



Public Notice

U.S. Army Corps
of Engineers
Tulsa District

Reply To:

U.S. Army Corps of Engineers
ATTN: Regulatory Office
2488 E 81st Street
Tulsa, Oklahoma 74137-4290

SWT-2017-657
Public Notice No.

April 18, 2018
Public Notice Date

May 18, 2018
Expiration Date

PURPOSE

The purpose of this public notice is to inform you of a proposal for work in which you might be interested and to solicit your comments and information to better enable us to make a reasonable decision on factors affecting the public interest.

SECTION 10

The U.S. Army Corps of Engineers is directed by Congress through Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) to regulate all work or structures in or affecting the course, condition, or capacity of navigable waters of the United States. The intent of this law is to protect the navigable capacity of waters important to interstate commerce.

SECTION 404

The U.S. Army Corps of Engineers is directed by Congress through Section 404 of the Clean Water Act (33 U.S.C. 1344) to regulate the discharges of dredged and fill material into all waters of the United States. These waters include lakes, rivers, streams, mudflats, sandflats, sloughs, wet meadows, natural ponds, and wetlands adjacent to other waters. The intent of the law is to protect these waters from the indiscriminate discharge of material capable of causing pollution and to restore and maintain their chemical, physical, and biological integrity.

NOTICE TO PUBLISHERS

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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101ST EAST AVENUE
TULSA, OKLAHOMA 74128-4609

Application No. SWT-2017-657

JOINT PUBLIC NOTICE
U.S. ARMY CORPS OF ENGINEERS
AND
OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ)
(30-DAY COMMENT PERIOD)

Interested parties are hereby notified that the District Engineer (DE) has received an application for a Department of the Army permit and water quality certification pursuant to Sections 404 and 401 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. The ODEQ hereby incorporates this public notice and procedure as its own public notice and procedure by reference thereto.

Applicant: Ms. Siv Sundaram, P.E.
Environmental Programs Division Engineer
Oklahoma Department of Transportation (ODOT)
200 Northeast 21st Street
Oklahoma City, OK 73105

Name of Agent: Mr. Ricky Wilson, PWS
HDR Engineering, Inc.
613 NW Loop 410, Suite 700
San Antonio, TX 78216

Location: The proposed project is located on State Highway (SH) 99 which is also United States Highway (US) 377, and spans Lake Texoma in Marshall County, Oklahoma, and Grayson County, Texas. The proposed project site is within a portion of Section 12, Township 8 South, and Range 4 East. The project site can be found on the Shay and Gordonville, 7.5 Minute USGS Quadrangle map at North Latitude 33.8699 and West Longitude 96.8335.

Project Description: The application is for the placement of fill material related to the proposed replacement of Willis Bridge on SH 99 over Lake Texoma.

Purpose: The basic purpose of this work (State Job Piece # 28828(04)) is to replace and widen a structurally deficient bridge over Lake Texoma.

The overall purpose of this work is to comply with Federal safety standards in order to provide safe and reliable transportation on SH 99 between the cities of Madill, Oklahoma, and Whitesboro, Texas.

Table of Impacts:

Original Proposal					
Number or Location	Impact Activity	Type of Water	Type of Fill Material	Qty of Material cys below OHWM	Footprint (ac and/or lf)
New Bridge	Placement of fill material	Lake Texoma	New Concrete Bridge Piers	2,925 cys	0.07 ac
Fish Habitat Structures	Placement of fill material	Lake Texoma	Rubble Piles Concrete	4,842 cys	0.7 ac
Total	-	-	-	7,767 cys	0.77 ac
cubic yards (cys), ordinary high water mark (OHWM), acre (ac), linear feet (lf)					

Description of Work: ODOT proposes to replace the existing bridge over Lake Texoma and improve associated roadway approaches. The existing span bridge will be replaced with a precast concrete beam span bridge that totals about 5,462 feet in length. The proposed bridge will have an east offset that has a clear roadway width of 44 feet and an approach roadway with two 12-foot driving lanes and 10-foot paved shoulders. The existing bridge will remain open during construction. The reason for discharge of fill material is for the construction of the proposed bridge over Lake Texoma with concrete piers as drilled shafts in tightly sealed forms. ODOT plans to excavate 11,800 cys from the existing roadbed abutments, in order to create "no net change" in flood storage of Lake Texoma.

Avoidance and Minimization Information: The applicant provided the following statement with regard to how avoidance and minimization of impacts to aquatic resources was incorporated into the project plan:

Impacts were avoided to the maximum extent practicable through design measures and alignment selection while keeping an eastern offset to keep the roadway open to traffic during construction and minimize impacts to a Corps park. Avoidance measures for the project include locating the offset alignment as near the existing alignment as practicable. The proposed project would entirely avoid impacts to wetlands and would have minimal impact to Lake Texoma.

In addition to the avoidance measures described above, the proposed project will minimize impacts to the extent practicable. The proposed project includes minimization efforts such as reducing the offset of the new bridge from 70 feet to 46 feet by using a more costly and complex temporary sheet piling technique. In addition, the guardrail/fence sections would have 1:3 side slopes extended in regions requiring fill while 1:4 side slopes would be maintained outside the guard rail/fence in regions within the flood control pool. These measures are in lieu of

the standard 1:6 side slopes. Finally, the guard rail/fence widening was reduced on the north side from the standard 5 foot to 3 feet 6 inches. Additionally, to minimize temporary work roads, barge construction will be utilized. To minimize the potential short-term impacts (such as turbidity and suspended solids) associated with the increased sediment generated by construction activities, Best Management Practices (BMPs) will be implemented in order to control soil erosion and sedimentation; furthermore, during construction activities excavated soil will not be placed in waters or floodplain areas unless required for construction of the project.

Mitigation: The applicant proposes the following as compensatory mitigation for the unavoidable impacts to aquatic resources expected from the proposed project:

ODOT has proposed mitigation to compensate for unavoidable impacts to waters of the United States by constructing 22 Fish Habitat Structures (FHS) by turning the old bridge pier into rubble piles. The proposed FHS will cover about 0.7 acre below the water surface of the lake. This on-site location and conceptual design was selected based on coordination with the Lake Texoma Corps office, Oklahoma Department of Wildlife Conservation (ODWC), and Texas Parks and Wildlife Department (TPWD). Fish habitat structures have been shown to be a successful means of enhancing aquatic habitat by providing fish cover, structure, spawning habitat, and as an attachment surface for phytoplankton and submerged vascular plants. Such structures have been successfully used for many years in freshwater habitats. Fish habitat structures such as these provide overall habitat lift for impounded waters, as well as enhanced recreation activities for fishermen.

