



# Local Structures 6 to 20 feet **Inventory Phase**

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BOS Structures Maintenance Chief

## Webinar

**February 9, 2024**

# WI Biennial State Budget & Statute

- **Budget Language (2023-2025)**

*Provides \$12,500,000 SEG to JCF's supplemental appropriation in FY24 for assessment of local bridges and culverts and create a biennial DOT SEG appropriation that could receive the funds. Directs the Department to develop a program for counties to assess local bridges and culverts that are less than 20 feet, but greater than six feet in length.*

- **State Statute 85.64**

*The department shall administer a program for counties to inventory and assess the condition of local bridges and culverts that are 20 feet or less in length but greater than 6 feet in length.*

- **The program includes:**

- *Inventory*
- *Assessment (Inspection)*
- *Load Rating, as deemed necessary & funding allows*





# Highway Structures

## Various Defined Highway Structures

- Bridge – defined by NBIS and State Trans Code 212.02(2)
  - > 20' length (ID starts with “B” or “P”)
- Small Bridge Like Structures (state-owned) Policy
  - ≤ 20' length (ID starts with “C” structures) – unique structural design
- Culvert (state-owned) – “CAMP”
  - Includes typical culvert pipes - pre-engineered and manufactured.
  - Culvert Asset Management Program
- **NEW** Local Structures 6-20ft
  - ≤ 20' and >6' length measured along the centerline of the roadway (“V” structures)





# Highway Structures

## Various Defined Highway Structures

- Bridge – defined by NBIS and Trans 212.02(2)
  - > 20' length as measured at centerline of roadway.
  - Bridge ID's start with "B" or "P"
- Small Bridge Like Structures (state-owned structures)
  - $\leq 20'$  length
  - Structure ID's start with "C"
  - Bridge like structures (deck girder, flat slabs, etc.)
  - Single or multi-cell box culverts with openings  $\geq 20 \text{ ft}^2$
  - Metal bolted-plate structures





# Highway Structures

## Various Defined Highway Structures

- **Culvert** (state owned structures)
  - Includes typical culverts purchased from a supplier.
  - Structure inventory and inspection data stored in CAMP
- **Local Structures 6 to 20 ft**
  - $\leq 20'$  and  $>6'$  length measured along the centerline of the roadway
  - Structure ID's will start with "V"



# Local Structures 6 to 20 ft

## Definition

- Defined following guidance in WisDOT's Structure Inspection Manual ([SIM 4.6.2](#)) ←link
  - Publicly owned highway structures having openings  $> 6$  feet and  $\leq 20$  feet, measured along the centerline of the roadway.
  - Includes multiple barrels/boxes or pipe culverts where the total distance from the inside edges of the outermost walls is  $> 6$  feet and  $\leq 20$  feet (measured along the centerline of the roadway) and the distance between openings is less than  $1/2$  of the smaller opening.



