

BrM BRIDGE INSPECTION
OFFICE MANUAL
FOR
OKLAHOMA BRIDGES



OKLAHOMA DEPARTMENT OF TRANSPORTATION
BRIDGE DIVISION

APRIL 2022 EDITION



FOREWORD

BrM Bridge Inspection Manual

For

Oklahoma Bridges

The BrM (formerly Pontis) Bridge Inspection Manual for Oklahoma is divided into three parts; a field manual, office manual and user manual. The field manual contains all information needed by a bridge inspection team leader to properly inspect a bridge per Oklahoma standards. The information contained in the office manual deals with functions normally performed in the office rather than out in the field, such as creating plans of action, sufficiency rating, error checking, invoicing and data submittal. However, the field manual will still be needed to supplement the office manual for BrM data entry. Single letter appendix references ('A') refer to appendices within the Field Manual, while double letter appendix references ('AA') refer to appendices within the Office Manual. The User Manual describes the various features of BrM which are applicable to the basic user. It describes how to log in and navigate the various screens, how to manipulate the bridge lists with various filters and layouts, how to run reports, how to import and export bridges, etc.

Appendices

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Appendix CC - County, City And Town Codes

Appendix DD - Bridge Inspection / Maintenance Responsibility

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**APPENDIX AA
CODING OF ENVIRONMENTS**

ASSIGNMENT OF ENVIRONMENTS

ON-SYSTEM

<u>ENVIRONMENT</u>	<u>DIV 1,3,4,5,7,8</u>	<u>DIV 2</u>	<u>DIV 6</u>
SEVERE	INTERSTATE / NHS	---	NHS / STP
BENIGN	STP	NHS / STP	---

OFF-SYSTEM

ENVIRONMENT

SEVERE	ACOG (OKC METRO), INCOG TULSA METRO) or CITIES W/ POPULATION >= 15,000 *
BENIGN	CITIES W/POPULATION < 15,000 or REMAINDER OF ACCO

Salt usage on any bridge will automatically place the elements of that bridge in the severe category.

ENVIRONMENTAL STATES

The behavior of each bridge element over time is governed by its environment and random effects of traffic and age. To capture the environmental effects, each element of each bridge is placed in one of the following environmental categories:

1. Benign - Neither environmental factors nor operation practices are likely to significantly change the condition of the element over time or their effects have been mitigated by past non-maintenance actions or the presence of highly effective protective systems.
2. Severe - Environmental factors and/or operation practices contribute to the rapid decline in the condition of the element. Protective systems are not in place or are ineffective.

The environmental designation of a bridge can change over time, as it would if operation policies were changed to reduce the use of road salt. However, by definition the designation cannot change as the result of maintenance actions or deterioration.

* The following cities have populations greater than 15,000, as of the 2010 population census:

Ada	Claremore	Lawton	Ponca City
Altus	Del City	McAlester	Sand Springs
Ardmore	Duncan	Midwest City	Sapulpa
Bartlesville	Durant	Moore	Shawnee
Bethany	Edmond	Muskogee	Stillwater
Bixby	El Reno	Norman	Tahlequah
Broken Arrow	Enid	Oklahoma City	Tulsa
Chickasha	Jenks	Owasso	Yukon

**APPENDIX AA
CODING OF ENVIRONMENTS**

Example Environmental Factors:

Timber Elements – high moisture content, pest infestation, ice flow impacts

Steel Elements – distance from salt air, water wet/dry cycles, exposure to corrosive soils and liquids

Concrete Elements – freeze-thaw cycles, tire chain wear, deck salting

Petroleum Based – high temperatures

Joints and Bearings – extreme temperature ranges

Operating Practices – high traffic or truck volume, or both

APPENDIX BB SUFFICIENCY RATING PROGRAM

The sufficiency rating is a method of evaluating data by calculating four separate factors (identified below) to obtain a numeric value which is indicative of a bridge's sufficiency to remain in service. These four factors are then subtracted from 100 to obtain a bridge's sufficiency rating. The result of this method is a percentage in which 100 percent would represent an entirely sufficient bridge and zero percent would represent an entirely insufficient or deficient bridge.

An asterisk prefix is used to identify a sufficiency rating that was calculated even though some essential data was missing or coded incorrectly. The Sufficiency Rating program will substitute a value for the unusable data (which will not lower the rating) and calculate the sufficiency rating. The asterisk is dropped when the unusable data is corrected. It is normal that all culverts with Bridge Roadway Width, Curb-To-Curb - Item 51 coded '0000' will have an asterisk prefixed sufficiency.

The following is a summary of the NBI items evaluated by the sufficiency rating formula. For the complete formula and an example of its usage, refer to the FHWA Coding Guide.

1. Structural Adequacy and Safety (55% Max)
 - Item 59 - Superstructure
 - Item 60 - Substructure
 - Item 62 - Culverts
 - Item 66 - Inventory Rating

2. Serviceability and Functional Obsolescence (30% Max)
 - Item 28 - Lanes on Structure
 - Item 29 - Average Daily Traffic
 - Item 32 - Approach Roadway Width
 - Item 43 - Structure Type, Main
 - Item 51 - Bridge Roadway Width
 - Item 53 - Vert. Clr. Over Deck
 - Item 58 - Deck Condition
 - Item 67 - Structural Evaluation
 - Item 68 - Deck Geometry
 - Item 69 - Underclearances
 - Item 71 - Waterway Adequacy
 - Item 72 - Approach Roadway Alignment
 - Item 100 - STRAHNET Highway Designation

3. Essentiality for Public Use (15% Max)
 - Item 19 - Detour Length
 - Item 29 - Average Daily Traffic
 - Item 100 - STRAHNET Highway Designation

Categories 1, 2 and 3, together, can represent up to a 100% reduction in a bridge's sufficiency rating; however there are additional reductions that can be taken. In no case will the total reduction be greater than 100%.

4. Special Reductions (13% Max)
 - Item 19 - Detour Length
 - Item 36 - Traffic Safety Features
 - Item 43 - Structure Type, Main

**APPENDIX BB
SUFFICIENCY RATING PROGRAM**

The same program which calculates the sufficiency rating also computes the bridge's deficiency status.

POOR (STRUCTURALLY DEFICIENT) BRIDGE DEFINITION

A bridge can be inadequate to carry legal loads, whether caused by obsolete design standards, structural deterioration, or waterway inadequacy. Structures in this category may include those posted to restrict load limits as well as those closed to all traffic. A structurally deficient bridge rating is determined from the results of field inspection findings where a NBI condition rating of 4 or less is assigned to the deck (Item 58), superstructure (Item 59), substructure (Item 60), or a culvert (Item 62) or a rating of 2 or less is assigned to the structural evaluation (item 67) or waterway adequacy (Item 71).

NOTE: Any bridge built or undergoing a major reconstruction within the last 10 years cannot be classified as Structurally Deficient.

SUMMARY:

POOR (STRUCTURALLY DEFICIENT) BRIDGE

A. If any of the following items ≤ 4 :

- Item 58 (Deck)
- Item 59 (Superstructure)
- Item 60 (Substructure)
- Item 62 (Culvert and retaining walls)

NOTE: The former FO status bridge definition is now located under item 218 in the field manual.

**APPENDIX CC
COUNTY, CITY AND TOWN CODES**

This information is for coding items 3, 4 and the first two digits of the structure name.

Item 3 is a three digit number to identify the county where the structure is located. The FHWA requires that the identification number be the Federal Information Processing Standards (FIPS) code scheme specified by the U.S. Census of Population and Housing. In BrM, the county name is always displayed in lieu of the 3 digit FIPS number, although the FIPS number is stored in the database.

Item 4 is a five digit number to identify the city or town where the structure is located. The FHWA requires that the identification number be the FIPS Code scheme as noted above. If the structure is not within a city or town city limits, code all zeroes. In BrM, the city name is always displayed in lieu of the 5 digit FIPS number, although the FIPS number is stored in the database.

The structure name is a bridge identification number which identifies the bridge location. The first 2 digits of the structure name is the County Identification Number, but not the same number used in Item 3. This is the 2 digit code number used by all Oklahoma State Agencies for county identification.

**APPENDIX CC
COUNTY, CITY AND TOWN CODES**

COUNTY	COUNTY CODE	COUNTY FIPS	DISTRICT	CITY NAME	CITY CODE
ADAIR	01	001	1	STILWELL WATTS WESTVILLE	02305 02585 02640
ALFALFA	02	003	6	ALINE AMORITA BURLINGTON BRYON CARMEN CHEROKEE DRIFTWOOD GOLTRY HELENA INGERSOLL JET LAMBERT	00050 00075 00320 00340 00405 00475 00710 00960 01100 01220 01250 01380
ATOKA	03	005	2	ATOKA CANEY STRINGTOWN	00125 00385 02325
BEAVER	04	007	6	BEAVER FORGAN GATE KNOWLES	00150 00855 00925 01345
BECKHAM	05	009	5	CARTER ELK CITY ERICK SAYRE TEXOLA	00420 00770 00795 02150 02420
BLAINE	06	011	5	CANTON GEARY GREENFIELD HITCHCOCK HYDRO LONGDALE OKEENE WATONGA	00390 00930 01010 01140 01200 01460 01805 02580
BRYAN	07	013	2	ACHILLE BENNINGTON BOKCHITO CADDO CALERA COLBERT DURANT HENDRIX KEMP KENEFICK MEAD SAND POINT SILO	00005 00160 00230 00350 00355 00530 00730 01103 01275 01290 01597 02123 02203
CADDO	08	015	7	ANADARKO APACHE BINGER BRIDGEPORT CARNEGIE CEMENT CYRIL EAKLEY FORT COBB GRACEMONT HINTON HYDRO LOOKEBA	00080 00090 00190 00275 00410 00440 00625 00740 00860 00985 01135 01200 01465

**APPENDIX CC
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COUNTY	COUNTY CODE	COUNTY FIPS	DISTRICT	CITY NAME	CITY CODE
CANADIAN	09	017	4	CALUMET EL RENO GEARY MUSTANG OKARCHE OKLAHOMA CITY PIEDMONT UNION CITY YUKON	00360 00785 00930 01705 01795 01815 01925 02485 02720
CARTER	10	019	7	ARDMORE DICKSON GENE AUTRY HEALDTON LONE GROVE RATLIFF CITY SPRINGER TATUMS WILSON	00100 00687 00935 01090 01452 02017 02275 02393 02670
CHEROKEE	11	021	1	HULBERT TAHLEQUAH	01192 02370
CHOCTAW	12	023	2	BOSWELL FT. TOWSON HUGO SOPER	00245 00875 01190 02235
CIMARRON	13	025	6	BOISE CITY KEYES	00225 01305
CLEVELAND	14	027	3	HALL PARK LEXINGTON MOORE NOBLE NORMAN OKLAHOMA CITY RANCHWOOD MNR. SLAUGHTERVILLE	01037 01430 01655 01750 01755 01815 02012 02212
COAL	15	029	3	BROMIDE CENTRAHOMA COALGATE LEHIGH PHILLIPS TUPELO	00300 00445 00525 01415 01915 02470
COMANCHE	16	031	7	CACHE CHATTANOOGA ELGIN FAXON FLETCHER GERONIMO INDIAHOMA LAWTON MEDICINE PARK STERLING	00345 00460 00765 00835 00840 00940 01210 01405 01603 02285
COTTON	17	033	7	DEVOL RANDLETT TEMPLE WALTERS	00670 02015 02400 02540
CRAIG	18	035	8	BIG CABIN BLUE JACKET KETCHUM VINITA WELCH	00180 00220 01300 02520 02625

**APPENDIX CC
COUNTY, CITY AND TOWN CODES**

COUNTY	COUNTY CODE	COUNTY FIPS	DISTRICT	CITY NAME	CITY CODE
CREEK	19	037	8	BRISTOW DEPEW DRUMRIGHT KELLYVILLE KIEFER MANNFORD MOUNDS OILTON SAPULPA SHAMROCK SLICK STROUD TULSA	00285 00665 00720 01270 01315 01540 01675 01790 02135 02180 02215 02335 02465
CUSTER	20	039	5	ARAPAHO BUTLER CLINTON CUSTER CITY HAMMON THOMAS WEATHERFORD	00095 00330 00520 00620 01040 02435 02610
DELAWARE	21	041	8	BERNICE COLCORD GROVE JAY KANSAS OAKS W. SILOAM SPRINGS	00165 00535 01015 01230 01257 01777 02638
DEWEY	22	043	5	CAMARGO LEEDY OAKWOOD PUTNAM SEILING TALOGA VICI	00370 01410 01780 01980 02160 02385 02515
ELLIS	23	045	6	ARNETT FARGO GAGE SHATTUCK	00110 00830 00905 02190
GARFIELD	24	047	4	BRECKENRIDGE CARRIER COVINGTON DOUGLAS DRUMMOND ENID FAIRMONT GARBER HILLSDALE HUNTER KREMLIN LAHOMA N. ENID WUKOMIS	00270 00417 00580 00705 00715 00790 00820 00915 01130 01195 01360 01365 01760 02590
GARVIN	25	049	3	ELMORE CITY LINDSAY MAYSVILLE PAOLI PAULS VALLEY STRATFORD WYNNEWOOD	00780 01435 01595 01870 01875 02320 02700

**APPENDIX CC
COUNTY, CITY AND TOWN CODES**

COUNTY	COUNTY CODE	COUNTY FIPS	DISTRICT	CITY NAME	CITY CODE
GRADY	26	051	7	ALEX AMBER BRADLEY CHICKASHA MINCO NINNEKAH NORGE RUSH SPRINGS TUTTLE VERDEN	00045 00067 00255 00485 01645 01748 01752 02100 02475 02505
GRANT	27	053	4	DEER CREEK JEFFERSON LAMONT MANCHESTER MEDFORD NASH POND CREEK RENFROW WAKITA	00650 01235 01385 01525 01600 01720 01940 02040 02535
GREER	28	055	5	BRINKMAN GRANITE MANGUM WILLOW	00280 01000 01530 02665
HARMON	29	057	5	GOULD HOLLIS	00980 01165
HARPER	30	059	6	BUFFALO LAVERNE MAY ROSTON	00310 01400 01590 02095
HASKELL	31	061	1	KEOTA KINTA MCCURTAIN STIGLER TAMAHA WHITEFIELD	01295 01335 01500 02295 02390 02653
HUGHES	32	063	3	ALLEN CALVIN DUSTIN GERTY HOLDENVILLE LAMAR STUART WETUMKA YEAGER	00055 00365 00735 00945 01160 01375 02340 02645 02715
JACKSON	33	065	5	ALTUS BLAIR DUKE ELDORADO ELMER HEADRICK MARTHA OLUSTEE	00060 00210 00723 00760 00775 01085 01580 01830
JEFFERSON	34	067	7	ADDINGTON CORNISH HASTINGS RINGLING RYAN SUGDEN TERRAL WAURIKA	00020 00570 01075 02055 02105 02345 02410 02595

**APPENDIX CC
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COUNTY	COUNTY CODE	COUNTY FIPS	DISTRICT	CITY NAME	CITY CODE
JOHNSTON	35	069	3	BROMIDE	00300
				MANNVILLE	01545
				MILBURN	01635
				MILL CREEK	01640
				RAVIA	02020
				TISHOMINGO	02445
WAPANUCKA	02555				
KAY	36	071	4	BLACKWELL	00205
				BRAMAN	00265
				HARDY	01055
				KAW CITY	01265
				KILDARE	01320
				NARDIN	01715
				NEWKIRK	01735
				PONCA CITY	01935
TONKAWA	02450				
KINGFISHER	37	073	4	CASHION	00425
				DOVER	00707
				HENNESSEY	01105
				KINGFISHER	01325
				LOYAL	01480
				OKARCHE	01795
PIEDMONT	01925				
KIOWA	38	075	5	COOPERTON	00555
				GOTEBO	00975
				HOBART	01150
				LONE WOLF	01455
				MT. PARK	01680
				MT. VIEW	01685
				ROOSEVELT	02085
				SNYDER	02230
LATIMER	39	077	2	RED OAK	02030
				TALIHINA	02380
				WILBURTON	02655
LEFLORE	40	079	2	ARKOMA	00105
				BOKOSHE	00235
				CAMERON	00375
				COWLINGTON	00590
				FANSHAWE	00827
				HEAVENER	01095
				HOWE	01185
				LEFLORE	01413
				PANAMA	01865
				POCOLA	01933
				POTEAU	01955
				SHADY POINT	02175
				SPIRO	02270
				TALIHINA	02380
WISTER	02675				
LINCOLN	41	081	3	AGRA	00030
				CARNEY	00415
				CHANDLER	00455
				DAVENPORT	00635
				FALLIS	00825
				KENDRICK	01285
				MEEKER	01605
				PRAGUE	01960
				SPARKS	02250
				STROUD	02335
				TRYON	02455
				WARWICK	02567
				WELLSTON	02635

**APPENDIX CC
COUNTY, CITY AND TOWN CODES**

COUNTY	NTY CODE	COUNTY FIPS	DISTRICT	CITY NAME	CITY CODE
LOGAN	42	083	4	CASHION COYLE CRESCENT GUTHRIE LANGSTON LOVELL MARSHALL MERIDIAN MULHALL ORLANDO	00425 00595 00600 01020 01395 01475 01575 01615 01695 01845
LOVE	43	085	7	LEON MARIETTA THACKERVILLE	01425 01560 02425
MCCLAIN	44	087	3	BLANCHARD BYARS COLE DIBBLE GOLDSBY NEWCASTLE OKLAHOMA CITY PURCELL ROSEDALE WASHINGTON WAYNE	00215 00335 00537 00685 00958 01728 01815 01975 02090 02570 02600
MCCURTAIN	45	089	2	BROKEN BOW GARVIN HARRIS HAWORTH IDABEL MILLERTON SMITHVILLE VALLIANT WRIGHT CITY	00295 00920 01062 01080 01205 01642 02225 02495 02689
MCINTOSH	46	091	1	CHECOTAH EUFALA HANNA HITCHITA RENTIESVILLE STIDHAM	00465 00800 01045 01145 02045 02290
MAJOR	47	093	6	AMES CLEO SPRINGS FAIRVIEW MENO RINGWOOD	00070 00510 00820 01610 02060
MARSHALL	48	095	2	KINGSTON LITTLE CITY MADILL MCBRIDE OAKLAND WOODVILLE	01330 01440 01520 01495 01775 02683

**APPENDIX CC
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COUNTY	COUNTY CODE	COUNTY FIPS	DISTRICT	CITY NAME	CITY CODE
MAYES	49	097	8	ADAIR CHOUTEAU DISNEY GRAND LAKE TOWNE HOOT OWL LANGLEY LOCUST GROVE PENSACOLA PRYOR SALINA SPAVINAW SPORTSMAN ACRES STRANG	00015 00495 00695 00997 01182 01390 01450 01895 01970 02115 02255 02273 02315
MURRAY	50	099	7	DAVIS DOUGHERTY HICKORY SCULLIN SULPHUR	00645 00700 01120 02155 02350
MUSKOGEE	51	101	1	BOYNTON BRAGGS COUNCIL HILL FT. GIBSON HASKELL MUSKOGEE OKTAHA PORUM TAFT WAINWRIGHT WARNER WEBBERS FALLS	00250 00260 00575 00865 01070 01700 01825 01950 02365 02530 02560 02620
NOBLE	52	103	4	BILLINGS MARLAND MORRISON PERRY RED ROCK SUMNER	00185 01565 01670 01910 02035 02355
NOWATA	53	105	8	DELAWARE LENAPAH NEW ALLUWE NOWATA S. COFFEYVILLE WANN	00655 01420 01727 01770 02245 02550
OKFUSKEE	54	107	3	BOLEY CASTLE OKEMAH PADEN WELEETKA	00240 00430 01810 01860 02630

**APPENDIX CC
COUNTY, CITY AND TOWN CODES**

COUNTY	COUNTY CODE	COUNTY FIPS	DISTRICT	CITY NAME	CITY CODE
OKLAHOMA	55	109	4	ARCADIA	00097
				BETHANY	00175
				CHOCTAW	00490
				DEL CITY	00660
				EDMOND	00755
				FOREST PARK	00850
				HARRAH	01060
				JONES	01255
				LAKE ALUMA	01370
				LUTHER	01485
				MIDWEST CITY	01630
				NICHOLS HILLS	01745
				NICOMA PARK	01746
				OKLAHOMA CITY	01815
				SMITH VILLAGE	02220
				SPENCER	02260
				SPRINGLAKE PARK	02280
THE VILLAGE	02430				
VALLEY BROOK	02490				
WARR ACRES	02565				
WOODLAWN PARK	02680				
OKMULGEE	56	111	1	BEGGS	00155
				BRYANT	00305
				DEWAR	00675
				GRAYSON	01007
				HENRYETTA	01110
				MORRIS	01665
				OKMULGEE	01820
				WINCHESTER	02672
OSAGE	57	113	8	AVANT	00130
				BARNSDALL	00140
				BARTLESVILLE	00145
				BURBANK	00315
				FAIRFAX	00805
				FORAKER	00845
				GRAINOLA	00990
				HOMINY	01175
				OSAGE	01850
				PAWHUSKA	01880
				PRUE	01966
				SAND SPRINGS	02125
				SHIDLER	02200
				SKIATOOK	02210
				TULSA	02465
WEBB CITY	02615				
WYNONA	02705				
OTTAWA	58	115	8	AFTON	00025
				COMMERCE	00550
				FAIRLAND	00810
				MIAMI	01620
				N. MIAMI	01765
				PEORIA	01900
				PICHER	01920
				QUAPAW	01985
WYANDOTTE	02695				

