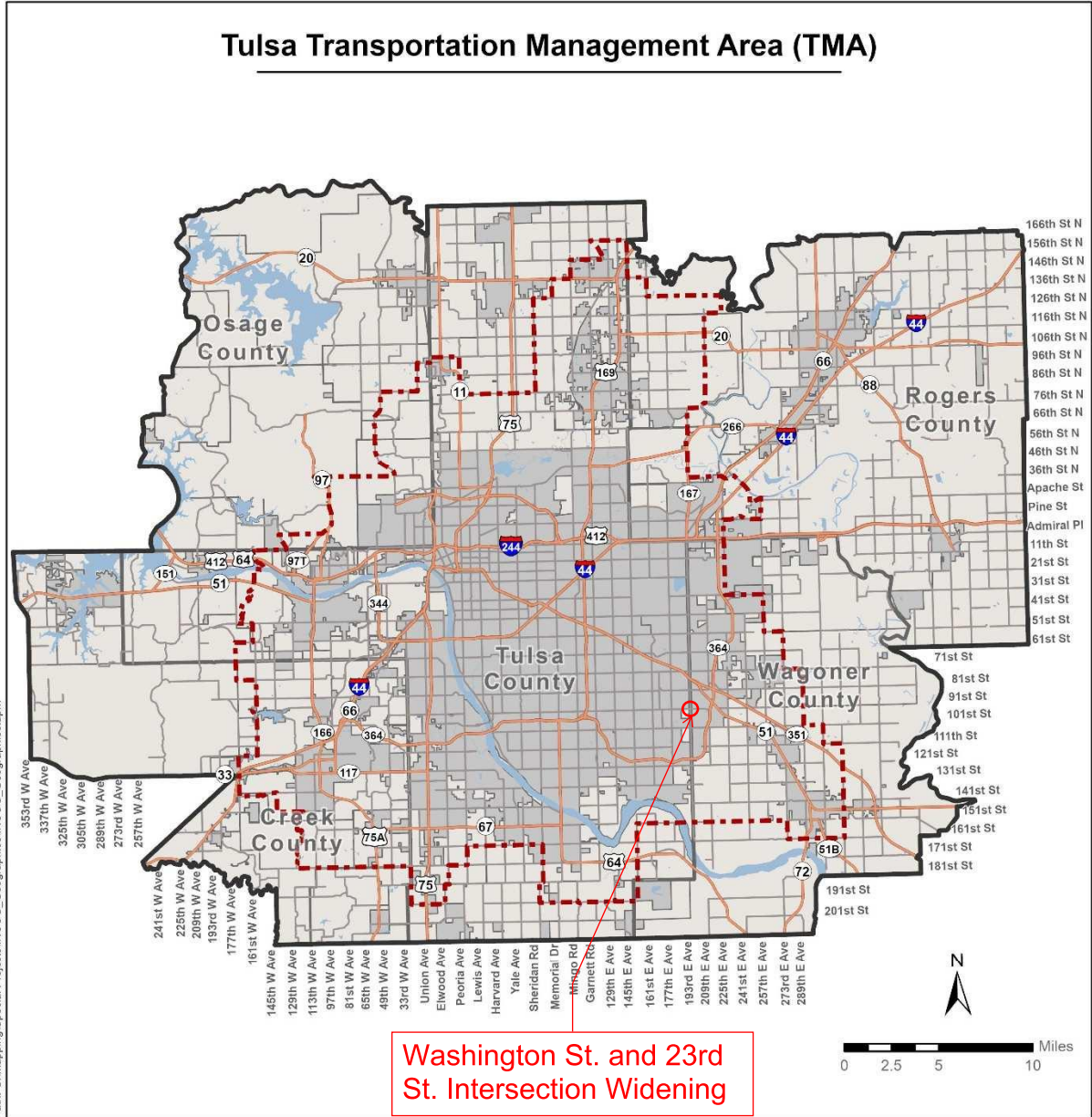
D. Graham Parker

3/11/2025

Assistant City Attorney

CITY OF BROKEN ARROW - PRIORITY NO. 3 PROJECT

Attachment B – Tulsa Transportation Management Area



Attachment C - Tulsa Urban Area Surface Transportation Program Project Rating Form

A. Application Information

Project Title	Washington St. and 23rd St. Intersection Improvements
Project Location	Washington (91st St. S.) and 23rd St. (193rd E. Ave) Intersection
Sponsor	City of Broken Arrow
Sponsor Contact Name	Brent Stout
Sponsor Contact Title	Transportation Project Manager
Address	485 N. Poplar Ave, Broken Arrow, OK 74012
Phone	(918) 259-7000 Ext. 7395
Email	bstout@brokenarrowok.gov

B. Project Financial Information – Include a detailed, complete, realistic cost estimate, and summarize below:

PROJECT BUDGET						
		Percent	Federal Funds	Sponsor Funds (20% Minimum)	TOTAL	
Pre-Construction Costs:						
Planning/Design						
ROW						
Utility Relocation						
Sub-total						
Construction Cost			\$2,960,000	\$5,520,000	\$8,480,000	
Contingency Cost (%)		10 %	\$300,000	\$550,000	\$850,000	
Sub-total			\$3,260,000	\$6,070,000	\$9,330,000	
Escalation	# of yrs <u>3</u>	<u>5</u> % per yr	15.8 %	\$510,000	\$970,000	\$1,480,000
Sub-total			\$3,770,000	\$7,040,000	\$10,810,000	
Construction Management & Inspection (%)		6%	\$230,000	\$420,000	\$650,000	
TOTAL			\$4,000,000	\$7,460,000	\$11,460,000	

- Only City of Broken Arrow funds used for planning/engineering design, right-of-way acquisition and utility relocation.

* \$1.5 mil of this total amount has already been allocated funding to City of Broken Arrow from a previous STP application award.

Note: In the application, please provide (a) The source of cost estimates and attach the most detailed and complete cost estimate available. Annual cost escalation to year of expenditure percentage and Construction Management & Inspection fee is provided as guidance but you may use the best applicable percentages to your project provided you have a basis. Total Federal Funds are capped for the project once awarded.

- 1) Applicants are required to include a minimum of **6%** Construction Management & Inspection costs per ODOT's recommendation.
- 2) Projects selected often take two years or more for preconstruction activity before they are ready for letting. The local project sponsor must provide an annual cost escalation to the year of expenditure.
- 3) All federal funds will be capped for awarded projects inclusive of CM&I fees.

Certification:

I certify that City of Broken Arrow (name of sponsor) supports the proposed project, has the legal authority to pledge matching funds, and has the legal authority to apply for state or federal funds. I further certify that matching funds are available or will be available for the proposed project.

Signature: Charlie Bright

Date: 3/12/25

Printed Name: Charlie Bright

Title: Engineering Director

A. Travel Time Improvement – Maximum 30 Points

Projects that seek to improve travel time can receive up to 30 points in this category. Improvements are usually in the form of capacity addition or intersection improvements.

1. What is the most recent average daily traffic count for the proposed project location? (For new alignments the projected volume and number of lanes from the most current computer model of the long-range transportation plan will be used. For intersection improvements, traffic volume of all approaches averaged will be used to determine the V/C ratio.)

Count: 15,056 Date: 3/12/25

Future Forecasted Traffic Volumes (2050): 39,702

Current number of lanes: 2 Count per lane: 7,528

For corridor improvements, INCOG will determine if the proposed project provides relief for an existing/future congested corridor location, using volume to capacity (V/C) ratio where Level of Service C capacity is greater than 0.80.

- V/C Ratio 1.50 or greater (18 points)
- V/C Ratio 1.20 or greater (12 points)
- V/C Ratio 1.00 to 1.19 (8 points)
- V/C Ratio 0.80 to 0.99 (4 points)
- V/C Ratio less than 0.80 (0 points)

2. Cost Points: Max 6 Points INCOG will calculate the STBG dollar cost per daily traffic volume. The projects will be divided into quartiles and the first quartile will receive 6 points, the second quartile 4 points, the third quartile 2 points and the fourth quartile 1 point.
3. If the project is exclusively related to intersection improvements: Additional 6 Points (Example: for Traffic Flow Improvements such as Arterial intersection projects, System Management/Integration, Turning Movement improvements, adding turn lanes to existing roadway or other related corridor traffic improvement projects that include intersection improvements to reduce congestion) –

Please provide any additional comments on congestion improvements:

Although classified as secondary arterials in the Transportation Plan, the segment of 23rd Street (193rd E. Ave.) from Houston (81st St. S.) to New Orleans (101st St. S.) is a major feeder for the Broken Arrow Expressway (SH-51), during the morning and afternoon rush hours. Washington St. (91st St. S.) from 9th St. (177th E. Ave.) to 37th St. (209th E. Ave.) is a route that is used by students and faculty to and from the NSU Broken Arrow campus. They are identified in INCOG's Regional Transportation Plan 2045 - Update as "congested arterials" with a Level of Service rating of "C" and are recommended for widening to 4 lane Urban Arterial streets in that plan as well as in the INCOG 2009 Congestion Management Program. In Broken Arrow's 2014 Transportation System Operational Analysis Update prepared by Traffic Engineering Consultants, the Level of Service is a "D" using 2018 traffic estimates and "E" using projected 2023 estimates. Expansion of the roadway and the Washington Street and 23rd Street intersection would significantly improve congestion in the area.

B. Safety Improvements – Maximum 30 Points

If the project is designed to mitigate identified safety issues, it can receive up to 30 points in this category. Please provide a description in the space provided next to each applicable criterion.

What is the Average Annual Crash Severity Index for the Project? _____
 (INCOG will calculate based on data from DPS/ODOT related to Fatality, Injury & PDO crashes)

- First Quartile of Projects: 18 Points
- Second Quartile of Projects: 12 Points
- Third Quartile of Projects submitted: 8 Points
- Fourth Quartile of Projects submitted: 4 Points

If the project is not an EXCLUSIVE safety project, it may not receive above points, but eligible to receive following points:

Evaluation Criteria	Points	Provide Description
Project includes transit, pedestrian, bicycle & wheelchair traffic safety. Ex: signalized crossings, high visibility markings, signage, crosswalk upgrades, sidewalk extensions, pedestrian ramps, lighting, barriers separating vehicle/person conflicts. (List each item that is a part of the design separately to receive 1 point each, up to 4 points total.)	4	PLANNING FOR UPGRADES/IMPROVEMENTS INCLUDE: PEDESTRIAN CROSSWALKS, HIGH VISIBILITY PAVEMENT MARKINGS, NEW SIGNAGE, POSSIBLE ADDITION OF SIDEWALK AND/OR SIDEPATH WITH ADA-COMPLIANT CURB RAMPS, ADDITION OF CURB & GUTTER TO PROVIDE A BARRIER BETWEEN TRAFFIC AND PEDESTRIANS ON SIDEWALK ON WASHINGTON STREET AND SIDEPATH/TRAIL, AND WIDENING FROM 2 LANES TO 3 LANES ON WASHINGTON STREET AND 2 LANES TO 5 LANES ON 23RD STREET (WITH LEFT TURN LANE) FOR IMMEDIATE INTERSECTION ONLY (ON 23RD). EACH LEG OF THE INTERSECTION WILL INCLUDE LEFT TURN LANES FOR IMPROVING LEFT TURN MOVEMENTS FOR BUSES AND HEAVY VEHICLES USING THIS INTERSECTION.
Projects to improve roadway safety and/or address Traffic Incident Management. Ex: pavement markings, lighting, signage, barriers or increase skid resistance, responder safety, equipment, communication systems, design features such as incident detection/synchronized signals, turning lane improvements, super-two-lane configuration with added shoulders (List each item that is a part of the design separately to receive 1 point each, up to 4 points total.)	4	PLANNING FOR UPGRADES/IMPROVEMENTS INCLUDE: PEDESTRIAN CROSSWALKS, PAVEMENT MARKINGS, NEW SIGNAGE, TRAFFIC SIGNAL SYNCHRONIZATION AND ADDITION OF LEFT TURN LANE EACH DIRECTION, PROVIDES BETTER ACCESS FOR EMERGENCY RESPONDERS AND GIVES ADDITIONAL ROADWAY FOR AVOIDING AND CLEARING TRAFFIC INCIDENTS. NEW PAVEMENT/OVERLAY FOR THE PROJECT WILL PROVIDE BETTER SKID RESISTANCE FOR VEHICLES AND REDUCE THE NUMBER AND SEVERITY OF ACCIDENTS. SHOULDERS WILL BE INCLUDED BOTH NORTH AND SOUTH BEYOND IMMEDIATE 5-LANE INTERSECTION WIDENING ON 23RD STREET ONLY.
Project increases safety through rail crossing improvements.	4	
TOTAL		

Comments:

With the addition of pedestrian access to the intersection, the safety improvements described above at this arterial intersection should reduce the number and severity of traffic accidents occurring at this location. Pedestrians utilizing this intersection should also be much safer with the new ADA improvements, crosswalks, signage, striping, and countdown pedestrian heads at the traffic signals. The addition of left turn lanes will also allow for safety improvements.