# Local Structures 6 to 20 ft

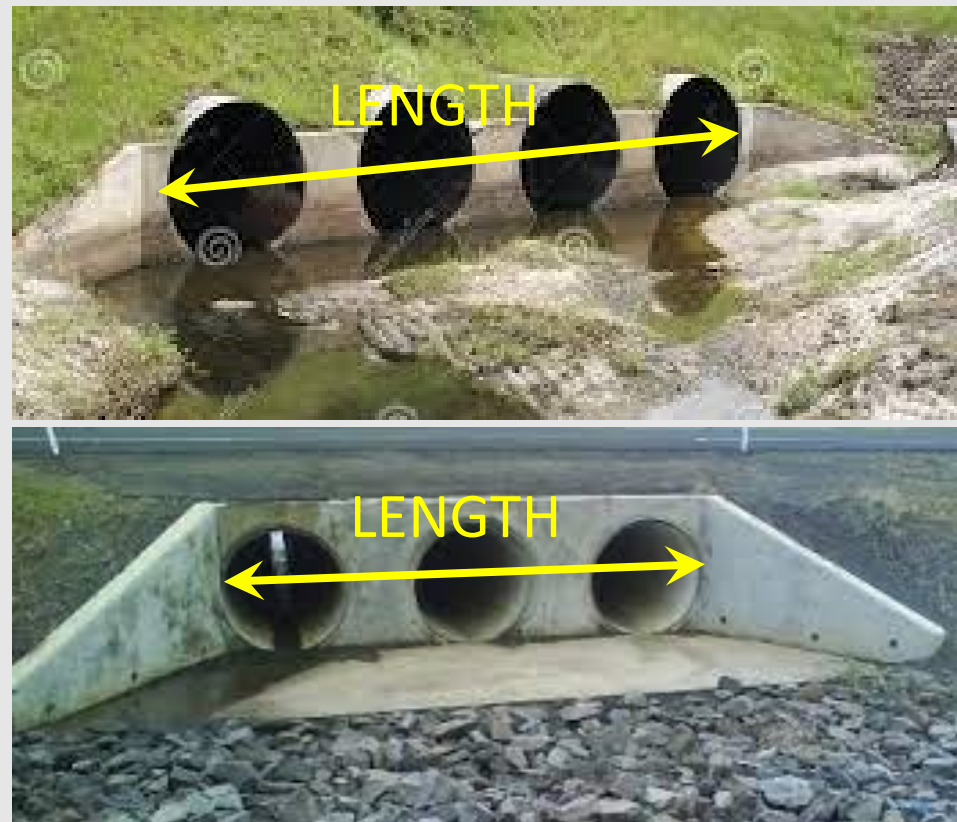
## Example Structures: Pipe Culverts



**Steel Pipe**



**Steel Pipe Arch**



**Multipipe Pipe Culvert**

AKA "culvert nest"



## Local Structures 6 to 20 ft

# Example Structures: Concrete Box Culvert



**Single Concrete Box Culvert Pipe**



**Double Barrel (multicell) Box Culvert**





# Local Structures 6 to 20 ft

## Example Structures: Arch Structures



**Precast Concrete Arch**



**Masonry Arch**



**Concrete Arch**





# Local Structures 6 to 20 ft

## Example Structures: Bridge Like Structures



**Concrete Flat Slab**



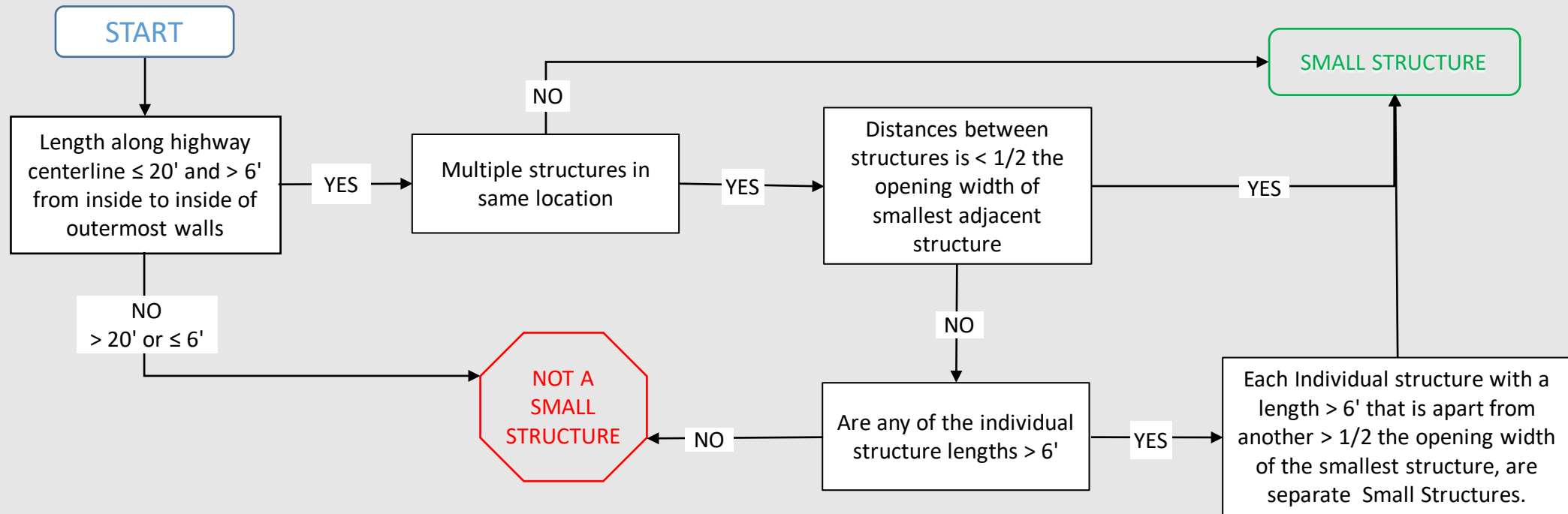
**Buried Rigid Frame**  
(no floor)