**APPENDIX CC
COUNTY, CITY AND TOWN CODES**

COUNTY	COUNTY CODE	COUNTY FIPS	DISTRICT	CITY NAME	CITY CODE
PAWNEE	59	117	8	BAUGH	01147
				BLACKBURN	00200
				CALIDA	00357
				CEDAR RIDGE	00438
				CLEVELAND	00515
				CURCHECE	00613
				EMPY	00788
				HALLETT	01035
				JENNINGS	01245
				JUBY'S	01256
				LEANDER	01480
				LEROY	01428
				MARAMEC	01550
				MULE BARN	01692
				OAK GROVE	01773
				PAWNEE	01885
				PETERMAN RIDGE	01912
				QUAY	01990
				RABORNVILLE	02003
				RALSTON	02005
				RIGSBY	02053
				SHA-TO-SHE	02189
				SHADY GROVE	02174
SKEDDEE	02205				
TERLTON	02405				
TIMBERLANE	02438				
WES	02636				
WESTPORT	02637				
PAYNE	60	119	4	CUSHING	00615
				DRUMRIGHT	00720
				GLENCOE	00950
				PERKINS	01905
				QUAY	01990
				RIPLEY	02065
				STILLWATER	02300
YALE	02710				
PITTSBURG	61	121	2	ALDERSON	00040
				ASHLAND	00120
				CANADIAN	00380
				CROWDER	00610
				HAILEYVILLE	01030
				HARTSHORNE	01065
				INDIANOLA	01215
				KIOWA	01340
				KREBS	01355
				MCALESTER	01490
				PITTSBURG	01930
				QUINTON	02000
				SAVANA	02145
PONTOTOC	62	123	3	ADA	00010
				ALLEN	00055
				BYNG	00337
				FRANCIS	00890
				ROFF	02075
				STONEWALL	02310

**APPENDIX CC
COUNTY, CITY AND TOWN CODES**

COUNTY	COUNTY CODE	COUNTY FIPS	DISTRICT	CITY NAME	CITY CODE
POTTAWATOMIE	63	125	3	ASHER BETHEL ACRES BROOKSVILLE EARLSBORO MACOMB MAUD MPCLOUD OKLAHOMA CITY PINK SHAWNEE ST. LOUIS TECUMSEH TRIBBEY WANETTE	00115 00177 00302 00745 01515 01585 01510 01815 01927 02195 02110 02395 02453 02545
PUSHMATAHA	64	127	2	ALBION ANTLERS CLAYTON RATTAN	00035 00085 00505 02018
ROGER MILLS	65	129	5	CHEYENNE HAMMON REYDON STRONG CITY	00480 01040 02050 02330
ROGERS	66	131	8	CATOOSA CHELSEA CLAREMORE COLLINSVILLE FOYIL INOLA JAMESTOWN OOLOGAH TALALA TULSA VALLEY PARK	00435 00470 00500 00540 00885 01225 01228 01835 02375 02465 02492
SEMINOLE	67	133	3	BOWLEGS CROMWELL KONAWA LIMA MAUD SASAKWA SEMINOLE WEWOKA	00249 00605 01350 01432 02585 02140 02165 02650
SEQUOYAH	68	135	1	GANS GORE MARBLE CITY MOFFETT MULDROW PARADISE HILLS ROLAND SALLISAW VIAN	00910 00970 01555 01650 01690 01872 02080 02120 02510
STEPHENS	69	137	7	BRAY COMANCHE DUNCAN EMPIRE CITY LOCO MARLOW VELMA	00267 00545 00725 00787 01445 01570 02497

**APPENDIX CC
COUNTY, CITY AND TOWN CODES**

COUNTY	COUNTY CODE	COUNTY FIPS	DISTRICT	CITY NAME	CITY CODE
TEXAS	70	139	6	GOODWELL GUYMON HARDESTY OPTIMA TEXHOMA TYRONE	00965 01025 01050 01840 02415 02480
TILLMAN	71	141	5	DAVIDSON FREDERICK GRANDFIELD HOLLISTER LOVELAND MANITOU TIPTON	00640 00895 00995 01170 01470 01535 02440
TULSA	72	143	8	BIXBY BROKEN ARROW COLLINSVILLE GLENPOOL JENKS LIBERTY LOTSEE OWASSO SAND SPRINGS SKIATOOK SPERRY TULSA	00195 00290 00540 00955 01240 01431 01468 01855 02125 02210 02265 02465
WAGONER	73	145	8	BIXBY BROKEN ARROW COWETA FAIR OAKS NEW TULSA OKAY PORTER REDBIRD TULLAHASSEE TULSA WAGONER	00195 00290 00585 00818 01738 01800 01945 02025 02460 02465 02525
WASHINGTON	74	147	8	BARTLESVILLE COPAN DEWEY OCHELATA RAMONA VERA	00145 00560 00680 01785 02010 02500
WASHITA	75	149	5	BESSIE BURNS FLAT CANUTE COLONY CORDELL CORN DILL CITY ROCKY SENTINEL	00170 00325 00395 00543 01730 00565 00690 02070 02170
WOODS	76	151	6	ALVA AVARD CAPRON FREEDOM WAYNOKA	00065 00135 00400 00900 02605
WOODWARD	77	153	6	FT. SUPPLY MOORELAND MUTUAL SHARON WOODWARD	00870 01660 01710 02185 02685

**APPENDIX DD
BRIDGE INSPECTION / MAINTENANCE RESPONSIBILITY**

BRIDGE INSPECTION RESPONSIBILITY

The owner of a route is responsible for inspection of all structures (highway, waterway, R.R., utility, pedestrian, etc.) along that route. However, conflicts arise from intersecting or concurrent routes in determining which agency is responsible for some structures. In these cases the following definitions describe which agency will have inspection responsibility.

Intersecting Routes (Bridges at grade separations)

In general, when a highway or turnpike is on a structure which intersects a county road or city street, then O.D.O.T. or the OTA will maintain the entire structure. When a highway or turnpike is under a structure which carries a county road or city street, the deck is maintained by the appropriate county or city while the superstructure and the substructure are maintained by O.D.O.T. or the OTA.

Intersecting Oklahoma Dept. of Transportation and Oklahoma Transportation Authority Bridges

O.D.O.T. and the OTA signed an agreement in April 2010 regarding inspection and maintenance of intersecting highways and turnpikes. In summary of this agreement, O.D.O.T. is responsible for structures where a U.S. or State Highway crosses over a turnpike and the OTA is responsible for structures where the turnpike crosses over a U.S. or State Highway. Specific bridges have been identified and a copy of the agreement has been placed in the maintenance folder for each of these bridges. This agreement identifies the following responsibilities:

- A. The Authority/Department shall maintain the full structure, including the slope walls, of its responsible bridges.
- B. The Authority/Department shall be responsible for the mowing and maintenance of fences, drainage structures, utilities and miscellaneous items within the right of way owned by the Authority/Department for its responsible bridges.
- C. The Authority/Department shall be solely responsible for snow and ice removal on all bridges and roadways leading to and traveling from its responsible bridges.
- D. The Authority/Department shall be responsible for any signage owned by the Authority/Department and needed to direct traffic to and across the bridges being maintained by the Authority/Department. The Authority/Department shall be responsible for maintaining clearance signs on bridges crossing over their roads and for maintaining object clearance signs on its roads.
- E. The Authority/Department shall be responsible for bridge inspections on its responsible bridges.
- F. The Authority/Department shall be responsible for the rehabilitation and/or replacement of its responsible bridges.

Also, the Authority/Department reserves the right to inspect and maintain bridges maintained by the other agency. This agreement does not prohibit the Authority and the Department from cooperating to share in the cost of maintenance, rehabilitation and/or replacement of any of their responsible bridges.

Concurrent Routes (More than one route on a bridge)

When 2 or more **routes are concurrent**, the owner of the route with the higher priority will inspect and maintain the bridges on the route except in the case where one of the concurrent routes is a toll route. In this case the toll collection agency will inspect the entire structure.

State Highways Within City Limits

On state highways within city limits, the state maintains the structure while the city maintains everything beyond the curbs

**APPENDIX DD
BRIDGE INSPECTION / MAINTENANCE RESPONSIBILITY**

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**APPENDIX EE
INSPECTION FREQUENCY DETERMINATION**

Inspection Frequency For Load Posted Bridges and for Fatigue, Fracture Critical Bridges

This table applies to steel truss bridges with no damaged or deteriorated members, and no signs of cracks in the superstructural steel (which would necessitate more frequent inspection than shown), and for load posted as well as bridges supposed to be posted but are not. Also, this table applies to all bridges, both On and Off system.

CONDITION	ADT (vehicles per day)	INSPECTION FREQUENCY once every....
Load Posted bridges or bridges supposed to be load posted	less than or equal to 500 vpd	two years (Routine Inspection only)
	greater than 500 vpd or damage, deterioration or cracks exist	two years *
Truss and Fracture Critical Bridges	N/A	Off system truss and fracture critical bridge inspection frequency will be determined in accordance with Bridge Division guidelines

* A follow-up in-depth inspection of the critical item(s) only will be performed at a 24 month interval. However, it will be recorded as an Other Special inspection and performed in the year between routine inspections. Record in the Structure Notes the reason why the other special inspection is required. Other Special inspections should always be scheduled near the midpoint between two routine inspections.

Inspection Frequency For Culverts

The inspection frequency for all culverts is determined in accordance with the table provided in Appendix C under the description for item 113.

Less Frequent (Greater Than 24 Months) Inspections.

A 1998 ruling from the FHWA allows Oklahoma to increase the maximum inspection interval of certain classes of bridges up to four (4) years (48 months). Past history indicates that certain types of bridges deteriorate at a very slow rate and have great resistance to damage from flooding, vehicular impact, overweight vehicles, etc. Increasing the inspection interval of these bridges will allow better utilization of inspectors to spend more time on critical or problem bridges. Once a bridge is approved for a 48 month inspection cycle, it will remain on this cycle until the inspector determines the bridge no longer meets one or more of the eligibility criteria. A BrM error check will help the inspector to make this determination.

The decrease in inspection frequency outlined herein is **optional**, representing a maximum allowable inspection interval, and in no way precludes continuing the inspection of otherwise eligible bridges at lesser intervals. Structures that are eligible for increased inspection intervals may, at the discretion of the engineer charged with determining inspection frequencies, be inspected at lesser intervals. In addition, the bridge owner may opt to continue inspecting his/her bridges at the current two-year frequency. The inspecting agency or company shall verify the bridge owner's wishes in writing before evaluating any bridges for increased inspection intervals. The inspection agency shall also review the established inspection frequency during subsequent inspections to insure that the bridge still qualifies for increased inspection intervals.

Bridges which meet all of the following criteria for that structure type as outlined in the FHWA Technical Advisory T5140.21, may be considered for a less frequent inspection interval, pending approval by the Bridge Division and the FHWA;

APPENDIX EE
INSPECTION FREQUENCY DETERMINATION

A. Age - To insure that no construction flaws are present and that the river channel is stable, the inspection interval will not be immediately increased for a newly constructed/rehabilitated bridge, or one that has recently experienced major structural or river channel repairs. Immediately after opening to traffic, the bridge will receive the first maintenance inspection. After the next biennial inspection two years later, the bridge inspection interval may be extended up to four (4) years if no significant distress in the structure or channel appears, and all other conditions outlined in these guidelines are met. No maximum allowable age will be set, since age alone should not be a factor in establishing inspection frequency. The other criteria listed should cover any problems that may develop over the life of a structure.

B. Safe Load Carrying Capacity - To be eligible, a bridge must be capable of carrying the legal loads for the roadway system it supports at the Inventory stress level (NBI Item 66 - Inventory Rating). NBIS Item 70 – ‘Safe Load Capacity’ must be coded ‘5’.

C. Susceptibility to Scour - To be eligible, a bridge must not be susceptible to scour. Bridges must have no history of, or present signs of significant scour. NBI Item 113 – ‘Scour Critical Bridges’ must be coded higher than ‘6’, or ‘N’. The Scour Smart Flag, Element No. 961 can be coded no worse than ‘1’.

D. Redundancy - To be eligible, a bridge must have multiple load paths to guard against potential catastrophic collapse. This rule applies to bridges made of all types of materials. For example, a concrete girder bridge composed of only two girders would not be eligible. In addition, steel member bridges must have no fatigue prone details that could lead to the member’s failure. Other examples of ineligible bridges are steel trusses, two-girder bridges, bridges containing steel pier beams, concrete or steel tied or bowstring arches, suspension bridges, cable-stayed bridges, etc. NBI Item 92A- ‘Fracture Critical Details’ must be coded ‘N’.

E. Susceptibility to Traffic Damage - To be eligible, a bridge must not be prone to vehicular traffic damage which could endanger load carrying members of the bridge. This damage could be due to over height vehicle impacts, sideswiping impacts of truss bridges due to narrow roadways, or impacts due to poor horizontal or vertical alignments. The following minimum conditions must be met;

- NBI Item 53 - Minimum Vertical Clearance Over Deck is 15'-00" or greater (where applicable).
- Deck Geometry Rating (NBI Item 68) must be greater than or equal to a ‘5’.
- The vertical and lateral under clearances must be such that the rating obtained for NBI Item 69 - ‘Underclearances, Vertical and Horizontal’ is greater than or equal to a ‘5’.
- No noteworthy vehicular impacts that can be attributed to low vertical clearance or poor alignment.

F. Span Length - To be eligible, a bridge must have maximum design span lengths of 100 feet or less (NBI Item 48 ‘Length of Maximum Span’ no greater than 100 feet).

G. Structural Condition - To be eligible, a bridge must be in relatively good condition. It must have no structural elements with condition states lower than Condition State ‘2’. For simplicity, eligible bridges must have a rating of 6 or more for NBI codes 58, 59, 60 and 62. The bridge must not be defined as either Structurally Deficient or Functionally Obsolete and the bridge must not have any PX or CX repair recommendations.

H. Maintenance History - To be eligible, a bridge must not have a history of developing recurring maintenance problems which could endanger elements of the structure, or the river channel or roadway in the vicinity of the bridge. Examples could include recurring drift buildup on piers, deck/roadway drainage problems, deck patching, etc.

APPENDIX EE INSPECTION FREQUENCY DETERMINATION

I. Traffic Counts - To be eligible, the bridge must have an Average Daily Traffic Count (ADT) of 5,000 or less. In addition, the Average Daily Truck Traffic County (ADTT) must be no more than 500 trucks per day. If a concrete culvert has a minimum of two (2) feet of fill (0.6 meters), the traffic count requirement stated above for bridges need not be applied. However, if the top of the culvert is at finished grade and was designed to carry traffic directly on top of the structure (no fill), or if the depth of fill is less than two feet, the same requirements as listed above for bridges for ADT and ADTT will apply.

J. Design History - To be eligible, the bridge must be of a design type that is not unusual in nature and that has a history of good performance.

K. Bridges That Do Not Carry Vehicular Traffic - If a bridge does not carry vehicular traffic, such as a pedestrian, utility or railroad overpass, it is eligible, regardless of structure type, providing the bridge does not have a recurring history of vehicular impact due to vertical and/or horizontal clearance restrictions. To be eligible, the overpass must:

- have NBI Item 69 – ‘Underclearances, Vertical and Horizontal’ rated greater than a ‘5’.
- have no history of recurring over height vehicle impacts.
- have no history of recurring vehicular impacts due to horizontal restrictions (use the same guidelines as shown in Section E above for lateral underclearance requirements), and
- have no history of recurring maintenance problems that could adversely affect the structure.

PROCEDURE FOR REQUESTING A LESS FREQUENT (48 MONTH) INSPECTION

The following steps are required to obtain approval to increase the inspection Interval for individual bridges;

1. The inspecting agency will obtain expressed, written consent from the bridge owner to place his/her bridges into consideration. A resolution from the county board of commissioners, or a letter of permission from the city manager or mayor of a city will be adequate. This must be done before each inspection cycle is begun.
2. The checklist shown in Figure EE-1 will be filled out during the next inspection for each bridge to be considered. The inspecting agency will indicate the proposed inspection frequency in the appropriate location on the form, and place his profession engineer’s seal and signature in the location indicated.
3. Completed checklists for a county/city will be forwarded through the appropriate field division to the Bridge Division.
4. Upon verification that the bridges qualify in all aspects, the Bridge Division will forward a request to the FHWA for their approval of the decreased inspection frequencies.
5. Upon FHWA approval, the Bridge Division will modify the Bridge Database to reflect the new inspection frequencies and notify the inspecting agency of the change by sending back a copy of these checklists indication approval by both ODOT and FHWA in the lower right corner. This approved checklist shall become a permanent part of the master bridge file. If a bridge has been denied for whatever reason, an explanation will be given on the form. The inspecting agency may wish to review to determine if an error was made or clarification is needed. Corrected forms may be resubmitted for consideration following the same procedure as before.

REVISING INSPECTIONS FREQUENCIES

When bridge conditions require the inspection frequency be changed, check frequencies for other types of inspections to insure an overdue bridge inspection situation isn’t created. Do not change the routine inspection frequency based on an ‘other special’, but an ‘other special’ inspection frequency may be changed on a routine inspection.

**APPENDIX EE
INSPECTION FREQUENCY DETERMINATION**

**OKLAHOMA DEPARTMENT OF TRANSPORTATION
CHECKLIST FOR APPLYING FOR DECREASED
INSPECTION FREQUENCY**

NBI NO.: 09893	Struct. No.: 1422 0176 X	Local No.: -1
Inspection Agency: Bridge Maintenance	Inspector:	Insp. Date: 9/24/2009

NBI ITEMS:

Item 29 (ADT): 6000	Item 109 (ADTT): 16	Item 113 (Scour Crit.): 7 Countermeasures
Item 43 (Str. Type Main): 1 19	Item 68(Deck Geometry): 6 Equal Min Criteria	Item 58 (Deck Rating): N N/A (NBI)
Item 48 (Max. Span): 3	Item 53 (Vert. Clr. Over Deck): 99.99	Item 59 (Super. Rating): N N/A (NBI)
Item 54 (Vert. Underclear.): 0	Item 66 (Inv. Rating): 32.6592	Item 60 (Sub. Rating): N N/A (NBI)
Item 69 (Underclear.): N Not appli	Item 70 (Bridge Posting): 5 At/Above Legal Load	Item 62 (Culvert): 6 Deterioration

1. ___ Y ___ N Are there any structural elements (Any element number under 300) with quantities worse than Condition State "2" for concrete or "3" for steel?
2. ___ Y ___ N Is there a scour smart flag (element no. 361) ?
 ___ If yes, indicate what the condition state the smart flag is in.
3. ___ Y ___ N Does the bridge have load path redundancy (more than two) ?
 ___ How is Item 92A-"Fracture Critical Details" coded ? (Must be coded "N" to qualify)
4. ___ Y ___ N Has it been at least two years since the bridge has been built, or experienced a major repair or rehabilitation ?
5. ___ Y ___ N If yes, has the bridge been inspected at least once since that event and experienced no significant distress in the structure, channel or roadway attributed to the event ?
6. ___ Y ___ N Has the bridge experienced a history of vehicular impacts (either from overheight vehicles or sideswiping impacts) ?
 ___ N/A
7. ___ Y ___ N Is the bridge of a standard design type that has a proven history of good performance ?
 Describe Structure - _____

8. ___ Y ___ N Does the structure have a history of developing recurring maintenance problems which could endanger the structure? if yes, explain-

9. ___ Y ___ N Is the structure a concrete reinforced box culvert?
 ___ feet If yes, how much fill is on top of the box?
10. ___ Y ___ N Has the bridge owner agreed to consider his/her bridges for increased inspection intervals? One copy of each local jurisdiction's approval must be sent to the Bridge Division and appropriate field division.

_____ Months PROPOSED INSPECTION FREQUENCY

Affix
P.E. Stamp
and Signature _____

Date _____

FOR ODOT/FHWA USE ONLY:
Approved ODOT by: _____
Approved FHWA By: _____
Denied By: _____
REASON FOR DENIAL: _____

NOTE: ATTACH A COPY OF THE LATEST INSPECTION REPORT

Figure EE-1. Checklist For Applying For Decrease Inspection Frequency

APPENDIX EE INSPECTION FREQUENCY DETERMINATION

Other Special (OS) Inspections

OS inspections, if required, are always scheduled at the midpoint between two routine inspections. The reason for the OS inspection is to be specified under the Structure Notes on the Notes tab. This is so subsequent inspectors and Bridge Division may know the reason for the OS inspection.

Do not change the routine inspection frequency or reschedule a routine inspection based on an OS inspection, but an OS inspection may be rescheduled based on a routine inspection. This is done primarily to keep the OS at the midpoint between two routine inspections and to prevent inadvertently creating an overdue bridge inspection situation where none previously existed.

If an OS is performed one time only (for example, due to a CX condition) or the need for an OS inspection no longer exists, then create the OS inspection in BrM but only mark the primary type of inspection as 'Special - Other'. Do not check the boxes indicating an OS was performed or is required, or enter any last inspection or next inspection dates. The reason why the OS inspection is no longer required (or the reason for performing a one-time only OS inspection) is to be specified under the Structure Notes on the Notes tab.

For an OS inspection, the NBI and Element Type of Inspection Performed check boxes are unchecked. This removes the elements from the Condition tab. (They are restored for the next inspection where the NBI and Element check boxes are checked.) The conditions noted during the OS inspection are to be recorded under the Inspection Notes on the Notes tab. Also, in cases where the OS inspection is for scour and the OS found that the scour rating can be changed (for better or worse) it has been noted that BrM does not recognize the new scour critical rating. It only sees the scour rating from the last routine inspection. So if the scour rating is to be changed as a result of an OS then the scour critical rating must also be changed in the most recent routine inspection. The change will need to be explained in the inspection notes. Whenever the routine inspection frequency is set to 6 months due to item 59, 60 or 62 = '2', then do not schedule an OS inspection.

Fracture Critical (FC) Inspections

FC inspections, if required, are always scheduled and performed concurrent with routine inspections.

NBI vs. Element Inspections

Even though BrM distinguishes between NBI and Element inspections, Oklahoma makes no distinction between the two types. NBI and element inspection types are always performed together; therefore the two check boxes are always both checked or both unchecked. The inspection frequency and next inspection date for an element inspection are always the same as for the NBI inspection.

Inspection Frequency Determination

The only routine (and FC) inspection frequencies recognized in Oklahoma are; 48, 24, 12 and 6 months. Through the proper application of 24 and 12 month inspection intervals, as noted in the table below, a bridge site may be visited at 48, 24, 12 or 6 month intervals. A 6 month routine inspection frequency is assigned only when item 59, 60 or 62 is rated '2'. 6 month inspections are recognized only for OS inspections of bridges with a CX repair recommendation. Underwater inspections are scheduled for 60 months only.

**APPENDIX EE
INSPECTION FREQUENCY DETERMINATION**

	OS	FREQUENCY OF SITE VISIT	COMMENTS
48	-	48 Months	Bridge is in good condition and meets the criteria of Appendix EE.
24	-	24 Months	Bridge is in good to fair condition. May have one or more PX on any element.
24	24	12 Months	Bridge must have one or more PX* on any structural element.
12	12	6 months	Bridge must have multiple PXs* on at least half of the structural elements.
24/12	6	6 Months	Bridge must have a CX* for any element. At the 6 month OS inspection, the bridge must be closed if repairs are not made or the bridge reverts to the previous scheduling if repairs have been made.
6	-	6 Months	Bridge must have item 59, 60 or 62 = '2'

* PX and CX recommendations are to be assigned per the guidance provided in Appendix E.