Arterial intersection related safety criteria:

Additional points will be awarded for projects that are proposed to improve unsafe intersections, railroad crossings and/or bridges Using the ODOT Public Safety data from the past three years, INCOG will calculate the most recent average annual crash count at the proposed project location:

Number of Crashes: 7 (2 w/ minor injuries) Date: 2022 - 2024
Crash Severity Index: _____
Points Awarded: _____

The projects will be divided into quartiles based on the Crash Severity Index and the first quartile will receive 2 points, the second quartile 4 points, the third quartile 6 points and the fourth quartile 8 points. Projects that involve rehabilitation of existing facilities only, with no targeted additional safety features/improvements, are not eligible for “Crash Severity” points.

C. System Maintenance and Management – Maximum 30 Points

If the main purpose of the proposed project is to maintain, rehabilitate or rebuild existing facilities, it may receive up to 30 points in this category. Please provide a description in the space provided next to each applicable criterion.

Evaluation Criteria	Points	Provide Description
Project includes either resurfacing or rehabilitation of a majority of the extent, substantial drainage improvements.	15	THIS PROJECT WILL INCLUDE PLANNING FOR A TOTAL RECONSTRUCTION OF THE INTERSECTION AS PREVIOUSLY DESCRIBED, INCLUDING NEW SUBBASE MATERIAL, AND EITHER AN ASPHALT OR CONCRETE SECTION WITH CURB AND GUTTER AND DRAINAGE SYSTEM IMPROVEMENTS.
Project improves signalization and/or aids in the detection and clearance of non-recurring traffic incidents, the rapid clearing of road obstructions, or otherwise contributes to or utilizes ITS technology or incident management elements.	15	THE INTERSECTION OF WASHINGTON STREET AND 23RD STREET WILL BE PLANNED FOR IMPROVEMENT WITH THE ADDITION OF A THROUGH LANE AND LEFT TURN LANE FOR THE NORTH AND SOUTH LEGS OF THE INTERSECTION. THIS WILL AID IN THE PROCESS OF CLEARING OF ANY ROAD OBSTRUCTIONS OR TRAFFIC INCIDENTS AND ALLOW TRAFFIC TO STILL PROCEED THROUGH THE INTERSECTION. NEW TRAFFIC SIGNALIZATION WILL BE INCLUDED WITH THE INTERSECTION TO SERVE THE ADDED LANES. POSSIBLE TRAFFIC SIGNAL SYNCHRONIZATION WITH NEIGHBORING SIGNALS WILL BE INVESTIGATED.
Project is derived from or related to the INCOG Congestion Management Process and reduces congestion on streets or intersections functionally classified by the FHWA as arterials in incorporated areas or as a major rural collectors in unincorporated areas.	5	PROJECT PLANNING FOR THE WIDENING OF WASHINGTON TO 3-LANES AND THE WIDENING OF 23RD TO 5-LANES AT THE IMMEDIATE INTERSECTION ONLY, FOR THIS INTERSECTION. THIS WILL REDUCE TRAFFIC CONGESTION AT THIS ARTERIAL STREET INTERSECTION, AND SUFFICIENTLY LENGTHENED LEFT TURN LANES WILL FACILITATE TRAFFIC MOVING THROUGH THE INTERSECTION FASTER. NEW TRAFFIC SIGNALS WILL IMPROVE STOPPING TIMES AT THE INTERSECTION AND REDUCE CONGESTION.
TOTAL		

Comments:

The main purpose of this project is to plan for alleviating traffic congestion and improving traffic safety at the Washington Street and 23rd Street intersection by reconstructing the existing intersection. Another primary purpose of the project is the raise the profile grade of the intersection out of the floodplain. Improvements, at this intersection, to capacity should dramatically improve current and future predicted traffic congestion at this location. Improvements to pedestrian infrastructure at this intersection will improve the safety of pedestrians at this intersection and encourage additional pedestrians/bicyclists to walk or bike to their destination as an alternative to driving.

D. Livability Criteria – Maximum 30 Points

If the main purpose of the proposed project is transit components, pedestrian components, or bicycle components, it may receive up to 30 points in this category. If the project is NOT an alternative-mode enhancement, but it includes design considerations for the operation thereof, it may obtain up to 15 points. Please provide a description in the space provided next to each applicable criterion.

Evaluation Criteria	Points	Provide Description
The project is a transit facility improvement, pedestrian or bicycle facility per the GO plan	30	THIS INTERSECTION IS INCLUDED IN THE CURRENT GO PLAN, AS A SIGNED ROUTE ON WASHINGTON STREET THROUGH THE INTERSECTION. FOR THE GO PLAN UPDATE, THIS IS PART OF A FUTURE BIKE/PEDESTRIAN ROUTE FROM WASHINGTON NORTH ON 23RD ST.
<i>If main purpose of project is not alternative mode, but it does include complementary features, please fill in below.</i>		
Project provides for existing or planned bus/transit/school bus operations (i.e., turning radii, bus stop pad, etc....)	5	WASHINGTON STREET AND 23RD STREET ARE USED BY BAPS SCHOOL BUSES. WIDENING IMPROVEMENTS WILL PROVIDE A SAFER FACILITY FOR THESE VEHICLES (WIDTHS, RADII, CURB AND GUTTER, LEFT TURN LANE, ADDITIONAL THROUGH LANE, ETC.)
Project provides for pedestrian or bicycle components (bump outs, sidewalks, shelters, wide shoulders, dedicated lanes, paths/trails etc....)	5	THIS PROJECT WILL INCLUDE A 5' ADA-COMPLIANT SIDEWALK AND THE ADDITION OF A 10' WIDE SHARED-USE/SIDEPATH ON THE WEST LEG OF THE PROJECT. 5' WIDE ADA-COMPLIANT SIDEWALK AND POSSIBLE 10' SIDEPATH IS ENVISIONED FOR THE REMAINDER OF THE PROJECT. ADA-COMPLIANT CURB RAMPS AND CROSSWALKS WILL BE ADDED FOR SIDEWALKS AND SIDEPATHS. NO CURRENT SIDEWALK IS PRESENT.
Project (<i>not</i> a limited access facility) is primarily located in a district zoned as Commercial, Office, High-Density Single-Family Residential, or Medium-Density Multi-Family.	5	THIS PROJECT IS LOCATED IN AN AREA WITH A NUMBER OF SINGLE-FAMILY RESIDENTIAL HOUSING UNITS THAT IS GROWING. THE ARTERIAL IS ALSO USED BY SOME COMMERCIAL TRAFFIC TO BUSINESSES AND RESIDENCES IN THE AREA AND TO ACCESS SH-51 AND THE PORT OF CATOOSA.
Project displaces one or more homes, businesses, schools, churches or recreational areas.	-10	NO DISPLACEMENTS ARE REQUIRED FOR THIS PROJECT. IT IS LIKELY THAT NO DISPLACEMENTS WOULD BE NEEDED FOR THE CONSTRUCTION OF AN ULTIMATE INTERSECTION IMPROVEMENT PROJECT.
TOTAL		

Comments:

One of the main purposes of this project is to plan for providing pedestrian and bicycle infrastructure at the arterial street intersection. The planned improvements will provide better accommodation and safety for pedestrians and bicyclists. A new traffic signal at the intersection will have new pedestrian countdown signals, improved crosswalks with new striping and signage, ADA-compliant curb ramps to improve safety and accessibility. Pedestrian sidepaths/trails are planned and designed as part of the project, as called for in the regional Bicycle and Pedestrian Master Plan 2025 Update. 5' wide sidewalks will be planned and designed for the remainder of the intersection to improve pedestrian access through the intersection and connect to subdivisions, homes, the NSU Broken Arrow campus and a church in the area.

E. Freight Movement and Intermodal Linkages – Maximum 20 Points

If the project induces the interaction between two or more modes of transportation, it may receive up to 20 points in this category. Please provide a description in the space provided next to each applicable criterion.

Evaluation Criteria	Points	Provide Description
Project facilitates the exchange of passengers and/or goods from private to public modes or between transportation modes.	10	WASHINGTON STREET AND 23RD STREET ARE USED BY BROKEN ARROW PUBLIC SCHOOL BUSES. OTHER HEAVY VEHICLES UTILIZE THE CORRIDOR TO ACCESS THE BROKEN ARROW EXPRESSWAY.
Project improves access to existing or proposed transportation freight or passenger terminal facility	10	23RD STREET IS A ROUTE TO THE PORT OF CATOOSA. THIS PROJECT WILL GREATLY IMPROVE THIS ROUTE.
Project improves road component(s) with 5% or more heavy duty trucks by traffic volume substantiated with observed vehicle classification data as an attachment	10	ROADWAY CONDITIONS WOULD SIGNIFICANTLY BE IMPROVED WITH AN INTERSECTION IMPROVEMENT PROJECT. THE PAVEMENT CONDITION RATING AND SKID RESISTANCE FOR CARS WOULD BE IMPROVED. HEAVY DUTY TRUCK PERCENTAGE IS 0.8% ON THE NORTH AND SOUTH INTERSECTION APPROACHES OF 23RD STREET, AND 0.2% ON THE EAST AND WEST INTERSECTION APPROACHES OF WASHINGTON STREET.
TOTAL		

Comments:

The inclusion of this arterial street intersection in the 2025 GO Plan Update (Regional Bicycle/Pedestrian Master Plan) requires additional consideration of bicycle and pedestrian infrastructure. Access to the transit system from this location must be considered for pedestrians and bicyclists willing to travel on these bike and pedestrian facilities to utilize transit connecting to other points across the metropolitan Tulsa area.

F. Project Preparation – Maximum 20 Points

Projects that are prepared for construction may receive up to 20 points in this category. Please provide a description in the space provided next to each applicable criterion. Additionally, INCOG may reduce the project score if previously awarded projects are not advancing to construction in a timely manner unless circumstances are out of the applicant’s control.

Evaluation Criteria	Pt	Provide Description
<i>What is the status of the environmental review process?</i>		
Environmental clearance completed and federal approval obtained.	5	
Safety and/or Active Transportation Projects that are deemed to be a CE projects	3	IT IS ANTICIPATED THAT THIS WILL BE A CE PROJECT.
Environmental clearance is in process in compliance with federal requirements	1	
Environmental clearance has not been initiated	0	ENVIRONMENTAL CLEARANCE HAS NOT STARTED.
EIS likely to be required	-4	
<i>What is the status of proposed project design/ engineering/ planning?</i>		
Final Design/ Engineering/ planning completed and approved by ODOT.	10	
Preliminary Design/ Engineering 60% plans completed.	6	
Preliminary Design/ Engineering/ Planning design consultant selected.	2	
<i>What is the status of right-of-way acquisition?</i>		
Right-of-way acquisition completed or not required per ODOT approved plans.	5	
Right-of-way acquisition based on area is 50% complete in compliance with federal requirements	2	
Right-of-way acquisition has not been initiated	0	FINAL IDENTIFICATION OF RIGHT-OF-WAY NEEDS AND ACQUISITION HAS NOT YET STARTED. IT IS NOT ANTICIPATED THAT ANY SIGNIFICANT RIGHT-OF-WAY WILL NEED TO BE ACQUIRED FOR THE PROJECT.
<i>What is the status of utility relocation?</i>		
Utility relocation plans are completed or not required per ODOT approved plans.	5	
Utility relocation is 50% complete in compliance with federal requirements	3	
Utility relocation has not been initiated	0	Utility relocation is not yet underway.
<i>What is the amount of matching funds for STBG Funds?</i>		
More than 50% (6pts), 25 – 50% (4pts)	4 or 6	65.1%
TOTAL		

G. Multijurisdictional Projects – Maximum 20 Points

Multijurisdictional transportation projects are transportation projects that can involve multiple jurisdictions, such as cities, counties, states, and/or the federal government. These projects can improve safety, efficiency, and reliability for people and goods. Please provide a description in the space provided next to each applicable criterion.