**Steel Girders/Beams**

# Local Small Structures 6 to 20 ft

## Flow Chart for Defining





# Local Structures 6 to 20 ft

## WisDOT Website – information about this program

- [www.WisconsinDOT.gov](http://www.WisconsinDOT.gov) ←link
  - Doing Business
    - Engineers and Consultants
      - Structures and road resources
        - Structures
          - Maintenance & Inspection
            - [Local Structures \(6-20 ft\)](#) ←link

The screenshot shows the Wisconsin DOT website page for "Local Structures 6 – 20 feet". The page includes a navigation menu with options like "DMV Online Services", "DMV Info", "Doing Business", "Travel", "Safety", "Projects and Studies", and "About WisDOT". The main content area is titled "Local Structures 6 – 20 feet" and features a sidebar with links to "Bureau of Structures", "Design & Construction", "Maintenance & Inspection", "Fabrication & Quality Assurance", "Manuals & HSI Quick Links", and "Research & Outreach". The main content includes sections for "Maintenance & Inspection", "Program Description", and "Program Information".

Wisconsin Gov

State of Wisconsin  
Department of Transportation

DMV Online Services | DMV Info | Doing Business | Travel | Safety | Projects and Studies | About WisDOT

### Local Structures 6 – 20 feet

Bureau of Structures  
Design & Construction  
Maintenance & Inspection  
Fabrication & Quality Assurance  
Manuals & HSI Quick Links  
Research & Outreach

#### Maintenance & Inspection

Policy Memos | Structures Inspection | Structures Preservation | Announcements | Inventory & Rating Forms | Structure Number Request Form | Highway Structures Information System (HSI) | Program Managers | Inspector Application & Credentials | Training & Tools | Local Structures (6-20 ft) | Additional Resources | Contacts

#### Program Description

The Wisconsin State 2023-25 Budget includes the following language:  
*Provide \$12,500,000 to the Joint Committee on Finance SEG supplemental biennial appropriation in 2023-24 for assessment of local bridges and culverts that are less than 20 feet in length and create a biennial DOT SEG appropriation that could receive the funds. Direct DOT to develop a program for counties to assess local bridges and culverts that are 20 feet or under in length, but greater than six feet in length.*

Based on this budget item, the Wisconsin legislature created [State Statute 85.64](#). The statute reads:  
*Assessment of local bridges and culverts. The department shall administer a program for counties to inventory and assess the condition of local bridges and culverts that are 20 feet or less in length but greater than 6 feet in length.*

WisDOT has collaborated with local owners associations to develop details to administer the program identified above. Local partners include:

- Wisconsin Towns Association (WTA)
- League of Wisconsin of Municipalities (LWM)
- Wisconsin County Highway Association (WCHA)
- Wisconsin Counties Association (WCA)

#### Program Information

- An overview of program details can be found [here](#).
- WisDOT presented the details of this program at a local owners' webinar on January 17, 2024 and at the WCHA Winter Road School on January 22, 2024.
  - A copy of the presentation can be found [here](#).
  - A recording of the local owners' webinar can be found [here](#).