If a bridge has a CX repair recommendation and requires a 6 months inspection do not change the frequency of the routine inspection. Instead, change the OS to a 6 month frequency.

Last Date / Frequency / Next Date Entries in BrM

The Last date, Frequency and Next Date entries in BrM should all be hand entered. Do not rely on the BrM update button for these data fields. The automatic update function does not always give reliable results. For the inspection type performed, the Last Date field should match the inspection date specified at the top left of the Schedule tab. The Next Date field should be set to the Last Date plus the specified inspection frequency. (For example: if the NBI and Element checkboxes are checked indicating a routine inspection was performed (assume 3/23/2011), then the Last Date is set to 3/23/2011. If the inspection frequency is 24 months, then the Next Date is set to 3/23/2013).

For an inspection type not performed, the Last Date should be set to the date of the previous inspection where that inspection type was performed. (For example: if a routine inspection was just performed on 3/23/2011 and an OS inspection was performed on 11/5/2010, then the routine inspection dates are set according to the previous example, but the OS Last Date is set to 11/5/2010. If the OS inspection frequency is 24 months, then the OS Next Date is normally set to 11/5/2012, but since the OS inspection should be set mid-way between the routine inspections, the OS Next Date is entered as 3/23/2012).

The Next Date for any inspection type may be set at or before the date indicated by the Last Date and frequency, but do not allow the Next Date to be set after the date indicated by the Last Date and the frequency. As we initially try to implement this policy, there will be some inspections which don't fall where they would normally be expected, but as time goes by, all inspections should fall in line and appear naturally where expected.

Revising Inspection Frequencies

When bridge conditions require the inspection frequency be changed, check the frequencies of other types of inspections for the same bridge to ensure an overdue bridge inspection situation is not created.

APPENDIX EE INSPECTION FREQUENCY DETERMINATION

FC / UW / OS Inspections Required Checkboxes

The FC, UW and OS Inspection Required checkboxes (lower left of the Schedule tab) are generally always checked or always unchecked. A bridge does not change its FC status unless a major reconstruction was performed. A bridge does not change its UW status unless the channel depth changes consistently to be above or below 5 ft. OS inspection required is a bit more flexible, but once required generally does not go away unless the bridge is repaired. If you remove an OS inspection, on the schedule tab, uncheck the box for OS Required (092CA). Then set the dates back to 1/1/1901. Then in the inspection notes document that it was a one-time OS and date it.

Inspection > Schedule

Summary

Date Entered:

Inspection Date:

Inspector:

Primary Type:

Inspection Helper:

Types of Inspection Performed

Routine:

Element:

Fracture Critical:

Underwater:

Other Special:

Schedule

	Required (Y/N)	Current Date	Frequency (months)	Next Date
Routine:		(090): <input type="text" value="6/2/2020"/>	(091): <input type="text" value="24"/>	<input type="text" value="6/2/2022"/>
Element:		<input type="text" value="6/2/2020"/>	<input type="text" value="24"/>	<input type="text" value="6/2/2022"/>
Fracture Critical (092AA):	<input type="checkbox"/>	(093A): <input type="text" value="1/1/1901"/>	(092AB): <input type="text"/>	<input type="text" value="1/1/1901"/>
Underwater (092BA):	<input type="checkbox"/>	(093B): <input type="text" value="1/1/1901"/>	(092BB): <input type="text"/>	<input type="text" value="1/1/1901"/>
Other Special (092CA):	<input type="checkbox"/>	(093C): <input type="text" value="1/1/1901"/>	(092CB): <input type="text"/>	<input type="text" value="1/1/1901"/>

Types of Inspection Performed Checkboxes

The NBI, Element, FC, UW and OS Types of Inspection Performed checkboxes (upper right of the Schedule tab) are used to indicate which inspection type was performed on the day the inspector went to the bridge. Check and uncheck these boxes accordingly. The Last Date and Next Date fields are then updated according to the type of inspection performed.

Annual Inspection Scheduling

There is a federal requirement that Oklahoma submit an annual bridge data report to the FHWA every April 1st. To meet this requirement, Bridge Division needs all bridge inspections for the previous year to be submitted by the annual database shutdown date, normally the last Friday in January. This has proven to be difficult and in most years we have not succeeded in eliminating the previous year's overdue bridges from the database. To help accomplish this goal, we encourage all inspectors to shift all field inspections out of the month of December. This way the field inspections will be performed during the months of January through November, leaving December to catch up on the BrM data entry and related office efforts. Submitting data to the FHWA containing overdue bridges can lead to Oklahoma being found in non-compliance with federal regulations regarding its bridge inspection program. Such findings can and will have consequences ranging from increased oversight and reporting requirements to loss of federal funding for Oklahoma's transportation programs.

APPENDIX EE
INSPECTION FREQUENCY DETERMINATION

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APPENDIX FF ERROR CHECKING REQUIREMENTS

The master copy of all bridge data resides in the BrM master database at Bridge Division. This database is used for high level connectivity with other state agency databases. It is accessible by only a few individuals. The working database is accessible to all inspectors and other users. Inspection data entered into the working database is moved to the master database only after a sequence of reviews and approvals has occurred. This will help ensure the appropriate people have seen and reviewed the entered inspection data for the most accurate possible database. Figure FF-1 illustrates the data entry, review and approval process during the inspection cycle.

On site bridge inspection

The bridge inspector should verify all information available on the bridge being inspected. Don't assume that the existing information is correct and don't check just a few basic entries. Also check for any data fields with missing information (often displayed as '-1', '_', 'N/A' or 'Unknown'). Inspection data may be entered at the bridge site via one of two options: =

- 1) if internet access is available, enter inspection data via the BrM Enterprise internet database connection, or
- 2) if using the BrM Workstation version installed on a laptop, export bridge data from the working database into the laptop, update bridge information as appropriate, then import the bridge data back into the working database.

Team Leader Review prior to submitting data to Program Manager

The team leader should verify all BrM bridge data against the inspection results. Once all inspection data has been entered into the working database, there are numerous error check reports and processes available in BrM that should be run against the entered inspection data. These reports can be run against a single bridge or against a group of bridges. These reports are further defined below.

Program manager review prior to submitting data to Division headquarters

The Program Manager is responsible for reviewing and approving the entire package of bridge information before it is submitted to the appropriate Division Headquarters. Of significant importance are the Load Rating entries; including rater initials, rating date, rating method and H and HS Operating and Inventory Ratings.

Division Headquarters review prior to submitting data to Bridge Division

The Division Bridge Coordinator should run the BrM error check reports and any other checks required by Division policy to ensure the data is accurate before passing it on to Bridge Division. Errors can be fixed after contacting the inspector, if necessary.

Bridge Division review prior to uploading new inspection data to the master database

Bridge Division personnel will run all Brm error checks plus a few more that are not available through BrM before approving the inspection data for promotion to the master database. Errors will be fixed after contacting the Division Bridge Coordinator and/or inspector, if applicable.

Working Database data promotion to the Master Database

On a nightly basis, any data changes to the working database which have received all the necessary approvals will be promoted to the master database, where the change will become official.

APPENDIX FF ERROR CHECKING REQUIREMENTS

Error Check Reports

There are numerous error check reports available in BrM which should be run against the entered bridge inspection data. It is intended that the checks be run against the bridge data and that any errors detected are corrected before the bridge data is passed to the next level of approval. These reports are all contained in the list of reports under the 'REPORTS > GENERATE' subtask and begin with 'OK9XX_EC . . .' where the XX refers to a two digit number which is used to help identify a particular report. These reports are frequently changed, added or deleted based on the needs of the time and their effectiveness. Some of the error check reports are designed to detect a specific condition and only display bridges which meet that condition. Reports of this nature have been grouped together into a single report in BrM which will help expedite the error checking process. Other reports display all bridges meeting a filtered criteria, but the user must visually scan down the report for any bridges displaying a specified criteria. The wording at the top of the report will identify the intent of the report and any required user action.

Validation

In addition to the error check reports, there is a 'Validate' function available under the BRIDGES > VALIDATE subtask of BrM. All bridges should be validated before approval and any detected errors corrected. After correction, the validate function should be run again until there are no errors present. The errors detected by the validate function are the same errors that are of concern to the FHWA and they will insist that they be corrected in the annual submittal. Occasionally a validate error will be displayed which cannot be corrected by the bridge inspector. In this case, contact the Bridge Maintenance Office for further direction.

Sufficiency Rating

Once the error check reports and the validate function are run and all errors corrected, the bridge should be sufficiency rated from the BRIDGES > SUFF RATE subtask in BrM. Do not sufficiency rate a bridge until all error check are run and the errors corrected. Any subsequent data changes made may affect the sufficiency rating and cause it to change. Even the bridge's deficiency status (SD/FO) could be affected.

All bridges are sufficiency rated by the BrM administrator before the annual submittal to the FHWA.

The following types of bridges should not be sufficiency rated:

1. Bridges with no route on the structure (R.R., utility or pedestrian bridges). The sufficiency rating program will ignore these structures.
2. Closed or temporary bridges. These have the load ratings set to '0', which the sufficiency rating program views as missing data so it substitutes a default value. This default value causes the sufficiency rating to be artificially high and may cause a deficient bridge to lose eligibility for replacement funding as the sufficiency rating may go over 50 and/or a deficient bridge may become non-deficient. If this bridge type is accidentally sufficiency rated, set Item 66 to 3 tons and re-sufficiency rate the bridge. This will approximate the bridge condition before it became temporary or closed. After the bridge is re-sufficiency rated then set Item 66 back to '0'.

APPENDIX GG
DATA SUBMISSION REQUIREMENTS

This appendix identifies all minimum data that is required for submission for all inspections (Includes On, Off-system and Fracture Critical/Truss Inspections) to either ODOT Bridge Division or the appropriate ODOT Field Division.

On-System Routine Bridge Inspection

Following is a list of items that must be submitted for each bridge per inspection. This list is the minimum requirements and subject to addition.

1. Enter bridge inspection data online in BrM.
2. Two (Minimum) properly labeled color photos submitted in a combined PDF format saved using the appropriate naming convention. This requires one centerline and one profile view.
Depending on the software available to the inspector, photos will be acceptable in two common formats. The preferred method is shown in figure GG-1, where photo editing software allows the individual photos to be labeled. The alternative method is shown in figure GG-2 where photo editing software is not available, but a word processing program was used to combine the photos in a document file and the label placed as text adjacent to the photos.(See Pages GG-12 and 13 for file naming and photo label conventions)
Photo labeling must also include the inspection date by either including it in the photo labeling or using a time stamp. (See examples in this Appendix, Figures GG-1 and GG-2)
3. Electronically signed PDF inspection report submitted as a hard copy in the appropriate naming convention, identified in this Appendix.
4. Completed Action Summary Report, hard copy plus digital copy in PDF format. (If applicable, see the example in Appendix KK)
5. In addition to the above items, check for any applicable documents identified on reports in Appendix HH.

Off-System Routine Bridge Inspection

Following is a list of items that must be submitted for each bridge per inspection. This list is the minimum requirements and subject to addition.

1. Enter bridge inspection data online in BrM.
2. Two (Minimum) properly labeled color photos submitted in a combined PDF format saved using the appropriate naming convention. This requires one centerline and one profile view.
Depending on the software available to the inspector, photos will be acceptable in two common formats. The preferred method is shown in figure GG-1, where photo editing software allows the individual photos to be labeled. The alternative method is shown in figure GG-2 where photo editing software is not available, but a word processing program was used to combine the photos in a document file and the label placed as text adjacent to the photos.(See Pages GG-12 and 13 for file naming and photo label conventions)
Photo labeling must also include the inspection date by either including it in the photo labeling or using a time stamp. (See examples in this Appendix, Figures GG-1 and GG-2)
3. Electronically signed PDF inspection report submitted as a hard copy in the appropriate naming convention, identified in this Appendix.
4. Properly completed scour evaluation for each bridge, hard copy. (If applicable and only if one has not already been completed)
5. Completed scour POA, hard copy. (If applicable and one does not already exist, see example in Appendix JJ)
6. Load rating summary sheet, hard copy. (If a new load rating has been performed, see Figure GG-3)
7. Load rating data file, hard copy. (If a new load rating has been performed with load rating software)
8. Complete/Accurate bridge plans/sketch of superstructure and substructure, hard copy.
(If plans/sketches do not already exist or if changes have been made to the structure)
9. Completed Action Summary Report, hard and a PDF digital copy. (See example Appendix KK if applicable)
10. In addition to the above items, check for any applicable documents found in Appendix HH.
11. Any documents required by contractor task order, in the format specified in the contract.

APPENDIX GG
DATA SUBMISSION REQUIREMENTS

Consultant Fracture Critical/Truss Inspection

Following is a list of items that must be submitted for each fracture critical/truss bridge per inspection, in addition to the routine bridge inspection requirements listed above (unless directed otherwise). This list is the minimum requirements and subject to addition.

- A. Executive summary, which contains the following information:
 - Date of inspection
 - Personnel comprising inspection team
 - Summary of NBI ratings for NBI Items 58,59,60,61 and sufficiency ratings for the current inspection and previous inspection in tabular form
 - Summary of recommended action in order of importance (CX including documentation of owner contact, PX, FX)
- B. Narrative of inspection and significant findings that includes a summary of the following items:
 - 1. NBI Item 36 - Traffic Safety
 - 2. NBI Item 58 - Deck
 - 3. NBI Item 59 - Superstructure - Include details, descriptions, and NBI ratings for the following applicable elements:
 - a. Beams
 - b. Stringers
 - c. Floor Beams
 - d. Pier Beams
 - e. Floor Bracing System
 - f. Truss Upper Chord
 - g. Truss Lower Chord
 - h. Truss Web Members
 - i. Truss End Posts
 - j. Truss Bracing
 - k. Member Alignment
 - l. Paint/Coating
 - m. Load Deflection
 - 4. NBI Item 60 - Substructure - Include details, descriptions, and NBI ratings for the following applicable items:
 - a. Abutments
 - b. Piers
 - c. Bearings
 - 5. NBI Item 61 - Channel and channel Protection - Include details, descriptions, and NBI ratings for the following applicable items:
 - a. Channel Scour
 - b. Embankment Erosion
 - c. Debris
 - d. Vegetation
 - 6. NBI Item 72 - Approach Roadway Alignment - Include details, descriptions and NBI ratings for the following applicable items:
 - a. Approach Roadway Condition
 - b. Approach Roadway Settlement
 - c. NBI Item 113 - Scour Rating - Existing versus proposed changes
- C. Two (Minimum) properly labeled color photos. (See Figures GG-1 and GG-2)
- D. Electronically signed SI&A Sheet
- E. All applicable field sketches and notes
- F. CAD Drawings (Include CAD drawings only if they provide information not provided for in any other aspect of the inspection report or bridge plans).

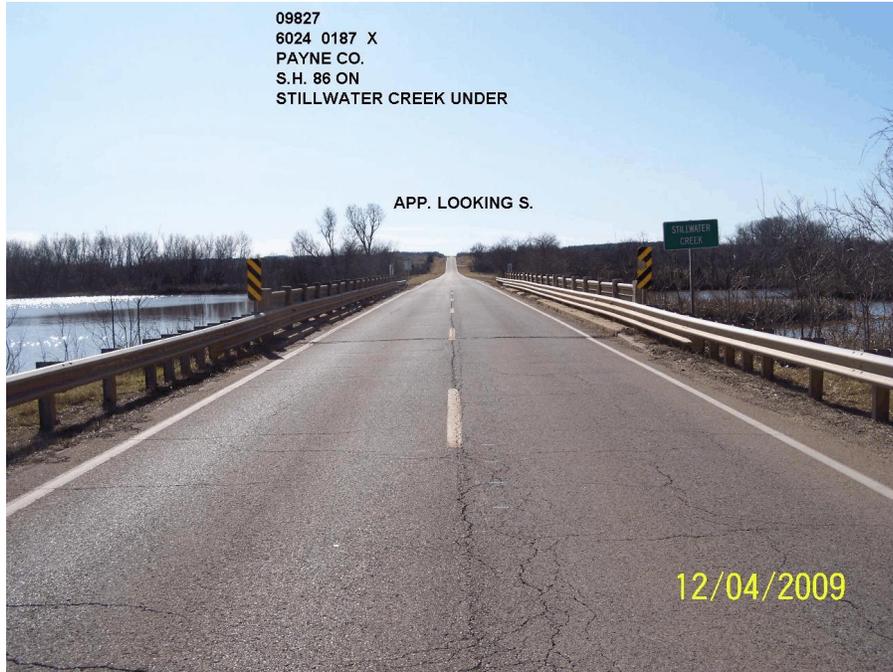
APPENDIX GG
DATA SUBMISSION REQUIREMENTS

Underwater Bridge Inspection

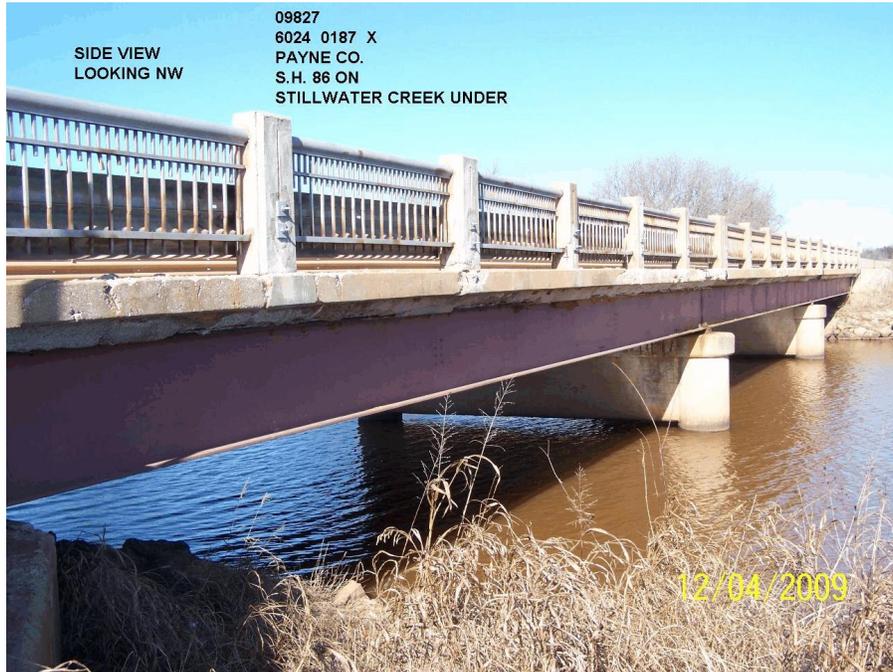
Following is a list of items that must be submitted for each bridge requiring underwater inspections per inspection. This list is the minimum requirements and subject to addition.

1. Enter bridge inspection data online in BrM.
2. List of personnel inspecting the structure with corresponding titles and/or qualifications
 - Licensed Professional Engineer
 - Certified Bridge Inspector
 - Certified Diver (if necessary)
3. All pertinent bridge data (e.g. – NBI #, Feature Name, Location, etc.)
 - Structure #
 - NBI #
 - Location
 - Year Built
 - Bridge Description
 - Feature Crossed
4. Weather conditions
5. Stream depth anomalies
 - Downstream from a dam
 - Obstructions or debris at bridge opening
 - Recent major weather event
6. Maximum depth of substructure elements to be inspected
 - <5' – underwater inspection does not apply
7. Channel Velocity
8. Visibility in the stream
9. Description of elements to be inspected
 - Foundation Type
 - Pier Type
 - Elevations
10. Level at which elements will be inspected
 - Level I – Visually inspected from above water
 - Level II – Inspection limited to deteriorated or damaged area
 - Level III – In-depth inspection of entire element
11. Description of findings for each element inspected
 - Effective scour around foundation
 - Several measurements should be taken around
12. Existing and recommended (new) NBIS ratings for:
 - Substructure
 - Channel
 - Scour Critical (if applicable)
13. Recommendations
 - Inspection Frequency
 - Countermeasures for Scour Critical Bridges
14. Additional comments concerning bridge and/or stream
 - Note degradation, aggradation, apparent or possible channel shift, bank erosion, etc.
15. Location Map
16. As built plan(s) sheet with current stream bed profile plotted to scale
17. Sketches of structure and elements inspected with cross section of stream bed plotted to scale
18. Plot cross sections taken 100' upstream and 100' downstream to scale.

APPENDIX GG
DATA SUBMISSION REQUIREMENTS



Centerline view



Profile view

Figure GG-1 Sample of properly individually labeled photos as a JPG. (Minimum of 2 per inspection)
This labeling method is preferred. Both JPG photos are to be combined into a single PDF.

APPENDIX GG
DATA SUBMISSION REQUIREMENTS

NBI #: 24137
Structure #: 60E0730N3510009
County: Payne

Facility Carried: E0730 - Eseco Feature
Intersected: Cottonwood Creek
Date Inspected: 2/8/2017



Photo 1-Bridge From East Approach With 9T Posting Sign



Photo 2-South Elevation

Combined View

Figure GG-2 Sample of properly labeled combined photos.
The entire document page is then saved as a PDF.
(Minimum of 2 per inspection)

APPENDIX GG
DATA SUBMISSION REQUIREMENTS

LOAD RATING SUMMARY SHEET

NBI NO.:	Struct. No.:	Local No.:
Year Built :	Year Reconstructed :	Span Type : Steel Stringer/Girder
Type of Overlay :	Overlay Depth :	Overlay Date :

Load Rater : _____ Date Rated : _____

Checked By : _____ Date Checked : _____

Load Rating Method : _____

Load Rating Software : _____

Data File Location : _____

Reason for Load Rating : _____

Assumptions : _____

Controlling Span : _____ Controlling Member : _____ Controlling Force : _____

Inventory Rating :	H _____	HS _____	3-3 _____
	H _____	HS _____	3-3 _____

Load Rating Engineer's Seal :

Load Rating Engineer's Signature : _____

Figure GG-3 Sample Load Rating Summary Sheet

APPENDIX GG

DATA SUBMISSION REQUIREMENTS

OKBMF File Naming Conventions

Creating and Naming Documents

All files submitted for inclusion in the digital Oklahoma Bridge Maintenance File system (OKBMF) are to be named and submitted to Bridge Division in accordance with the following requirements.