Evaluation Criteria	Points	Provide Description
Project is multi-jurisdictional and is a part of a regional funding program or economic development or Travel/Tourism strategy that benefits more than one community and/or county involving multiple local public agencies.	10	
Project involves multiple partners that participate with substantial local match in funding, greater than 25% of total match required, substantiated with a letter of commitment from the partner(s).	10	
TOTAL		

Comments:

This is an arterial street bordering the Tulsa County and Wagoner County as well as a corridor from Coweta to the Port of Catoosa for transportation of people and goods.

H. Regional Priorities – Maximum 20 Points

Please describe the extent to which the proposed project offers significant additional benefits to the region in terms of functionally obsolete or structurally deficient bridges and/or projects on boundary roads that are shared between two or more jurisdictions. Please provide a description in the space provided next to each applicable criterion.

Evaluation Criteria	Points	Provide Description
Project includes replacement or rehabilitation of a functionally obsolete or structurally deficient bridge, such that it no longer is a functionally obsolete or structurally deficient.	10	Project includes the replacement of the existing bridge located on Washington ST west of the intersection and the existing bridge located on 23rd ST south of the intersection. NBI No. 08094 is Functionally Obsolete. NBI No. 11195 is Structurally Deficient.
Projects involving boundary roads between two or more jurisdictions.	10	
TOTAL		

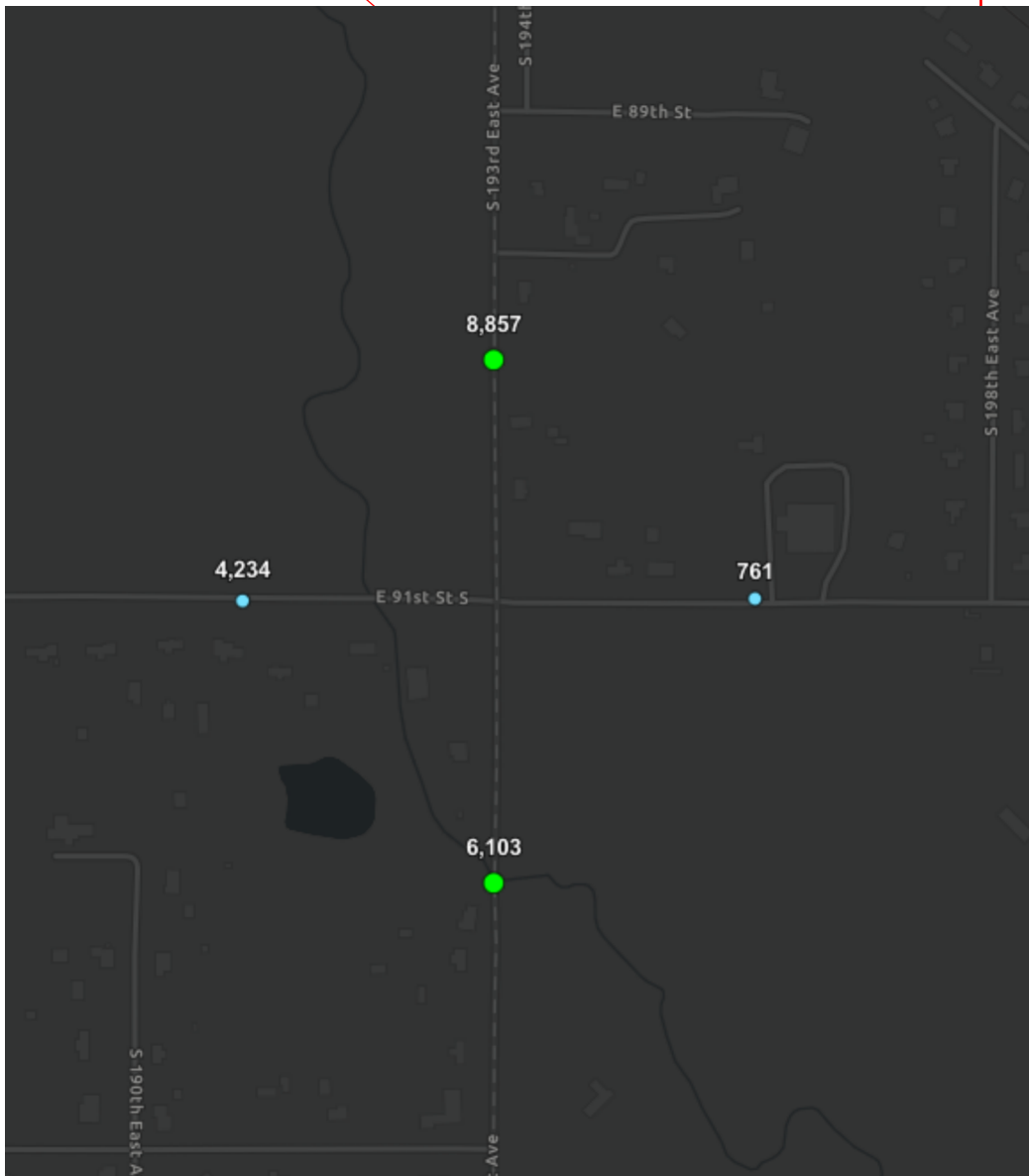
Comments:

This project replaces two bridges that include one that is Functionally Obsolete and one that is Structurally Deficient. One was built in 1940 and the other built in 1950. These bridges have exceeded their projected lifespans and they are overdue to be replaced with fully modern structures.



23rd Street

Washington Street and 23rd Street Intersection



Washington ST

INCOG - AADT ESTIMATES (STREETLIGHT DATA), USED IN SECTION A.1

Project: 23rd Street and Washington Street Intersection Improvements

11/12/2024

Proj No.: ST24220

J/P No.:

Submittal:

Roadway Items		Quantity	Unit	Unit Cost	Item Cost
Earthwork					
201(A)	Clearing and Grubbing	1	LSUM	\$ 95,000.00	\$ 95,000.00
202(A)	Unclassified Excavation	48,611	CY	\$ 15.00	\$ 729,200.00
202(D)	Unclassified Borrow	1,500	CY	\$ 20.00	\$ 30,000.00
	Sediment Control	4.04	AC	\$ 7,500.00	\$ 30,400.00
220	SWPPP Documentation and Management	1	LSUM	\$ 9,500.00	\$ 9,500.00
Roadside Development					
205(A)	Type A - Salvaged Topsoil	1	LSUM	\$ 62,000.00	\$ 62,000.00
230(A)	Solid Slab Sodding	19,573	SY	\$ 4.00	\$ 78,300.00
232(A)	Seeding Method A	4.04	AC	\$ 2,100.00	\$ 8,500.00
233(A)	Vegetative Mulching	4.04	AC	\$ 950.00	\$ 3,900.00
241	Mowing	8.09	AC	\$ 250.00	\$ 2,100.00
Bases					
303(A)	Aggregate Base Type A 8"	6,385	CY	\$ 75.00	\$ 478,900.00
310(B)	Subgrade Method B	31,650	SY	\$ 3.00	\$ 95,000.00
325	Separator Fabric	34,372	SY	\$ 3.00	\$ 103,200.00
Surface Courses					
411(B)	Superpave, Type S3 (PG 64-22 OK) 8"	12,437	TON	\$ 115.00	\$ 1,430,300.00
411(C)	Superpave, Type S4 (PG 70-28 OK) 2"	3,817	TON	\$ 145.00	\$ 553,500.00
Incidental Construction					
412	Cold Milling Pavement	8,556	SY	\$ 5.00	\$ 42,800.00
609(B)	2'-2" Comb. Curb & Gutter (6" Barrier)	460	LF	\$ 25.00	\$ 11,500.00
619(A)	Removal of Structures & Obstructions	1	LSUM	\$ 100,000.00	\$ 100,000.00
619(B)	Removal of Asphalt Pavement	4,667	SY	\$ 8.00	\$ 37,400.00
SPECIAL	Stabilized Construction Entrance	2	EA	\$ 2,500.00	\$ 5,000.00
Subtotal Roadway Items:					\$ 3,906,500.00
Minor Roadway Items (% of Roadway Subtotal)					\$ 390,650.00
Project Storm Sewer (% of Roadway Subtotal)					\$ 117,195.00
Total Roadway Items :					\$ 4,414,345.00

ALTERNATE 1 | RCB

Bridge Items		Quantity	Unit	Unit Cost	Item Cost
Bridge A - Washington St					
		3,900	SF	\$ 285.00	\$ 1,111,500.00
Bridge B - 23rd St					
		5,460	SF	\$ 285.00	\$ 1,556,100.00
619(B)	Removal of Bridge Items	2	EA	\$ 10,000.00	\$ 20,000.00
Subtotal Bridge Items:					\$ 2,687,600.00
Minor Bridge Items (% of Bridge Subtotal)					\$ 134,380.00
Total Bridge Items					\$ 2,821,980.00

Traffic Control Items		Quantity	Unit	Unit Cost	Item Cost
Traffic Control					
Percentage of Roadway					\$ 353,147.60
Total Traffic Control Items:					\$ 353,147.60

Miscellaneous Items	Quantity	Unit	Unit Cost	Item Cost
Traffic Signing & Striping				
Percentage of Roadway	1%			\$ 44,143.45
Traffic Signal				
Washington St. & 23rd St.	1	EA	\$ 375,000.00	\$ 375,000.00
Total Miscellaneous Items:				\$ 419,143.45

Construction Cost			Item Cost
Total Roadway Items			\$ 4,414,345.00
Total Bridge Items			\$ 2,821,980.00
Total Traffic Control Items			\$ 353,147.60
Total Miscellaneous Items (Traffic Signing & Striping and Signal)			\$ 419,143.45
Subtotal Construction Cost:			\$ 8,008,616.05
Staking	1%		\$ 80,086.16
Mobilization			\$ 388,548.09
Total including Staking & Mobilization			\$ 8,477,250.30

* Use \$8,480,000 as construction cost

Oklahoma Dept. of Transportation - Bridge Inspection Report

NBI No.: 08094	Structure No.: 72E0680N4060009	Local ID: 55	Suff. Rating: 54.00	FO
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Bridge Description: IDENTIFICATION

23ft. I-BM SPAN

1. State: Oklahoma	7. Facility Carried : WASHINGTON ST
2. Division: Division 8	6. Feat. Intersect: BROKEN ARROW CREEK
3. County: TULSA	9. Location: 0.1 MI W OF 193 E AVE
4. City: BROKEN ARROW	11. Mile Post: 10.706 mi
Admin Area: Unknown	13. LRS Inv. / Sub Rte: /
5a. On/Under: Route On Structure	16. Latitude: 36° 01' 54.85"
5b. Kind of Hwy: City Street	17. Longitude: 095° 45' 46.71"
5c. Lvl of Svc: Mainline	98. Border Brdg: Not Applicable (P)
5d. Route No.: 08180	% Responsible: 0.00
5e. Dir. Sufx: N/A (NBI)	99. Border Brdg #: Unknown

INSPECTION

Type	Insp. Req.	Insp. Done	Freq.	Insp. Date	Next Insp.
NBI:		1	24 months	2/4/2023	02/04/2025
FC:	N	0		NA	NA
UW:	N	0		NA	NA
OS:	N	0		NA	NA

STRUCTURE TYPE AND MATERIALS

43a/b. Main Span:	Steel / Stringer/Girder
44a/b. Appr. Span:	N/A / Not Applicable (P)
45. # of Main Spans:	1
46. # of Appr. Spans:	0
107. Deck Type:	Concrete-Cast-in-Place
108a. Wearing Surface:	Bituminous
108b. Membrane:	None
108c. Deck protection:	None

CLASSIFICATION

12. Base Hwy Net.: Not on Base Network	101. Parallel Str.: No bridge exists
20. Toll Facility: On free road	102. Traffic Dir.: 2-way traffic
21. Custodian: City	103. Temp. Str.: Not Applicable (P)
22. Owner: City	104. Hwy System: Not on NHS
26. Function Class: 19 Urban Local	105. Fed Land Hwy: N/A (NBI)
37. Historical Sig.: Not eligible for NRHP	110. Defense Hwy: Not a STRAHNET hwy
100. Def. Hwy: Not a STRAHNET hwy	112. NBIS Length: Long Enough