Inventory Phase



## Local Structures 6 to 20 ft

# Information About Program – WisDOT Website

- Program Description and Information
- GIS Application/Mapping tool for potential structure locations
- Forms for inventory and inspection
- Links to webinars and other reference materials about the program.



# Local Structures 6 to 20 ft

## Locating Local Small Structures

- Methods to located these structures...
  - Existing local inventories
  - Local knowledge
  - Search and locate (Road trip!)
  - Online GIS Application - estimated locations shown on maps
    - <https://wisconsindot.gov/pages/doing-bus/mapsgis.aspx> ←link
    - Video on how to access and download data is located on BOS website
    - Will require field verification on location and structure size





# Inventory

An inventory must be completed to identify the number of local small structures that will require an inspection and condition assessment.

- Name of the person completing the inventory
- Date of the inventory
- Structure Owner (county, city, village, township)
- County
- Municipality (city, town, village)
- Feature Over/Road name
- Number of traffic lanes
- Feature under (waterway, pedestrian path, land/cattle pass, other)
- Name of waterway (if known)
- Latitude/Longitude
- Location Description (distance from nearest public road intersection)
- Span Length/Structure Length
- Structure Type
- Structure Material
- Weight Limit (if posted)
- Critical Finding - intended to ID any critical issues noticed that should be brought to the immediate attention of the owner.
- Comments
- Photos

# Inventory Records

- Options for field data:
  - Paper (field) forms - multiple structures (up to 10) structures per sheet
  - Enter directly into WisDOT created spreadsheet with a laptop or tablet from the field.
- All data must be entered into the WisDOT spreadsheet for uploaded into HSIS.
  - Send inventory data to the county highway department
  - County hwy dept will determine the format to supply inventory data.
- WisDOT Spreadsheet
  - One structure per row.
  - Correct data in each cell/row – errors will cause upload failure
  - Review data for errors before submitting.
  - County hwy dept staff must contact the person supplying the data to correct errors.



# Highway Structures Information System (HSIS)

[WisDOT Structure Inventory Database](#) ←link

- WisDOT's publicly viewable and searchable database of highway structures
- Contains structure inventory, inspections, and other records.
- Need a WAMS ID (Web Access Management System)
  - Go to [www.Wisconsin.gov](http://www.Wisconsin.gov) search for WAMS
- Training on uploading inventory data to HSIS
  - Link available on BOS website by the end of February





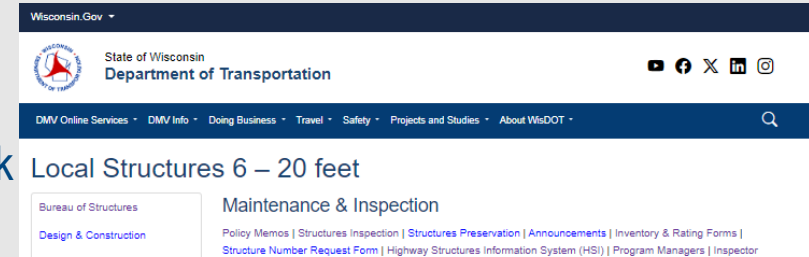
# County Highway Department Responsibilities

- Manage inventory program within county
- Work with municipalities to determine who will complete the inventory
- Determine resources to complete the inventory for those the county will manage.
- Monitor inventory completion
- Determine the format municipalities should return inventory data (paper or electronic)
- Facilitate entry into the WisDOT spreadsheet (enter data, combine spreadsheets, etc.)
- Uploaded completed spreadsheets to HSIS
- Invoice WisDOT for structures inventoried and uploaded to HSIS
- Distribute WisDOT funds to appropriate municipalities and/or consultants