This mitigation plan is the applicant's proposal. The Corps has made no determination at this time with regard to the adequacy of the proposed mitigation relative to the federal mitigation rules and guidance, including Tulsa District's Mitigation and Monitoring Guidelines. The Corps is accepting comments on the need for and nature of the proposed mitigation in addition to comments on the applicant's primary proposal. The Corps bears the final decision on the need for and extent of mitigation required if the project proposed herein is authorized.

Government Authorizations obtained or received: See Cultural Resources and Threatened and Endangered Species sections below.

Project Setting: The project area is located within the Eastern Cross Timbers ecoregion of Oklahoma. Vegetation of the project area is primarily comprised of maintained highway right-of-way, maintained campgrounds, brushy old fields, upland forest, and riparian forest. Dominant vegetation in maintained road right-of-way includes Bermuda grass, paspalum, purpletop, Indian grass, and Johnson grass. Dominant vegetation in maintained campground includes Bermuda grass, Johnson grass, and paspalum. Dominant vegetation in brushy old field includes trumpet creeper, potato vine, pepper vine, balloon vine, blackberry, and Johnson grass. Dominant vegetation in upland

forest includes post oak, white ash, eastern red cedar, elm species, Shumard oak, blackhaw, hickory, and sumac. Dominant vegetation in riparian forest includes ash species, elm species, hackberry, and cottonwood.

Existing Condition: The majority of the project area is agricultural grazing and farming. The bridge site is a crossing of the Red River arm of Lake Texoma (8-digit HUC 11130210). Site specific hydrology is dominated by Lake Texoma with a normal pool elevation of 617 feet and flood control pool elevation of 640 feet. The crossing of Lake Texoma is approximately 5,260 feet wide. The lakebed is composed primarily of sandy and clay soils with layers of gravel and coarse sands near bedrock which is hard shale except for limestone near the north bank. Typical depth of soil material overlaying bedrock is approximately 40 feet.

Cultural Resources: The DE is responsible to ensure compliance with the National Historic Preservation Act of 1966 (NHPA) (Public Law 89-665), as amended and other cultural resources laws and Executive Orders. ODOT conducted a cultural resources survey. Consultation of the survey was made by procedures established with Federal Highway Administration and ODOT with the Oklahoma Historical Society (OHS) December 1, 2015 (File #0349-16), Oklahoma Archaeological Survey (OAS) November 16, 2015, Texas Historical Commission December 15, 2015 (Track #201602237), Chickasaw Nation, Osage Nation, and Wichita and Affiliated Tribes. No objections were received and all state agencies concurred that there are no historic properties affected by the proposed project.

Threatened and Endangered Species: ODOT has conducted a biological assessment in consultation with the U.S. Fish and Wildlife Service (USFWS) January 8, 2016, with the following findings: no effect on the following federally listed species red knot (*Calidris canutus rufa*) and whooping crane (*Grus americana*); a “may effect, unlikely to adversely affect” the interior least tern (*Sterna antillarum*) and piping plover (*Charadrius melodus*). It was determined that a final effect analysis and determination regarding the American burying beetle (*Nicrophorus americanus*) would be covered under an existing Programmatic Biological Assessment and Biological Opinion for ODOT projects with the USFWS. The IPAC consultation numbers were 02EKOK00-2016-SLI-0189 and 02ETAR00-2016-SLI-0051.

Environmental Considerations: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts of the proposed activity and its intended use on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof: conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownerships,

and, in general, the needs and welfare of the people. A permit will be denied if the discharge does not comply with the Environmental Protection Agency's 404(b)(1) Guidelines. Subject to the 404(b)(1) Guidelines and any other applicable guidelines or criteria, a permit will be granted unless the DE determines that it would be contrary to the public interest.

Plans and Data: Plans showing the location of the proposed activity and other data are enclosed with this notice. If additional information is desired, it may be obtained from Shane Charlson, U.S. Army Corps of Engineers, ATTN: Regulatory Office, 2488 E 81st Street, Tulsa, OK 74137-4290, or telephone 918-669-7400.

Comments: In order to consider and evaluate the impacts of this proposed activity the Corps is soliciting comments from the public, federal, state, and local agencies and officials, Indian tribes, and other interested parties. Comments concerning the issuance of this permit should be received by the DE no later than the expiration date of this public notice. You may submit comments to mailing address: U.S. Army Corps of Engineers, ATTN: Regulatory Office, 2488 E 81st Street Tulsa, OK 74137-4290 or email CESWT-RO@usace.army.mil, please include the public notice number SWT-2017-657 in the subject line of the message.