CONDITION

58. Deck: 6 Satisfactory	59. Sup.: 5 Fair	60. Sub: 7 Good
62. Culvert: N/A (NBI)	61. Chan./Chan. Prot.: 5 Bank Prot Eroded	

Flowline Notes

FL taken top of rail, North side, West to East

AGE AND SERVICE

19. Detour Length: 4.0 mi	106. Year Reconst.:	
27. Year Built: 1940	109. Truck ADT: 5%	
28a/b. Lanes on/und: 2 / 0		
29. ADT: 3,767		
30. Year of ADT: 2020		
42a/b. Type of Svc on/und: Highway / Waterway		

LOAD RATING AND POSTING

31. Design Load: MS 18 (HS 20)	Date Rated: 03/26/2021															
41. Post. Status: P Posted for load																
70. Posting: 2 20.0-29.9% below																
63. Op / 65. Inv. Rating Meth.: 1 LF Load Factor / 1 LF Load Factor																
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <th>H</th> <th>HS</th> <th>3-3</th> <th>EV3</th> <th>SHV</th> </tr> <tr> <td>23.00</td> <td>41.00</td> <td>66.00</td> <td>32.00</td> <td>42.00</td> </tr> <tr> <td>14.00</td> <td>25.00</td> <td>39.00</td> <td>19.00</td> <td></td> </tr> </table>	H	HS	3-3	EV3	SHV	23.00	41.00	66.00	32.00	42.00	14.00	25.00	39.00	19.00	
H	HS	3-3	EV3	SHV												
23.00	41.00	66.00	32.00	42.00												
14.00	25.00	39.00	19.00													
64. Operating Rating (tons):																
66. Inventory Rating (tons):																

GEOMETRIC DATA

10. Vert. Clearance: 99.99 ft	50a. Curb/Sdwk Width L: 0.00 ft
32. Appr Rwy Width: 23.00 ft	50b. Curb/Sdwk Width R: 0.00 ft
33. Median: No median	51. Width Curb to Curb: 21.30 ft
34. Skew: 0.00°	52. Width Out to Out: 23.00 ft
35. Struct. Flared: No flare	Deck Area: 517.00 sq. ft
47. Horizontal Clr: 21.30 ft	53. Min. Vert. Cl. Ovr Brg: 99.99 ft
48. Length Max Span: 23.00 ft	54a. Min. Vt. Undclr. Ref.: N Feature not hwy c
49. Struct. Length: 23.00 ft	54b. Min. Vert. Undclr.: 0.00 ft
	55a. Min. Lat. Undclr. Ref.: N Feature not hwy
	55. Min. Lat. Underclr. R: 0.00 ft
	56. Min. Lat. Underclr. L: 0.00 ft

APPRAISAL

36a. Brdg Rail: 0 Substandard	68. Deck Geom.: 2 Intolerable - Replace
36b. Transition: 0 Substandard	69. Vert./Horiz. Undclr: Not applicable (NB)
36c. Appr. Rail: 0 Substandard	71. Waterway Adeq: 5 Above Tolerable
36d. Appr. Rail Ends: 0 Substandard	72. Appr. Alignment: 7 Above Min Criteria
67. Str Evaluation: 5 Above Min Toler	113. Scour Critical: 8 Stable Above Footr

OKLAHOMA ITEMS

200c. Temperature: 49	214a. Posted Weight Limit: 232323
200d. Weather: Ptty Cloudy	b. Posted Speed Limit: 40
201. Struc. Stl. ASTM Desig.: -1 / -1	c. Narrow/1way Brdg Sign: No
202. Waterprf. Membrane: -1	d. Vertical Clr. Sign: No
Date Installed: 01/01/1901	Adv. Warning Sign: No
203. Type Exp. Device: -	e. Navigation Lights?: No
204. Type of Railing: W-Beam	Working/Not Working: No
205. Material Quantity: -1.00	215. Overpass: INCOG
208a. Type of Abutment: Cantilever	218. Functionally Obsolete: FO
b. Type of Found.: Bears on Natural Found.	220. Bridge Redecked: -
209. Type of Pier/Found.: - / -	221. Substr. Cond. (U/W):
210. Foundation Elev.: -1.00	222. Fill Over RCB:
-1.00	223. Appr. Slab/Rwy Cond.: 3
-1.00	225. Paint Type/Ovrct: Red Lead 3 Coat System
211. Wear. Surf. Prot. Sys: None	N/A
Date Installed: 01/01/1901	226. Date Painted: 1940
211c. Silane Reapplied	227. Paint Color: Black
211d. Date:	233. Deck Forming:
213. Utilities Attached: Water	238. School Bus Rte.: -
	240. Appr. Rwy Type.: Asphalt/Bituminous
	243. Grdr Spacing/No.: /

PROPOSED IMPROVEMENTS

94. Bridge Cost: \$146,000	75. Type of Work: 31 Repl-Load Capacity
95. Roadway Cost: \$80,000	76. Lngth of Improvement: 93.7 ft
96. Total Cost: \$230,000	114. Future ADT: 4,886
97. Yr. of Cost Est.: 2015	115. Yr. of Future ADT: 2040

NAVIGATION DATA

38. Nav. Control: Permit Not Required	111. Pier Protect.: 1 Not Required
39. Vert. Clearance: 0.0 ft	116. Lift Bridge Vert. Clr.: 0.0 ft
40. Horiz. Clearance: 0.0 ft	

244. Span Lengths: 23
245. Girder Depth:
246a. Type of Overlay: AC Overlay
b. Overlay Thickness: 12.00
c. Overlay Date: 01/01/2004
d. Ovlv Depth Changed >1": Y
247. Protective Systems:
248. # Field Splices w/ Corrosion: 0
249. Scour Crit. POA Exists?: -
250. Headwall:
258. Plans w/Found. in ODOT File: -
259. Scour Eval. in ODOT File: -
263. Interchange at Intersection: -
264. Interstate Milepoint: -1.00

Oklahoma Dept. of Transportation - Bridge Inspection Report

NBI No.: 08094	Structure No.: 72E0680N4060009	Local ID: 55	Suff. Rating: 54.00	FO
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Inspection Date: 2/4/23 Rick Kingery
 Invoice No.: 21T03080-11 Inspected With: Jacob Hoak

Richard Kingery

Digitally signed by Richard Kingery
 Location: Garver, LLC
 Contact Info: RSKingery@GarverUSA.com
 Date: 2023.04.24 15:35:49-05'00'

BRIDGE NOTES:

INSPECTION NOTES: 2/4/23

PX - REPLACE GUARDRAIL ON BRIDGE & APPROACH GUARDRAIL THAT MEETS CURRENT STANDARDS.
 Beaver dam on South side.

ELEMENT CONDITION STATE DATA

Elem. / Env	Description	Unit	Total Qty	% 1	Qty. 1	% 2	Qty. 2	% 3	Qty. 3	% 4	Qty. 4
12 / 4	Re Concrete Deck	sq.ft	490.00	0%	0.00	100%	490.00	0%	0.00	0%	0.00
Covered with asphalt overlay South fascia has map cracking with efflorescence.											
510 / 4	Wearing Surfaces	sq.ft	490.00	81%	398.00	9%	46.00	9%	46.00	0%	0.00
Wearing along wheel paths with exposed aggregate. Large longitudinal cracks near centerline.											
107 / 4	Steel Opn Girder/Beam	ft	161.00	0%	0.00	89%	143.00	11%	18.00	0%	0.00
Surface rust throughout where paint has failed (top flange of both beams). Beam 1 has exfoliation on bottom flange. Beams 1 and 7 have moderate pitting. Spalls on abutment diaphragms.											
515 / 4	Steel Protective Coating	sq.ft	725.00	0%	0.00	100%	725.00	0%	0.00	0%	0.00
Coating is sound except at underside of top flanges and outside fascias of Beams 1 & 7.											
215 / 4	Re Conc Abutment	ft	46.00	89%	41.00	11%	5.00	0%	0.00	0%	0.00
West abutment has a vertical crack at Beam 3 and minor spalls at beam bearings. East abutment has a vertical crack on South side and a spall near Beam 1.											
330 / 4	Metal Bridge Railing	ft	46.00	0%	0.00	100%	46.00	0%	0.00	0%	0.00
PX-RAILS ARE NOT ADEQUATE AND DO NOT MEET STANDARDS. VERY WEAK. SURFACE CORROSION THROUGHOUT.											
919 / 4	St.(Rail) Prot. Coat	(SF)	51.00	0%	0.00	100%	51.00	0%	0.00	0%	0.00
Coating losing effectiveness											
859 / 4	Soffit	(EA)	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
South side has minor spalling with exposed rebar at guardrail post connections and hairline horizontal cracks with efflorescence. North side has minor spalling with exposed rebar at guardrail post connection.											
870 / 4	Concrete Wingwall	(EA)	4.00	100%	4.00	0%	0.00	0%	0.00	0%	0.00
963 / 4	Steel Section Loss SF	(EA)	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
Both exterior beams have minor section loss (<10%) on top flanges.											

Oklahoma Dept. of Transportation - Bridge Channel Report

NBI No.: 080940000000000	Structure No.: 72E0680N4060009	Local ID: 55	Insp. Date: 2/4/2023
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Bridge Description:

23ft. I-BM SPAN

1. State: Oklahoma	7. Facility Carried : WASHINGTON ST
2. Division: Division 8	6. Feat.Intersected: BROKEN ARROW CREEK
3. County: TULSA	9. Location: 0.1 MI W OF 193 E AVE
4. City: BROKEN ARROW	16. Latitude: 36° 01' 54.85"
	17. Longitude: 095° 45' 46.71"

38. Nav. Control:	Permit Not Required
39. Nav. Vert. Clearance:	0.0 ft
40. Nav. Horiz. Clearance:	0.0 ft
42. Service Type Under:	Waterway
61. Channel/Chan. Prot.:	5 Bank Prot Eroded
71. Waterway Adeq.:	5 Above Tolerable
111. Pier Protect.:	1 Not Required
113. Scour Critical:	8 Stable Above Footing
249. Scour Crit. POA Exists?:	-
259. Scour Eval.in ODOT File?:	-

Flowline Note

FL taken top of rail, North side, West to East

i212 Hydraulic Data:

Navigable Waterway?	Unkno
Type Bedding Material at the Bottom of Piers, Piles, Spread Footing or Drilled Shaft:	-1
Contributing Drain Area:	-1
Drainage Area:	-1
High Water Elevation:	-1.00
Low Point Elevation:	-1.00
Top of Opening Elevation:	-1.00
Computed High Water:	-1
Stream Velocity Plans):	-1
Total Scour for Q100:	
Total Scour for Overtopping:	
V - Velocity Downstream:	-1
Q - Flow Thru Bridge:	-1
Waterway Below Low Steel:	-1

Channel Profile Measurements

256. Measurements were taken from which side of bridge? - Distance from beginning of bridge to baseline (up to 999.9 ft.): 23.0

1 2 3 4 5 6 7 8 9 10

Distance from baseline:

0.00	12.00	23.00	
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Profile:

10.80	10.20	10.20	
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Event:

Abutment	Flowline	Abutment	-	-	-	-	-	-	-
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11 12 13 14 15 16 17 18 19 20

Distance from baseline:

Profile:

Event:

-	-	-	-	-	-	-	-	-	-
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CITY OF BROKEN ARROW BRIDGE: 55
NBI NO.: 08094
STRUCTURE NO.: 72E0680N4060009

COUNTY: TULSA
FACILITY CARRIED: WASHINGTON ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



PHOTO 1: EAST APPROACH WITH 23 TON POSTING SIGN (LOOKING WEST)



PHOTO 2: WEST APPROACH WITH 23 TON POSTING SIGN (LOOKING EAST)

CITY OF BROKEN ARROW BRIDGE: 55
NBI NO.: 08094
STRUCTURE NO.: 72E0680N4060009

COUNTY: TULSA
FACILITY CARRIED: WASHINGTON ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



PHOTO 3: SOUTH PROFILE (LOOKING NORTH)



PHOTO 4: CHANNEL, UPSTREAM (LOOKING NORTH)

