

## BRIDGE INSPECTION PROCEDURES AND FREQUENCIES

**PURPOSE:** To establish a formal policy and procedure for the frequency at which bridges shall be inspected based on condition and load carrying capacity.

**SCOPE:** This Directive applies to all public bridges on all highways, roads, and streets in the State of Louisiana.

**POLICY:** Each On-System and Off-System bridge in the State of Louisiana shall be inspected by LA DOTD Certified Bridge Inspectors at a maximum interval of twenty-four (24) months. Other type inspections shall be required periodically and some bridges, depending on conditions, load carrying capacity, or other deficiencies (see tables below), shall be inspected at more frequent intervals. This directive will outline when various inspection types are required, who is required to perform them, and what is required to be recorded.

It is also the Department's policy that a Bridge Inspection Team Leader be present during the entire Initial, Routine, Fracture Critical, Underwater, or In-Depth bridge inspection, and shall affix their signature or initials to the inspection report in accordance with the procedures below.

**PROCEDURE:** Initial

The inventory or Initial inspection of a bridge shall be completed in accordance with EDSM IV.4.1.2. This report is similar in nature to a Routine inspection and requires the presence and signature of a Bridge Inspection Team Leader. It also provides the following:

- First inspection
- All Structure Inventory and Appraisal (SI&A) data
- Baseline condition assessment for bridge
- Development of Element inventory and Condition States
- Verify as-built plans (if applicable)

The Initial inspection report will only be used by DOTD for inputting the FIRST inspection report for a newly inventoried structure. It will NOT be used when conducting the first inspection of a rehabilitated or modified structure, although updates to the SI&A data would be required as per Bridge Maintenance Directive #8.

Standard Form 3097\_PO (attached) should be used during the field inspection to document the current NBI condition & appraisal ratings, element quantities,

condition states, streambed profile, and inspection notes. This completed form should be attached to the PONTIS inspection report when completed.

### Routine

The Routine inspection is required by the NBIS and EDSM IV.4.1.2 at a frequency of not more than 24 months, and will be monitored for compliance by verification of inspections being done within the same month every two years (i.e. November of odd numbered years). Strict adherence to this cycle is required at all times. Structures requiring special access equipment such as under bridge inspection vehicles (UBIs) shall be placed into an inspection cycle that would allow them to be inspected as a group over a period of a few weeks each year. This is to allow adequate scheduling of UBI equipment around the state.

Should an inspection be delayed due to "unusual circumstances" FHWA may, after review of specific requests, issue a waiver for up to a 30 day grace period. FHWA defines "unusual circumstances" as "...severe weather, concern for bridge inspector safety, concern for inspection quality, the need to optimize scheduling with other bridges, or other unique situations...". Every effort should be expended to avoid a delay in the scheduled inspection, but should this occur, the following steps must be taken for proper documentation:

1. As soon as practical, and preferably prior to the inspection(s) becoming delinquent, email the Headquarters Bridge Inspection Engineer with specific details on which bridges will be delayed, the specific "unusual circumstance" causing the delay, and the expected date of actual inspection.
2. The Headquarters Bridge Inspection Engineer will make a formal request to FHWA for their approval of any inspections that will be delayed past the 24<sup>th</sup> month for all district offices and forward the approval(s) back to the Districts.
3. Upon the completion of the inspection, the Inspector shall document in the Inspection Notes the specific cause for the delay for every inspection that is delayed past the 24<sup>th</sup> month, regardless of FHWA's approval (i.e. "Bridge site was in a hurricane damaged area that was inaccessible for 3 weeks" – not just "severe weather" or "Hurricane Isaac").

4. Where FHWA has approved a delay of inspection into the 25<sup>th</sup> month, the letter of approval shall be attached to the inspection report media content and notated within the Inspection Notes of the report.

It should be duly noted that any inspection performed past the 24<sup>th</sup> month will be tallied against the department's compliance with NBIP Metric 6 & 7. Only those delayed inspections that received a concurrence from FHWA for an "unusual circumstance" AND were inspected no later than the end of the 25<sup>th</sup> month will be exonerated from the tally during the compliance review.

A Bridge Inspection Team Leader is required to be present at all times during a Routine inspection, and shall be required to affix his/her initials to the inspection report.

