**Underwater Dive Inspection Procedure Checklist**

Acceptable written procedures communicate to the next dive team what is necessary to ensure a safe and successful inspection. Each bridge requiring underwater dive techniques must have a unique written inspection procedure. The prior inspection report does not suffice for the required procedures. It is valuable to review the last inspection notes, but they do not serve the same purpose as a stand-alone inspection procedure.

This document shall be completed for all underwater dive inspections. This document shall be reviewed prior to performing the field work and it shall be updated when necessary.

1. **Bridge Identification**
2. Agency with Inspection Responsibility: \_\_\_\_\_\_\_\_\_\_\_ODOT DISTRICT 2\_\_\_\_\_\_\_\_\_\_\_\_

Dive Frequency: \_\_\_\_\_\_60\_\_\_\_\_\_\_\_\_\_\_\_\_ months

SFN: \_\_7202431\_\_\_ Bridge Number (County-Route-SLM-SD): \_SAN-53-1745\_\_\_\_\_\_

Superstructure Type Main Span Type : \_\_\_CONTINUOUS REINFORCED CONCRETE\_\_\_

Approach Span: \_\_\_\_REINFORCED CONCRETE\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Substructure Type Abutment Type: \_\_\_\_REINFORCED CONCRETE\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Pier Type: \_\_\_\_\_\_STEEL H-PILES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Total Pier Count: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_4\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Total Pier Count in water: \_\_\_\_\_\_\_\_\_\_\_4\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Foundations: \_\_\_\_\_\_\_\_\_UNKNOWN\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Feature Intersected \_\_\_\_\_\_MUDDY CREEK\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Photographs**

Endview



Elevation



Underside

1. **Office and Field Assessment**

Prior to the inspection, obtain and review copies of the previous underwater inspection reports, routine inspection reports, scour and hydraulic information, and design plans in preparation of the inspection. Divers should pay particular attention given to any observed areas of deterioration, the channel conditions and factors that may accelerate material deterioration. Changes shall be noted in the inspection procedure. Site conditions should be reviewed prior to diving.

1. Channel Conditions

\_\_\_\_Waterway features

\_\_\_\_Rapid stream flows,

\_\_\_\_Significant debris accumulation

\_\_\_\_Constricted waterway openings

\_\_\_\_Soft or unstable streambeds

\_\_\_\_Meandering channels

\_\_\_\_Other which may promote scour and undermining of substructure elements

\_\_\_\_Navigable Waterway

\_\_\_\_Flow Controls

1. Anticipated Water conditions which may affect the inspection

\_\_\_\_Cold Water (Apprx. Temp\_\_\_\_)

\_\_\_\_Black water

\_\_\_\_Rapid stream flows

\_\_\_\_Near military facility

\_\_\_\_Tribal fishing

\_\_\_\_Water quality

\_\_\_\_History of Log jams

1. Identify factors that may accelerate the deterioration of the bridge elements:

\_\_\_\_Highly corrosive water

\_\_\_\_Unprotected steel members

\_\_\_\_Other

Risk Factor Narrative:

1. **Contacts Prior to Work**

District 2 Bridge Engineer: David Geckle, P.E.

Email: david.geckle@dot.ohio.gov – Phone: 419-373-4377

Point of contact for immediate action such as closing the bridge due to findings

Contact Bridge Owner \_\_\_\_14\_\_\_\_\_\_\_\_ (number) days before the proposed underwater inspection.

Special contracting and scheduling procedures prior to inspection, include recommended lead time

|  |  |  |  |
| --- | --- | --- | --- |
| Entity | Contact Name and Title | Contact Phone | Lead Time |
| Coast Guard |  |  |  |
| Property Owner |  |  |  |
| Access Equipment |  |  |  |
| Lake or River draw-down |  |  |  |
| Canal dry time |  |  |  |
| Tree removal |  |  |  |
| Other: |  |  |  |
| Other: |  |  |  |

1. **Dive Team Shall Include the Following:**

Dive Team Narrative:

The dive team consisted of one Team Leader (NBIS, P.E., ADCI) and two Team Members (NBIS, UW, ADCI)

*Example: The Bridge shall be investigated using a three-member dive team: one supervisor to monitor rack box and take notes, one diver, and one tender/standby diver. There shall be one NBIS Team Leader onsite at all times.*

1. **Site Information**

Navigable waterway: Y / N

If Yes, waterway river point \_\_N/A\_

Anticipated water visibility depth \_\_1\_\_\_ ft

Anticipated Dive depth \_\_15\_\_ ft

Anticipated current \_\_<1\_\_ ft

Scour Critical (item 113): \_\_\_5\_\_\_\_

POA in place: Y/N

Scour Monitoring devices present: Y/N

Verify the Scope of Services when work is contracted for the procedure for underwater elements that are not in water during an inspection.

Site Information Narrative:

The underwater inspection consists of a visual and tactile examination of the accessible surfaces of the substructure items in water. Additional items should reference the scope of services in the contract. For reference the following items are in water:

|  |  |  |
| --- | --- | --- |
| **Item** | **Number of Units** | **Level of Inspection (1, 2 or 3) with Commentary** |
| Piers and Number of Columns | 4 | 100% LEVEL I10% LEVEL II |
| Abutment | N/A |  |
| Culvert  | N/A |  |
| Scour Countermeasures  | N/A |  |
| Fenders or Dolphins | N/A |  |

Photographs should be taken, if water clarity permits, for typical conditions, conditions that have changed since last inspection and significant or noteworthy deficiencies. The type of channel bottom material, the presence or extent of scour, the presence or extent of riprap, the presence or extent of drift and debris, and the location of any foundation exposure or undermining shall be quantified. Include depth, length, height and location of deficiencies.

1. **Equipment and Field Logistics**
2. The inspection should be conducted using:

\_\_\_\_Chest waders

\_\_\_\_Hip waders

\_X\_\_Diving equipment

\_\_\_\_SCUBA (Note that ADCI Consensus Standards require communication systems be employed for both SCUBA and Surface-Supplied (whether air or mixed-gas) dive modes)

\_\_\_\_SCUBA with communication

\_\_X\_\_Surface Supplied with communication

1. The channel bottom should be sounded utilizing

\_X\_\_\_Digital fathometer

\_\_X\_\_Telescoping survey rod

\_\_\_\_ acoustic imaging

1. During the inspection, the divers should work from

\_\_\_\_Shore

\_\_X\_\_Boat

\_\_\_\_Either

The note taker should work alongside the dive team.

1. Access to the waterway should be obtained from the shore (north bank, southwest quadrant, driveway 30 yards north etc.)

\_\_Riverfront Marina & Campgrounds Public Boat Ramp\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The maximum depth of the channel is typically measured\_\_\_\_\_ feet from \_\_The South Quarter Point at the Structure Centerline Between Bents 2 and 3\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reference Datum: Top of Cap at the Upstream Nose of Bent 1

Soundings should be dictated by the scope of work. When not detailed in the scope they should be repeated from the previous soundings. If neither exist then they need to be taken in a grid pattern between substructure units 100’ upstream and 100’ downstream.

1. **Inspection Procedure History**

Created: COLLINS ENGINEERS, INC\_\_\_\_ Date: 9/25/2020

Updated By: Date:

Updated By: Date:

Updated By: Date:

Updated By: Date:

Updated By: Date:

1. **Other Narrative Not Included In Previous Sections**