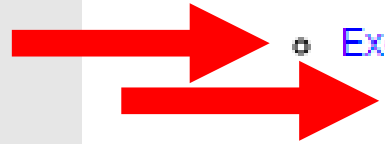
# Local Structures Spreadsheet

[Spreadsheet to record structure inventory](#) ←link



## Inventory Phase

- WisDOT Bureau of Structures will hold a webinar on Friday, February 9th from 9:00 AM – 10:30 AM to discuss process and procedure for collecting inventory information.
  - [Link to join Bureau of Structures Inventory Webinar](#)
  - A recording of the webinar will be added here when available.
- Inventory information can be collected on paper in the field, but must be input into an Excel spreadsheet for submittal to the County Highway Commissioner and uploaded to the Highway Structures Information System (HSIS).
  - [Inventory field collection form – single bridge](#)
  - [Inventory field collection form – multiple bridges](#)
  - [Excel spreadsheet inventory submittal form](#)
  - [Instructions for excel spreadsheet inventory submittal form](#)



• The locations identified may be on a railroad, bicycle path, pedestrian trail, etc.



# Local Structure Inventory – Form Instructions

B-##-###  
####-##-###X



Designed: \_\_\_ 1/31/2024  
Checked: \_\_\_

## Local Road Culvert Inventory

Use the following link to obtain preliminary location data:

<https://data-wisdot.opendata.arcgis.com/datasets/WisDOT::possible-local-road-culvert-locations/explore>

- Use the "Template Headings" spreadsheet to format collected inventory data for automatic structure creation in HSIS.
- Column format and data names/format must be maintained and individual cell options and formats must be used to avoid errors in HSIS.
- Spreadsheet must be saved to a CSV format in order for the locations to merge properly with HSIS.
- Column A, O thru U are not automatically uploaded to HSIS, these fields contain inspection data will need to be manually entered in HSIS. Columns are provided in the template spreadsheet to keep data together if inventory and inspection is completed at the same time until a structure number can be generated by HSIS.
- The template sheet has drop down lists for some of the categories to ensure consistent data.

**- ANY ROWS NOT CONTAINING STRUCTURE DATA TO BE UPLOADED MUST BE DELETED FROM THE FINAL CSV FILE OR MARKED "N" IN COLUMN B OR UPLOAD WILL FAIL. THIS INCLUDES SPREADSHEET LISTS IN COLUMNS BR THRU BW**

Multi-Structure Paper Form	PAPER FORM BOX #	Spread sheet Column Letter	COLUMN DESCRIPTION	FORMAT	Auto HSIS Upload	Included in GIS CSV Download
1	1	A	OBJECTID	<b>Temporary ID assigned by owner or FROM GIS DOWNLOAD - NOT REQUIRED FOR HSIS UPLOAD</b>	N	Y
		B	Y/N	Y/N - "Y" if qualifying structure, "N" if no structure/does not qualify - choose from list	Y	Y
2	2	C	Latitude	Decimal Degrees with 7 numbers beyond the decimal	Y	Y
3	3	D	Longitude	Decimal Degrees with 7 numbers beyond the decimal	Y	Y
4	4	E	County Name	County Name - choose from list	Y	Y
5	5	F	City-Town-Village	"C" for City, "T" for Town, "V" for Village - choose from list	Y	Y
6	6	G	Municipality Name	Name of Municipality structure is located in - choose from list	Y	Y
7	7	H	Owner	Structure Owner - choose from list	Y	Y
8	8	I	Location	Location description in distance from nearest intersection.	Y	Y
9	9	J	Total Structure Length (FT)	Length (decimal feet) - inside of pipe/box along skew, bearing to bearing along skew for bridge like structures (Item 49 in old Recording & Coding Guide)	Y	Y
10	10	K	Feature Over	Roadway name over structure	Y	Y
11	11	L	Service Feature Under	Type of feature under structure - choose from list	Y	Y
12	12	M	Feature Under Name	Name of feature under	Y	Y
13	13	N	Comments	General structure, location, safety, critical finding comments. Not to be confused with inspection comments	Y	Y
14	14	O	Structure Type	Primary structure type: SEE HSIS FOR ALLOWABLE TYPES	N	Y
15	15	P	Structure Material	Primary structure material: SEE HSIS FOR ALLOWABLE MATERIALS	N	Y
16	16	Q	Inventory Date	Date the field inventory was completed (MM/DD/YYYY)	Y	Y
17	17	R	Critical Finding	Y/N - describe in comment field. Coordinate with County PM to address concern	N	Y
18	18	S	Inspector Name	Name of person conducting field inventory	N	Y
		T	x	<b>FROM GIS DOWNLOAD - NOT REQUIRED FOR HSIS UPLOAD</b>	N	Y
		U	y	<b>FROM GIS DOWNLOAD - NOT REQUIRED FOR HSIS UPLOAD</b>	N	Y