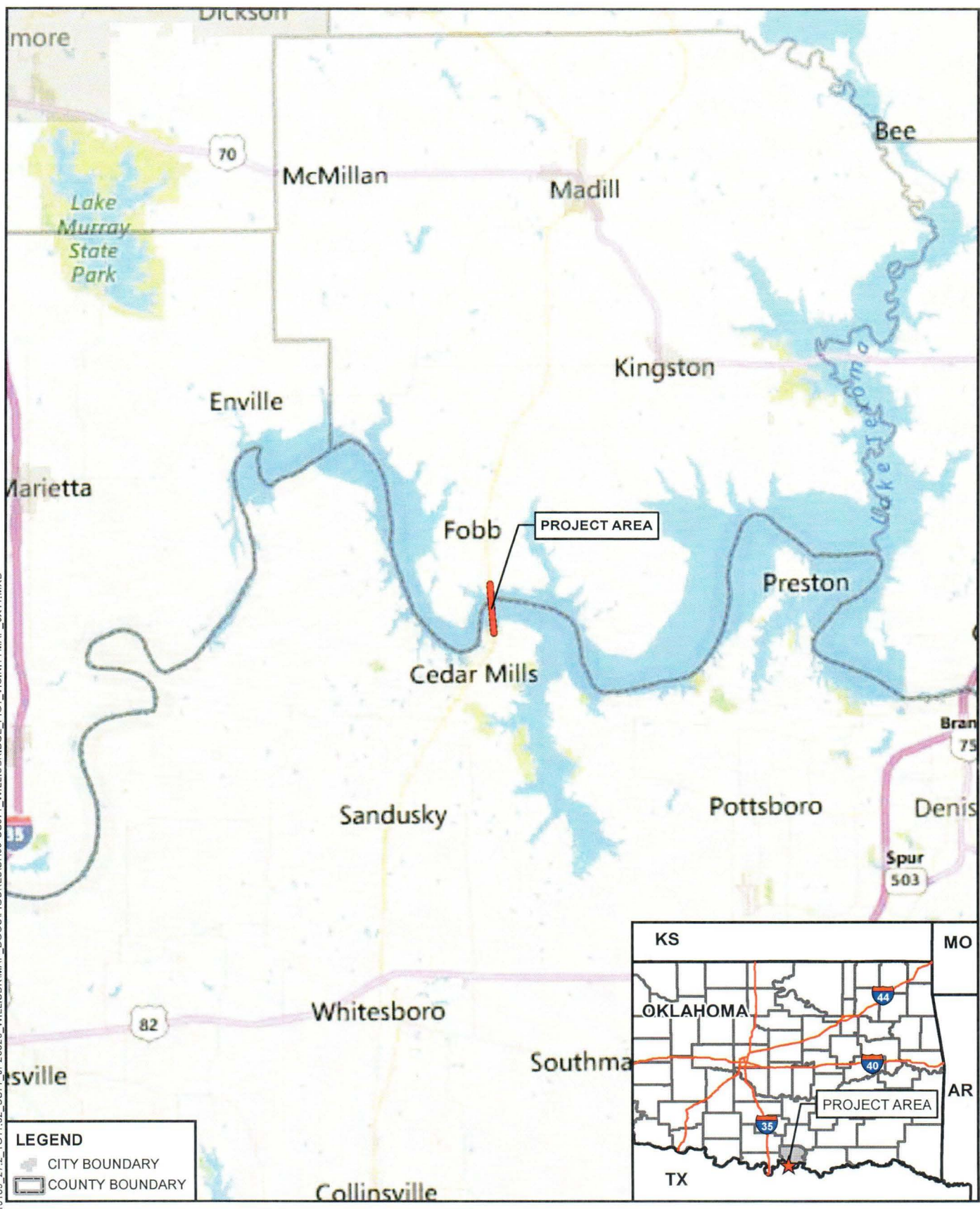
Comments concerning water quality impacts in Oklahoma will be forwarded to ODEQ for consideration in issuing a Section 401 Water Quality Certification for the proposed project. For water quality certification in Texas, this project incorporates the requirements necessary to comply with the Texas Commission on Environmental Quality's (TCEQ) Tier I project criteria. Tier I projects are those which result in a direct impact of 3 acres or less of waters or 1,500 lf of streams (or a combination of the two is below the threshold) for which the applicant has incorporated BMPs and other provisions designed to safeguard water quality. The Corps has received an ODOT completed checklist and signed statement-fulfilling Tier I criteria for the project. Accordingly, a request for 401 certification for the portion of the project in Texas is not necessary and there will be no additional TCEQ review.

Work may **not** commence until decisions have been made on both Sections 401 and 404.

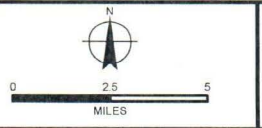
Andrew R. Commer
Chief, Regulatory Office

Enclosures

FILE:O:\10027861_10188_27.2_TO11.02_US77_JP28828_WILLISBRIDGE_DOCS\FIGURES\SH99-US377_WILLISBRIDGE_FIG1_VICINITYMAP_8X11.MXD