Bridges that are closed to traffic or are under reconstruction shall receive a Routine inspection as required by this directive. These routine inspections shall also follow the reporting guidance in Bridge Maintenance Directive #10/11.

All bridges containing fracture critical members require a fracture critical member (FCM) inspection in accordance with Bridge Maintenance Directive #12, and EDSM IV.4.1.2 requires that FCM inspections be conducted as part of the Routine inspection. This means that; although a FCM inspection is being done, the report will still be called a Routine inspection.

Bridge elements in less than 4 feet of water shall be inspected by means of wading and probing for signs of deterioration or during periods of low water flow or both as part of the Routine inspection.

Routine inspections are different from In-Depth inspections in that a "hands-on" assessment of every non-FCM member is not required, but a full assessment of all areas at a distance acceptable to make identification of any condition changes is required.

The Routine inspection shall fully document the condition of the bridge with the following:

- Current NBIS Condition Ratings
- Current Element Condition States
- Periodic inventory photos (as needed / 6 year maximum intervals)
- Deficiency photos (every report)
- Sketches (as needed / updated in every subsequent report)
- Written notes of findings

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- Written notes on the location and identity of submerged elements in more than 4 ft of water (or that are otherwise inaccessible for inspection) that should be inspected and documented during an Underwater inspection.
- Recommendations for maintenance or repairs (include Work Request number for On-system bridges)
- Written details of previous repairs and date(s) made
- Streambed Profile (if applicable and in accordance with Maintenance Directive #1) or notations of latest Hydrographic survey results compared with the previous survey
- Timber Rating form (if applicable and in accordance with Maintenance Directive #7)
- Verification of SI&A Data (include MSF updates as necessary in accordance with Bridge Maintenance Directive #8)
- Verification of Load Posting Requirements and that Load Ratings reflect present condition

The frequency of Routine inspections shall be increased from 24 months to 12 or 6 months if one of the following conditions exists:

FUNCTIONAL CLASS (SI&A Item 26)	AVERAGE DAILY TRAFFIC (ADT)	LOWEST <u>CONDITION</u> RATING (Deck, Super, Sub, or Culvert)	MAXIMUM INTERVAL OF ROUTINE INSPECTIONS
INTERSTATE / PRINCIPAL ARTERIAL (I26= 01, 02, 11, 12 OR 14)	ANY	0 – 2	SIX (6) MONTHS
ANY	> 50,000	0 – 2	SIX (6) MONTHS
INTERSTATE / PRINCIPAL ARTERIAL (I26= 01, 02, 11, 12 OR 14)	ANY	3 – 4	ONE (1) YEAR
ANY	> 50,000	3 – 4	ONE (1) YEAR

Consultant led Routine inspections shall include Standard Form 3097\_PO (attached) to document the current conditions, Element quantities, Condition States, streambed profile, and inspection notes. This completed form shall be

submitted to DOTD Headquarters – Bridge Maintenance within 45 days of the completion of the field work and attached to the final inspection report when completed.

When an owner other than LADOTD performs the regularly scheduled Routine inspections (e.g. state border bridges, Causeway Commission, NOPBRR – Huey Long bridge), the District ADA of Operations is responsible for acquiring a copy of the inspection form/report within 45 days after the due date, and transmitting it to HQ through PONTIS.

### **Complex Bridge**

Complex bridges are those bridges with complex load paths or special details that require specialized inspection training for Team Leaders and/or individualized inspection procedures to complete a Routine Inspection. Examples of complex bridges would be trusses, cable stayed, suspension, movable (bascule, vertical lift, swing, pontoon), segmental box, etc.

The Routine inspection of complex bridges shall be completed by the District inspection office. Team Leaders assigned to inspect movable bridges shall have received specialized movable bridge inspection training from the Headquarters Structures & Facilities section.

Routine inspections for bridges that contain details or components that require specialized equipment or techniques for evaluation should have the required inspection process annotated in the Bridge Notes field in PONTIS and notations made in the report indicating the required inspection was performed along with the results of the inspection. An example would be detailed procedures and time frames for inspections of stay cable strands on cable stayed bridges.