NOTE:

The submittal requirements for photos are different from all other document types due to the photo labeling requirements we have implemented. However, the naming convention for photos is the same as for all other types of documents.

A typical file name will look like this: **12345(2018-12-25)BP.pdf**

The components of the name are derived as follows:

1. The first component will be the applicable bridge NBI number '(12345)'. **Must hold five places.**
2. The second component will be the origination date of the plans, photos, reports, etc. in the format '(YYYY-MM-DD)', e.g., '(2018-08-15)'. The parentheses are included, and month and date **must hold 2 places**
3. The third component will consist of one of the following codes, according to the type of document:

TYPE OF DOCUMENT	CODE
Bridge Plans	BP
Channel Profiles	CP
Documents	DC
Final Inspections	DC
Foundations	FD
Fracture Critical Reports	FC
Hydraulic Information	HY
Inspection Reports	IR
Load Ratings	LR
Materials Reports	MR
Other Special Inspection Report	OS
Photos	PH
Pier Sway Survey Reports	PS
Rail Road Bridges	RR
Repairs	RE
Roadway Plans	RP
Scour Documents	SD
Scour Photos	SP
Scour Reports	SR
Shop Drawings	SH
Underwater Reports	UW

4. In the event the first three conventions do not produce a unique file name, include '01', '02', '03', etc. to uniquely identify the file. Whenever possible, combine multiple images into a single file.

EXAMPLES

- 00134(2015-12-23)BP.pdf
- 12345(2016-02-14)DC01.pdf
- 12345(2016-02-14)DC02.pdf
- 26333(2015-10-30)SR.pdf
- 16873(2016-06-06)IR.pdf

Bridge Picture Labeling

Inspectors are required to take a minimum of two color digital pictures of the on-system and off-system bridges. One picture down the roadway showing the bridge and any load posting or other signs and the other picture a side view of the bridge. (See Figure GG-1) Any defects in the bridge should also be photographed, labeled, and submitted.

All photo images will be submitted in a single combined PDF in the following format:

Each picture must be labeled with the following information, using Paint Shop Pro or other photo editing software: NBI Number, Structure Number, County, Facility Carried, Feature Intersected, and Date.

For Example:

NBI 12225

Structure No. 7104 2761x

County Tillman

Facility Carried U.S. 123

Featured intersected Muddy Creek

10/02/2018

NOTE: Additional notes may be placed on any photo that further explains what that photo is showing.

The label should be placed in an area on the photograph which does not obscure the view of the bridge or the problem the picture emphasizes. Labeling should also be of a color which contrasts with the background over which it is placed (**black or white text preferred**).

Submitting Documents

All files, including photos and inspections are to be submitted in PDF format. Photos should be labeled and stored as combined PDF files on the U Drive.

To connect to the U Drive go to: U:\BRIDGE\BridgeMaintenance-InspectionPhotos and then select the appropriate DIV-1 through DIV-9 subfolder.

When submitting files by email they must be emailed to: **okbmf@odot.org**

This is a special email account which has been set up to receive all documents submitted for the digital filing system. When emailing photos and documents to the okbmf account; please be aware of the total file size you are sending. Emails larger than 20M will not go through the email system. If emailing a large number of files is necessary, then split the files into 2 or more emails, so not to exceed the file size limit.

APPENDIX HH

INVOICE REQUIREMENTS

Bridge inspection costs for consultant and CED inspectors are paid by invoice. This appendix identifies the reports required to be submitted to Bridge Division as part of the TOPS invoice package. If the data is entered incorrectly or the reports are not submitted with the required signatures, the invoice approval will be delayed until the data is corrected or the missing item is received. If missing information is not submitted in a timely manner, the TOPS invoice will be rejected. All reports, except the Bridge Inventory Invoice spreadsheet, are printed by BrM with all applicable bridge information automatically filled in.

For best results, the bridge inspection data should be submitted and confirmation received from the Bridge Maintenance office that the data has been accepted and imported into the oracle database before submitting the TOPS invoice. Failure to do so is the most common reason for invoice payment delays.

BRIDGE INSPECTION INVOICE BrM DATA ENTRY

The following items are located under the ODOT INSPECTION > INSPECTOR ITEMS > INVOICE subtask and must be entered for every bridge in the invoice. They are important for database queries in regard to ensuring all bridge inspections reported to be in an invoice are actually present in the database.

Billing Date - Enter the date to appear on the invoice as the date the invoice is submitted for payment.

Invoice No. - Enter the invoice number used for inspection data submittal and claim for payment.

BrM INSPECTION REPORTS

The following reports are required to be included with every TOPS invoice in order for the invoice to be approved by Bridge Division for payment.

1. Bridge Inspection Invoice spreadsheet (See figure HH-1)
This form must be manually completed and will be signed by the program manager. A file for printing this form can be found at the Oklahoma BrM download website. The address is:
http://www.okladot.state.ok.us/pontis_files/
The file name to download and print is: Inspection Invoice.xlsx

The following information will be entered directly on the inspection invoice spreadsheet:

- Bridge inspection contract (EC no.)
 - Invoice number
 - Date of Invoice/Date of last Invoice
 - Number of bridges Inspected this invoice
 - County/City
 - Professional services (from – to) dates
 - Reason for invoice (checkbox)
 - Snooper costs
 - Approved misc. expenses (attach travel receipts)
 - Employee costs
 - Load rating costs
 - Travel Expenses: Mileage/Lodging/Per Diem
 - Average time per bridge (provide a brief explanation if over 4 hours)
 - Average cost per bridge
 - Total due this invoice.
2. Report of Conference between Bridge Owner and Bridge Inspection Consultant (See figure HH-2)
(Use BrM report named 'OK401 invoice_bridge-owner-signature-form') This report will be signed by the bridge owner and program manager.

APPENDIX HH
INVOICE REQUIREMENTS

3. List of Bridges Included in the Invoice (See figure HH-3)
(Use BrM report named 'OK402 invoice_bridge-listing') This report will be signed by the program manager and must have a P. E. stamp.

The following report is to be submitted with the invoice only when there are bridges which require posting, but are not currently posted or are not posted correctly. This report is used by Bridge Division to ensure that bridges requiring posting are posted within the time frame requirements established by the Federal Government.

4. List of Bridges Requiring Load Posting (See figure HH-4)
(Use BrM report named 'OK403 invoice_bridges_req_load_posting') This report will be signed by the bridge owner only after all listed bridges have been properly posted.

**APPENDIX HH
INVOICE REQUIREMENTS**

BRIDGE INSPECTION INVOICE - CED & CONSULTANT (Revised 6/20/18)

BRIDGE INSPECTION CONTRACT (EC No.):	XXXX
CONSULTANT INVOICE NO.	XXXX
DATE OF INVOICE	1/1/1901
DATE OF LAST INVOICE	1/1/1901
NO. OF BRIDGES INSPECTED THIS INVOICE:	13
COUNTY	Muskogee
CITY	N/A
FOR PROFESSIONAL SERVICES FROM	1/1/1901 TO 1/1/1901

REASON FOR INVOICE (CHECK ALL THAT APPLY)

<input checked="" type="checkbox"/> ROUTINE INSPECTION	<input checked="" type="checkbox"/> LOAD RATING
<input type="checkbox"/> FRACTURE CRITICAL	<input type="checkbox"/> SEISMIC OR FLOOD
<input type="checkbox"/> OTHER SPECIAL	<input type="checkbox"/> RAILROAD
<input type="checkbox"/> UNDERWATER	<input type="checkbox"/> OVERHEIGHT IMPACT

SNOOPER COSTS ONLY WHEN APPROVED BY BRIDGE DIVISION: \$ 950.00
 APPROVED MISC EXPENSES (ATTACH RECEIPTS): \$ 15.00

LABOR COSTS	HOURS		APPROVED HOURLY RATE	
Engineer	5.00	HOURS X PER HOUR	\$ 50.00	\$ 250.00
Inspector	6.00	HOURS X PER HOUR	\$ 60.00	\$ 360.00
Helper	7.00	HOURS X PER HOUR	\$ 70.00	\$ 490.00
Place Holder	8.00	HOURS X PER HOUR	\$ 80.00	\$ 640.00
Place Holder	9.00	HOURS X PER HOUR	\$ 90.00	\$ 810.00
Place Holder	10.00	HOURS X PER HOUR	\$ 100.00	\$ 1,000.00
LOAD RATING				
Structural Eng	11.00	HOURS X PER HOUR	\$ 110.00	\$ 1,210.00
Engineer	12.00	HOURS X PER HOUR	\$ 120.00	\$ 1,440.00

TRAVEL EXPENSES (RATES SUBJECT TO YEARLY CHANGES) (*Receipts Required)				
MILEAGE :	888.00	MILES X COST PER MILE	\$ 0.47	\$ 417.36
LODGING:				
STANDARD RATE:	4.00	DAYS @ \$91 + *TAX	\$ 91.00	\$ 364.00
OKC RATE:	5.00	DAYS @ \$97 + *TAX	\$ 105.78	\$ 528.90
ENID RATE:	6.00	DAYS @ \$103 + *TAX	\$ 113.71	\$ 682.26
PER DIEM:				
STANDARD RATE:	7.00	DAYS X PERDIEM RATE	\$ 51.00	\$ 357.00
OKC & ENID	8.00	DAYS X PERDIEM RATE	\$ 59.00	\$ 472.00

AVERAGE TIME PER BRIDGE	5.23	AVERAGE COST PER BRIDGE (W/O MIL., SNOOPER, LODGING & PER DIEM)	\$ 476.92
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REASON FOR MORE THAN 5 HOURS PER BRIDGE

Additional time required for POA and ASR, meetings with owner.

TOTAL AMOUNT DUE THIS INVOICE \$ 9,986.52

CED OR CONSULTING ENGINEER

AUTHORIZED REPRESENTATIVE

Figure HH-1 Sample Bridge Inspection Invoice

**APPENDIX HH
INVOICE REQUIREMENTS**

**Report of Conference between Bridge Owner and Bridge Inspection Consultant or
Circuit Engineering District
for**

Invoice No.: 2502
County Owner : GARVIN
City Owner : Unknown
ODOT Owner : Division 3

The undersigned do certify that I/we have met with the bridge inspection consultant or circuit engineering district following inspection of bridges within my jurisdiction. We have discussed to my satisfaction the following topics, as applicable:

- Bridges requiring load posting.
- Bridges requiring closing.
- Bridges with a CX or PX repair recommendation along with recommended actions to take and the possible consequences of failure to timely perform the recommended actions.
- Recommendations for bridge maintenance to prevent further deterioration.

Additionally, I/we have received a copy of all bridge inspection reports and have been instructed how to interpret the information contained therein. Details of individual bridge requirements and recommendations are provided on a separate sheet.

Bridge Owner(s)	Date
_____	_____
_____	_____
_____	_____

Bridge Inspection Consultant or Circuit Engineering District

The bridges under the subject invoice number have been discussed with the appropriate bridge owner and repair and/or maintenance actions recommended.

Authorized Representative	Date
_____	_____

Include this form as an attachment to TOPS invoice submittal.

Figure HH-2 Sample Report of Conference between Bridge Owner and Bridge Inspection Consultant

APPENDIX HH
INVOICE REQUIREMENTS

APPENDIX HH
INVOICE REQUIREMENTS

Bridges Included In Invoice : 111111
Bridge Inspection Contract :
COUNTY : BLAINE

1/13/2012

Structure	NBI Number
08E0895N2590005	30336
20E1010N2220003	30168
20E1010N2340000	30178
22N2200E0830004	30177
75E1230N2270000	29836

No. of Bridges This Invoice : 5

Bridge Maintenance
CONSULTING ENGINEER

BY :

AUTHORIZED REPRESENTATIVE



Figure HH-3

Sample List of Bridges Included in Invoice

**APPENDIX HH
INVOICE REQUIREMENTS**

**OKLAHOMA COUNTY
BRIDGES REQUIRING LOAD POSTING**

1/13/2012

Local ID.	Struct. No.	Agency Bridge Id :	Location	Rec. Max. Posting	Actual Posting	Date Posted	Initials of Poster
O-175	55E0950N3240008	08938	.8E OF TRIPLE XXX	18			
E-031	55N3190E0910003	11985	0.3S of COFFEE CREEK RD	3			
E-015	55E0930N3150009	21066	200' W of DOUGLAS	3			
E-008A	55E0910N3160001	26954	.5E OF DOUGLAS ON COFFE	3			
190	55N3280E1090007	19394	.3N OF SE 44	10			

We the undersigned certify that the bridges listed above have been posted for the weight limits specified.

County Commissioner, District 1 Date

County Commissioner, District 2 Date

County Commissioner, District 3 Date

cc: ODOT Field Division Office
ODOT Bridge Division

Figure HH-4 Sample Bridges Requiring Load Posting

APPENDIX I I CREATING SIGNED PDF FORMAT INSPECTION REPORTS

Bridge Division has converted to a paperless bridge record filing system to facilitate easy access to all bridge data from any ODOT computer on a read-only basis. On-System bridges are to be submitted in electronic format as described in this document in lieu of paper reports.

One big consideration has been the necessity of creating an electronic bridge inspection report that can be digitally signed, thus replicating a signed paper inspection report. The electronic bridge inspection report must be created and digitally signed by the inspector just as the paper inspection report would have been printed and signed. This way the electronic inspection report can be used as a legal document. The digitally signed report can be distinguished from any other bridge inspection report that may be printed from BrM at a later date. Plus, the digitally signed inspection report can certify whether or not the file has been modified since the time it was originally created. One software program which accomplishes this goal and has been acquired by ODOT for use on ODOT computers is Adobe Acrobat. This software has been installed on various Bridge Division and Division Bridge Coordinator computers. State bridge inspecting consultants will need to purchase this software if they do not already own a copy. Once the signed bridge inspection report is created, it can be viewed using any PDF file reader. Adobe Acrobat Reader is available as a free download from the internet at Adobe.com.

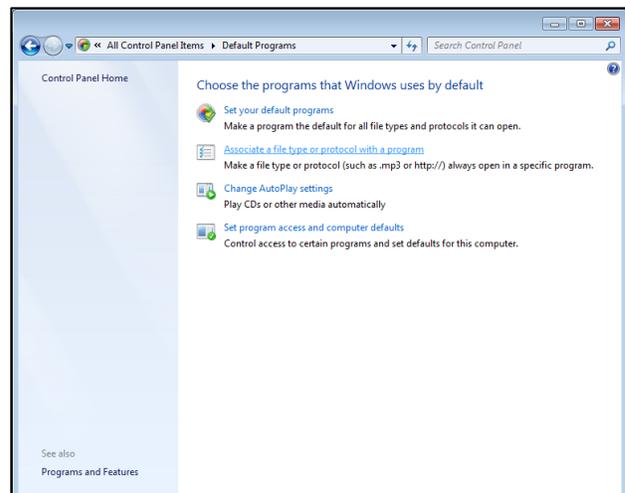
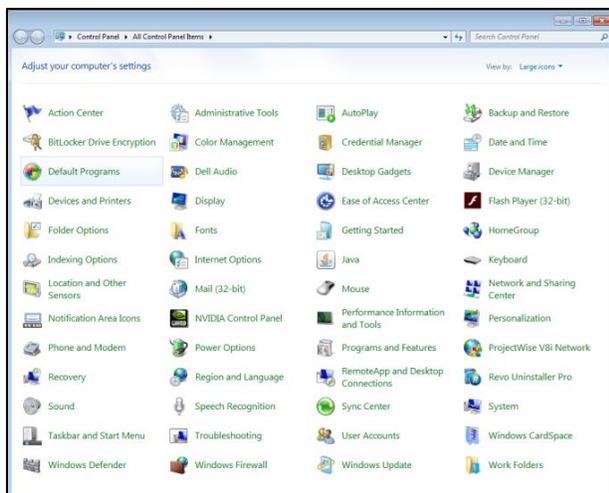
These instructions are for creating a signed PDF Bridge Inspection Report in Adobe Acrobat. They are written for Adobe Acrobat 2018 Pro DC using Windows 7 operating system. These are the versions currently installed on Bridge Division computers. If a different version is used, the procedures will be different than described herein.

SET THE DEFAULT PROGRAM TO OPEN PDF FILES (IF REQUIRED)

If your computer has Adobe Acrobat Reader DC already installed when Adobe Acrobat 2018 Pro DC was installed, then you will need to change the default program for opening PDF files. Otherwise, Adobe Acrobat Reader will open your PDF files and you will not be able to utilize the digital signature feature of Adobe Acrobat Pro DC.

To change the default program for opening PDF files:

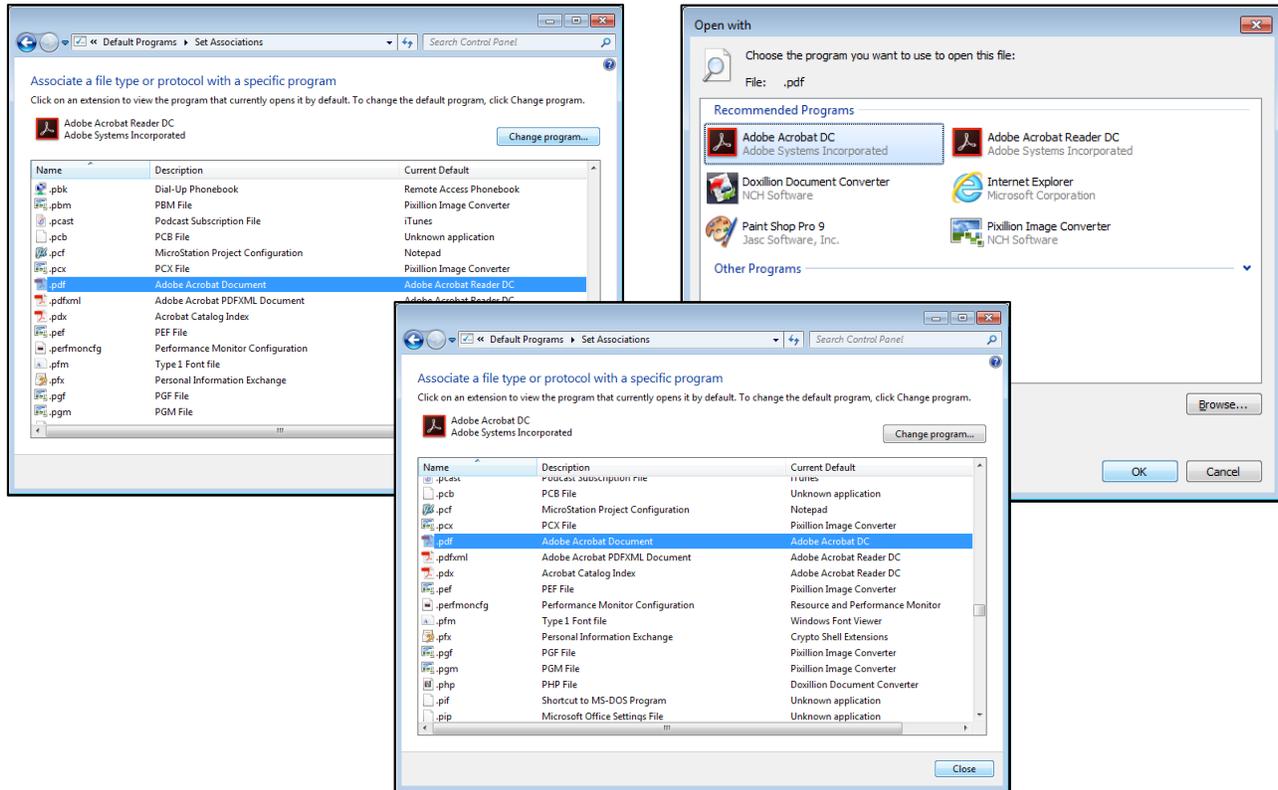
1. Open the 'Start' menu button from your Windows taskbar in the lower left hand corner of your monitor.
2. Select the 'Control Panel' from the list of options; and the 'Control Panel' window will open up.
3. Then select the 'Default Programs' from the list of options, and the 'Default Programs' window will open up.
4. Pick 'Associate a file type or protocol with a program' from the list.
5. Next, the 'Associate a file type or protocol with a program' window will open. Scroll down the list to find the '.pdf' file extension from the 'Name' list and click on it. This will show which program is associated with PDF files. If the window does not show Adobe Acrobat DC as the default program to open PDF files; but rather shows Adobe Acrobat Reader DC, then click on the 'Change Program' button.



APPENDIX I I

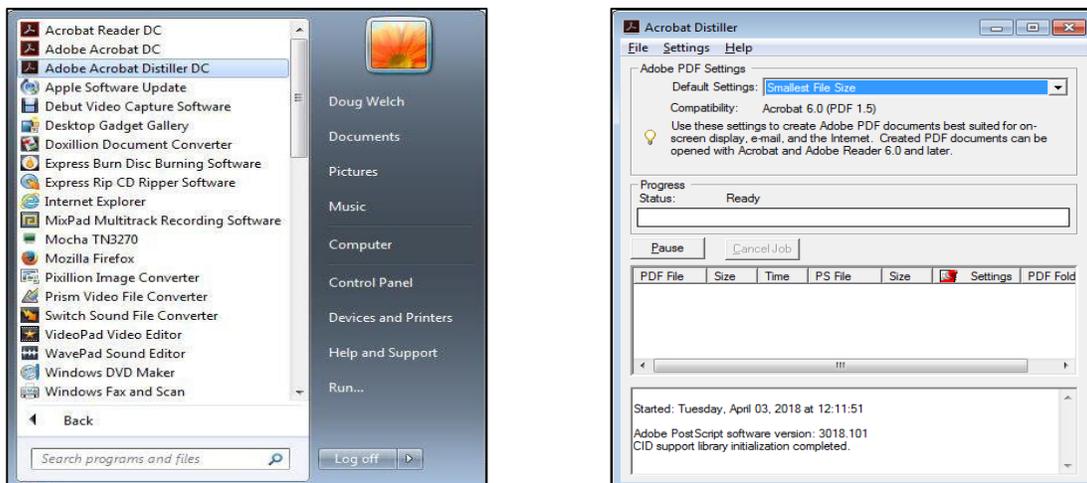
CREATING SIGNED PDF FORMAT INSPECTION REPORTS

6. The 'Open With' window opens. Pick Adobe Acrobat DC from the 'Recommended Programs' list and then click the 'OK button'.
7. The 'Associate a file type or protocol with a program' window should now show Adobe Acrobat DC as your default program to open PDF files.
8. Select the 'Close' button to close the 'Associate a file type or protocol with a program' window. Then close the 'Default Programs' by clicking on the 'X' button.