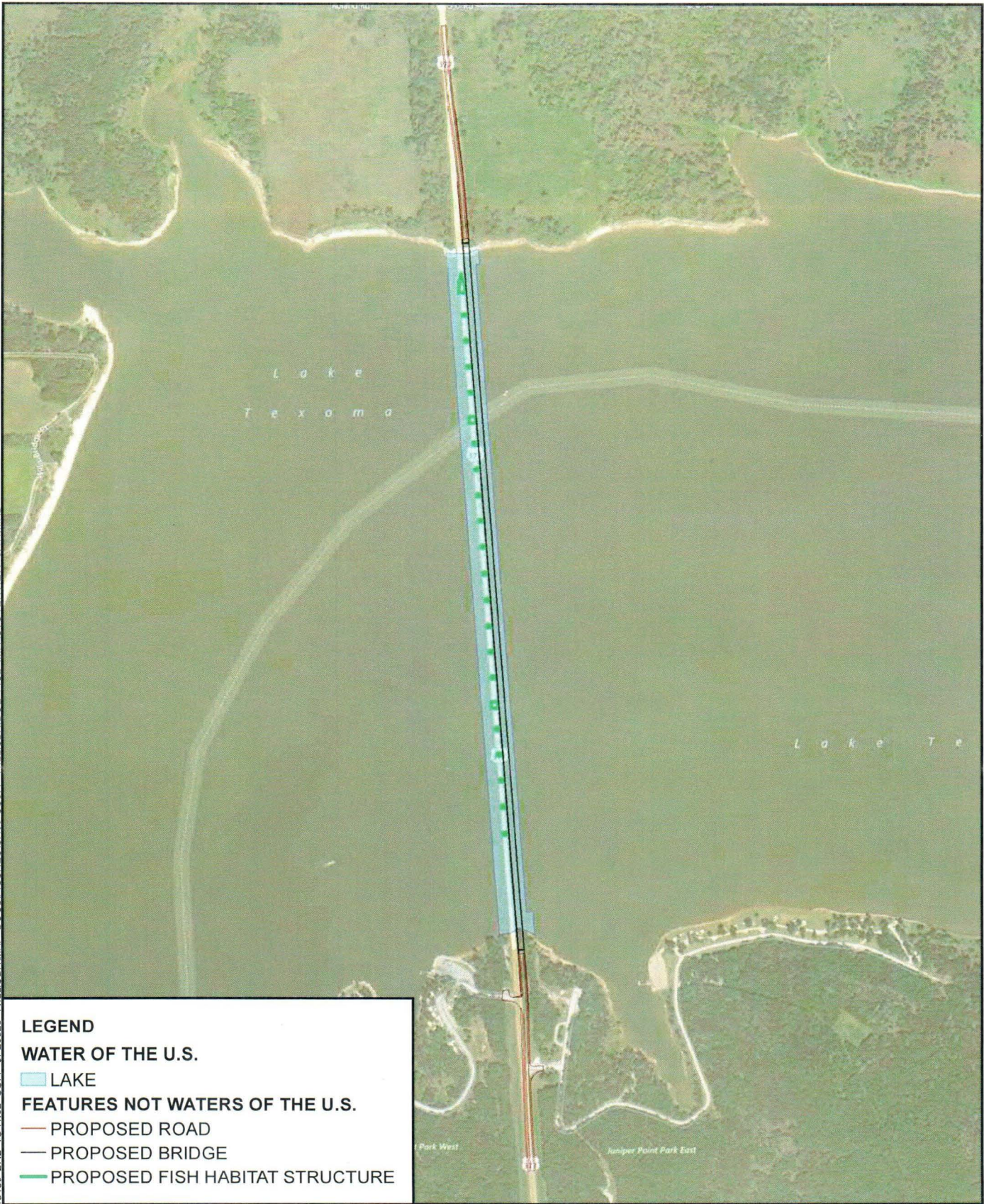


STATE HIGHWAY 99 / U.S. HIGHWAY 377
MARSHALL COUNTY, OK / GRAYSON COUNTY, TX
 J/P NO. 28828(04)
 VICINITY MAP



SWT-2017-657
 Oklahoma Department of Transportation
 US 377, SH 99, Willis Bridge Replacement
 Red River, Marshall County, OK, Grayson County, TX
 Enclosure 1 of 6

PATH: O:\10007861\10189_27.2_TO11.02_US77_JP28828_WILLISBRMAP_DOCS\FIGURES\SH99-USS377_WILLISBRIDGE_FIG2_IMPACTOVERVIEW_8X11.MXD



LEGEND

WATER OF THE U.S.

LAKE

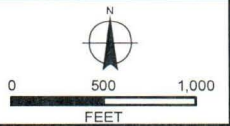
FEATURES NOT WATERS OF THE U.S.

PROPOSED ROAD

PROPOSED BRIDGE

PROPOSED FISH HABITAT STRUCTURE

STATE HIGHWAY 99 / U.S. HIGHWAY 377
MARSHALL COUNTY, OK / GRAYSON COUNTY, TX
 J/P NO. 28828(04)
PROJECT OVERVIEW



SWT-2017-657
 Oklahoma Department of Transportation
 US 377, SH 99, Willis Bridge Replacement
 Red River, Marshall County, OK, Grayson County, TX
 Enclosure 2 of 6

HORIZONTAL CURVE DATA
 P.L. STA. 137+91.70
 X = 2322890.82
 Y = 194070.99
 Δ = 31°3'39" LT.
 D = 0°23'43"
 T = 408.51
 L = 816.81
 R = 14500.00

PROPOSED
R/W
 24 JUNE 2018

DESIGN DATA
 CONCRETE CLASS AA f'c = 4 K.S.I.
 CONCRETE CLASS A f'c = 3 K.S.I.
 REINFORCING STEEL (GRADE 60) fy = 60 K.S.I.
 STRUCTURAL STEEL M270 (GRADE 50W) fy = 50 K.S.I.
 STAINLESS STEEL A240 (TYPE 316) fy = 30 K.S.I.

LOADING:
 HL-93 OR OKLAHOMA OVERLOAD TRUCK
 20 PSF FUTURE WEARING SURFACE
 5 PSF STAY-IN-PLACE DECK FORM ALLOWANCE

DESIGN:
 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION WITH 2013 INTERIMS
 ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE
 ANSI/AWS D1.6 STRUCTURAL WELDING CODE - STAINLESS STEEL