# Local Structure Inventory – Field Form

4. County: \_\_\_\_\_

5/6. Municipality: \_\_\_\_\_

7. Owner: ① \_\_\_\_\_

**Local Small Structure Inventory**

17. Inventory Completed By: \_\_\_\_\_

16. Inventory Date: \_\_\_\_\_

1. Object ID	2. Latitude	3. Longitude	8. Location	9. Structure Length (ft)	10. Feature Over (Road Name)	11. Service Feature Under ②	12. Feature Under Name	14. Structure Type ③	15. Structure Material ④	18. Critical Finding (Y/N)
13. Structure Concerns or Comments										
13. Structure Concerns or Comments										
13. Structure Concerns or Comments										
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13. Structure Concerns or Comments										
13. Structure Concerns or Comments										
13. Structure Concerns or Comments										
13. Structure Concerns or Comments										
13. Structure Concerns or Comments										

① Owner: County-30, City-40, Village-41, Town-42

② Service Feature Under: Waterway, Pedestrian, Land, Other

③ Structure Type: See HSIS for Structure Types

④ Structure Material: See HSIS for Material Types

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





# Local Small Structure Inventory – Field Form

## Local Small Structure Inventory Form

1. Object ID. \_\_\_\_\_

2. Latitude		4. County	
3. Longitude		5-6. Municipality Type and Name	
7. Owner	<input type="checkbox"/> 30 - County <input type="checkbox"/> 40 - Town <input type="checkbox"/> 41 - City <input type="checkbox"/> 42 - Village	8. Location	

9. Total Structure Length (ft) \_\_\_\_\_

10. Road Name or Highway Route (enter all road names and route numbers carried by the structure)  
 \_\_\_\_\_

11. Type Service Under (name if known)  
 Waterway  
 Pedestrian  
 Land/Cattle Pass  
 Other

12. Service Under Name \_\_\_\_\_

13. Comments:  
 \_\_\_\_\_

14. Structure Type \_\_\_\_\_

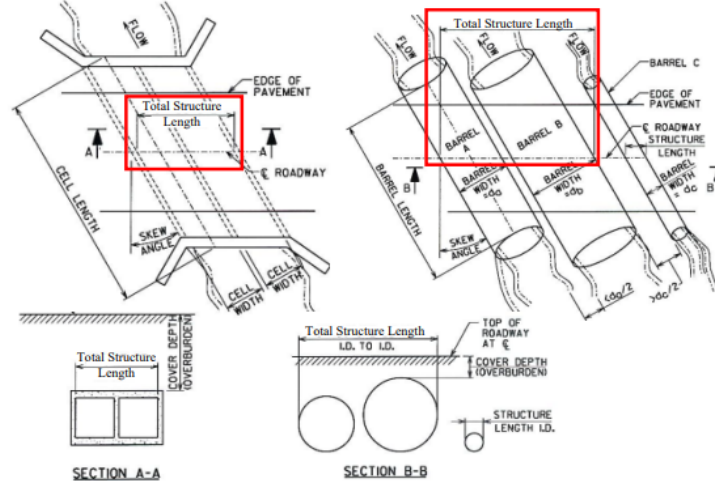
15. Structure Material \_\_\_\_\_

16. Inventory Date \_\_\_\_\_

17. Inspector Name \_\_\_\_\_

18. Critical Finding     Yes     No

The following diagram are for Box 7. Measurements for span are from the inside edge of the cell or pipe.