SETTING ADOBE ACROBAT DISTILLER PROGRAM SETTINGS

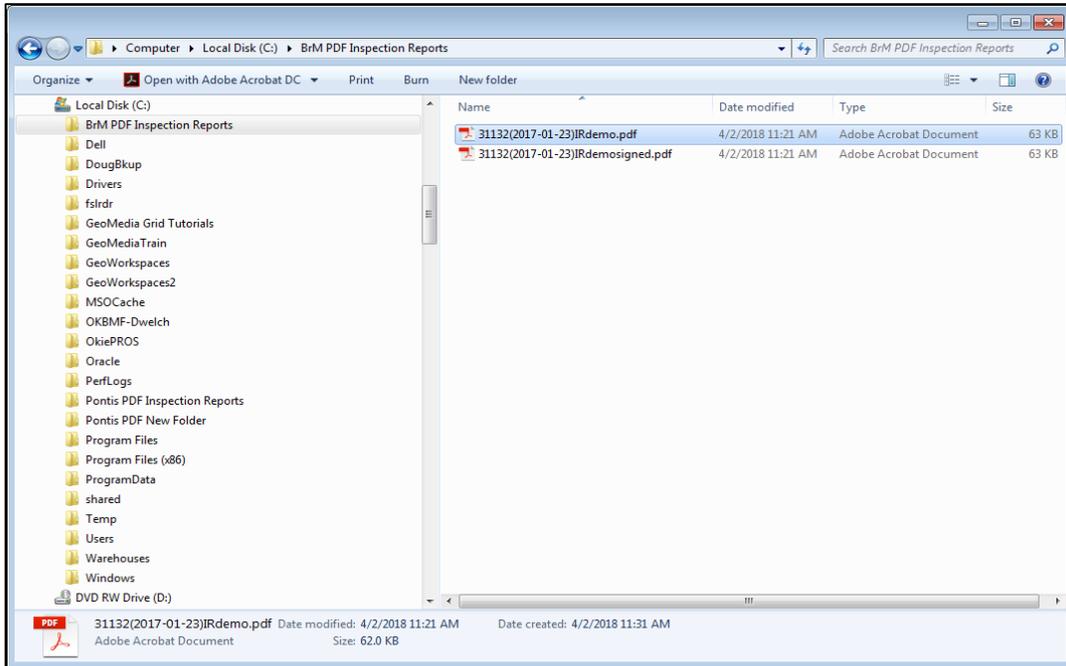
1. Before the Bridge Inspection Report is created in BrM and made into a PDF, a setting in Adobe Acrobat Distiller DC program must be set. First open the 'Start' menu button from your Windows taskbar in the lower left hand corner of your monitor.
2. Select the 'Adobe Acrobat Distiller DC' from the list of Programs; and the 'Adobe Distiller' window will open up.
3. In the top most field 'Default Settings', select 'Smallest File Size'. Next close Acrobat Distiller.



APPENDIX I I

CREATING SIGNED PDF FORMAT INSPECTION REPORTS SETTING UP A LOCATION ON YOUR COMPUTER TO STORE PDF INSPECTION REPORTS

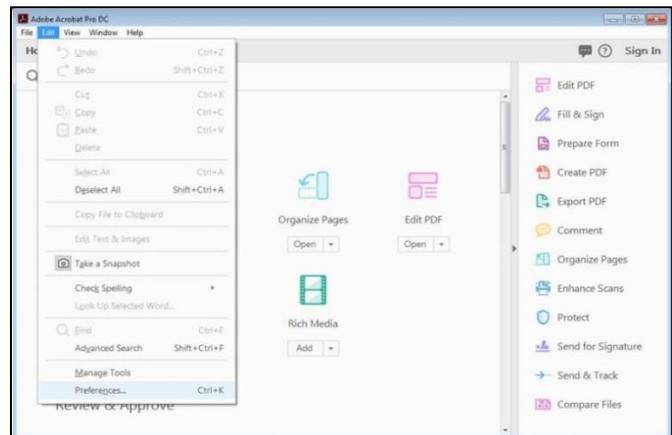
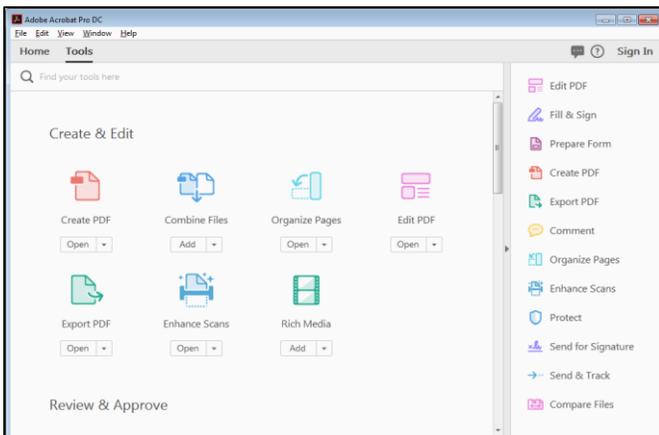
A location on your computer hard drive to store your PDF formatted inspection reports needs to be created on the main computer hard drive 'Local Disk (C):' (i.e. 'C Drive'). Using the 'Computer' window add a new 'Folder' on the 'C Drive' under 'Local Disk (C):' A recommended name for the folder is 'BrM PDF Inspection Reports'.



CREATING YOUR DIGITAL SIGNATURES

A signature file must first be created which contains the inspector's 'digital signature' before a document can be digitally signed. The signature should be created in the format described below. Additional features are not desired. There is information embedded in the signature which is used to detect whether the document was modified after the electronic document was digitally signed. The signature file is password encoded to prevent unauthorized usage. To create a PDF format digital signature, the following procedure will be followed:

1. To begin you must first setup the preferences for your digital signatures. The following options shown below are required and you may add other options displayed needed.
2. Open the Adobe Acrobat Pro DC program. From the Adobe Acrobat menu bar, select 'Edit', then 'Preferences'.

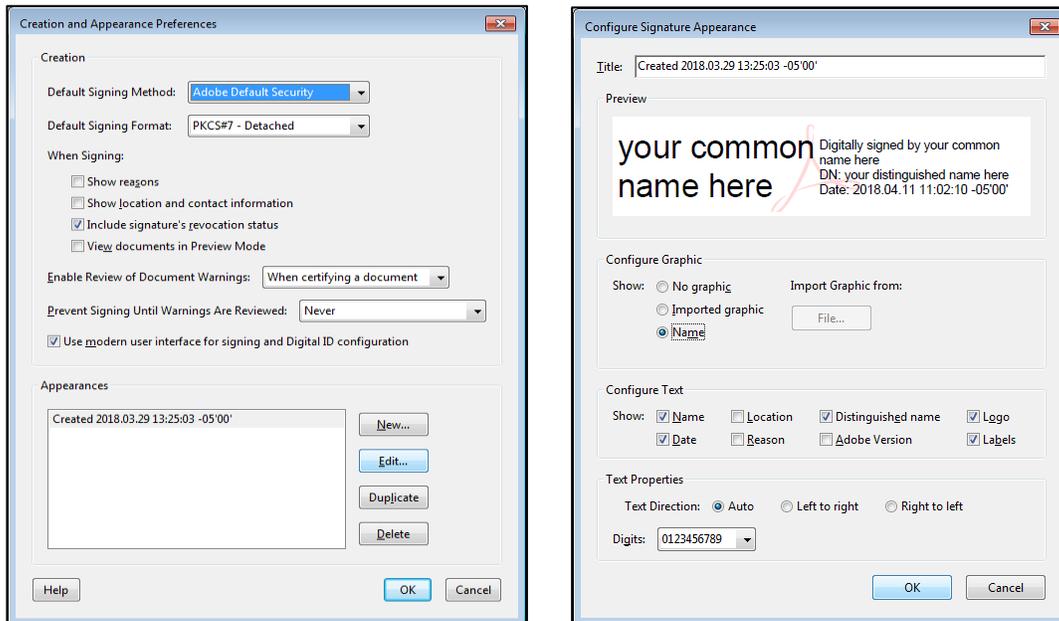
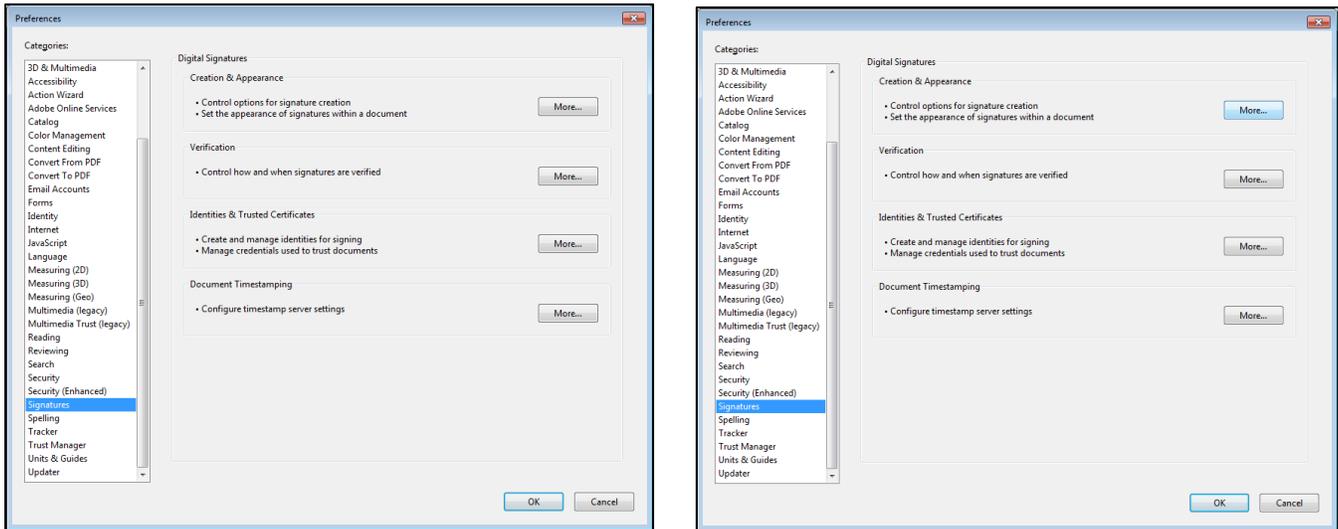


3. The 'Preferences' window opens up. In the 'Categories' list, select the 'Signatures' option.
4. In the 'Digital Signatures' pane, select the 'More' button from the 'Creation & Appearance' option.

APPENDIX I I

CREATING SIGNED PDF FORMAT INSPECTION REPORTS

5. The 'Creation and Appearance Preferences' window will open up. Pick the 'Edit' button at bottom right.



6. The 'Configure Signature Appearance' window will open up next. Setup the preferences for your digital signatures. The following options shown above are required and you may add other options displayed needed.

7. Click the 'OK' button to close 'Configure Signature Appearance' window. Click the 'OK' button to close 'Preferences' window.

DIGITAL SIGNATURE CREATION

To now begin the process to create a digital signature, you must first open the Adobe Acrobat Pro DC program again if needed. Follow the instructions below:

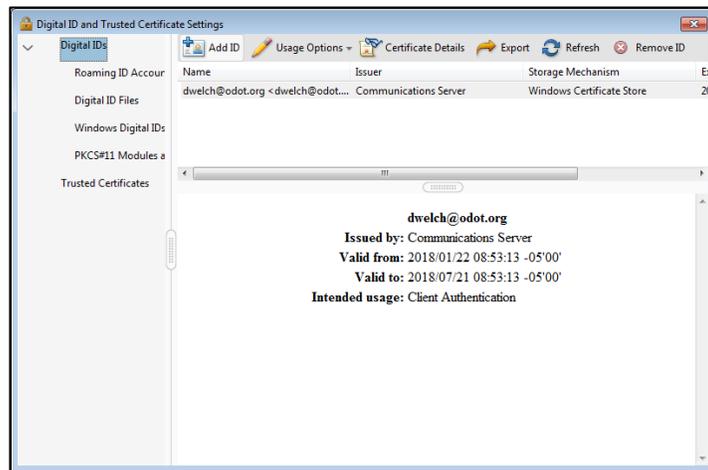
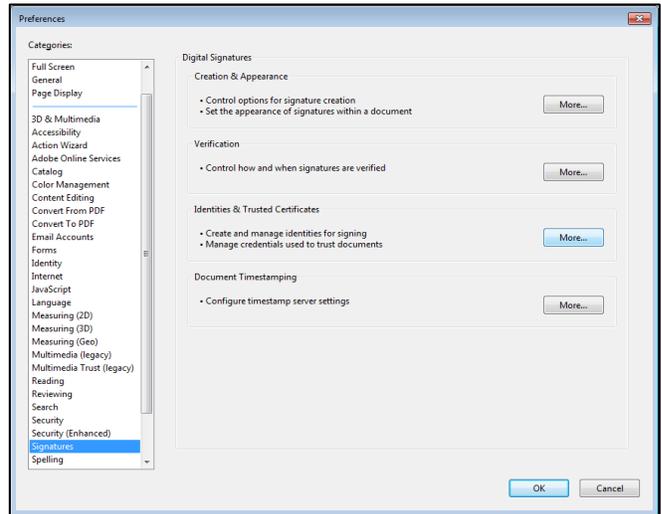
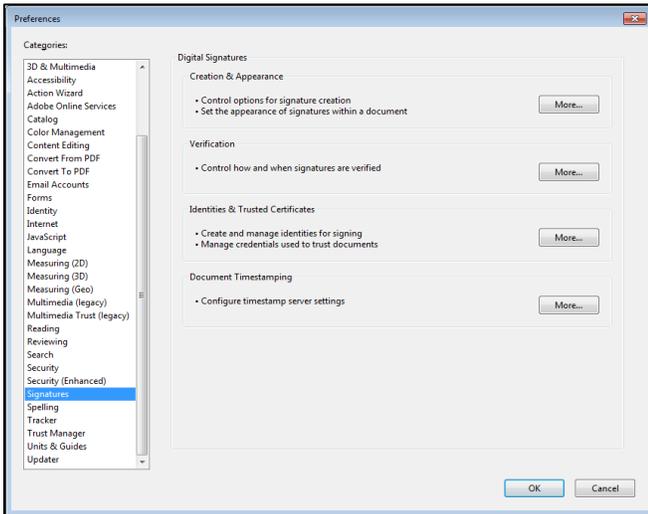
1. As shown in the pictures above, from the Adobe Acrobat menu bar, select 'Edit', then 'Preferences'. 'Preferences' window will open again.
2. In the 'Categories' list, select the 'Signatures' option. The 'Digital Signatures' pane will open.

APPENDIX I I

CREATING SIGNED PDF FORMAT INSPECTION REPORTS

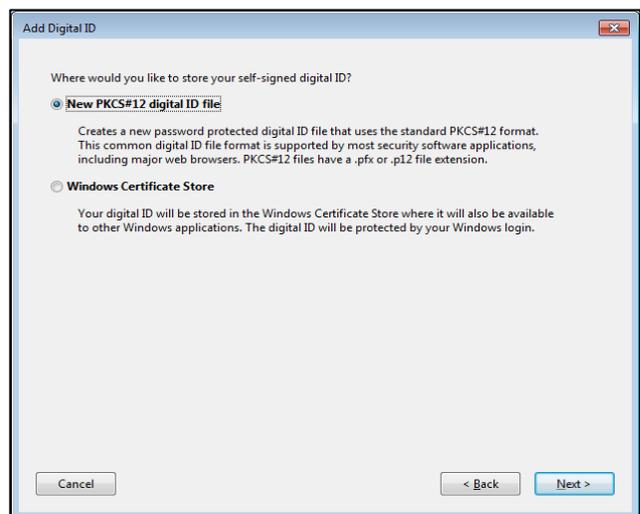
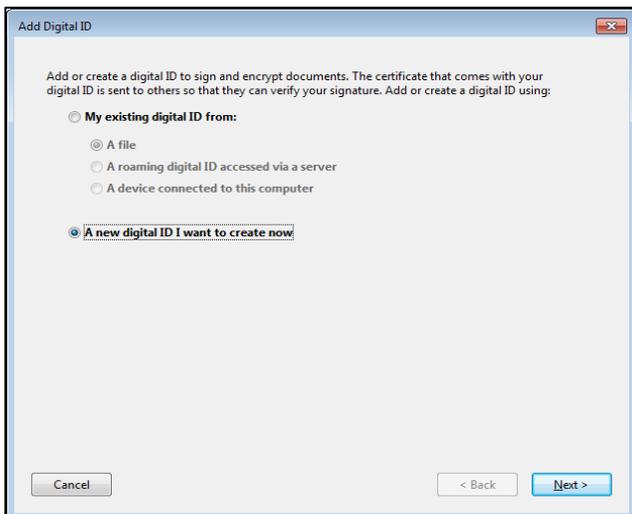
3. In the 'Digital Signatures' pane, select the 'More' button from the 'Identities & Trusted Certificates' option.

4. The 'Digital Signatures & Trusted Certificate Settings' window will open up. Pick 'Digital IDs' on the top left.



5. In the 'Add Digital ID' window, select the 'A new digital ID I want to create now' button. Click 'Next'.

6. In the 'Add Digital ID' you are asked 'Where would you like to store your Self-signed Digital ID?', select 'New PKCS #12 Digital ID file' button. Click 'Next'.



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CREATING SIGNED PDF FORMAT INSPECTION REPORTS

7. In the 'Add Digital ID' window, enter your name (i.e. Bob Jones) in the 'Name' field. In the 'Organizational Unit' field, enter the name of the person you inspect bridges with (i.e. with John Smith). Put your ODOT Division or Business Name in the 'Organization Name' field (i.e. ODOT Bridge Div9 or i.e. Bob Jones Inspection). Last enter your e-mail address (i.e. bjones@odot.org) in the 'Email Address' field. Click the 'Next' button.

SUGGESTION: If you inspect bridges with different people, you may create multiple Digital IDs with a different helper's name in the signature. If so, you can modify your name by putting the helper's initials in parentheses behind your name. This will allow you to distinguish between the different digital signatures. For example, if inspector Bob Jones frequently inspects bridges with helper 'John Smith' and sometimes inspects with helper 'Jane Doe', then Bob Jones might set up two digital signatures shown below:

Name: **Organizational Unit:**
Bob Jones(JS) with John Smith
Bob Jones(JD) with Jane Doe

The example shown below is for if Bob Jones is a consultant who uses an available ODOT supplied helper:

Name: **Organizational Unit:**
Bob Jones with ODOT helper name

Enter your identity information to be used when generating the self-signed certificate.

Name (e.g. John Smith): Bob Jones

Organizational Unit: with John Smith

Organization Name: ODOT Bridge Div9

Email Address: bjones@odot.org

Country/Region: US - UNITED STATES

Key Algorithm: 2048-bit RSA

Use digital ID for: Digital Signatures and Data Encryption

Buttons: Cancel, < Back, Next >

Enter a file location and password for your new digital ID file. You will need the password when you use the digital ID to sign or decrypt documents. You should make a note of the file location so that you can copy this file for backup or other purposes. You can later change options for this file using the Security Settings dialog.

File Name: C:\BrM PDF Inspection Reports\BobJones.pfx [Browse...]

Password: [Password field]

Confirm Password: [Password field]

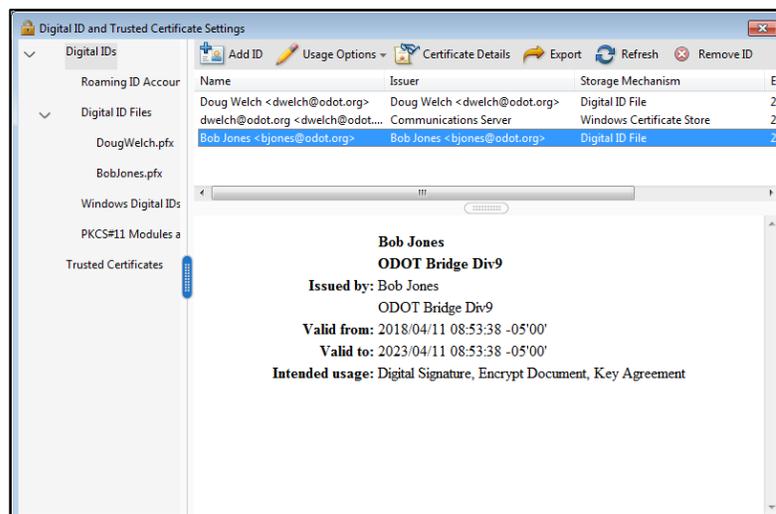
Strong

Buttons: Cancel, < Back, Finish

8. In the 'Add Digital ID' window in the 'File Name' field, click the 'Browse' button to pick a folder location (i.e. BrM PDF Inspection Reports) for your Digital ID file(s). Next enter a 'Password' and then 'Confirm Password' (You will be asked to enter this password each time you edit or delete a signature or sign a document). Then click 'Finish'.