An In-Depth inspection will be performed by consultant contract for major truss, stayed, and large movable bridges identified in the attached list on a regular basis to supplement the information in the Routine inspection (not replace them).

### **Damage**

A Damage inspection is an unscheduled inspection to assess the structural damage resulting from an accident, human action, or natural disaster/environmental factor. This report type will only be used for the initial assessment and documentation of the damage caused by some outside force. Any follow-up reviews should be entered as a Special inspection. Some of the

things that should be assessed or collected and recorded during a Damage inspection are:

- Cause of damage (who, what, how, when, etc.)
- Extent of damage to all bridge members with detailed measurements
- Photographs and sketches
- Streambed profile (if applicable)
- Accident report (if/when available)
- Assessment of possible need to close or restrict traffic

### In-Depth

An In-Depth inspection is one in which a “hands-on” method of inspection is employed to physically assess each bridge member to determine if any changes exist and the extent of those deficiencies. It may require the use of nondestructive field tests, other material tests, etc. to identify any deficiencies not readily detectable using Routine inspection procedures. This is generally a specially assigned inspection and does not have a set routine or frequency. This inspection type will usually be used only to record the specialized consultant contract inspections of major complex bridges or other in-depth review of bridge components such as

- Stay inspections on cable stayed bridges
- Gusset plate inspection of truss bridges
- Nondestructive load testing

The reason, planned activity, procedure, and findings of In-Depth inspections shall always be carefully and completely documented in the report.

A list of the complex / large movable bridges which will receive regularly scheduled In-Depth inspections by consultant on an eight year cycle is attached to this document. This inspection cycle will commence in the 2<sup>nd</sup> quarter of 2013.

Consultant led In-Depth inspections shall include Standard Form 3097\_PO (attached) to document the current conditions, Element quantities, Condition States, streambed profile, and inspection notes. This completed form shall be submitted to DOTD within 45 days of the completion of the field work and attached to the final inspection report when completed.

A Bridge Inspection Team Leader is required to be present at all times during an In-Depth inspection, and shall be required to affix his/her initials to the inspection report.

**Special (Interim)**

Special inspections of On-System bridges shall be performed by LA DOTD Bridge Inspectors and recorded in a dated inspection report in PONTIS.

Special inspections of Off-System bridges shall be the responsibility of, and performed by, the local jurisdiction bridge owners and/or their engineering staff. These inspections shall be recorded in a dated inspection report (Form 3097 or Form 3097\_PO) in the owner’s bridge files.

Purposes/key features of the Special (Interim) inspection:

- Monitor a known particular or suspected deficiency
- Does not reset Routine inspection cycle
- Does not require a Team Leader to be present
- Can be scheduled at the discretion of the owner
- Shall be required if the following conditions exist and increased Routine inspection frequency does not apply:

LOAD CARRYING CAPACITY	LOWEST <b><u>CONDITION</u></b> RATING (Deck, Super, Sub, or Culvert)	MAXIMUM INTERVAL OF SPECIAL INSPECTIONS
N/A	0 – 2	SIX (6) MONTHS
10 – 15 OR LESS	3 – 5	SIX (6) MONTHS
15 – 25 OR GREATER	3 – 5	ONE (1) YEAR
NO RESTRICTION	3 – 5	ONE (1) YEAR
ANY LOAD RESTRICTION	6 – 9	ONE (1) YEAR

**Fracture Critical**

A Fracture Critical Member (FCM) inspection is required at a maximum frequency of 24 months for all bridges containing FCMs. EDSM IV.4.1.2 requires this inspection to be done as part of the Routine inspection and documented in accordance with Maintenance Directive #12.

This inspection type will only be used for inspections assigned or contracted specifically to perform a hands-on inspection of fracture critical members. When one of the criteria established in the table below is met, the ADA of Operations is to schedule a Fracture Critical inspection of the affected members as well as other similar details that may possibly be affected. The results of this inspection are to be recorded in PONTIS using an inspection type of Fracture Critical.