CITY OF BROKEN ARROW BRIDGE: 55
NBI NO.: 08094
STRUCTURE NO.: 72E0680N4060009

COUNTY: TULSA
FACILITY CARRIED: WASHINGTON ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



PHOTO 5: CHANNEL, DOWNSTREAM (LOOKING SOUTH)



PHOTO 6: GIRDER 7 AT ABUTMENT 2 – MINOR SECTION LOSS

CITY OF BROKEN ARROW BRIDGE: 55
NBI NO.: 08094
STRUCTURE NO.: 72E0680N4060009

COUNTY: TULSA
FACILITY CARRIED: WASHINGTON ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



PHOTO 7: WEST ABUTMENT - MINOR CRACKS AND SPALLS



PHOTO 8: GIRDER 7 EAST ABUTMENT – MINOR SECTION LOSS

CITY OF BROKEN ARROW BRIDGE: 55
NBI NO.: 08094
STRUCTURE NO.: 72E0680N4060009

COUNTY: TULSA
FACILITY CARRIED: WASHINGTON ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



PHOTO 9: TYPICAL GIRDER CORROSION



PHOTO 10: MINOR EROSION AT NW CORNER REPAIRED

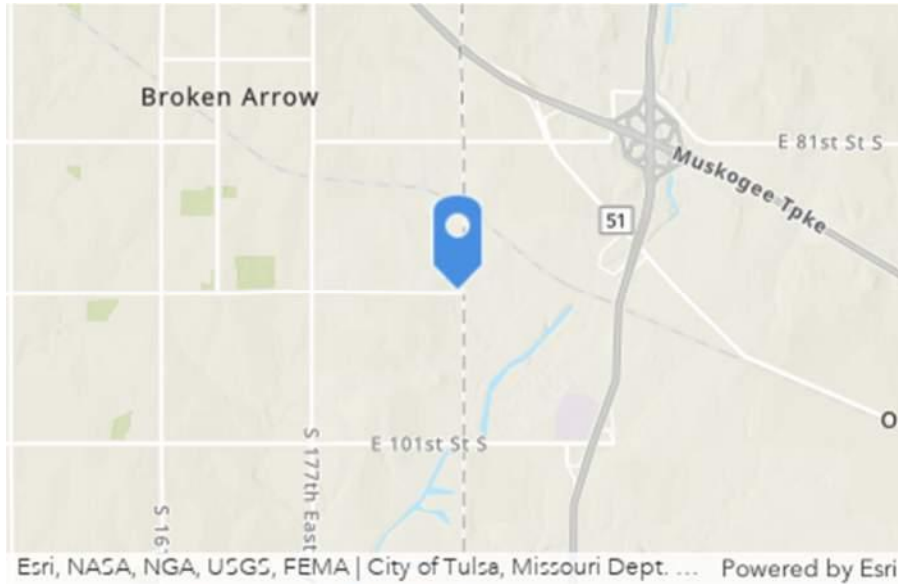
CITY OF BROKEN ARROW BRIDGE: 55
NBI NO.: 08094
STRUCTURE NO.: 72E0680N4060009

COUNTY: TULSA
FACILITY CARRIED: WASHINGTON ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK

INSPECTED BY: Bridge2_Garver

INSPECTION DATE: 02/04/2023

LOCATION: -95.762395072025, 36.03182939771326



LOCATION NOTES

Summary of Maintenance Bridge Inspection for City of Broken Arrow February 2023								
Local ID	NBI No.	Description	Facility Carried	Feature Intersected	Scour POA?	Existing Load Posting	New Load Posting	Comments
054	25727	4-19ft. X 13ft. X 82ft. RC BOX	FAU 8180 (91ST ST.)	HAIKEY CREEK				FX: ADD RIPRAP TO MITIGATE 15 IN. SCOUR AT SE WING; NO UNDERMINING. * PX: REMOVE SILT ACCUMULATION OF ALL CELLS. *
055	08094	23ft. I-BM SPAN	WASHINGTON ST.	BROKEN ARROW CREEK		23 TONS		FX: NONE PX: REPLACE ALL GUARDRAIL ON BRIDGE & AT APPROACHES TO CURRENT STANDARDS. *
056	11974	12ft.-14ft.-12ft. X 12ft. X 62ft. R.C.BOX	FAU 8461 (129TH E AVE.)	CREEK				FX: NONE PX: REMOVE SILT ACCUMULATION OF CELL 3. *
057	11195	25ft. STEEL I-BEAM SPAN W/ TIMBER DECK	23RD ST.	BROKEN ARROW CREEK		NOT POSTED	27 TONS	FX: NONE PX: REPLACE BRIDGE SOON. SECTION LOSS OF BEAM 7. ADD RIPRAP TO MITIGATE SCOUR AT SOUTH ABUTMENT (30 IN. EXPOSED FOOTING) & SW WINGWALL (12 IN. EXPOSED FOOTING); NO UNDERMINING. * CX: INSTALL NEW 27 TON LOAD POSTING SIGNS AT EACH END OF BRIDGE.
058	11975	12ft.-14ft.-12ft. X 12ft. X 64ft. R.C.BOX	OLIVE AVE.	CREEK				FX: REPLACE ALL GUARDRAIL ON BRIDGE & AT APPROACHES TO CURRENT STANDARDS. * PX: REMOVE BERM AT WEST END OF CELL 1 & SILT ACCUMULATION IN CELL 1. *
58A	31390	3-47 FT. P/S BEAM SLAB SPAN	E0685 (S NYSSA)	E. BRANCH OF HAIKEY CR.				FX: ADD RIPRAP TO ADDRESS SCOUR HOLE 20-50FT. DOWNSTREAM. ADD RIPRAP TO REPAIR EROSION AT NORTH EMBANKMENT. PX: NONE

* RECOMMENDATION NOTED IN PREVIOUS INSPECTION REPORT.



Oklahoma Dept. of Transportation - Bridge Inspection Report

NBI No.: 11195	Structure No.: 72N4070E0680002	Local ID: 57	Suff. Rating: 44.40	SD
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<p>Bridge Description: <u>IDENTIFICATION</u></p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">25ft. STEEL I-BEAM SPAN W/ TIMBER DECK</div> <p>1. State: Oklahoma 2. Division: Division 8 3. County: TULSA 4. City: BROKEN ARROW Admin Area: Unknown 5a. On/Under: Route On Structure 5b. Kind of Hwy: County Hwy 5c. Lvl of Svc: Mainline 5d. Route No.: 08541 5e. Dir. Sufx: N/A (NBI)</p> <p>7. Facility Carried : 23RD ST 6. Feat. Intersect: BROKEN ARROW CREEK 9. Location: 0.2 MI S OF 91 ST S. 11. Mile Post: 5.859 mi 13. LRS Inv. / Sub Rte: / 16. Latitude: 36° 01' 47.20" 17. Longitude: 095° 45' 42.14" 98. Border Brdg: Not Applicable (P) % Responsible: 0.00 99. Border Brdg #: Unknown</p>	<p style="text-align: center;"><u>INSPECTION</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Type</th> <th>Insp. Req.</th> <th>Insp. Done</th> <th>Freq.</th> <th>Insp. Date</th> <th>Next Insp.</th> </tr> </thead> <tbody> <tr> <td>NBI:</td> <td></td> <td>1</td> <td>24 months</td> <td>2/4/2023</td> <td>02/04/2025</td> </tr> <tr> <td>FC:</td> <td>N</td> <td>0</td> <td></td> <td>NA</td> <td>NA</td> </tr> <tr> <td>UW:</td> <td>N</td> <td>0</td> <td></td> <td>NA</td> <td>NA</td> </tr> <tr> <td>OS:</td> <td>N</td> <td>0</td> <td></td> <td>NA</td> <td>NA</td> </tr> </tbody> </table> <p style="text-align: center;"><u>CLASSIFICATION</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>12. Base Hwy Net.: Not on Base Network</td> <td>101. Parallel Str.: No bridge exists</td> </tr> <tr> <td>20. Toll Facility: On free road</td> <td>102. Traffic Dir.: 2-way traffic</td> </tr> <tr> <td>21. Custodian: City</td> <td>103. Temp. Str.: Unknown (NBI)</td> </tr> <tr> <td>22. Owner: City</td> <td>104. Hwy System: Not on NHS</td> </tr> <tr> <td>26. Function Class: 19 Urban Local</td> <td>105. Fed Land Hwy: N/A (NBI)</td> </tr> <tr> <td>37. Historical Sig.: Not eligible for NRHP</td> <td>110. Defense Hwy: Not a STRAHNET hwy</td> </tr> <tr> <td>100. Def. Hwy: Not a STRAHNET hwy</td> <td>112. NBIS Length: Long Enough</td> </tr> </table>	Type	Insp. Req.	Insp. Done	Freq.	Insp. Date	Next Insp.	NBI:		1	24 months	2/4/2023	02/04/2025	FC:	N	0		NA	NA	UW:	N	0		NA	NA	OS:	N	0		NA	NA	12. Base Hwy Net.: Not on Base Network	101. Parallel Str.: No bridge exists	20. Toll Facility: On free road	102. Traffic Dir.: 2-way traffic	21. Custodian: City	103. Temp. Str.: Unknown (NBI)	22. Owner: City	104. Hwy System: Not on NHS	26. Function Class: 19 Urban Local	105. Fed Land Hwy: N/A (NBI)	37. Historical Sig.: Not eligible for NRHP	110. Defense Hwy: Not a STRAHNET hwy	100. Def. Hwy: Not a STRAHNET hwy	112. NBIS Length: Long Enough
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<p style="text-align: center;"><u>STRUCTURE TYPE AND MATERIALS</u></p> <p>43a/b. Main Span: Steel / Stringer/Girder 44a/b. Appr. Span: N/A / Not Applicable (P) 45. # of Main Spans: 1 46. # of Appr. Spans: 0 107. Deck Type: Wood or Timber 108a. Wearing Surface: Bituminous 108b. Membrane: None 108c. Deck protection: None</p>	<p style="text-align: center;"><u>CONDITION</u></p> <p>58. Deck: 5 Fair 59. Sup.: 4 Poor 60. Sub: 4 Poor 62. Culvert: N/A (NBI) 61. Chan./Chan. Prot.: 4 Protection Undermined</p> <p>Flowline Notes</p> <div style="border: 1px solid black; padding: 2px;">Flowline taken top of planks, West side, South to North</div>
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<p style="text-align: center;"><u>AGE AND SERVICE</u></p> <p>19. Detour Length: 4.0 mi 27. Year Built: 1950 28a/b. Lanes on/und: 2 / 0 29. ADT: 4,852 30. Year of ADT: 2020 42a/b. Type of Svc on/und: Highway / Waterway</p> <p>106. Year Reconst.: 2017 109. Truck ADT: 5%</p>	<p style="text-align: center;"><u>LOAD RATING AND POSTING</u></p> <p>31. Design Load: MS 18 (HS 20) Date Rated: 03/25/2023 41. Post. Status: P Posted for load 70. Posting: 3 10.0-19.9% below 63. Op / 65. Inv. Rating Meth.: 1 LF Load Factor / 1 LF Load Factor</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>H</th> <th>HS</th> <th>3-3</th> <th>EV3</th> <th>SHV</th> </tr> </thead> <tbody> <tr> <td>64. Operating Rating (tons):</td> <td>27.00</td> <td>50.00</td> <td>77.00</td> <td>37.00</td> <td>47.00</td> </tr> <tr> <td>66. Inventory Rating (tons):</td> <td>16.00</td> <td>30.00</td> <td>46.00</td> <td>22.00</td> <td></td> </tr> </tbody> </table>		H	HS	3-3	EV3	SHV	64. Operating Rating (tons):	27.00	50.00	77.00	37.00	47.00	66. Inventory Rating (tons):	16.00	30.00	46.00	22.00	
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66. Inventory Rating (tons):	16.00	30.00	46.00	22.00															