9. Your name will now be in the 'Name' list of the 'Digital Signatures & Trusted Certificate Settings' window.

10. Your digital signature is ready to sign any PDF document. Repeat steps 1 thru 9 to create additional digital ID's.



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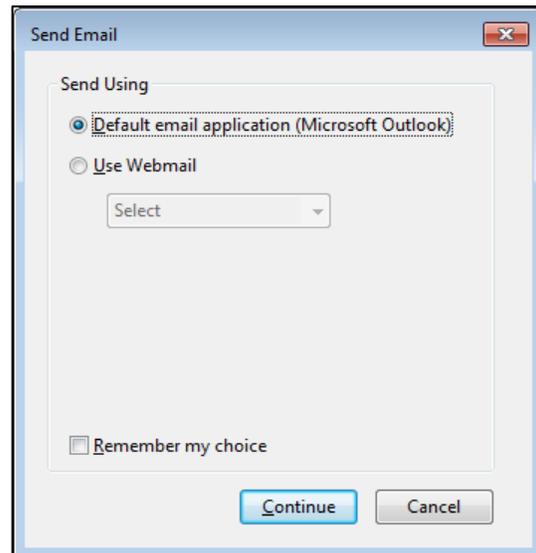
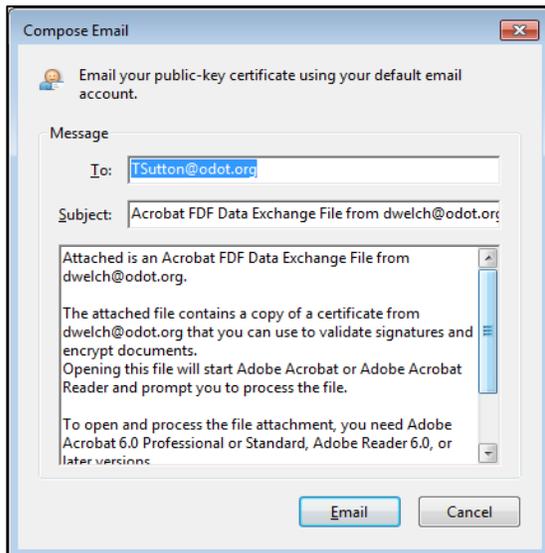
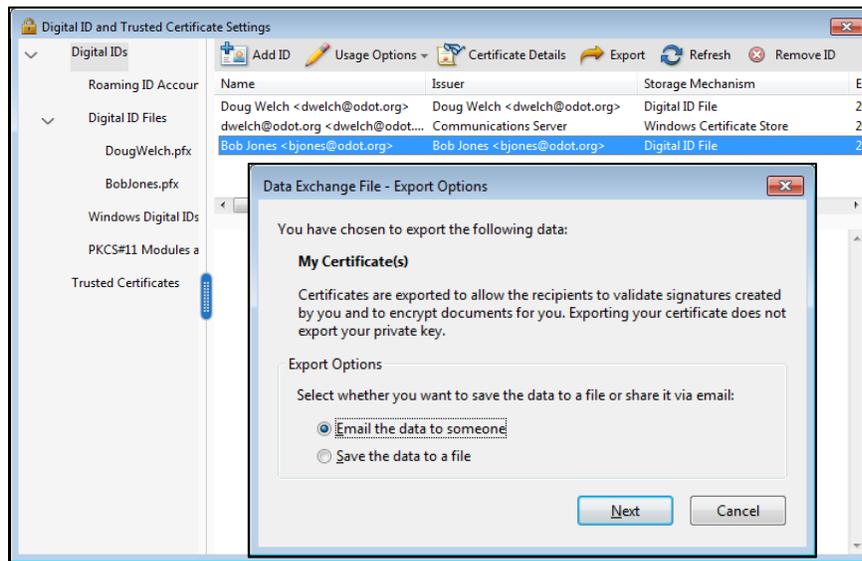
CREATING SIGNED PDF FORMAT INSPECTION REPORTS

NOTE: A security certificate needs to be created and sent to the Bridge Division for each digital ID you create. This will allow confirmation as to the authenticity of the digital signature whenever the inspection PDF is opened. Computers without this certificate may open the inspection PDF and observe the report, but the signature will not be certified. To begin the email process:

11. Select the Digital ID you just created. Then select the 'Export' button from the options at the top of the window and the 'Data Exchange File - Export Options' window will open.

12. In the 'Data Exchange File - Export Options' window, under 'Export Options' select 'Email the data to someone' Then click 'Next'.

13. In the 'Compose Email' window under Message in the 'To' field, enter the email address for Tony Sutton, (TSutton@odot.org) and also OKBMF@odot.org. Click the 'Email' button.



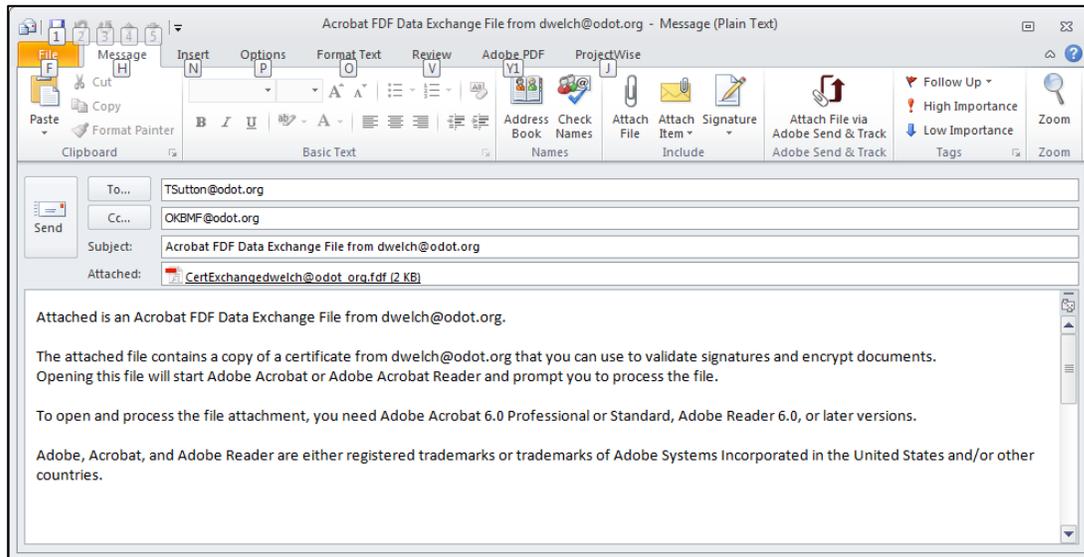
14. Next the 'Send Email' window will open. Under the 'Send Using' option, pick the 'Default email application (Microsoft Outlook)' button. Your email software should open with a prepared message and attachment as shown below.

NOTE: If your email software is not already open and running, you will be prompted to open up that software through your standard email login process.

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CREATING SIGNED PDF FORMAT INSPECTION REPORTS

15. Enter the email address for Tony Sutton, (TSutton@odot.org). Also CC: a copy to Bridge Maintenance, (OKBMF@odot.org) and then send the email.



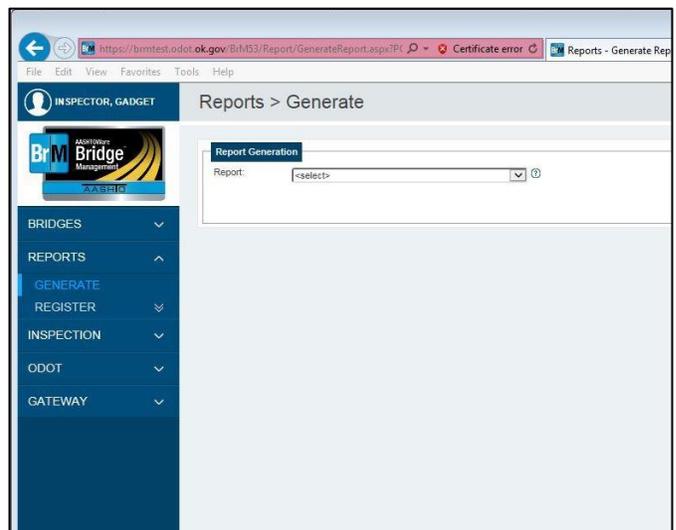
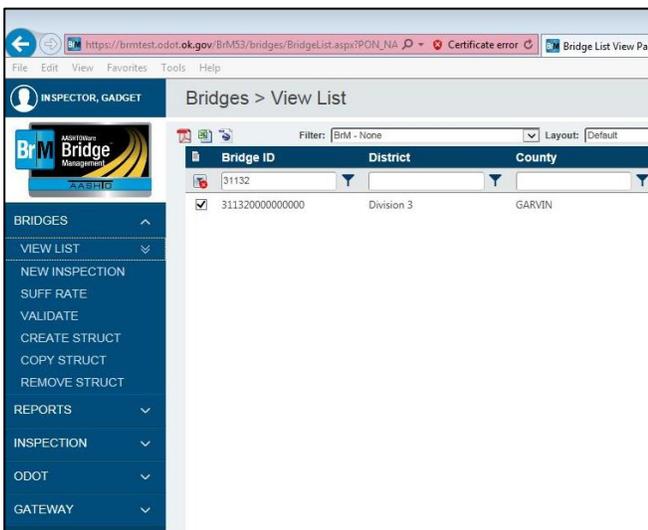
16. Repeat steps 1 thru 15 for any additional Digital Signature ID's you created.

17. Close the 'Digital Signatures & Trusted Certificate Settings' window.

CREATING A DIGITAL PDF FORMATTED INSPECTION REPORT IN BrM

Before a signed PDF Inspection Report file can be stored in an individual bridge folder, the PDF Inspection Report file must be created one bridge at a time. To create a signed Bridge Inspection Report in PDF file format use the following procedure:

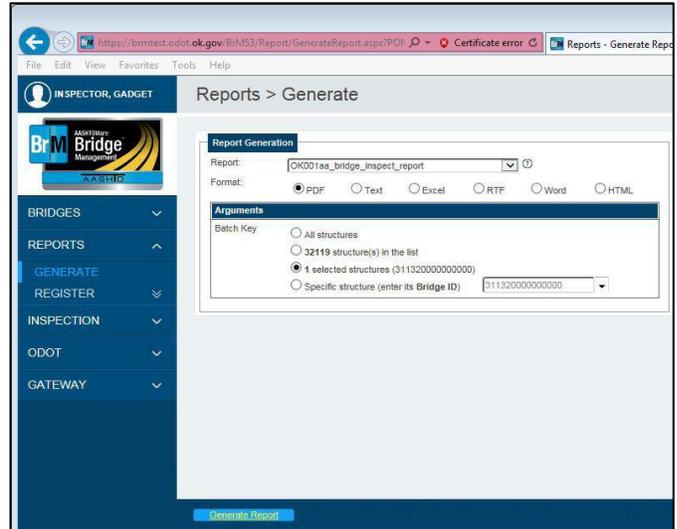
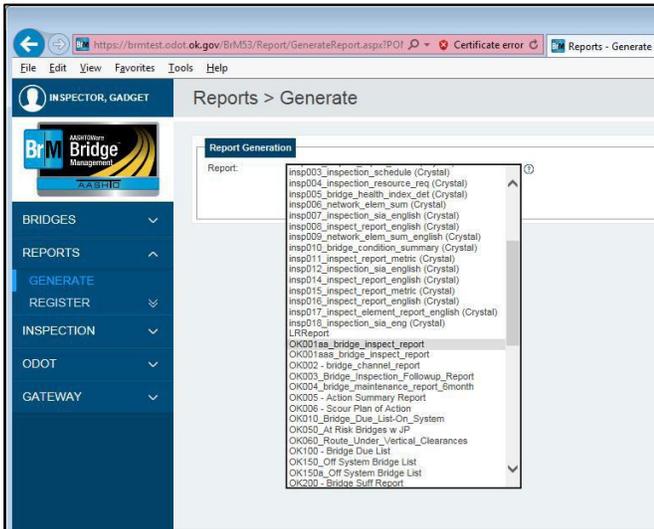
1. In the BRM 'Inspection' window, under the 'Bridges' 'View List' and 'Bridge ID'; check the check box by the selected the bridge from the bridge list for which the inspection report is to be printed. Next select the 'Reports' tab located on the left side of the BRM 'Inspection' window.
2. The 'Reports Generate' window will open with the 'Report Generation' 'Report:' drop down window showing. This drop down window allows a particular report type to be generated.



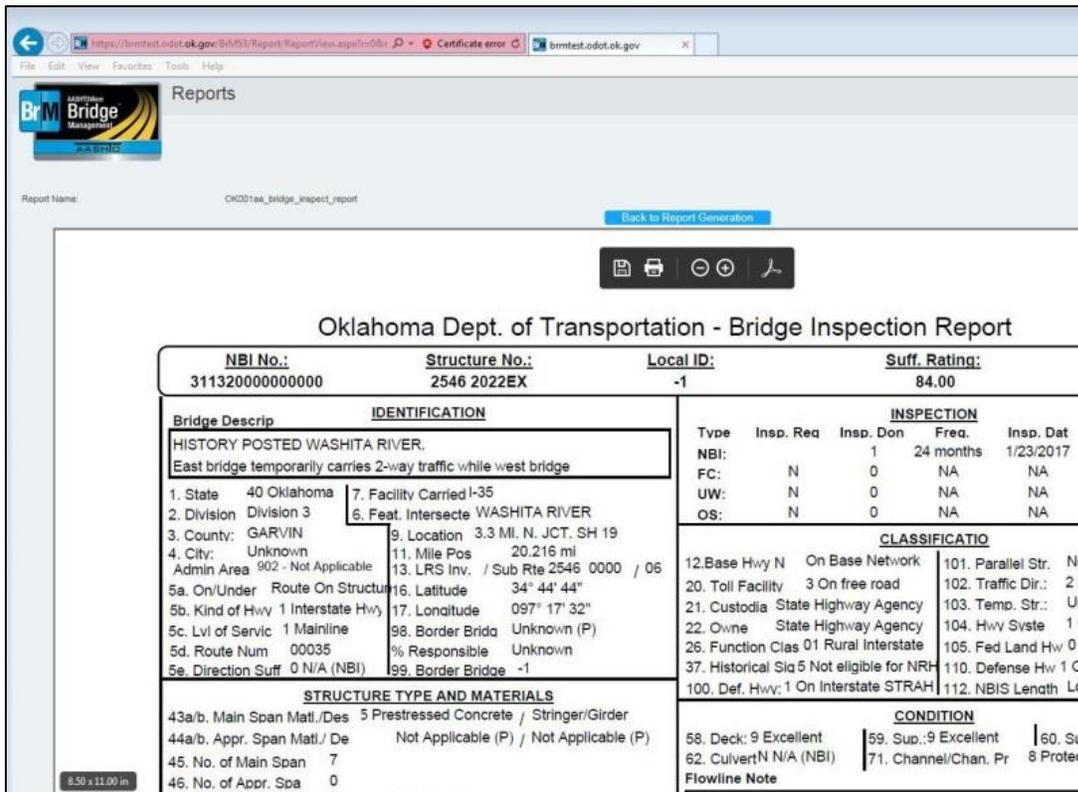
APPENDIX I I

CREATING SIGNED PDF FORMAT INSPECTION REPORTS

3. From the list of reports, select the 'OK001_bridge_inspection_report' from the 'Report Generation' 'Report:' drop down window. Under 'Report Generation' 'Format:' pick the 'PDF' button option.
4. Next, under 'Arguments' 'Batch Key:' pick the '1 selected structures (e.g., 31132000000000)' button option.
5. Click the 'Generate Report' button at the bottom of the 'Reports Generate' window. This begins the PDF report generation process using Adobe Acrobat Distiller Pro. When finished, the report is displayed on your computer monitor in the BrM 'Report' window.



6. With the BrM PDF Inspection Report displayed on your computer monitor, select the 'Save' button at the top of displayed PDF.
7. After clicking the 'Save' button the 'Save' PDF File As window will open up.

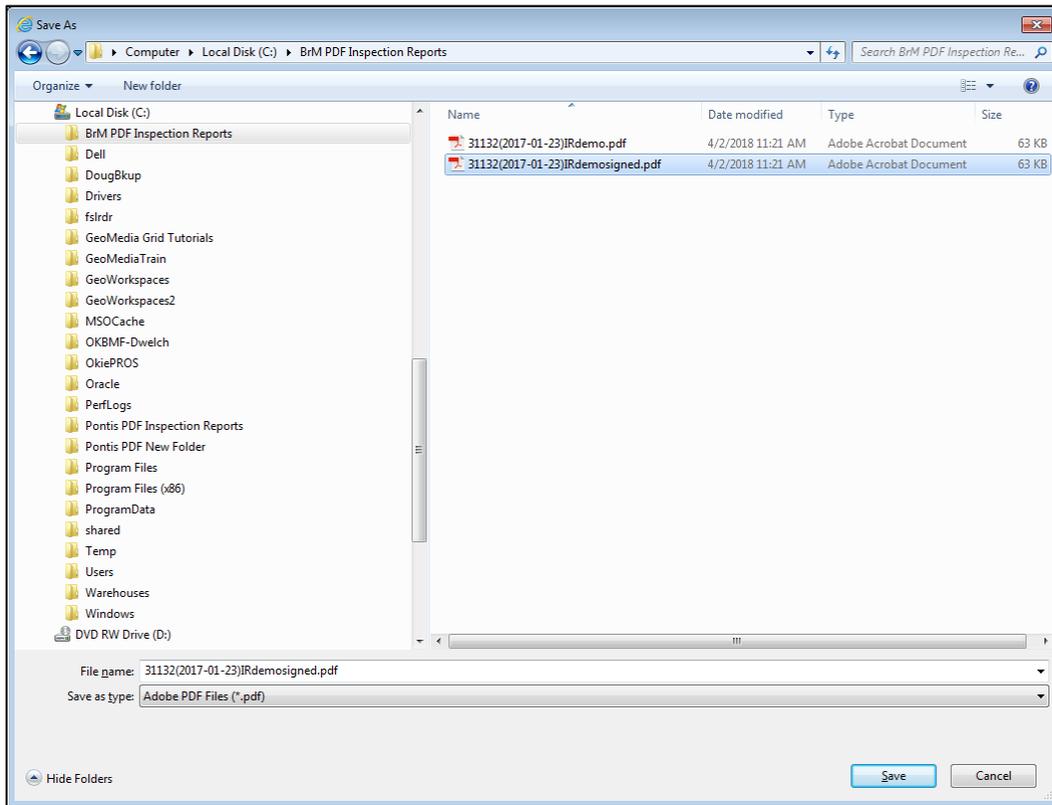


APPENDIX I I

CREATING SIGNED PDF FORMAT INSPECTION REPORTS

8. After the 'Save' PDF File As window opens, take the opportunity to check the directory location where the file will be saved as well as name of the file. You are then given the opportunity to identify the location where the file will be stored on your computer and to name the report.

9. Navigate to the 'BrM PDF Inspection Reports' folder that was set up in earlier instructions for the location to save the Digital PDF Inspection Reports to. Name the file in the approved Bridge file naming format (See the **'NOTE'** below). Select the 'Save' button.



NOTE: In order to standardize file names, use the following format to name your digital inspection report PDF files: NBI Number (Date in the YYYY-MM-DD format)IR, where IR indicates it is an inspection report. The date portion of the name is entered in the year-month-day order so that the files will sort in the correct order after multiple inspections have been performed on the same bridge. For example, the PDF file for bridge NBI# 31132, inspected on January 23, 2017, will be named 31132(2017-01-23)IR.pdf. Refer to the 'BrM Office Manual Appendix GG' for additional information.

10 After selecting 'Save' Adobe Acrobat Pro DC will create the Digital PDF Bridge Inspection Report and save it in the designated folder for PDF's. When finished creating all of the needed reports, log out of the BrM 'online software. This returns you back to the main BrM 'Login' window.

11. At this point you can choose to repeat steps 1 thru 10 to create PDF's for all of the remaining bridge inspection reports before digitally signing them, or digitally sign each Inspection Report PDF after it is created in BrM.

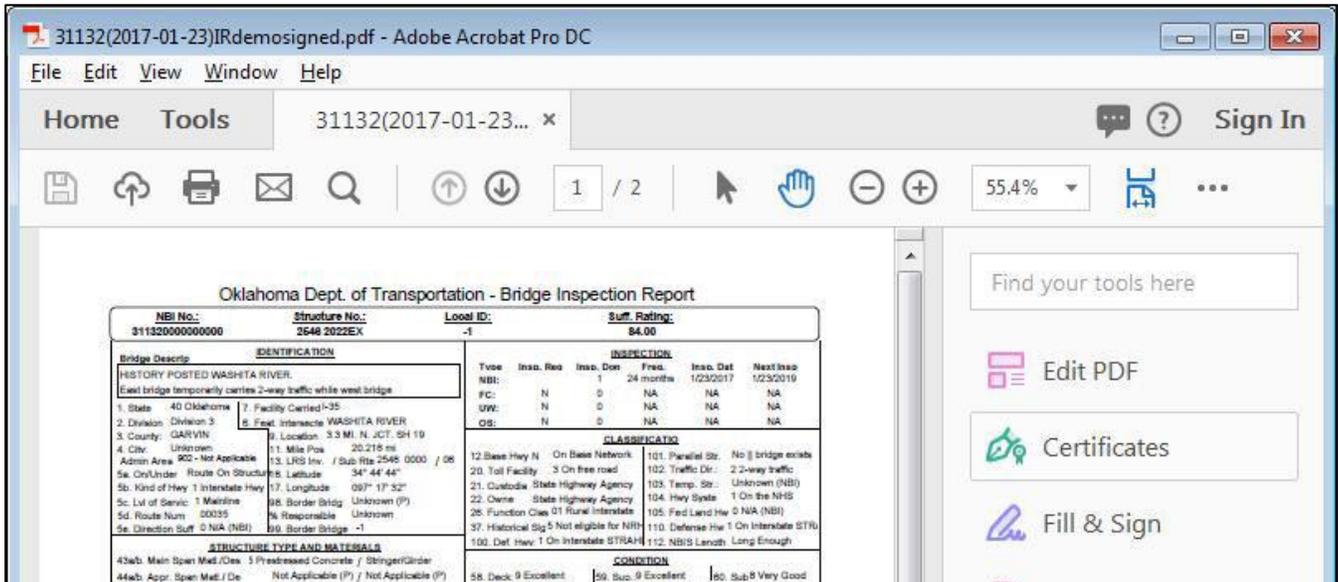
APPENDIX I I

CREATING SIGNED PDF FORMAT INSPECTION REPORTS

CREATE A SIGNED PDF INSPECTION REPORT

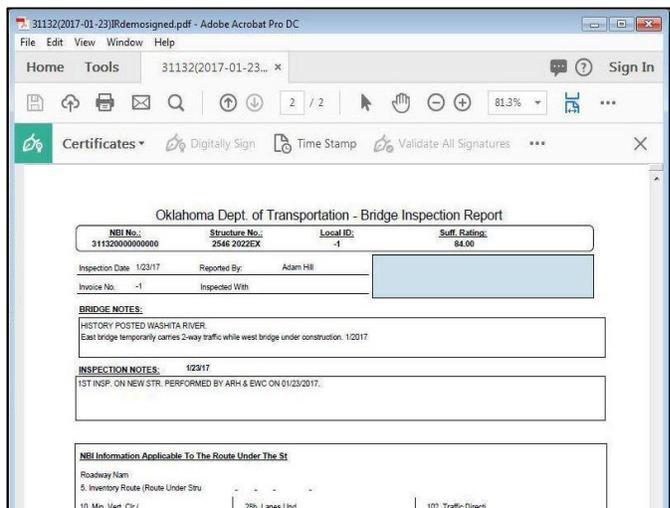
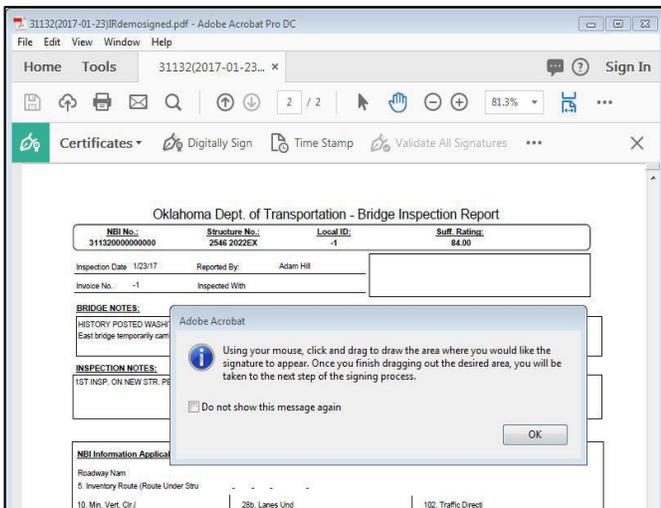
In order for the digitally signed inspection report file to be stored in an individual bridge folder, the signed PDF file must be created one bridge at a time. To create a digitally signed Bridge Inspection Report in PDF file format use the following procedure:

1. Once the digital PDF Inspection Report file is created and then located on your computer, open the digital PDF Inspection Report in Adobe Acrobat Pro DC. Scroll down to the top of page 2 of the digital inspection report.
2. To digitally sign the report, first select the 'Certificates' button on the tool bar at the right side of the Adobe Acrobat window. This will open the 'Certificates' tool bar banner located above the inspection report. Then select the 'Digitally Sign' button option on the 'Certificates' tool bar banner.