## Local Small Structure Inventory Form

1. Object ID. \_\_\_\_\_

### General Instructions and Help

Box 1. Object ID: Temporary ID from GIS download or assigned by owner. Used to track structure until a permanent ID is assigned in HSIS.

Box 2/3. Enter the Latitude and Longitude of the structure using Decimal Degrees with 7 numbers beyond the decimal (Example: 44.0966325 or 89.9961711).

Box 4. Enter the county name where the structure is located.

Box 5. Enter the municipality type (city, village, town) where the structure is located.

Box 6. Enter the name of the municipality name where the structure is located.

Box 7. Indicate the owner of the structure (County, Town, Village, City)

Box 8. Indicate the location of the structure from the nearest intersection. (Example: 1.2 miles West of Pine Road).

Box 9. Code the total length for the structure, as measured along the center of the roadway. For box and pipe culverts, measure the "Structure Length" as indicated in the diagrams on page 1.

Box 10. Enter the name(s) of the roadway or route number(s) on the structure. If multiple road names or route numbers exist, include them all. For example, a structure with a single highway could have 3 named designations, such as 'CTH X-Business 151-Dubuque Road' or another may simply be 'Main Street'.

Box 11/12. Indicate the services under the structure. Indicate the name of the waterway or pedestrian path, if known. If the structure has another purpose, include description in Box 12. If structure serves as a waterway and cattle pass, code as a waterway and include comment about cattle pass usage.

Box 13. Area for general comments about the structure, location, access, or safety concerns. If there is an ID plaque present, indicate the ID # and any date shown on the plaque.

Box 14. Code the basic structure type.

Box 15. Code the structure material. If structure is a bridge, code the material of the girders or beams, otherwise code the primary material of the arch, box, or pipe.

Box 16. Date the field inventory was completed.

Box 17. Name of person completing field inventory.

Box 18. A critical finding is a safety concern requiring immediate attention for public safety. If an immediate action is necessary, contact the owner of the structure. Describe the condition in Box 13. If no immediate safety concern is not found, this Box will be "No".

# Local Small Structure Inventory – Field Form

Local Small Structure Inventory Form

1. Object ID: \_\_\_\_\_

2. Latitude	_____	4. County	_____
3. Longitude	_____	5-6. Municipality Type and Name	_____
7. Owner	<input type="checkbox"/> 30 – County <input type="checkbox"/> 40 – Town <input type="checkbox"/> 41- City <input type="checkbox"/> 42 - Village	8. Location	_____

9. Total Structure Length (ft) \_\_\_\_\_

10. Road Name or Highway Route (enter all road names and route numbers carried by the structure)  
\_\_\_\_\_

11. Type Service Under (name if known) \_\_\_\_\_

14. Structure Type \_\_\_\_\_

15. Structure Material \_\_\_\_\_

16. Inventory Date \_\_\_\_\_

17. Inspector Name \_\_\_\_\_

4. County: \_\_\_\_\_

5/6. Municipality: \_\_\_\_\_

7. Owner: ① \_\_\_\_\_

Local Small Structure Inventory

17. Inventory Completed By: \_\_\_\_\_

16. Inventory Date: \_\_\_\_\_

1. Object ID	2. Latitude	3. Longitude	8. Location	9. Structure Length (ft)	10. Feature Over (Road Name)	11. Service Feature Under ②	12. Feature Under Name	14. Structure Type ③	15. Structure Material ④	18. Critical Finding (Y/N)
13. Structure Concerns or Comments										
13. Structure Concerns or Comments										

- 2 types of field forms have been created
  - A single structure per form
  - Up to 12 structures per form
    - One structure per row - start a separate form whenever county, municipality, structure owner, or inventory date changes.
- 18 items gathered for each structure inventory.
- The inventory information gathered on the field form must be entered into the upload spreadsheet.