<p style="text-align: center;"><u>GEOMETRIC DATA</u></p> <p>10. Vert. Clearance: 99.99 ft 32. Appr Rwy Width: 22.40 ft 33. Median: No median 34. Skew: 0.00° 35. Struct. Flared: No flare 47. Horizontal Clr: 22.90 ft 48. Length Max Span: 25.00 ft 49. Struct. Length: 25.00 ft</p> <p>50a. Curb/Sdwk Width L: 0.00 ft 50b. Curb/Sdwk Width R: 0.00 ft 51. Width Curb to Curb: 22.90 ft 52. Width Out to Out: 24.20 ft Deck Area: 602.80 sq. ft 53. Min. Vert. Cl. Ovr Brg: 99.99 ft 54a. Min. Vt. Undclr. Ref.: N Feature not hwy c 54b. Min. Vert. Undclr.: 0.00 ft 55a. Min. Lat. Undclr. Ref.: N Feature not hwy 55. Min. Lat. Underclr. R: 0.00 ft 56. Min. Lat. Underclr. L: 0.00 ft</p>	<p style="text-align: center;"><u>APPRAISAL</u></p> <p>36a. Brdg Rail: 0 Substandard 36b. Transition: 0 Substandard 36c. Appr. Rail: 0 Substandard 36d. Appr. Rail Ends: 0 Substandard 67. Str Evaluation: 4 Minimum Tolerab</p> <p>68. Deck Geom.: 2 Intolerable - Replace 69. Vert./Horiz. Undclr: Not applicable (NB) 71. Waterway Adeq: 5 Above Tolerable 72. Appr. Alignment: 8 Equal Desirable Crit 113. Scour Critical: 4 Stable, needs action</p>
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<p style="text-align: center;"><u>OKLAHOMA ITEMS</u></p> <p>200c. Temperature: 51 200d. Weather: Ptty Cloudy 201. Struc. Stl. ASTM Desig.: -1 / -1 202. Waterprf. Membrane: -1 Date Installed: 01/01/1901 203. Type Exp. Device: - 204. Type of Railing: W-Beam 205. Material Quantity: -1.00 208a. Type of Abutment: Cantilever b. Type of Found.: Bears on Natural Found. 209. Type of Pier/Found.: - / - 210. Foundation Elev.: -1.00 -1.00 -1.00 -1.00 -1.00 211. Wear. Surf. Prot. Sys: None Date Installed: 01/01/1901 211c. Silane Reapplied 211d. Date: 213. Utilities Attached:</p>	<p style="text-align: center;"><u>PROPOSED IMPROVEMENTS</u></p> <p>94. Bridge Cost: \$149,000 95. Roadway Cost: \$82,000 96. Total Cost: \$236,000 97. Yr. of Cost Est.: 2015</p> <p>75. Type of Work: 31 Repl-Load Capacity 76. Lngth of Improvement: 95.8 ft 114. Future ADT: 5,792 115. Yr. of Future ADT: 2040</p> <p style="text-align: center;"><u>NAVIGATION DATA</u></p> <p>38. Nav. Control: Permit Not Required 39. Vert. Clearance: 0.0 ft 40. Horiz. Clearance: 0.0 ft 111. Pier Protect.: Not Applicable (P) 116. Lift Bridge Vert. Clr.: 0.0 ft</p>
---	---

<p>214a. Posted Weight Limit: 272727 b. Posted Speed Limit: 40 c. Narrow/1way Brdg Sign: No d. Vertical Clr. Sign: No Adv. Warning Sign: No e. Navigation Lights?: No Working/Not Working: No 215. Overpass: INCOG 218. Functionally Obsolete: FO 220. Bridge Redecked: - 221. Substr. Cond. (U/W): 222. Fill Over RCB: 223. Appr. Slab/Rwy Cond.: 2 225. Paint Type/Ovrct: - N/A 226. Date Painted: 227. Paint Color: - 233. Deck Forming: - 238. School Bus Rte.: Current & Desired route 240. Appr. Rwy Type.: Asphalt/Bituminous 243. Grdr Spacing/No.: /</p>	<p>244. Span Lengths: 25</p> <p>245. Girder Depth: 246a. Type of Overlay: AC Overlay b. Overlay Thickness: 13.00 c. Overlay Date: 09/14/2004 d. Ovlv Depth Changed >1": - 247. Protective Systems: <table border="1" style="width: 100%; border-collapse: collapse; height: 40px;"> <tr><td style="width: 50%;"></td><td style="width: 50%;"></td></tr> </table></p> <p>248. # Field Splices w/ Corrosion: 249. Scour Crit. POA Exists?: - 250. Headwall: 258. Plans w/ Found. in ODOT File: - 259. Scour Eval. in ODOT File: - 263. Interchange at Intersection: - 264. Interstate Milepoint: -1.00</p>		

Oklahoma Dept. of Transportation - Bridge Inspection Report

NBI No.: 11195	Structure No.: 72N4070E0680002	Local ID: 57	Suff. Rating: 44.40	SD
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Inspection Date: 2/4/23 Rick Kingery
 Invoice No.: 21T03080-11 Inspected With: Jacob Hoak

Richard Kingery

Digitally signed by Richard Kingery
 Location: Garver, LLC
 Contact Info: RSKingery@GarverUSA.com
 Date: 2023.04.24 15:39:53-05'00'

BRIDGE NOTES:

Beams numbered West to East.
 4 different size beams with different spacing.
 4 beams total added to the East and West sides in 2017.

INSPECTION NOTES: 2/4/23

C X - DUE TO NEW LOAD RATINGS, INSTALL 27 TON LOAD POSTING SIGNS AT EACH END OF THE BRIDGE.
 City of Broken Arrow installed new 27-Ton LP signs at both ends of the bridge on 4-13-2023.

PX - BRIDGE NEEDS TO BE REPLACED.

South approach has settled approximately 1 inch.

ELEMENT CONDITION STATE DATA

Elem. / Env	Description	Unit	Total Qty	% 1	Qty. 1	% 2	Qty. 2	% 3	Qty. 3	% 4	Qty. 4
31 / 4	Timber Deck	sq.ft	575.00	0%	0.00	91%	525.00	9%	50.00	0%	0.00
Some deck boards are rotten on ends and cracked between the exterior beams. Deck is a laminated deck.											
510 / 4	Wearing Surfaces	sq.ft	575.00	50%	290.00	18%	105.00	31%	180.00	0%	0.00
13" asphalt overlay. Several longitudinal cracks throughout. Settled in several locations. Transverse cracks at the bridge ends. Wearing in wheel paths.											
107 / 4	Steel Opn Girder/Beam	ft	165.00	0%	0.00	82%	135.00	18%	30.00	0%	0.00
PX - BEAM 7 HAS MODERATE TO ADVANCED SECTION LOSS OF WEB & TOP FLANGE (33%) & BOTTOM FLANGE (50%) LOCATED 2 FT. - 12 FT. FROM NORTH ABUTMENT. Surface rust with light pitting. No protective coating. Beam 1 has minor section loss (15%). Beams 2, 8, 9, and 10 have exfoliation with minor section loss on top & bottom flanges and webs.											
215 / 4	Re Conc Abutment	ft	50.00	56%	28.00	44%	22.00	0%	0.00	0%	0.00
Honeycombing at both abutments.											
330 / 4	Metal Bridge Railing	ft	50.00	0%	0.00	100%	50.00	0%	0.00	0%	0.00
West rail is damaged at South end. East rail is damaged at North end.											
919 / 4	St.(Rail) Prot. Coat	(SF)	142.00	0%	0.00	100%	142.00	0%	0.00	0%	0.00
Coating is failing.											
865 / 4	St.Open Gird End(5Ft	(LF)	110.00	0%	0.00	84%	92.00	16%	18.00	0%	0.00
Beam 1, 7, and 11 have moderate section loss at ends.											
870 / 4	Concrete Wingwall	(EA)	4.00	100%	4.00	0%	0.00	0%	0.00	0%	0.00
Southwest wing has diagonal cracks, honeycomb with exposed rebar and 1 ft undermining. Southeast wing has diagonal cracks. Northwest wing has diagonal cracks. Northeast wing has diagonal cracks with honeycombing.											
916 / 4	St.Bearing Assembly	(LF)	8.00	0%	0.00	100%	8.00	0%	0.00	0%	0.00
Moderate corrosion at built-up plates on beams 2,3,9,& 10.											
961 / 4	Scour SF	(EA)	1.00	0%	0.00	100%	1.00	0%	0.00	0%	0.00
PX - SOUTH ABUTMENT HAS 24 INCHES TO 30 INCHES OF EXPOSED FOOTING, NO UNDERMINING AT THIS TIME. SOUTHWEST WING HAS 1 FT OF UNDERMINING. North abutment footing exposed up to 6 in. at West end. South abutment appears to be founded in rock.											
963 / 4	Steel Section Loss SF	(EA)	1.00	0%	0.00	0%	0.00	100%	1.00	0%	0.00
Varying section loss in beams 1,2,7,8,9, and 10. Beam 7 is the worst.											
968 / 4	Erosion SF	(EA)	1.00	100%	1.00	0%	0.00	0%	0.00	0%	0.00
Northwest & Southeast wings have minor erosion.											
969 / 4	OutOfPlane Dist./Load	(EA)	1.00	0%	0.00	0%	0.00	100%	1.00	0%	0.00
PX - BEAM 7 IS WARPED AT CENTER AND IS SLIGHTLY OUT OF PLANE. BEAM 7 IS BOWING TO THE EAST (10 FT FROM SOUTH ABUTMENT). BEAMS 4, 5, 6, & 7 ARE LATERALLY BRACED.											

Oklahoma Dept. of Transportation - Bridge Channel Report

NBI No.: 11195000000000	Structure No.: 72N4070E0680002	Local ID: 57	Insp. Date: 2/4/2023
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Bridge Description:

25ft. STEEL I-BEAM SPAN W/ TIMBER DECK

1. State: Oklahoma	7. Facility Carried : 23RD ST
2. Division: Division 8	6. Feat.Intersected: BROKEN ARROW CREEK
3. County: TULSA	9. Location: 0.2 MI S OF 91 ST S.
4. City: BROKEN ARROW	16. Latitude: 36° 01' 47.20"
	17. Longitude: 095° 45' 42.14"

38. Nav. Control:	Permit Not Required
39. Nav. Vert. Clearance:	0.0 ft
40. Nav. Horiz. Clearance:	0.0 ft
42. Service Type Under:	Waterway
61. Channel/Chan. Prot.:	4 Protection Undermined
71. Waterway Adeq.:	5 Above Tolerable
111. Pier Protect.:	Not Applicable (P)
113. Scour Critical:	4 Stable, needs action
249. Scour Crit. POA Exists?:	-
259. Scour Eval.in ODOT File?:	-

Flowline Note

Flowline taken top of planks, West side, South to North

i212 Hydraulic Data:

Navigable Waterway?	Unkno
Type Bedding Material at the Bottom of Piers, Piles, Spread Footing or Drilled Shaft:	-1
Contributing Drain Area:	-1
Drainage Area:	-1
High Water Elevation:	-1.00
Low Point Elevation:	-1.00
Top of Opening Elevation:	-1.00
Computed High Water:	-1
Stream Velocity Plans):	-1
Total Scour for Q100:	
Total Scour for Overtopping:	
V - Velocity Downstream:	-1
Q - Flow Thru Bridge:	-1
Waterway Below Low Steel:	-1

Channel Profile Measurements

256. Measurements were taken from which side of bridge? - Distance from beginning of bridge to baseline (up to 999.9 ft.): 25.0

1 2 3 4 5 6 7 8 9 10

Distance from baseline:

0.00	13.00	25.00	
------	-------	-------	--

Profile:

11.40	9.80	8.60	
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Event:

Abutment	Flowline	Abutment	-	-	-	-	-	-	-
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11 12 13 14 15 16 17 18 19 20