3. An 'Adobe Acrobat' window will open up informing you to click and drag a window where you want the digital signature to be placed. Read the directions on how to place the signature in the PDF file. When familiar with this process, if you do not want see this prompt again check the 'Don't show this message again' box. Next click the 'OK' button. Crosshairs will appear on the screen in place of the mouse pointer.

4. Locate the rectangular signature box in the upper right hand corner of page 2. Place the cursor at upper left hand corner of the signature box. Then hold down the left mouse button. Click and drag the mouse from the upper left hand corner of the signature box to the lower right hand corner, then release the mouse button.

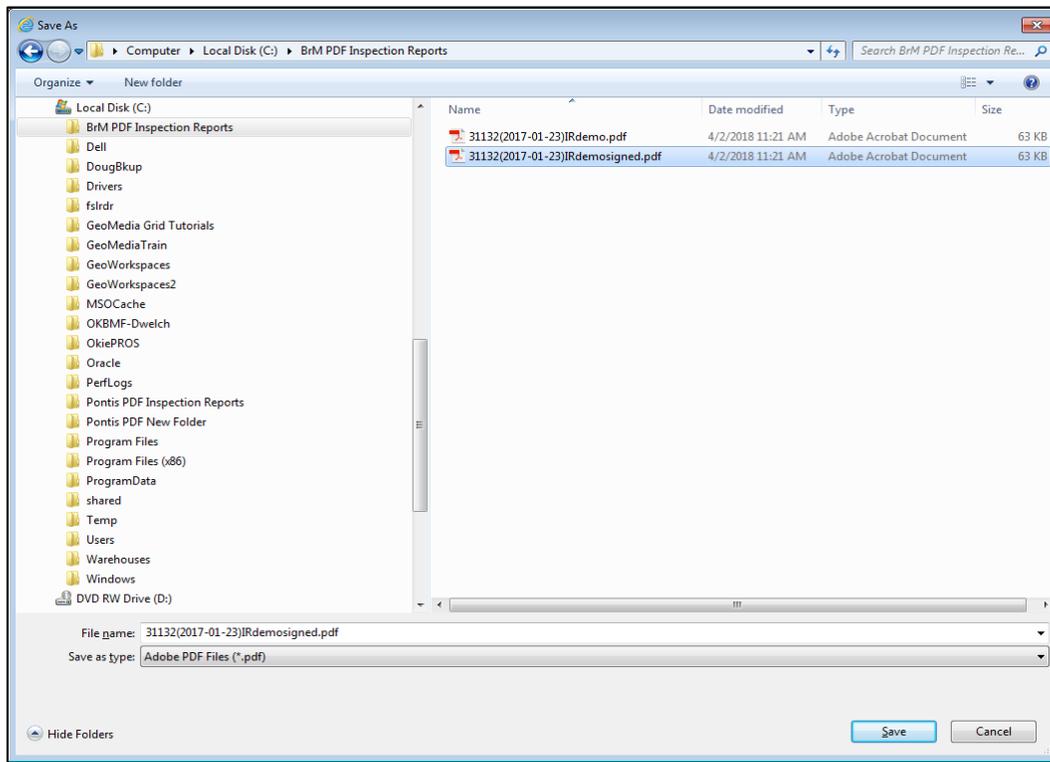
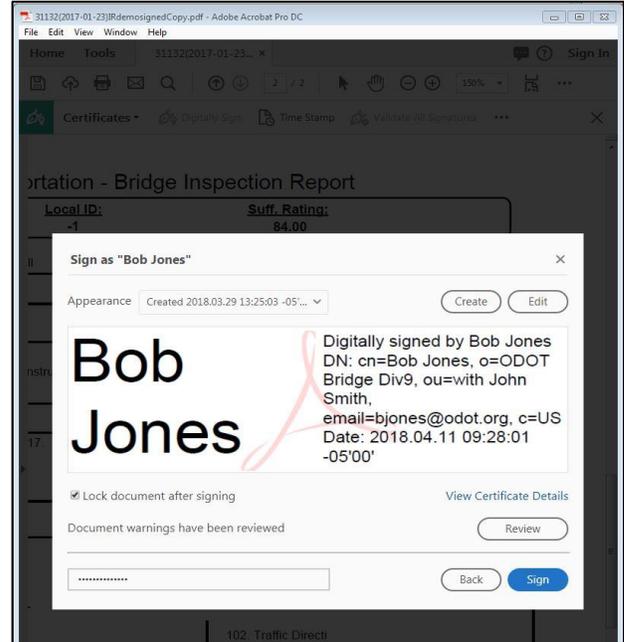
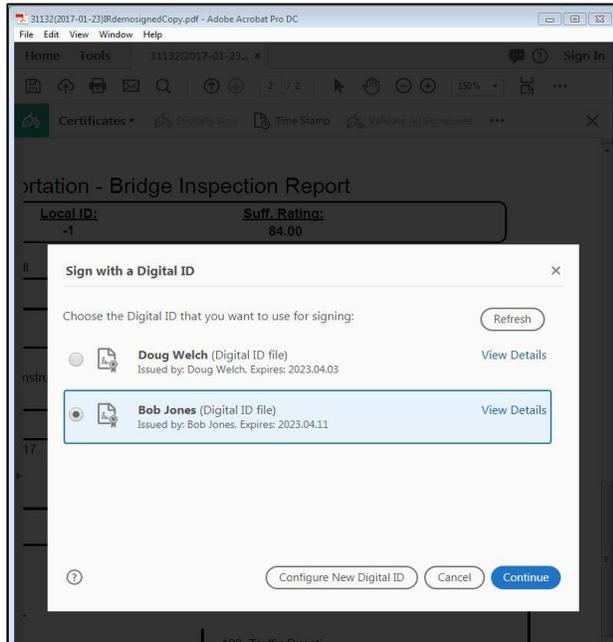


APPENDIX I I

CREATING SIGNED PDF FORMAT INSPECTION REPORTS

5. The 'Sign' with a Digital ID' window will open up. Select the digital signature profile needed from the list of available signatures that have been created in Adobe Acrobat. Click the 'Continue' button and the 'Sign as Bob Jones' window will open. Review the digital signature to make sure it is current.

6. Enter your password in the 'Password' field. Check the 'Lock document after signing' box and click the 'Sign' button. **YOU MUST REMEMBER YOUR PASSWORD.** You cannot edit or delete digital signatures then without it.

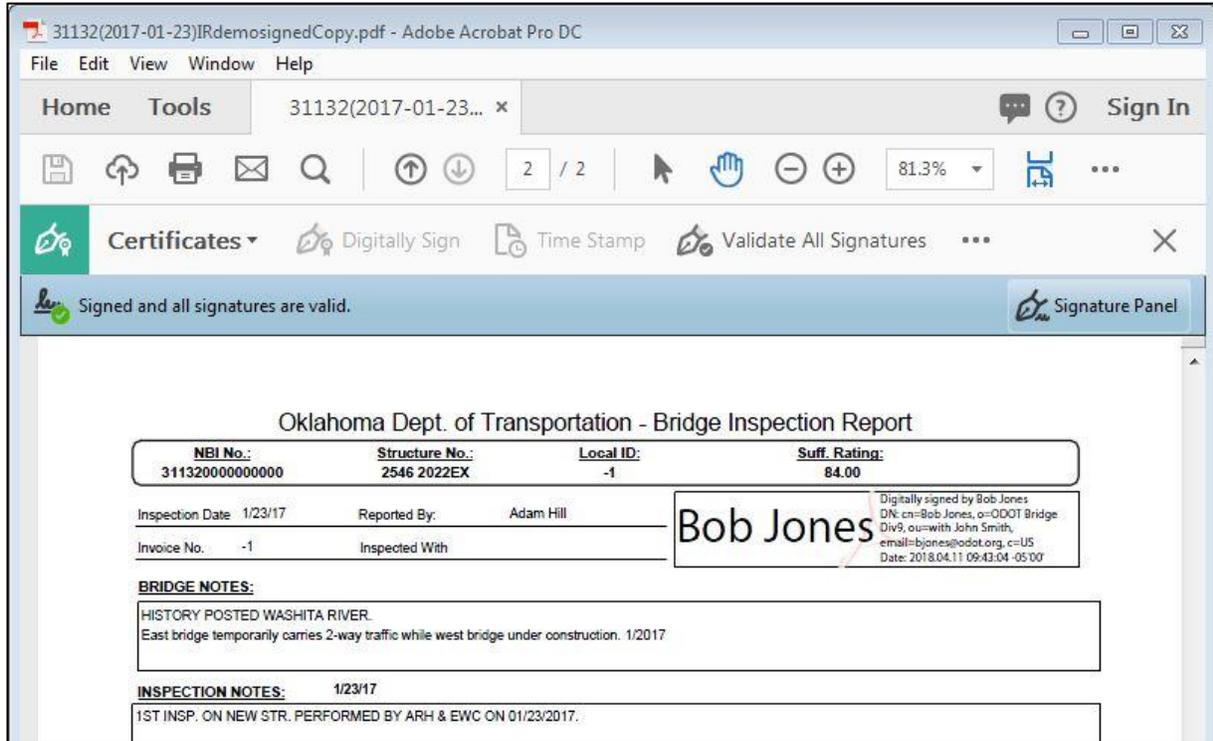


7. Click the 'Save' button. The digitally signed PDF inspection report is now complete. Close the document.

APPENDIX I I

CREATING SIGNED PDF FORMAT INSPECTION REPORTS

8. To create each Bridge Inspection Report PDF and digitally sign them one at a time repeat steps 1 thru 7 for each bridge inspection.
9. Or repeat steps 1 thru 7 to digitally sign a batch of previously created Bridge Inspection Reports in BrM.



PROVIDE PDF FILES TO ODOT

Once all inspection reports are created as digitally signed PDF files, then they should then be sent to the same person at the ODOT Division Office and the ODOT Central Office as you previously send the paper inspection reports. The PDF digitally signed inspection files (IR) and PDF combined photo files (PH) should be provided in the manner described in the 'BrM Office Manual Appendix GG'.

PRINT PDF FILES TO PAPER (ONLY IF NEEDED FOR LOCAL STORAGE)

If paper inspection reports are required for local bridge inspection files, a convenient way to print the PDF files in one batch job is to open 'Computer' and navigate to the folder where the PDF files are saved on your hard drive. Highlight all reports to be printed and then select 'Print'. The reports will be printed in a single batch.

APPENDIX II
CREATING SIGNED PDF FORMAT INSPECTION REPORTS

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APPENDIX JJ

CREATING SCOUR PLANS OF ACTION

When do you need to produce and complete a Plan of Action?

A bridge is considered scour critical if item 113 < =3. If a bridge is determined to be scour critical, a Plan of Action shall be developed and implemented to address the problem; to comply with NBIS regulation 23 CFR 650.313(e)(3). Figure JJ-1 shows a sample POA.

At this time all on system spans structures have been evaluated for scour and the new POA forms are being completed. Inspectors are responsible for producing and completing Plan of Action for all on system scour critical bridge size culverts.

Off system spans and culverts are currently being assessed and POA's are to be produced as necessary.

If the on system culvert or off system span or culvert has item 113 < = 3; then you need to produce a POA. CHECK the maintenance file, a POA is only required to be produced one time and should be consulted and updated as needed.

The POA (Plan of Action) is a report in BrM. To generate a POA:

1. On the BrM desktop, select the bridge(s) you want to work on (i.e., all in same county, along a certain highway, or division) by placing a check in the box to the left of the bridge listing. You may highlight certain bridges out of a larger list or use the BrM filters to display only the bridges desired.
2. Select the 'Reports' task. The 'Reports > Generate' screen will appear.
3. Click on the down arrow for the reports field and select 'OK006 – Scour Critical POA'. Then make sure the PDF format is selected.
4. Click on 'Generate Report' at the bottom of the screen.
 - . This will generate a POA for all selected bridges which also meet the following criteria;
 - Scour Smart Flag (961) exists and Item 113 < = 3.

Instructions for completing a Scour Plan of Action (POA)

1. Write in the coding of item 113 from last inspection
2. Write in the coding of items 60(substructure), 61(channel), 62(culvert), and 71(waterway) from last inspection
3. Write in your cell phone number
4. Employer
5. This section should be completed during the follow-up meeting with the bridge owner. Circle or write in what the owner decides he wants for a criteria for closing the roadway.
6. Detour route - this can be a Google map or a county map with a route highlighted or written instructions. When choosing a route, be sure that if the same stream or creek that is causing the closure crosses the detour route, that the roadway will not be overtopped and it is not a scour critical bridge.
7. Neatly print or type name and area code and phone number.
8. Countermeasures recommended can include adding riprap at abutment, bracing piles, or just monitoring the bridge.
9. Have each sign and date.
10. If work completed, enter that date here.

APPENDIX JJ

**OKLAHOMA DEPT. OF TRANSPORTATION
PLAN OF ACTION FOR SCOUR CRITICAL BRIDGES**

5/13/2010

Division : Division 8		County : PAWNEE		Bridge No. : 04603	
-----------------------	--	-----------------	--	--------------------	--

	Current Condition	Previous Condition			
Item # 113 :	3 SC - Unstable	1	ADT :	990	ADT Year : 2008
Bridge Structure #	5914 1566 X		Year Built :	1935	Bus Route : Current and Desired Bus Route
Bridge Location :	S.H. 18	over ARKANSAS RIVER	Location : PAWNEE-OSAGE C/L		
Bridge Desc. :	5-210' HI. TRUSS & 4-100' PONY TRUSS SPANS(RIVETS)				
Structure Notes :	O/S Inspection Items Include: Riveted truss connections; areas of heavy section loss to lower chord in spans 1 and 9; collision damage in spans 7, 8, and 9; areas of heavy section loss to stringers and floorbeams including failed stringer 6 at floor beam 0 in span 6.				
Inspection Notes :	PX: Repair failed stringer at floor beam 0 in span 6; repair deck joint headers and seal expansion joints. FX: Program the deck for replacement; replace the east approach rail to meet standard requirements; repair section loss to lower chord at panel points in spans 1 and 9; replace lower lateral bracing gusset plates with heavy section loss in spans 1 and 9; repair stringer ends with gusset plates; repair floor beams with gusset plates; periodically remove soil and debris				
Foundation Type	Abutment Type and Foundation :	208a: Pedestal 208b: Bears on Natural Foundat	Type of Pier and Foundation :	209a: 2 209b: Yes	209c: No Piling / Drilled Shaft, Natural Foundation Foundation Soils Type : -1
Replacement Plans :	JP Number :	2089504	Project No. :	BRFY -159B (036)	Let Date : /
			Project Type :	Bridge Replacement - No Added Capability	

	Current Condition	Previous Condition			
Bridge Condition :	Substructure	4 Poor	2	Comments :	
	Culvert	N N/A (NBI)	2	Comments :	
	Channel	6 Bank Slumping	2	Comments :	
	Waterway	6 Equal Minimum	2	Comments :	
Sources of Scour Critical Rating:	W.abut - 21.9',+50' - 30.1',p1 - 33.0',+105' - 42.4',p2 - 32.7',+105' - 41.5',p3 - 33.7',+105' - 42.4' - 38.4'=4.0'water depth,p4 - 36.3',+105' - 39.4',p5 - 36.6',+105' - 37.8',p6 - 35.2',+50' - 37.2',p7 - 37.3',+50' - 35.8',p8 - 33.6',+50' - 19.8',E.abut - 10.2'				
Scour Smart Flag: 361	Condition State (CS1/CS2/CS3)				100 / 0 / 0
Scour comments Heavy drift at river piers causing local scour around piers.					

Inspection and Monitoring:		Inspection Date :	11/18/2009	Inspection Frequency	24 Months
Inspector :	Pontis Pontis	Contact Number :	3	Company :	4

Criteria for Bridge Closure <small>(Circle all that apply)</small>	5	Roadway Overtopped	Roadway Fill Failed	Bridge Failed	Settlement
		Approach Fill Washed Out	Other (Explain)		

Detour Route (County approved mapped route that cannot also be affected by the same storm event which closes this bridge).
6

Bridge Contact Info	BRIDGE OWNER	Name:	7	COUNTY BRIDGE COORDINATOR	Name:	7
		Contact Number:			Contact Number:	7
	MAINTENANCE RESPONSIBILITY	Name:	7	COUNTY COMMISSIONER	Name:	7
		Contact Number:			Contact Number:	7

Countermeasures Recommended:		8	Date Implemented:	10
-------------------------------------	--	---	--------------------------	----

Author(s) of POA	Bridge Inspector	Signature	9	Date
Reviewed with Bridge Owner	Bridge Owner	Signature	9	Date
Reviewed with Co. Bridge Coordinator	County Bridge Coordinator	Signature	9	Date

Figure JJ-1. Sample Scour Plan of Action

APPENDIX KK

CREATING ACTION SUMMARY REPORTS

When do you need to produce and complete an Action Summary Report?

Whenever a bridge has item 59, 60 or 62 rated at '2', then an Action Summary Report shall be developed and implemented to address the problem. Figure KK-1 shows a sample Action Summary Report.

The Action Summary Report must be presented to the bridge owner. In addition, a digital copy of the report must be emailed to the FHWA representative, ODOT Bridge Maintenance Engineer and the Division 1-8 County Bridge Coordinator.

The Action Summary Report is a report in BrM. To generate the report:

1. On the BrM desktop, select the bridge(s) you want to work on (i.e., all in same county, along a certain highway, or division) by placing a check in the box to the left of the bridge listing. You may highlight certain bridges out of a larger list or use the BrM filters to display only the bridges desired.
2. Select the 'Reports' task. The 'Reports > Generate' screen will appear.
3. Click on the down arrow for the reports field and select 'OK005 –Action Summary Report'. Then make sure the PDF format is selected.
4. Click on 'Generate Report' at the bottom of the screen.
5. This will generate the Action Summary Report for all selected bridges which also meet the following criteria;
 - Item 59, 60 or 62 = '2'.

Instructions for completing a Scour Plan of Action (POA)

- 1 The bridge identification information at the top of the report is filled in by BrM when the report is generated.
- 2 Fill in the Program Manager and Team Leader names along with the date of the report and the date of the inspection
- 3 Specify the bridge condition causing item 59, 60 or 62 to be rated '2'.
- 4 Fill in the recommended short term and long term actions required to repair the condition, along with the recommended completion dates.
- 5 Program Manager sign the report and affix seal..
- 6 Submit the Action Summary Report to the people identified at the top of the report.

APPENDIX KK

**ACTION SUMMARY REPORT
FOR
BRIDGES WITH 'CRITICAL CONDITION' RATING**

Digital copies of this report (for all applicable bridges) are to be emailed to the following persons :

**FHWA Representative; Randy Leonard (randall.leonard@dot.gov)
ODOT Bridge Maintenance Engineer (wkellogg@odot.org)
Division 1-8 (as appropriate) County Bridge Coordinator**

Each Action Summary report should be submitted as an individual PDF file to facilitate filing in the appropriate bridge file.
Also a copy of this report must be included in the bridge information presented at the bridge owner conference.

NBI NO.: 05015	Struct. No.: 57N3820E0050007	Local No.: 19
Year Built : 1936	Year Reconstructed : -1	Span Type : Steel
Superstructure Rating : 2	Substructure Rating : 5	Truss-Thru Culvert Rating : N

Program Manager : Program Manager Date : DD/MM/YYYY

Team Leader : Team Leader Inspection Date : DD/MM/YYYY

Condition / Situation Causing Rating of '2' : Scour repairs have failed. Far reaching void below
previous repairs downstream of E. span and extends too far to measure under the
substructure unit. 10' drop in FL since previous inspection.

Recommended Short Term Action(s) : Document CX condition & recommendations in letter to
bridge owner, place structure on 6 month inspection frequency.

Recommended Completion Date For Short Term Action(s) : Letter sent immediately after owner
notification. Inspection frequency change to be completed upon data submission.

Recommended Long Term Action(s) : Grout void beneath substructure unit and armor fill around
substructure unit.

Recommended Competition Date For Long Term Action(s) : Inspection date + 90 days

Program Manager Seal :

Program Manager Signature : Program Manager, P.E.