DEFICIENCY DESCRIPTION FOR FCM	MAXIMUM INTERVAL OF FCM INSPECTION
UNARRESTED CRACKING <u>OR</u> > 40% SECTION LOSS	SIX (6) MONTHS
MODERATE ARRESTED CRACKING <u>AND</u> > 15% SECTION LOSS	SIX (6) MONTHS
15% – 40 % SECTION LOSS <u>AND NO</u> CRACKING	ONE (1) YEAR
MODERATE ARRESTED CRACKING <u>AND NO</u> SECTION LOSS	ONE (1) YEAR

If an increased Routine inspection frequency is required and an increased FCM inspection frequency is required at the same time, the FCM inspection shall be completed, and reported, as part of the Routine.

A Bridge Inspection Team Leader is required to be present at all times during a Fracture Critical inspection and shall be required to affix his/her initials to the inspection report.

**Underwater**

Underwater inspections are to be recorded for bridges with structural components that remain submerged in 4 feet of water or more, or are otherwise inaccessible by wading/probing, during the regularly scheduled

Routine inspections. It is also required for culvert structures which remain submerged and inaccessible during the regularly scheduled Routine inspections.

These inspections are required on a maximum frequency of 60 months and must be completed by a diving inspection or through the use of advanced techniques for certain substructure types (with diving assistance). This work shall be conducted through multiple consultant retainer contracts (overlapping 5 year contracts) administered by the Headquarters Bridge Maintenance section. The District will be responsible for determining which structures require inspection and for providing an inspector to monitor and document the activities of the consultant.

Should an inspection be delayed due to "unusual circumstances" FHWA may, after review of specific requests, issue a waiver for up to a 30 day grace period. FHWA defines "unusual circumstances" as "...severe weather, concern for bridge inspector safety, concern for inspection quality, the need to optimize scheduling with other bridges, or other unique situations...". Every effort should be expended to avoid a delay in the scheduled inspection, but should this occur, the following steps must be taken for proper documentation:

1. As soon as practical, and preferably prior to the inspection(s) becoming delinquent, email the Headquarters Bridge Inspection Engineer with specific details on which bridges will be delayed, the specific "unusual circumstance" causing the delay, and the expected date of actual inspection.
2. The Headquarters Bridge Inspection Engineer will make a formal request to FHWA for their approval of any inspections that will be delayed past the 60<sup>th</sup> month for all district offices and forward the approval(s) back to the Districts.
3. Upon the completion of the inspection, the Inspector shall document in the Inspection Notes the specific cause for the delay for every inspection that is delayed past the 60<sup>th</sup> month, regardless of FHWA's approval (i.e. "Bridge site was in a hurricane damaged area that was inaccessible for 3 weeks" – not just "severe weather" or "Hurricane Isaac").
4. Where FHWA has approved a delay of inspection into the 61<sup>st</sup> month, the letter of approval shall be attached to the inspection report media content and notated within the Inspection Notes of the report.

It should be duly noted that any inspection performed past the 60<sup>th</sup> month will be tallied against the department's compliance with NBIP Metrics 8 & 9. Only

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those delayed inspections that received a concurrence from FHWA for an "unusual circumstance" AND were inspected no later than the end of the 61<sup>st</sup> month will be exonerated from the tally during the compliance review.

A Bridge Inspection Team Leader is required to be present at all times during an Underwater inspection, and shall be required to affix his/her initials to the inspection report. If the Team Leader is provided by a consultant contract, the Team Leader and diver must each sign the report form.

An attached Underwater Inspection Report form (3097\_UW) shall be used to document every Underwater inspection of a bridge and be signed by the DOTD inspector present when completed. The signed report form is testament that the bridge was inspected by certain named divers on a particular day(s), and must be included in the final inspection report from the consultant. The DOTD inspector shall prepare a PONTIS inspection report of the type "Underwater" and attach thereto the completed & signed Form 3097\_UW. The PONTIS report shall be completed and approved within 60 days of completion of the field work.

In the event that elements identified in the Routine inspection report are found to be accessible without the need for a diver at the time of the consultant Underwater inspection, said elements shall still be inspected and recorded as described above.

Structures with substructure or culvert condition ratings of 4 or less will require a Level III inspection and the results thereof may require an increased frequency for underwater inspections based on the following, unless bridge is immediately repaired or load posted:

SUBSTRUCTURE or CULVERT CONDITION RATING (FROM UWI REPORT)	MAXIMUM INTERVAL OF UNDERWATER INSPECTION
3 – 4	TWO YEAR (24 MONTHS)
2	ONE YEAR (12 MONTHS)

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**RESPONSIBILITY:** The DOTD District ADA of Operations shall be responsible for the implementation of this policy.