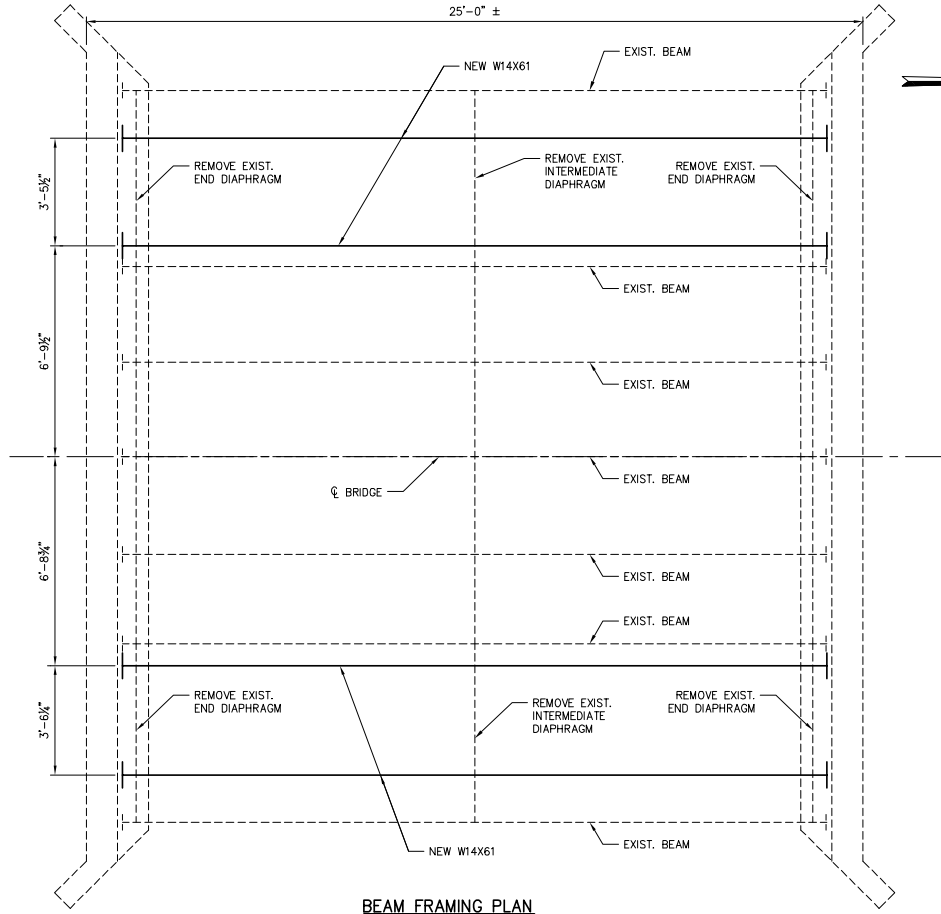
Distance from baseline:

Profile:

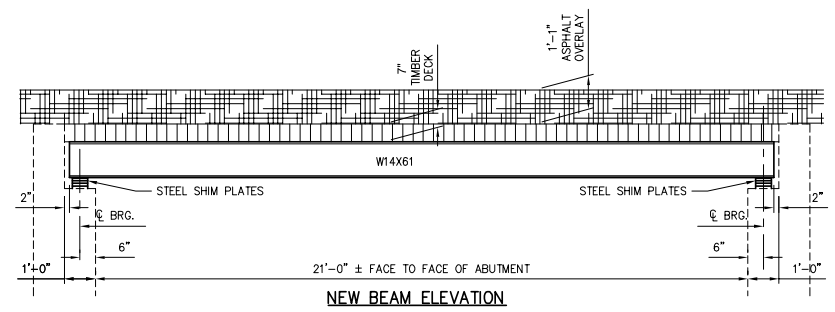
Event:

-	-	-	-	-	-	-	-	-	-
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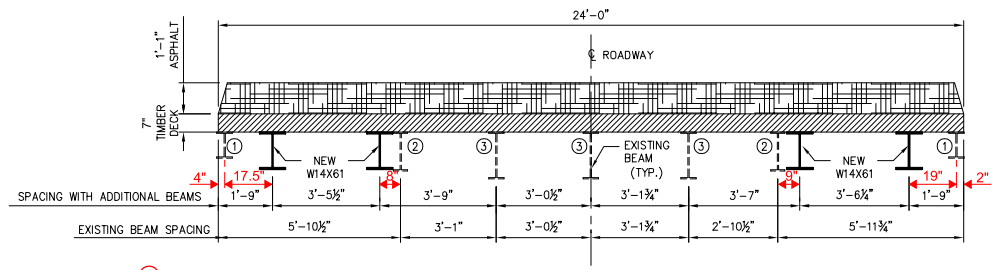
N:\1\JOBS\Broken Arrow\Bridge 57\BA 57_Sketch.dwg, 11/17/2017 10:45:23 AM



BEAM FRAMING PLAN



NEW BEAM ELEVATION



- ① EXISTING 10" x 4.75" x 0.325" BEAM x 0.375" FLANGE
- ② EXISTING 15" x 5.50" x 0.41" BEAM x 0.50" FLANGE
- ③ EXISTING 18" x 6.00" x 0.50" BEAM x 0.50" FLANGE

TYPICAL BRIDGE SECTION
(AHEAD ON STATIONING)

QUANTITIES		
ITEM	UNIT	QUANTITY
INSTALLATION OF BRIDGE ITEMS	LSUM	1.00

NOTE:
ALL COSTS TO COMPLETE THE WORK AS SHOWN ON THIS PLAN SHEET INCLUDING TRAFFIC CONTROL, STRUCTURAL STEEL, REMOVAL AND DISPOSAL OF DIAPHRAGMS, JACKING, MOBILIZATION, LABOR, MATERIAL AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE FOR "INSTALLATION OF BRIDGE ITEMS".

GENERAL NOTES

1. VERIFY ALL DIMENSIONS PRIOR TO STARTING WORK.
2. USE STRUCTURAL STEEL WITH A MINIMUM YIELD OF $F_y=36$ KSI. WDF FLANGE BEAMS OF A DIFFERENT SIZE MAY BE SUBSTITUTED SUBJECT TO THE APPROVAL OF THE ENGINEER. USED WIDE FLANGE BEAMS MAY BE SUBSTITUTED SUBJECT TO INSPECTION AND APPROVAL BY THE ENGINEER.
3. USE SHIM PLATES WITH A MINIMUM PLAN DIMENSION OF 6" OR LARGER.

TRAFFIC CONTROL NOTES

1. INSTALL TRAFFIC CONTROL TO SAFELY CLOSE THE BRIDGE PRIOR TO STARTING REHABILITATION ACTIVITIES.
2. ALL ROAD CLOSURE AND REHABILITATION WORK AT THE SITE SHALL TAKE PLACE ON A SUNDAY DURING DAYLIGHT HOURS ONLY.
3. SUBMIT A TRAFFIC CONTROL PLAN TO THE ENGINEER PRIOR TO STARTING WORK. DO NOT START FIELD WORK WITHOUT THE ENGINEER'S WRITTEN APPROVAL OF A TRAFFIC CONTROL PLAN.

SUGGESTED CONSTRUCTION SEQUENCE

1. INSTALL TRAFFIC CONTROL FOR BRIDGE CLOSURE
2. REMOVE EXISTING INTERIOR AND END DIAPHRAGMS BETWEEN EXISTING EXTERIOR BEAMS AND FIRST INTERIOR BEAMS.
3. INSTALL NEW W14X61 BEAMS OR APPROVED SUBSTITUTIONS.
4. JACK AND SHIM ALL NEW BEAMS TO MAINTAIN A SNUG TIGHT CONDITION.
5. REMOVE TRAFFIC CONTROL.



Stephen J. Nicholls
5-22-17

DESIGN		BRIDGE 57 REHABILITATION	CITY OF BROKEN ARROW
DETAIL		DETAILS OF ADDITIONAL BEAMS (W14X61)	
CHECK			
NEO DESIGN LLC		SHEET NO. 1	

CITY OF BROKEN ARROW BRIDGE: 57
NBI NO.: 11195
STRUCTURE NO.: 72N4070E0680002

COUNTY: TULSA
FACILITY CARRIED: 23RD ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



PHOTO 1: NORTH APPROACH (LOOKING SOUTH)



PHOTO 2: SOUTH APPROACH (LOOKING NORTH)

CITY OF BROKEN ARROW BRIDGE: 57
NBI NO.: 11195
STRUCTURE NO.: 72N4070E0680002

COUNTY: TULSA
FACILITY CARRIED: 23RD ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



**PHOTO 3: EAST PROFILE
(LOOKING WEST)**



**PHOTO 4: CHANNEL,
UPSTREAM
(LOOKING WEST)**

CITY OF BROKEN ARROW BRIDGE: 57
NBI NO.: 11195
STRUCTURE NO.: 72N4070E0680002

COUNTY: TULSA
FACILITY CARRIED: 23RD ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



PHOTO 5: CHANNEL,
DOWNSTREAM
(LOOKING EAST)



PHOTO 6: SE CORNER
EROSION (TYPICAL)

CITY OF BROKEN ARROW BRIDGE: 57
NBI NO.: 11195
STRUCTURE NO.: 72N4070E0680002

COUNTY: TULSA
FACILITY CARRIED: 23RD ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



PHOTO 7: BEAM 7
DISTORTION



PHOTO 8: BEAM 7 – 4'
SECTION WITH
MODERATE SECTION
LOSS UP TO 50% IN
BOTTOM FLANGE AND
33% IN WEB

CITY OF BROKEN ARROW BRIDGE: 57
NBI NO.: 11195
STRUCTURE NO.: 72N4070E0680002

COUNTY: TULSA
FACILITY CARRIED: 23RD ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



PHOTO 9: SW WING - 12" UNDERMINING



PHOTO 10: SOUTH ABUTMENT AND SE WING - UP TO 30" OF EXPOSED FOOTINGS

CITY OF BROKEN ARROW BRIDGE: 57
NBI NO.: 11195
STRUCTURE NO.: 72N4070E0680002

COUNTY: TULSA
FACILITY CARRIED: 23RD ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



PHOTO 11: SOUTH ABUTMENT - HONEYCOMB (TYPICAL)



PHOTO 12: BEAMS - MINOR CORROSION

CITY OF BROKEN ARROW BRIDGE: 57
NBI NO.: 11195
STRUCTURE NO.: 72N4070E0680002

COUNTY: TULSA
FACILITY CARRIED: 23RD ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK



PHOTO 13: NORTH
ABUTMENT - EXPOSED
FOOTING 6"

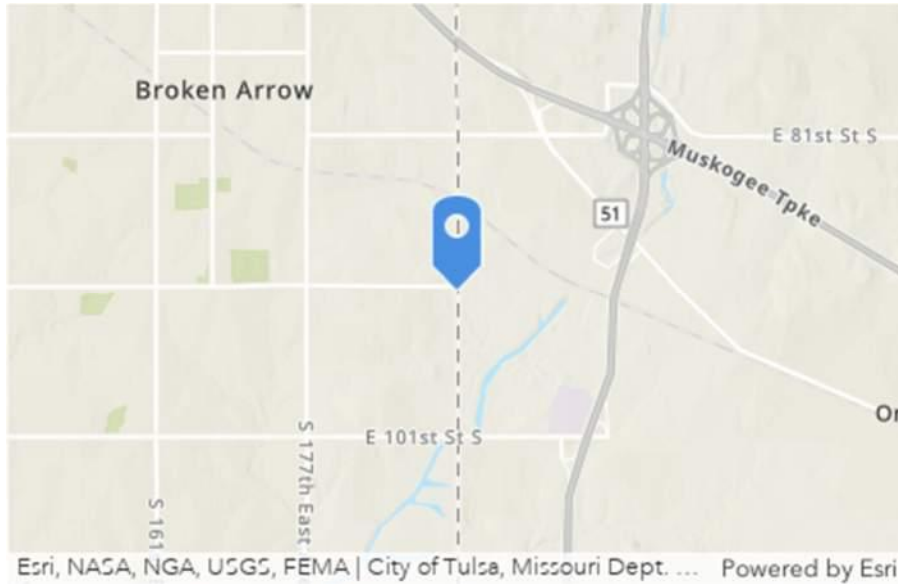
CITY OF BROKEN ARROW BRIDGE: 57
NBI NO.: 11195
STRUCTURE NO.: 72N4070E0680002

COUNTY: TULSA
FACILITY CARRIED: 23RD ST.
FACILITY INTERSECTED: BROKEN ARROW CREEK

INSPECTED BY: Bridge2_Garver

INSPECTION DATE: 02/04/2023

LOCATION: -95.761762301349, 36.03118269160763



LOCATION NOTES

Load Rating Summary Sheet

County Tulsa District 8 Local ID 057

Structure Number 72N4070E0680002 NBI Number 11195

Load Rater NBK Checked By CLB/BRT

Date Load Rated 02/2023 Date Checked 02/2023

Year Built 1950 Year Reconstructed 2017 Span Type 25-ft Steel beam w/ Timber Deck

Load Rating Method LFD Load Rating Software Bar7

Data File Location Garver LLC – 6100 S. Yale Ave. Suite 1300 Tulsa, OK 74136

Reason for Load Rating Load Rating update for FAST ACT.