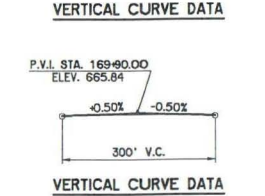
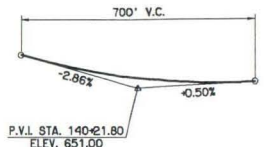
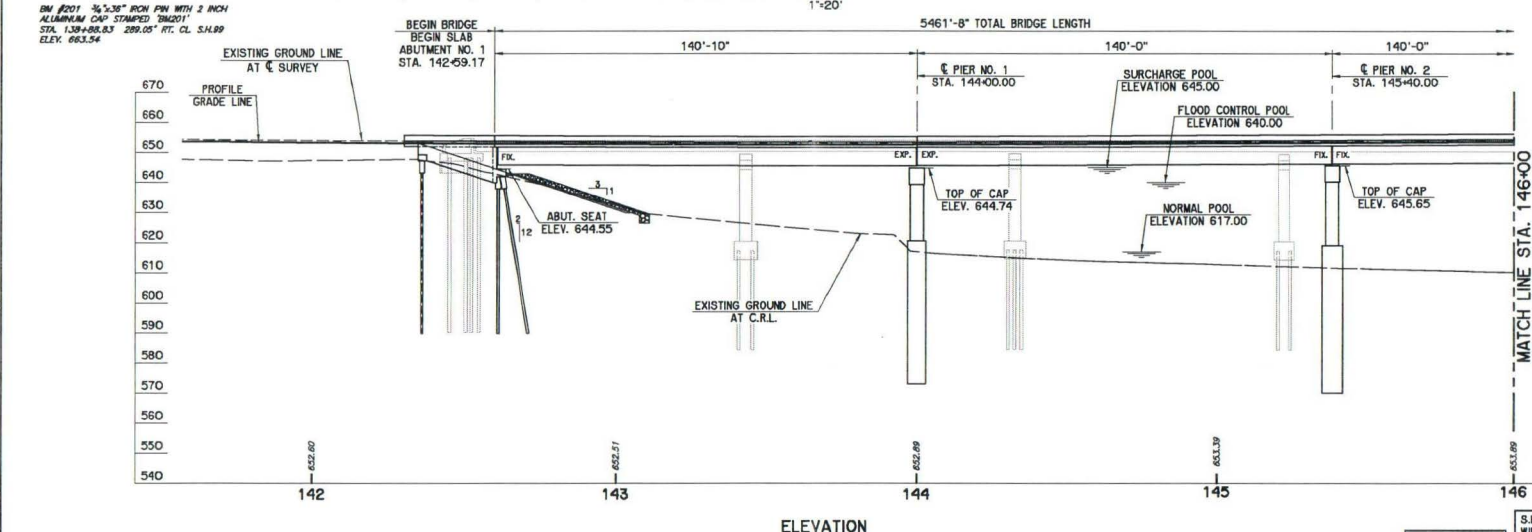
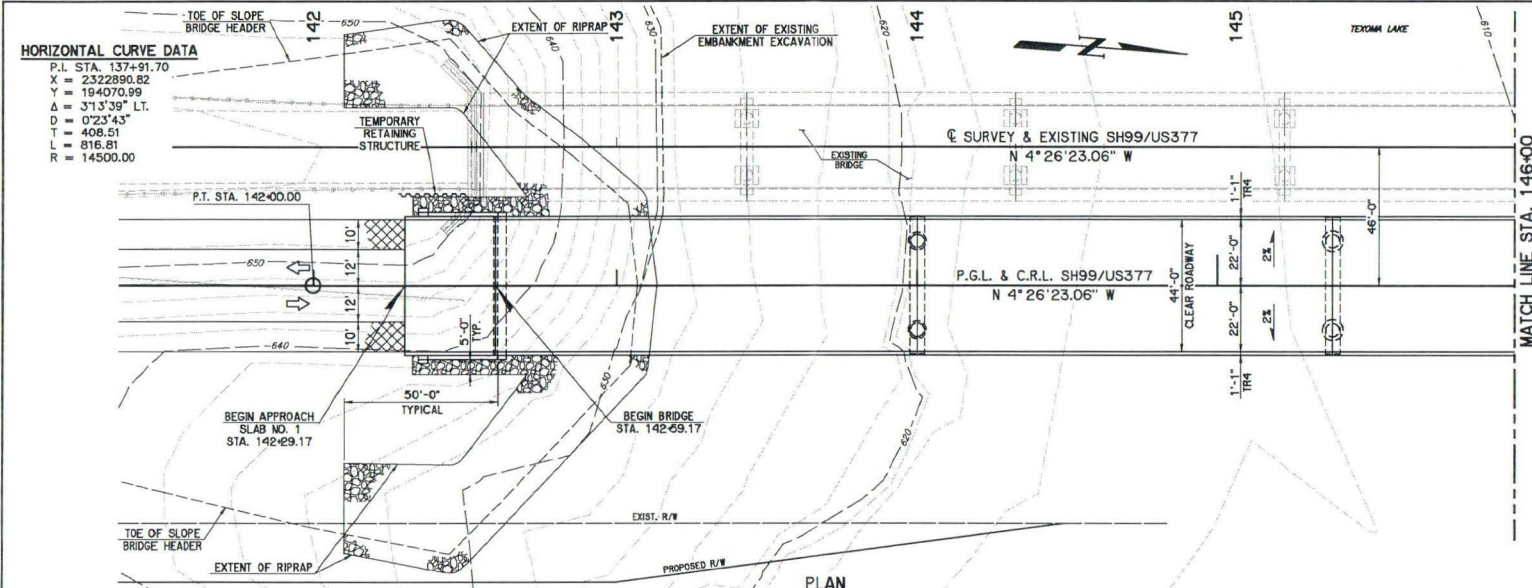
HL-93 INVENTORY RATING FACTOR: 1.00
 HL-93 OPERATING RATING FACTOR: 1.35

INDEX OF SHEETS

- 6 SUMMARY OF PAY QUANTITIES (BRIDGE)
- 7 GENERAL NOTES (BRIDGE)
- 16-25 GENERAL PLAN AND ELEVATION
- 26 TYPICAL BRIDGE SECTION
- 27 TEMPORARY RETAINING STRUCTURE DETAILS
- 28 BRIDGE RIPRAP DETAILS
- 29 ALTERNATE C/D PIER DETAILS
- 30 ALTERNATE B/D SUPERSTRUCTURE DETAILS
- 31 NAVIGATION LIGHT DETAILS
- 32 EXISTING BRIDGE PIER DEMOLITION AND FISH HABITAT STRUCTURE DETAILS

STANDARDS

TR4-2	CCD1-1	SCD1-1
HP1-2	CCD2-1	SPD1-1
LECS-4	PBD1-1	NCD1-1
PLD-3		



NOTE:
 FOR HYDRAULIC DATA, SEE SHEET **xx**.
 FOR SUMMARY OF BRIDGE QUANTITIES AND FOUNDATION DATA, SEE SHEET **xx**.
 FOR TRAFFIC RAIL DRAIN OPENING LOCATIONS, SEE SHEET **xx**.