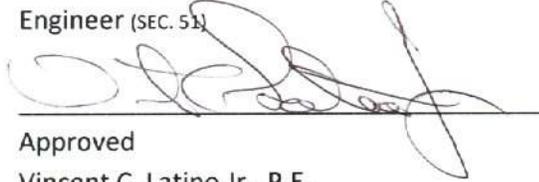
**EFFECTIVE DATE:** This policy shall become effective immediately upon receipt.



Recommend Approval  
Bridge Inspection Engineer (SEC. 51)



Recommend Approval  
Headquarters Structures and Facilities Maintenance  
Engineer (SEC. 51)



Approved  
Vincent C. Latino Jr., P.E.  
Chief Maintenance Engineer

Attachments:

Underwater Inspection Form (Form 3097\_UW)

Bridge Inspection Form (Form 3097\_PO)

Complex Bridge List

STATE OF LOUISIANA  
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

**BRIDGE INSPECTION REPORT**

DISTRICT	PARISH	ROUTE	STRUCTURE NUMBER	RECALL NUMBER
CROSSING DESCRIPTION	LENGTH	BRIDGE TYPE	YEAR BUILT	POSTED LOAD

CONDITION			INSPECTION	
TOTAL RATING : _____	DECK : _____	CHANNEL : _____	DATE : _____	
OVERALL RATING : _____	SUPERSTRUCTURE : _____	CULVERT : _____	TYPE : _____	
TRAFFIC SERVICE : _____	SUBSTRUCTURE : _____			

APPRAISAL		
WATERWAY ADEQ : _____	BRIDGE RAILINGS : _____	GUARDRAIL ENDS : _____
APPROACH ALIGN : _____	TRANSITIONS : _____	PIER PROTECTION : _____
SURFACE THICKNESS : _____	APPR GUARDRAIL : _____	

SPECIAL DETAILS	
PIN & HANGER : _____	
2-GIRDER SYSTEM : _____	
2-TRUSS SYSTEM : _____	
SUSPENSION SPANS : _____	
X-GIRDER/FLR BEAMS : _____	
PIER CAPS : _____	

ACCESS EQUIPMENT (hrs)	
REACH-ALL : _____	
BUCKET TRUCK : _____	
MARSH BUGGY : _____	
SCAFFOLDING : _____	
BOAT : _____	
LADDER : _____	

ATTACHMENTS	
SKETCHES :	Y / N
PHOTOGRAPHS :	Y / N
STREAMBED PROFILE :	Y / N
TIMBER RATING :	Y / N
588 STEEL FORM :	Y / N
MOVABLE BRIDGE INSP	Y / N

PERSONNEL RESOURCES	
NO. OF INSPECTORS : _____	
MAN HOURS : _____	
TEAM LEADER INITIALS : _____	

INSPECTED BY : _____
APPROVED BY : _____
DATE APPROVED : _____

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STATE OF LOUISIANA  
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

**BRIDGE INSPECTION REPORT**

STR UNIT:

Page \_\_\_\_ of \_\_\_\_

**ELEMENT CONDITIONS AND NOTES**

ELEM DESCRIPTION					
<b>QUANTITY STATE</b>					
TOTAL QTY UNITS	1	2	3	4	5
NOTES:					

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STATE OF LOUISIANA  
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NOTES:					



STATE OF LOUISIANA  
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT QA/QC  
**BRIDGE INSPECTION FIELD REVIEW REPORT**

RECALL	SPAN	STURCTURE TYPE	DATE OF INSPECTION	TYPE FLOORING	BRIDGE HAS TIMBER SPANS ONLY? T(RUE) OR F(ALSE)

DECK THICKNESS (IN. AND THS.)	DECK PLANK WIDTH (IN. AND THS.)	WEARING COURSE (IN. AND THS.)	RDWY WIDTH (FT. AND THS.)	SPAN LENGTH (FT. AND THS.)	CAP DEPTH (IN. AND THS.)	CAP WIDTH (IN. AND THS.)