Figure KK-1 Sample Action Summary Report

APPENDIX LL

Federal Inspection Requirements

The Code of Federal Regulations (CFR) Part 650.307 states that each state transportation department must inspect, or cause to be inspected, all highway bridges located on public roads that are fully or partially located within the states boundaries, except for bridges that are owned by federal agencies. Additionally, the CFR Part 650.305 contains the following definitions of the various types of bridge inspections:

Initial Inspection

The first inspection of a bridge as it becomes a part of the bridge file to provide all Structure Inventory and Appraisal (SI & A) data and other relevant data and to determine baseline structural conditions. This inspection should be performed within 75 days of bridge completion for On-System bridges and 150 days for Off-System bridges

Routine Inspection

Regularly scheduled inspections consisting of observations and/or measurements needed to determine the physical and functional condition of the bridge, to identify any changes from initial or previously recorded conditions, and to ensure that the structure continues to satisfy present service requirements. This inspection should be performed at 12, 24 or 48 month intervals, as bridge conditions require. Normally, all bridges are routinely inspected at 24 month intervals.

In-depth Inspection

A close-up inspection may be performed on one or more members above or below the water line to identify any deficiencies not readily detectable using routine inspection procedures. In-depth inspections are performed at the direction of the bridge owner or program manager

Special Inspection

An inspection scheduled at the discretion on the bridge owner, used to monitor a particular known or suspected deficiency. Types of special inspections include: fracture critical member inspections, underwater inspections and scour inspections. Special inspections are performed at 6, 12 or 24 month intervals, as bridge conditions require. The special inspection frequency normally should correspond to the routine inspection frequency and the special inspection frequency should be scheduled at the midpoint between two routine inspections.

Damage Inspection

An unscheduled inspection to assess structural damage resulting from environmental factors (e.g., flooding) or human actions (e.g., traffic impact). Damage inspections are performed on an as required basis.

Fracture Critical Member Inspection

A hands-on inspection of a fracture critical member or member components that may include visual and other non-destructive evaluation. Fracture critical members are to be inspected at intervals not to exceed 24 months and are always scheduled to be performed concurrent with a routine inspection. Criteria is to be established to determine the level and frequency to which these members are inspected considering such factors as age, traffic characteristics and known deficiencies.

Follow-up Inspection

An inspection initiated by either a program manager or bridge owner due to some adverse condition recorded during the routine or in-depth inspection. The result of this inspection may be to just inspect the item more closely in the future or a repair project may be initiated. Once the repair is complete, an additional follow-up inspection will be performed within 75 days for on-system and 150 days for off-system to verify the item was satisfactorily repaired.

APPENDIX LL

Personnel Qualifications

The Code of Federal Regulations (CFR) Part 650.309 contains the following definition of personnel qualifications:

- A. A program manager must, at a minimum:
 - 1) Be a registered professional engineer or have ten years bridge inspection experience; and
 - 2) Successfully complete an FHWA approved comprehensive bridge inspection training course.
 - 3) Additional requirements may be specified in individual inspection contracts.
- B. There are five ways to qualify as a team leader. A team leader must, at a minimum:
 - 1) Have the qualifications specified in paragraph A, above; or
 - 2) Have five years bridge inspection experience and have successfully completed an FHWA approved comprehensive bridge inspection training course; or
 - 3) Be certified as a Level III or IV Bridge Safety Inspector under the National Society of Professional Engineer's program for National Certification in Engineering Technologies (NICET) and have successfully completed an FHWA approved comprehensive bridge inspection training course; or
 - 4) Have all of the following:
 - a) A Bachelor's degree in engineering from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology;
 - b) Successfully passed the National Council of Examiners for Engineering and Surveying Fundamentals of Engineering examination;
 - c) Successfully completed an FHWA approved comprehensive bridge inspection training course;
 - d) 2 years of inspection experience; or
 - 5) Have all of the following:
 - a) An Associates' degree in engineering or engineering technology from a college or university accredited by or determined as substantially equivalent by the Accreditation Board for Engineering and Technology;
 - b) Four years of bridge inspection experience;
 - c) Successfully completed an FHWA approved comprehensive bridge inspection training course.
- C. The individual charged with the overall responsibility for load rating bridges must be a registered professional engineer.
- D. An underwater bridge inspection diver must complete an FHWA approved comprehensive bridge inspection training course or other FHWA approved underwater diver bridge inspection training course.
- E. A fracture critical bridge inspector must have completed an FHWA approved fracture critical bridge inspection training course.
- F. Non-PE Qualified Assistants must have completed a 2-week comprehensive training course based on the bridge inspector's manual or the QCQA training as required by ODOT.

APPENDIX LL

New Qualification / Requalification Requirements

A candidate for new inspection qualification (someone who has never before inspected a bridge in Oklahoma) or re-qualification (someone who has missed at least two consecutive QCQA bridge inspection / workshop cycles, regardless of whether the inspector has actively inspected bridges during the interim) should follow a procedure similar to the policy established in the QCQA guidelines. With that in mind, the following procedure will be followed:

The candidate's Program Manager will send Bridge Division a Qualification Plan at the beginning of the program, with dates for Step 3 below, so that Bridge Division/FHWA may attend.

The Candidate shall:

Step 1. Act as an Assistant for the inspection of 10 bridges made up of a representative cross-section of bridge types inspected. It is recommended the bridge types include at least one of each of the following: a truss bridge, a timber girder bridge, a steel girder bridge, a concrete girder bridge, a prestressed girder bridge and a bridge length concrete culvert. During 5 of the inspections, the candidate should do the BrM entry of the inspection data.

Step 2. Act as a Team Leader for the inspection of 3 types of bridges and fill out the BrM inspection report.

Step 3. Be reviewed by the Program Manager at the location of the 3 bridges as specified in the QCQA document. The candidate's Program Manager will send Bridge Division an electronic copy of a Qualification Report at the end of the process.

Fracture Critical Inspection Procedures

The Inspector will make all necessary investigations, perform all fracture critical bridge inspection activities in compliance with the National Bridge Inspection Standards (NBIS), current AASHTO policies, State and Federal Highway Administration (FHWA) Regulations, including but not limited to:

"National Bridge Inspection Standards (NBIS)"

"AASHTO Manual for Condition Evaluation of Bridges" (latest edition)

"ANSI/AASHTO/AWS D1.5 Bridge Welding Code" (latest revision).

"AASHTO LRFD Bridge Design Specifications, Customary U.S. Units", 2012 (6th Edition), and all current interim specifications.

"Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges" FHWA (latest edition).

"Guidelines Manual for Bridge Maintenance Inspection" (latest edition).

"Bridge Inspector's Reference Manual" October 2002 FHWA (latest edition).

"BrM Bridge Inspection Manual for Oklahoma Bridges" (latest edition).

"FHWA Inspection of Fracture Critical Bridge Members" (latest edition).

"Manual on Uniform Traffic Control Devices for Streets and Highways", U.S. Department of Transportation, FHWA, 2000, as amended (latest revision).

"Oklahoma Administrative Code, Title 730"

APPENDIX LL

The types of inspections to be performed as part of the fracture critical inspection program are defined as follows:

Routine Inspection – Regularly scheduled inspections consisting of observations and/or measurements needed to determine the physical and functional condition of the bridge, to identify any changes from initial or previously recorded conditions, and to ensure that the structure continues to satisfy present service requirements. Routine and Fracture Critical Member inspections are to coincide on the same date. They are to be scheduled at twenty-four (24) or twelve (12) month frequencies.

Fracture Critical Member Inspection – A hands on inspection of a fracture critical member or member components that may include visual and other non-destructive evaluation. Routine and Fracture Critical Member inspections are to coincide on the same date. They are to be scheduled at twenty-four (24) or twelve (12) month frequencies.

“Other” Special Inspection – An inspection scheduled at the discretion of the bridge owner, used to monitor a particular known or suspected deficiency. “Other” Special Inspections are not to coincide with the Routine or Fracture Critical Member Inspections. “Other” Special Inspections are to be scheduled at twenty-four (24) or twelve (12) month frequencies.

The bridge inspection team will consist of a qualified team leader, who must be on the bridge site at all times, and an assistant. Qualifications for each are presented below:

A. **Team Leader** - Minimum qualifications for the bridge inspection team leader include completion of a two-week comprehensive training course based on the Bridge Inspector’s Training Manual, which has been developed by a joint Federal-State task force and published by the US Department of Transportation, unless otherwise approved by the Department; and a fracture critical member inspection class as well as ODOT QC/QA training. The Team leader must be a registered PE in the state of Oklahoma.

B. **Assistant Team Leader** - Minimum qualifications consist of the completion of a two-week comprehensive training course based on the Bridge Inspector’s Training Manual or attend the QC/QA Training as required by the Department.

The Inspector will take measurements and photographs for the master bridge file, as needed. At a minimum, one (1) photograph looking down the roadway should be taken on every bridge inspection, showing any signing present and one (1) cross-section side view photograph. All photos are to be labeled with the structure name, NBI number, date, and photo subject. All photos are to be submitted in a digital format. The naming convention is specified in the ODOT Bridge Inspection Office Manual for Oklahoma Bridges, Appendix GG.

All reports and photos submitted as a result of a bridge inspection shall be submitted in electronic format to Bridge Division.

APPENDIX MM
HYDRAULIC DATA ENTRY

Hydraulic data is entered in BrM under the ODOT tab. It is to be entered by Bridge Hydraulics personnel only. The inspector is not to edit this data.

Item 212: HYDRAULIC DATA

Enter the bridge hydraulic data available from the bridge plans (for bridges over waterways only):

I212HWELEV: HW Elevation (nearest 1/10 foot)	5 Digits
I212NAV: (Select 'Yes' for Navigable or 'No' for Not Navigable)	
I212SV: Stream Velocity as shown on plans (Feet/Second)	3 Digits
I212TOE Top of opening elevation (TOE)	
(Low steel or top of RCB to nearest 1/10 foot)	5 Digits
I212LPT: Low point elevation of approach roadway (nearest 1/10 foot)	5 Digits
I212BEDDING: Type Bedding Material at bottom of pier piling, spread footing or drilled shaft	
(Examples: red bed, black clay, sandy clay, clay, sand, rock, hard rock, shale)	10 Digits
I212WBLS: Waterway Area below Low Steel (sq. ft.)	4 Digits
I212DRAIN: Total Drainage Area (sq. Miles)	4 Digits
I212CDR: Contributing Drainage Area (sq. miles)	4 Digits
I212Q: Amount of Flow Going through the Bridge (CFS)	40 Digits
I212V: Velocity of the flow at the downstream face of the bridge in (fps)	40 Digits
I212CHW: Computed high water or water surface elevation of the water due to the bridge and roadway fill upstream of the bridge (feet)	50 Digits

Example for I212Q, I212V, I212CHW :

Hydraulic Data

Q25 = 1370 cfs
V25 = 10.16 fps
CHW25 = 1431.52 ft.

Q50 = 1860 cfs
V50 = 7.22 fps
CHW50 = 1432.02 ft.

Q100 = 2420 cfs
V100 = 7.69 fps
CHW100 = 1432.24 ft.

Q500 = 4100 cfs
V500 = 8.01 fps
CHW500 = 1432.64 ft.

Would be entered as follows:

I212Q = Q25-1370,Q50-1860,Q100-2420,Q500-4100
I212V = V25-10.16,V50-7.22,V100-7.69,V500-8.01
I212CHW = C25-1432.52,C50-1432.02,C100-1432.24,C500-1432.64

APPENDIX MM
HYDRAULIC DATA ENTRY

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APPENDIX NN
BRIDGE SCOUR OFFICE ASSESSMENT FORM

Instructions for Completing Bridge Scour Assessment Form (BSAF)

The Bridge Scour Assessment form is a simplified non analytical evaluation which results in a conservative assignment of the coding of item 113. A hydraulic analysis is not required to perform this procedure. The Oklahoma Department of Transportation (ODOT) has developed this to reduce time and cost of evaluating local bridges for scour. This form and procedure is meant to document and provide guidance in evaluating existing bridges for scour vulnerability and not an exact analysis.

The Bridge Scour Assessment shall be completed by a professional engineer familiar with the bridge and site conditions. Locate and review as much of the recommended information to perform a scour assessment as you can. These include: plans, past inspection reports, photos, flood info, scour reports, USGS Quadrangle maps, aerial photos (different times to compare river course through bridge), any soils logs, data or reports for the area. Although a field review may not be necessary if the engineer doing the assessment is familiar with the bridge, in some cases it allows the engineer to see and document the conditions as they currently exist.

The BSAF may be used in lieu of or as a prescreening for the HEC-18 analysis method. In many instances the BSAF may tend to give more conservative results. In order to avoid costly scour countermeasures or monitoring that may be indicated for certain bridges because of this, it may be prudent to perform an analysis using the procedures from HEC-18. Use BrM to select the bridge that you will be assessing, then run report 'OK008 – Bridge Scour Office Assessment Form'. You will also need the bridge file, all past inspections, any photos and plans available.

Line 1 [Bridge Identification]

Automatically filled in by BrM.

Line 2 [Type of Foundation]

Circle the appropriate answer. If no plans exist, also circle 'unknown'. If you can tell it is spread footing but have no plans, circle both unknown and spread footings. If there are pile bents in the overbank [ob] and pile footings at the banks [b], circle both and write "ob" or "b" below. If you are assessing a RCB, circle culvert and use the chart in the BrM field inspection manual, page C-19 to figure the rating and frequency. Then complete this form from line 12 through line 20. If you have drilled shafts, circle 'Drilled Shafts' and go to line 12 and enter item 113 = '8' and frequency = '2 yrs'. Drilled shafts have been designed for maximum scour.

Line 3 [Channel bed material]

Complete using data from plans and field observation; both the type and size for upstream, downstream and under the bridge. For example, upstream may have a sandy clay bed where downstream may have sandy clay bed with rock. This may be an indication that a prior countermeasure placed has failed (riprap around the piers).

STREAM STABILITY

Line 4 [Flowline Measurement]

Complete using measurements and locations from previous inspections. Flowline measurements may not always be in flowline notes. If there is a location where the flowline is, write that in. BrM has the flowline profile data and location under the ODOT > Inspector Items > Channel Profile group. Compare those to see if the channel is migrating. Look through all flowline measurements to determine if degradation has occurred or is occurring and if it is stabilized. Record any comments or conclusions you feel make the bridge more vulnerable or susceptible to scour after reviewing these items.

Lines 5 and 6. [Vertical and Lateral Stability]

Based on measurements and field observation, has degradation or lateral movement occurred? If so, describe. Degradation can expose substructure members, or cause sloughing of the banks under the bridge, making the bridge unstable. Likewise lateral movement could change the flow's angle of attack, hitting piers or abutments at unfavorable angles. Flood plain piers could become channel piers. Record any comments or conclusions you feel make the bridge more vulnerable or susceptible to scour after reviewing these items.

APPENDIX NN
BRIDGE SCOUR OFFICE ASSESSMENT FORM

Line 7 [Check yes for any that apply and describe]

Further defines the stream stability. For each item checked, circle the location observed (upstream or downstream) and describe. The more of these items occurring, the more likely it is that scour will occur. Document your observations and take pictures for future comparison.

Line 8 [Bridge Scour Potential]

The more of these items occurring, the more likely it is that scour will occur. Document your observations and take pictures for future comparison. If the inspection reports or document files have any flood or high-water mark information, write it in the comment line. The best way of evaluating flow conditions through the bridge is to look at and photograph the bridge from the up- and downstream channel. Is there a significant angle of attack of the flow on a pier or abutment? Is there evidence of movement of piers or abutments; rotational movement, settlement (check lines of substructure and superstructure, bridge rail, etc., for discontinuities; check for structural cracking or spalling). Check bridge seats for excessive movement. Is there damage to scour countermeasures protecting the foundations (riprap, guide banks, sheet-piling, sills, etc.). Examples of damage could include riprap placed around piers and/or abutments that has been removed or replaced with river run bed material. A common cause of damage to abutment riprap protection is runoff from the ends of the bridge which flows down to the riprap and undermines it. This condition can be corrected by installing bridge-end drains. Are there changes in streambed elevation at foundations (undermining of footings or exposure of piles), or changes in streambed cross section at the bridge, including location and depth of scour holes.

Note and measure any depressions around piers and abutments. Note the approach flow conditions. Is there an angle of attack of flood flow on piers or abutments?

a. Substructure

- Is there evidence of scour at piers?
- Is there evidence of scour at abutments (upstream or downstream sections)?
- Is there evidence of scour at the approach roadway (upstream or downstream)?
- Are piles, pile caps or footings exposed?
- Is there debris on the piers or abutments?
- If riprap has been placed around piers or abutments, is it still in place?

b. Superstructure

- Evidence of overtopping by flood water (Is superstructure tied down to substructure to prevent displacement during floods?)
- Obstruction to flood flows (Does superstructure collect debris or present a large surface to the flow?)
- Design (Is superstructure vulnerable to collapse in the event of foundation movement, e.g., simple spans and non-redundant design for load transfer?)

c. Channel Protection and Scour Countermeasures

- Riprap (Is riprap adequately toed into the streambed or is it being undermined and washed away? Is riprap pier protection intact, or has riprap been removed and replaced by bed-load material? Can displaced riprap be seen in streambed below bridge?)
- Guide banks (Spur dikes) (Are guide banks in place? Have they been damaged by scour and erosion?)

Line 9 [Bridge Appraisal Rating]

Using this inspection, and the previous inspection, compare the ratings of the substructure, channel, waterway, and scour. Ratings for the current inspection are automatically filled in by BrM. Enter the ratings for the previous inspection. Rating of item 60 should be consistent with item 113. When item 113 is rated less than or equal to 5, a scour smart flag exists that could give you additional information to contribute to your scour assessment. Place any of these in the comments.

APPENDIX NN
BRIDGE SCOUR OFFICE ASSESSMENT FORM

Line 10 [Recommended Item 113 coding]

Use the NBIS Coding Guide or the BrM Bridge Inspection Manual to code item 113. Record any comments or conclusions that helped in forming your rating in the remarks section.

- If bridge is a RCB, go to the chart in the BrM Bridge Inspection Manual on page C-19 and figure rating and inspection frequency.
- If bridge is currently coded scour critical (item 113 \leq 3) use that coding. (Unless countermeasures have been placed and are effective, then item 113 = 7). For code of 3 or less, inspection frequency should be annual, and after a major flood.

Scour POA's are required for all bridges with item 113 \leq 3 or = U. A POA may be generated in BrM. Using BrM filters, select the desired bridges on the BrM desktop. Select 'Reports' on left side, then on the Reports > Generate screen, select report 'OK006 – Scour Plan of Action' from the drop down list. Then click on 'Generate Report' at the bottom of the screen. The Scour Smart Flag (961) must also exist for the Scour POA to be printed.

Line 11 [Scour Elevation and Foundation Bottom Elevation]

If you have scour computations, enter the elevation that is worst case for the foundation element associated with it. Enter the foundation bottom elevation associated with the previous scour elevation. (For instance: if, at pier 1, Computed Scour elevation = 613.20' and Foundation Bottom elevation = 611.60' and at pier 2, Computed Scour elevation = 612.20' and Foundation Bottom elevation = 614.60'; you would enter the info for pier 2.)

Line 12 [Remarks]

Enter anything that factored in your decisions and rating.

Line 13 [Date Inspected]

The date the bridge was inspected is entered by BrM. Enter the inspector's name.

Line 14 [Date Assessed]

Enter the date the bridge scour was assessed and the program manager's name.

Line 15 [Signed]

Must be signed, dated and sealed by Program Manager approved in contract.

.....
UPDATE BrM AS NECESSARY. MAKE COPY FOR MASTER FILE. GENERATE AND COMPLETE POA's USING BrM REPORTS. THERE MUST BE A COPY OF THIS COMPLETED DOCUMENT; SIGNED, DATED, AND SEALED IN EACH BRIDGE MAINTENANCE FILE FOLDER IN THE MASTER FILE LOCATED AT THE FIELD DIVISION OFFICE.

**APPENDIX NN
BRIDGE SCOUR OFFICE ASSESSMENT FORM**

BRIDGE SCOUR OFFICE ASSESSMENT FORM

NBI No.:	Structure No.:	Local ID	Division	County	River/Creek Name	Bridge Length	Bridge Width
00586	24E0420N2970008	113A	04	GARFIELD	BLACK BEAR CREEK	30.0	18.8

2 **Type of Foundation:** Unknown Spread Footing Pile Bents Pile Footings Drilled Shafts Culvert

3 **Channel Bed Material:** (TYPE - Silt/Clay Sand Gravel Cobble/Boulders Bedrock) (SIZE - Fine Medium Coarse)

UPSTREAM _____ **UNDER BRIDGE** _____ **DOWNSTREAM** _____

STREAM STABILITY

4 **Flowline Measurement / Location From Last 10 Inspections:**

	1	2	3	4	5	6	7	8	9	10
Inspection Year										
Flowline Measurement										
Location of Flowline										

5 **Vertical Stability**

Degradation (flowline measurements increasing) **Aggradation** (flowline measurements decreasing) **of flowline?**

Describe: Are substructure elements exposed?

6 **Lateral Stability**

Has channel moved toward abutment or floodplain pier? Are piers originally on floodplain now in main channel?

Describe:

7 **Check yes for any that apply and describe**

Yes

___ Bridge located near bend: upstream / downstream _____

___ Steep vertical banks, sloughing: upstream / downstream _____

___ Bed deposits, islands or point bars: upstream / downstream _____

___ Nearby tributary, or confluence: upstream / downstream _____

___ Nearby bridge, culvert, control structure: upstream / downstream _____

8 **BRIDGE SCOUR POTENTIAL**

Are there observed or potential scour problems at bridge? Describe

___ High-water marks _____

___ Angle of attack on bridge or piers: normal flow: _____ flood flow: _____

___ Scour holes near abutments, piers _____

___ Bridge rail sagging _____

___ Abutments tilting in moving _____

___ Approach panel cracking or settlement _____

___ Debris build up or potential _____

___ Damage to existing countermeasures, riprap, abutments, piers, dikes etc _____

9 **BRIDGE APPRAISAL RATING**

NBIS Item #	Current	Previous	Comments
60 - Substructure	3	_____	_____
61 - Channel	5	_____	_____
71 - Waterway	4	_____	_____
113 - Scour	3	_____	_____

10 **Recommended Item 113 Coding:** _____ **Recommended Inspection Freq.:** _____ **POA Needed?** _____

11 **Scour Elevation: (If Computed)** _____ **Foundation Bottom Elevation:** _____

12 **REMARKS:**

13 **Date Inspected:** 7/2/2019 **Team Leader:** _____

14 **Date Assessed:** _____ **Program Manager:** _____

15 **Signed** _____ **Date** _____ **PE Seal**

(must be signed, dated and sealed by Program Manager approved in Contract)