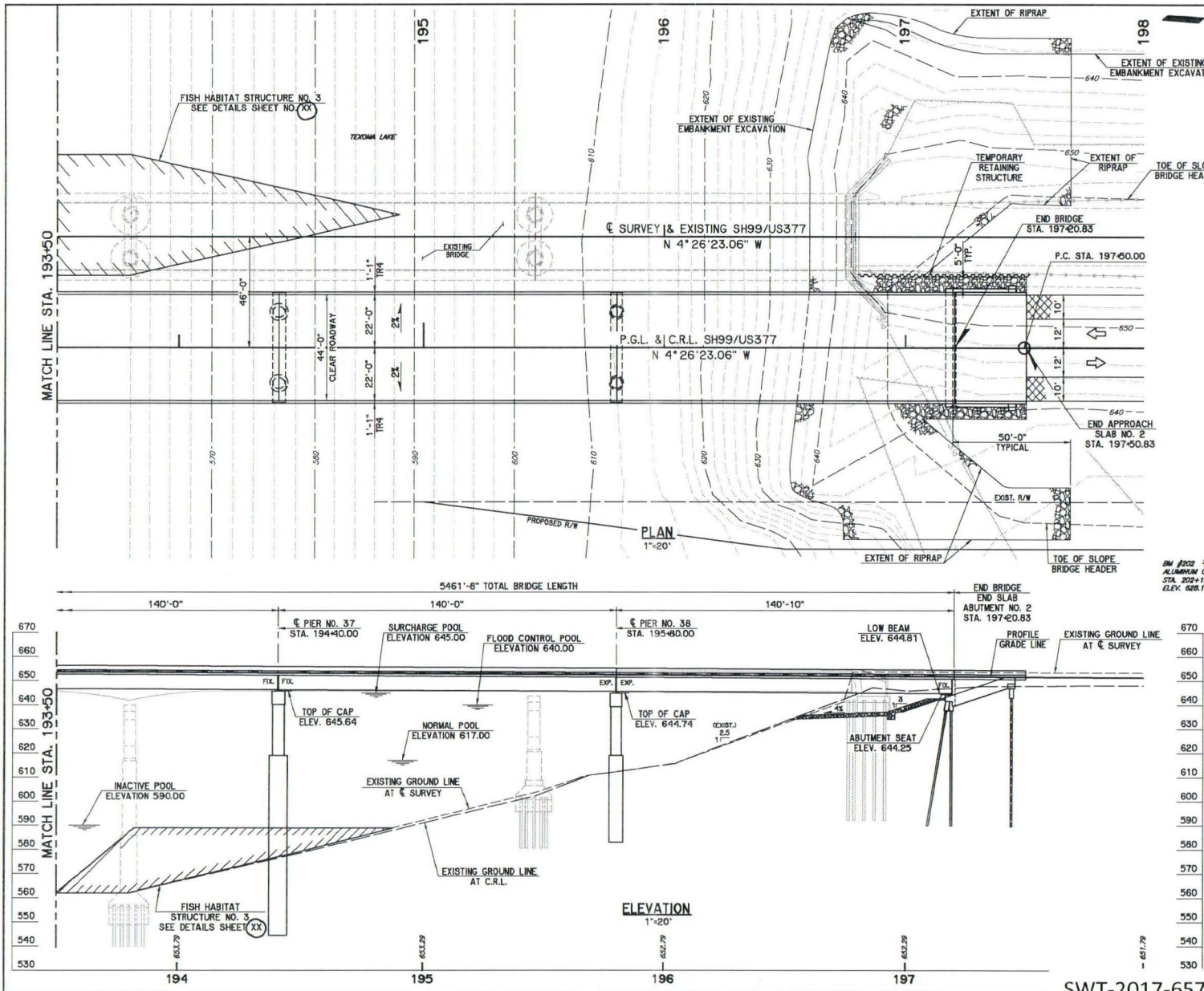
NOTE:
 ALL EXISTING GROUND INFORMATION BELOW ELEVATION 610 TAKEN FROM FINAL REPORT OF UNDERWATER INSPECTION, AUGUST 2010. ACTUAL GROUND SURFACE MAY HAVE CHANGED.

THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS NOT A FINAL, SIGNED AND SEALED DRAWING.

S.H.99/U.S.377 OVER LAKE TEXOMA WILLIS BRIDGE		Marshall County, OK	Design	CEG
GENERAL PLAN AND ELEVATION (1 OF 10)		Grayson County, TX	Detail	DRB
(39)140' TYPE J P.C.B. SPANS			Check	
44'-0" CL. RDWY. WITH TR4 TRAFFIC RAILS				
€ STA. 169+90.00, 0° SKEW				WHITE ENGINEERING ASSOCIATES

SWT-2017-657
 Oklahoma Department of Transportation
 US 377, SH 99, Willis Bridge Replacement
 Red River, Marshall County, OK, Grayson County, TX
 Enclosure 3 of 6

I:\Active\1415\Drawings\FE.dwg, 0/21/2016 7:05:12 AM, Deanne



**PROPOSED
R/W**
24 JUNE 2016

HYDRAULIC DATA

TOTAL DRAINAGE AREA	= 23,394 SQ. MILES
CONTROLLED DRAINAGE AREA	= 0 SQ. MILES
EFFECTIVE DRAINAGE AREA	= 23,394 SQ. MILES
Q2	= 45,621 C.F.S.
V2	= 1.48 F.P.S.
Q2 COMPUTED HIGHWATER ELEVATION	= 622.35 FT.
Q5	= 100,360 C.F.S.
V5	= 1.59 F.P.S.
Q5 COMPUTED HIGHWATER ELEVATION	= 628.72 FT.
Q10	= 147,292 C.F.S.
V10	= 1.46 F.P.S.
Q10 COMPUTED HIGHWATER ELEVATION	= 636.17 FT.
Q25	= 217,228 C.F.S.
V25	= 1.75 F.P.S.
Q25 COMPUTED HIGHWATER ELEVATION	= 640.68 FT.
Q50	= 275,982 C.F.S.
V50	= 2.02 F.P.S.
Q50 COMPUTED HIGHWATER ELEVATION	= 643.08 FT.
Q100	= 339,819 C.F.S.
V100	= 2.38 F.P.S.
Q100 COMPUTED HIGHWATER ELEVATION	= 644.29 FT.
PIER SCOUR DEPTH	= 9.30 FT.
CONTRACTION SCOUR DEPTH	= 1.25 FT.
TOTAL SCOUR DEPTH	= 10.55 FT.
Q0T + Q500	= 507,136 C.F.S.
V500	= 3.44 F.P.S.
Q500 COMPUTED HIGHWATER ELEVATION	= 645.24 FT.
PIER SCOUR DEPTH	= 10.25 FT.
CONTRACTION SCOUR DEPTH	= 1.60 FT.
TOTAL SCOUR DEPTH	= 11.85 FT.
EXTREME HIGHWATER ELEVATION	= 645.72 FT. (2015)
LOW BEAM ELEVATION	= 644.81 FT.