	STRINGER DEPTH (IN. AND THS.)	STRINGER THICKNESS (IN AND THS.)	DISANCE TO NEXT CENT-CENT (IN. AND THS.)
1			
2			
3			
4			
5			
6			
7			
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9			
10			
11			
12			
13			
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26			
27			
28			
29			
30			

	PILE SPACING (FT. AND THS.)	PILE CIRC. (IN. AND THS)	PILE SHELL THICKNESS (IN AND THS.)	PILE LENGTH (IN. AND THS.)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				







### Consultant Inspection of Complex Bridges

	District	Structure Num	Recall Number	Project Number	Latitude	Longitude	Crossing/Name	Route	Cycle yr
1	03	03490080400002	007282	008-04-0052	30 32.767	91 44.767	Atchafalaya River	US 190	1
2	03	03490080400001	007284	008-04-0030	30 32.822	91 44.767	Atchafalaya River	US 190	1
3	61	61474340200001	613300	434-02-0001	30 03.016	90 40.507	Mississippi R. (Gramercy)	LA 3213	1
4	05	05334510900001	500590	451-09-0003	32 19.230	90 56.010	Mississippi River (Vicksburg)	I 20	2
5	08	08400150100111	039502	015-01-0037	31 18.770	92 26.730	Red River (Jackson Street)	US 165B	2
6	61	61474260200721	203760	426-02-0038	30 05.762	90 55.371	Mississippi R. (Sunshine)	LA 70	2
7	02	02362830802441	200790	283-08-0019	29 56.248	90 03.403	Mississippi River (CCC)	US 90 Z	3
8	02	02362830802442	001710	283-08-0048	29 56.248	90 03.403	Mississippi River (CCC)	US 90 Z	3
9	02	02290640503281	000920	064-05-23	29 34.078	90 22.960	Intracoastal/W LaRose	LA 1	3
10	04	04080010300001	012060	1801	32 30.963	93 44.738	Red River (Texas Ave)	US 80	4
11	04	04080830300001	012548	083-03-0016	32 53.580	93 49.398	Red River (Bossier City)	LA 2	4
12	08	08050520500001	036110	052-05-0032	30 58.487	91 47.862	Atchafalaya R. (Simmsport)	LA 1	4
13	07	07100310400701	031751	031-04-18	30 03.672	93 20.752	Ellenders	LA 27	4
14	61	61170071000001	051880	007-10-0003	30 30.428	91 11.472	Mississippi River	US 190	4
15	61	6117450900001	052640	450-09-02	30 26.383	91 12.188	Mississippi R. (Baton Rouge)	I 10	4
16	03	03512390106491	030351	239-01-77	29 45.892	91 47.352	Intracoastal/Louisa	LA 319	4
17	02	02290640601401	000930	064-06-16	29 38.678	90 32.663	Lockport	LA 1	4
18	02	02454503700001	206000	450-37-0002	29 57.012	90 22.205	Mississippi R. (Luling)	I 310	5
19	61	616306131NEW11	610278		30 43.130	91 21.390	Mississippi R. (St. Francis)	LA 10	5
20	02	02380620200432	002500	062-02-32	29 52.468	90 00.725	Intracoastal/Judge Perez	LA 23	5
21	02	02361480201061	001630	148-02-13	29 59.752	89 56.398	Gulf Outlet (IC waterway)	LA 47	5
22	04	04081020300001	012750	102-03-0001	32 27.530	93 41.070	Red River (Bossier City)	LA 511	5
23	02	02552459009801	003412	245-03-41	29 45.892	91 47.352	Intracoastal/Dularge	LA 315	5
24	07	07104509127691	032780	003-30-0003	30 14.212	93 15.558	Calcasieu River	I 10	5
25	03	03514240532701	302500	424-05-0031	29 41.100	91 13.017	Atchafalaya River (Morgan City)	US 90	6
26	03	03510050100001	009000	6004	29 41.800	91 13.187	Atchafalaya/Berwick Bay	LA 182	6
27	02	02360069001041	001421	006-90-61	30 00.420	90 01.922	Danziger	US 90	6
28	02	02360463102221	001610	046-02-02	29 58.100	90 01.700	Intracoastal/Judge Seeber	LA 39	6