Overlay Depth 13.00” Overlay Date 09/14/2004

Assumptions: As-Built data was used to analyze the bridge. Data was supplemented using field inspection observations.

Controlling Span 1 Controlling Member ** Controlling Force Moment

Inventory Rating: H 16 HS 30 3-3 46 EV3 22 NRL/SHV 28

Operating Rating: H 27 HS 50 3-3 77 EV3 37 NRL/SHV 47

Post for Load: H 27* HS _____ 3-3 _____ EV3 _____ NRL/SHV _____

* Rating factor for EV3 truck is less than 1.0.

** Existing Interior Beam No. 2.

Load Rating Engineer's Seal:



Digitally signed by Brad Thompson
Date: 2023.03.27 10:01:46-05'00'

Load Rating Engineer's Signature _____

Load Rating Verification Sheet

County Tulsa District 8 Local ID 057 Structure Number 72N4070E0680002 NBI Number 11195

Load Rater NBK Date 02/2023 Checked By CLB/BRT Date 02/2023

Year Built 1950 Span Type 25-ft Steel Beam with Timber Deck

Load Rating Method LFD

Reason for Load Rating: Load Rating update for FAST ACT.

LOAD RATING DETERMINED BY (Check One):

Load Rating/Design Load shown in plans. No ratings calculated.


Load Rating calculated. Computer printout or hand calculations are attached.

Load Rating calculations are already in the Master Bridge file.

Load Rating based on engineering judgement. No ratings calculated.

Load Rating is assigned, provided that the following conditions, based on the criteria outlined in the commentary to the MBE Third Edition/2018, sections C6A.1.1 and C6B.1 are all met:

- 1) The bridge was designed and checked using either the AASHTO Load and Resistance Factor Design (LRFD) or Load Factor Design (LFD) methods to at least HL-93 or HS-20 live loads, respectively; and
- 2) The bridge was built in accordance with the design plans; and
- 3) No changes to the loading conditions or the structure condition have occurred that could reduce the inventory rating below the design load level; and
- 4) An evaluation has been completed and documented, determining that the force effects from State legal loads or permit loads do not exceed those from the design load; and
- 5) The checked design calculations, and relevant computer input and output information, must be accessible and referenced or included in the individual bridge records.

	PROJECT	ODOT CI-2337 Off-System Bridge Inspection	ORIGINATED BY:	NBK	DATE:	01/13/23
	JOB NO.	21T03080	REVISED BY:	-	DATE:	-
	SUBJECT	City of Broken Arrow - Bridge 057 Load Rating Analysis				
	PATH	L:\2021\21T03080 - ODOT CI-2337 Off-System Bridge Insp\Design\Inspections\2 - City of Broken Arrow\057 (NBI 11195)\2023-02\Load Rating\[About Load Rating.xlsm]About - Floor Beams				

About Load Rating Analysis

City of Broken Arrow - Bridge 057

Design Description

Calculations to determine the load rating of Bridge 057 for the FAST ACT. Rehabilitation plans are available for this bridge, which shows the addition of four W14x61 beams. A 13" asphalt wearing surface was poured ovetop the original glue laminated timber deck. The information in the rehabilitation plans will be used to load rate this bridge, and supplemented with data collected in the field. Two models were created to compare the existing interior beam with the new interior beam. It was found that the existing beam controlled the load rating.

Software Used

Loads: [Spreadsheets](#)
Load Rating: [BAR7](#)

Calculation Parameters

Beams: [Multiple Types/Sizes - see plan sheet](#)
Beam Spacing: [Varies - see plan sheet](#)
Beam Model: [22' Simply supported span](#)

Assumptions

1. Existing Steel Beams Fy is assumed from the MBE (Fy = 33 ksi)
2. New Steel Beams Fy is given in the plans (Fy = 36 ksi)
3. Interior Beams are analyzed
4. Top flange considered to be continually braced.
5. No dimensions given for the diaphragms, 10% of the steel beam weight will be used to account for the bracing.

Notes:

1. See "Bar7 Input" section for Dead Loads
2. Live Load Cases
 - Case 1: H Loading
 - Case 2: HS Loading
 - Case 3: 3-3 Loading
 - Case 4: EV3 Loading
 - Case 5: SHV/NRL Loading

Load Rating Differences

The differences between this load rating and the previous are:

1. Distribution factors.
2. Values for DL1 & DL2.
3. Beam spacing for the new steel beams.

GENERAL NOTES

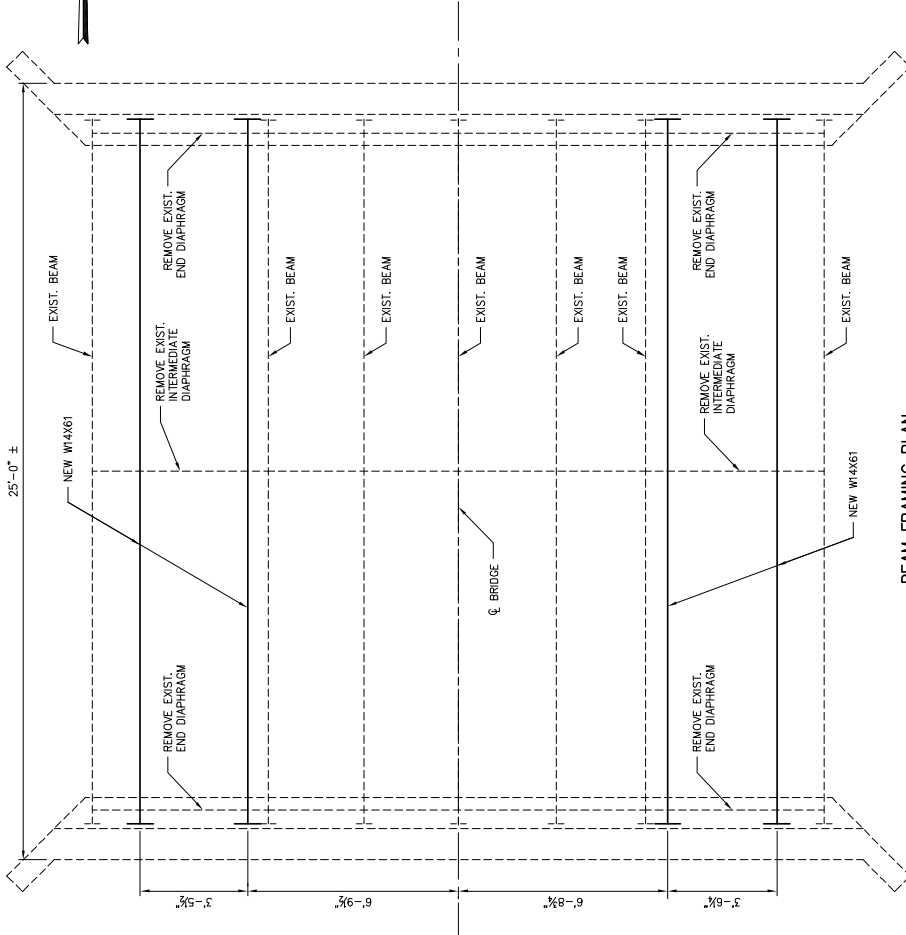
1. VERIFY ALL DIMENSIONS PRIOR TO STARTING WORK.
2. USE STRUCTURAL STEEL WITH A MINIMUM YIELD OF Fy=36 KSI. WIDE FLANGE BEAMS OF A DIFFERENT SIZE MAY BE SUBSTITUTED SUBJECT TO CHECKING WITH THE ENGINEER. ALL SUBSTITUTIONS MUST BE SUBJECT TO INSPECTION AND APPROVAL BY THE ENGINEER.
3. USE SHIM PLATES WITH A MINIMUM PLAN DIMENSION OF 6" OR LARGER.

TRAFFIC CONTROL NOTES

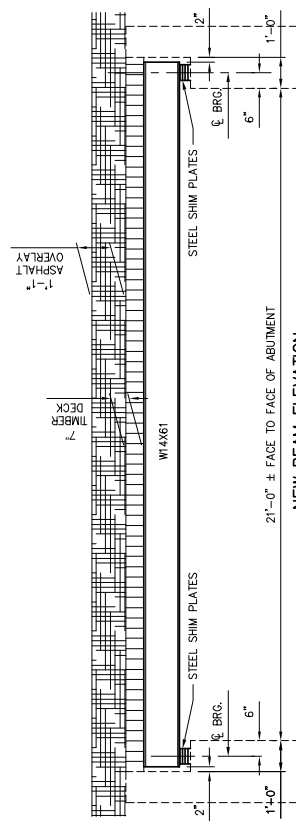
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SUGGESTED CONSTRUCTION SEQUENCE

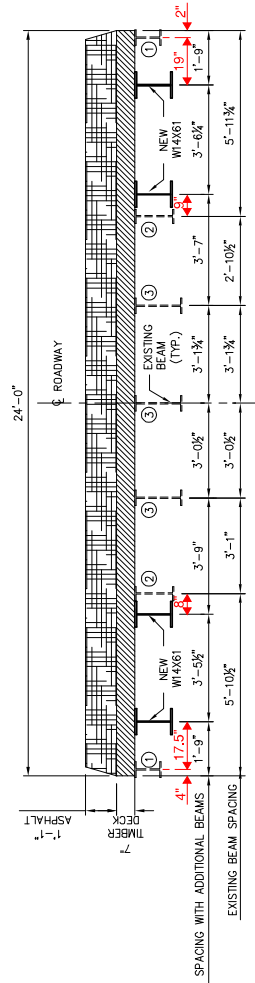
1. INSTALL TRAFFIC CONTROL FOR BRIDGE CLOSURE
2. REMOVE EXISTING INTERIOR AND END DIAPHRAGMS BETWEEN EXISTING EXTERIOR BEAMS AND FIRST INTERIOR BEAMS.
3. INSTALL NEW W4X61 BEAMS OR APPROVED SUBSTITUTIONS.
4. JACK AND SHIM ALL NEW BEAMS TO MAINTAIN A SNUG TIGHT CONDITION.
5. REMOVE TRAFFIC CONTROL.



BEAM FRAMING PLAN



NEW BEAM ELEVATION



TYPICAL BRIDGE SECTION
(AHEAD ON STATIONING)

QUANTITIES		
ITEM	UNIT	QUANTITY
INSTALLATION OF BRIDGE ITEMS	LSUM	1.00

NOTE: ALL COSTS TO COMPLETE THE WORK AS SHOWN ON THIS PLAN SHEET INCLUDING TRAFFIC CONTROL, STRUCTURAL STEEL, REMOVAL AND DISPOSE OF EXISTING DIAPHRAGMS, INTERIOR AND EXTERIOR BEAMS AND INCIDENTALS SHALL BE INCLUDED IN THE UNIT PRICE FOR "INSTALLATION OF BRIDGE ITEMS".



Stephen J. Nickolls
5-22-17

DESIGN				
DETAIL				
CHECK				
DATE				

BRIDGE 57 REHABILITATION CITY OF BROKEN ARROW

NEO DESIGN, LLC

DETAILS OF ADDITIONAL BEAMS (W4X61)

SHEET NO. 1

Load Rating Summary Sheet

County Broken Arrow District _____ Circle Number 57

Structure Number 9E0390N3450003 NBI Number 11195

Load Rater SJN Checked By SJN

Date Load Rated 10/17 Date Checked 010/17

Year Built 1950 Year Reconstructed _____ Span Type Steel Stringer/Girder

Load Rating Method LFD Load Rating Software BAR7/MATHCAD

Data File Location NEO DESIGN, LLC

Reason for Load Rating No Load Rating Calculations in File

Overlay Depth 13" Overlay Date 9/14/04

Assumptions Fy = 33ksi (Original Beams), Fy=36ksi (2017 Widening)
Non-Composite, Original beams braced at midspan. New beams unbraced for length
of span. Load Rating Controlled by Original Center Beams.

Controlling Span 1 Controlling Member Girder Controlling Force M

Inventory Rating: H 16.7 HS 30.1 3-3 _____

Operating Rating: H 27.8 HS 50.1 3-3 _____

Load Rating Engineer's Seal:



Load Rating Engineer's Signature Stephen J Nicholls 10-28-17