BAR #202 3/8"x3/8" IRON PIN WITH 2 INCH ALUMINUM CAP STAMPED "2002" STA. 202+16.00 290.6' RT. CL. S.H.99 ELEV. 628.17

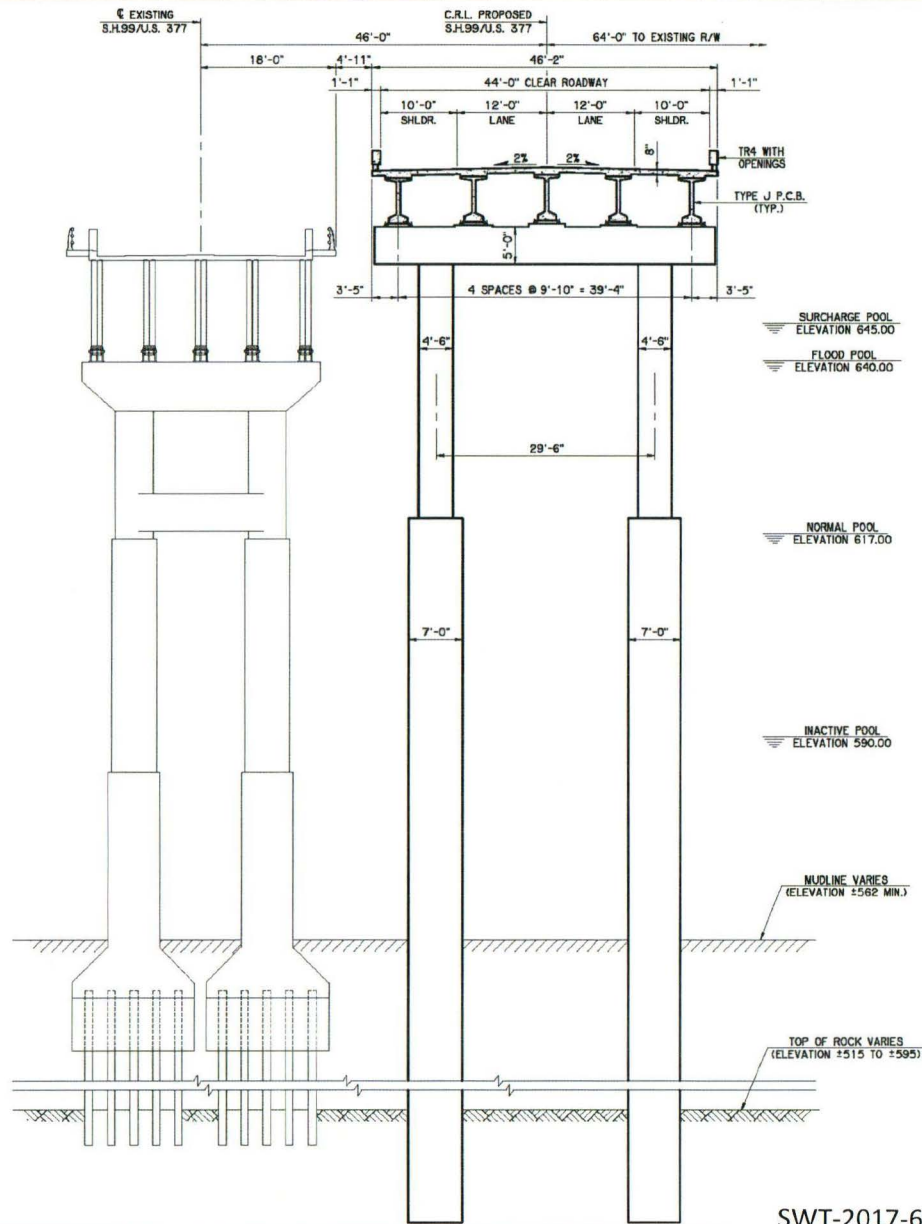
NOTE:
ALL EXISTING INFORMATION BELOW ELEVATION 610 TAKEN FROM "FINAL REPORT OF UNDERWATER INSPECTION, AUGUST 2010." ACTUAL GROUND SURFACE MAY HAVE CHANGED.

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S.H.99/US.377 OVER LAKE TEXOMA WILLIS BRIDGE	MARSHALL COUNTY, OK GRAYSON COUNTY, TX	Design	CEG
GENERAL PLAN AND ELEVATION (10 OF 10)	(39)140' TYPE J P.C.S. SPANS	Detail	DRB
44'-0" CL. RDWY. WITH TR4 TRAFFIC RAILS	€ STA. 169+00.00, 0° SKEW	Check	
		White	ENGINEERING ASSOCIATES

SWT-2017-657
Oklahoma Department of Transportation
US 377, SH 99, Willis Bridge Replacement
Red River, Marshall County, OK, Grayson County, TX
Enclosure 4 of 6

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R/W
24 JUNE 2016



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S.H.99/U.S.377 OVER LAKE TEXOMA MARSHALL COUNTY, OK
WILLIS BRIDGE GRAYSON COUNTY, TX

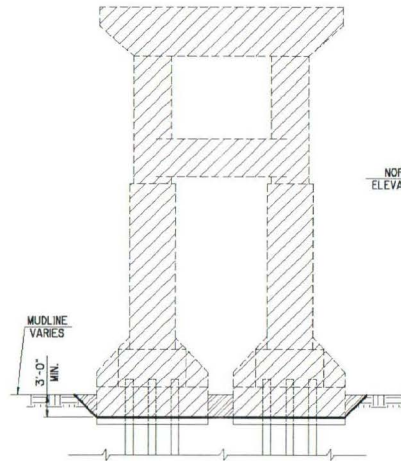
Design	CEG
Detail	DRB
Check	
WHITE ENGINEERING ASSOCIATES	

TYPICAL BRIDGE SECTION

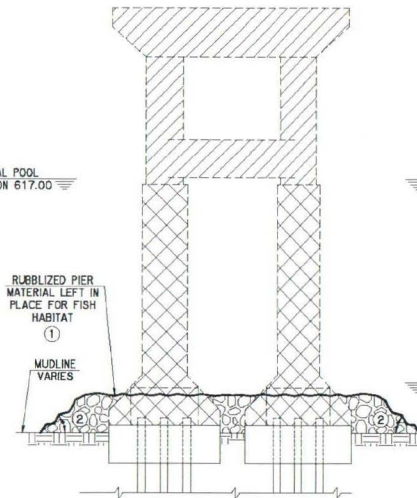
SWT-2017-657
Oklahoma Department of Transportation
US 377, SH 99, Willis Bridge Replacement
Red River, Marshall County, OK, Grayson County, TX
Enclosure 5 of 6

EXISTING PIER MATERIAL SCHEDULE

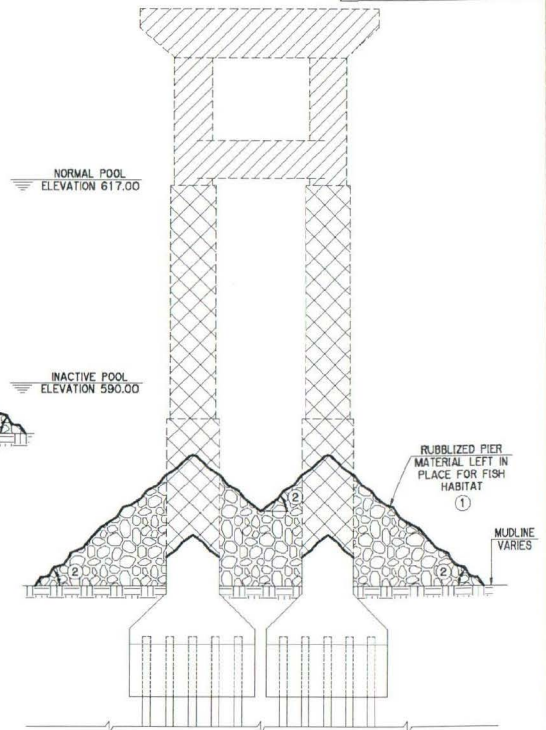
EXISTING PIER NO.	TOTAL ESTIMATED MATERIAL (C.Y.)	MATERIAL REMOVED AND RELOCATED (C.Y.)	MATERIAL RUBBLIZED AND LEFT IN PLACE (C.Y.)	INCIDENTAL MATERIAL REMOVED AND RELOCATED (C.Y.)	VOLUME OCCUPIED BY RELOCATED RUBBLIZED MATERIAL (C.Y.) (3)
1	19	19	0	10	32
2	62	62	0	2	103
3	65	65	0	0	108
4	153	153	0	14	255
5	100	100	0	45	166
6	164	164	0	56	274
7	160	80	100	0	134
8	170	80	90	0	134
9	160	80	100	0	134
10	198	80	118	0	134
11	172	80	92	0	134
12	157	80	77	0	134
13	155	80	75	0	134
14	175	80	95	0	134
15	175	80	95	0	134
16	171	80	91	0	134
17	173	80	93	0	134
18	192	80	112	0	134
19	162	80	102	0	134
20	169	80	109	0	134
21	203	80	123	0	134
22	194	80	114	0	134
23	164	80	104	0	134
24	230	80	150	0	134
25	216	80	136	0	134
26	231	80	151	0	134
27	204	80	124	0	134
28	203	80	123	0	134
29	125	125	0	56	209
TOTAL	4,822	2,448	2,374	183	4,095



EXISTING PIER NOS. 1 THRU 6 AND 29
PIER NO. 6 SHOWN, OTHERS SIMILAR



EXISTING PIER NOS. 7 THRU 11



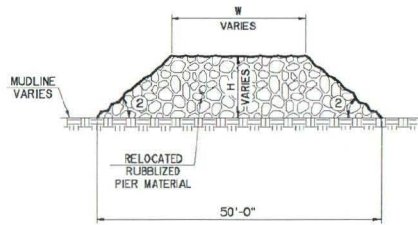
EXISTING PIER NO. 12 THRU 28
PIER NO. 28 SHOWN, OTHERS SIMILAR

NOTES:

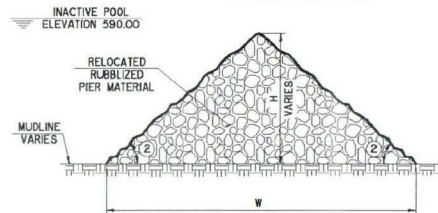
- PIER MATERIAL LEFT IN PLACE MAY NOT EXCEED INACTIVE POOL LEVEL (ELEVATION 590.00). NO SINGLE PIECE OF RUBBLIZED MATERIAL MAY EXCEED 3 FEET IN ANY DIMENSION. REDISTRIBUTE PIER MATERIAL AFTER DEMOLITION OPERATIONS IF NECESSARY. VERIFY ALL MATERIAL ELEVATIONS WITH SONAR.
- 40° ANGLE OF REPOSE ASSUMED. ACTUAL ANGLE MAY DIFFER BASED ON DEMOLITION PROCEDURES AND ENVIRONMENTAL FACTORS.
- INCLUDES ASSUMED VOID RATIO FACTOR 0.67. ACTUAL RATIO MAY DIFFER BASED ON DEMOLITION PROCEDURES AND ENVIRONMENTAL FACTORS.

EXISTING PIER DEMOLITION DETAILS

NO MATERIAL FROM EXISTING BRIDGE DECK MAY BE USED TO CONSTRUCT FISH HABITAT STRUCTURES OR ALLOWED TO ENTER LAKE WATERS



STRUCTURES NO. 1 AND 2



STRUCTURE NO. 3

FISH HABITAT STRUCTURE DETAILS

FISH HABITAT STRUCTURE SCHEDULE

STRUCTURE NO.	BEGIN STATION	END STATION	MINIMUM OFFSET	MAXIMUM OFFSET	H	W	TOTAL VOLUME
1	161+40	161+90	30' LT.	80' LT.	10'	26'	590 C.Y.
2	183+40	183+90	30' LT.	80' LT.	13'	19'	660 C.Y.
3	193+60	194+90	30' LT.	65' LT.	27'	55'	2,920 C.Y.

LEGEND

- PIER MATERIAL REMOVED AND RELOCATED TO FISH HABITAT STRUCTURE(S)
- PIER MATERIAL RUBBLIZED AND LEFT AT PIER LOCATION
- INCIDENTAL MATERIAL REMOVED AND RELOCATED TO FISH HABITAT STRUCTURE(S)

THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS NOT A FINAL, SIGNED AND SEALED DOCUMENT

S.H.99/U.S.377 OVER LAKE TEXOMA WILLIS BRIDGE	MARSHALL COUNTY, OK GRAYSON COUNTY, TX	Design	CEG
		Detail	DRB
EXISTING BRIDGE PIER DEMOLITION AND FISH HABITAT STRUCTURE DETAILS		Check	
STATE OF DEPARTMENT OF TRANSPORTATION			WHITE ENGINEERING ASSOCIATES

SWT-2017-657