# Local Small Structure Inventory Form

- Item 1: Object ID

Temporary ID from GIS download or assigned by owner. Used to track structure until a permanent ID is assigned in HSIS.

Single Structure Form

Local Small Structure Inventory Form

1. Object ID: [ ]

2. Latitude		4. County	
3. Longitude		5-6. Municipality Type and Name	
7. Owner	<input type="checkbox"/> 30 - County <input type="checkbox"/> 40 - Town <input type="checkbox"/> 41 - City <input type="checkbox"/> 42 - Village	8. Location	

9. Total Structure Length (ft)

10. Road Name or Highway Route (enter all road names and route numbers carried by the structure)

14. Structure Type

15. Structure Material

16. Inventory Date

Multiple Structure Form

Local Small Structure Inventory

4. County:

5/6. Municipality:

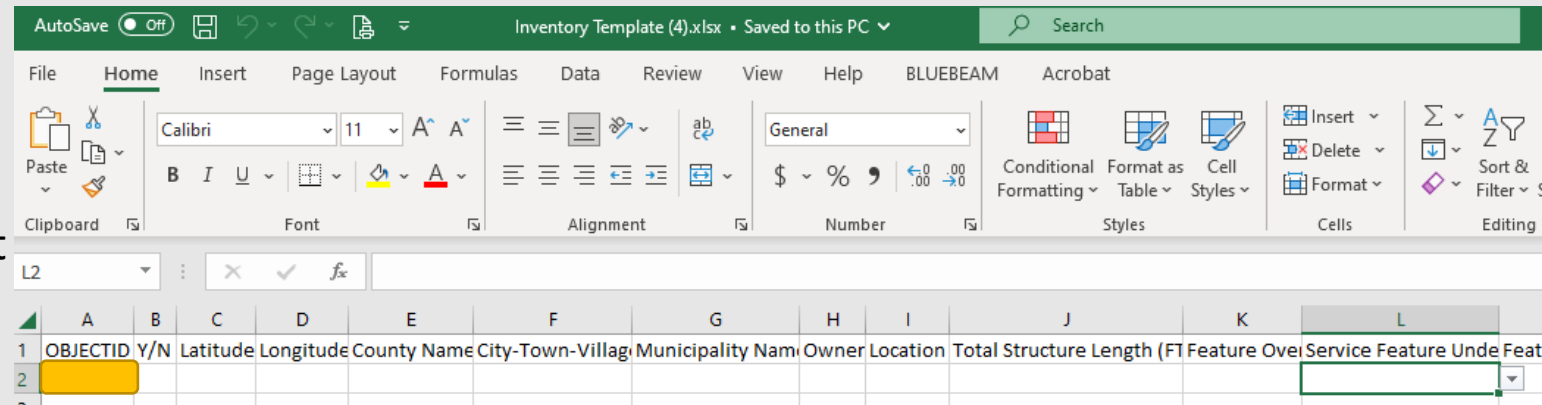
7. Owner:

17. Inventory Completed By:

16. Inventory Date:

1. Object ID	2. Latitude	3. Longitude	8. Location	9. Structure Length (ft)	10. Feature Over (Road Name)	11. Service Feature Under <sup>②</sup>	12. Feature Under Name	14. Structure Type <sup>③</sup>	15. Structure Material <sup>④</sup>	18. Critical Finding (Y/N)
<span style="background-color: yellow; border: 1px solid black; padding: 2px;">[ ]</span>										
13. Structure Concerns or Comments										

Excel Spreadsheet



# Local Small Structure Inventory Form

- Item 2: **Latitude** (lat)

These units represent the coordinates on earth the structure is located.

- Item 3: **Longitude** (long)

Find the latitude and longitude using a smart phone or tablet device

- Load the map application (Google Maps) on the device.
- Open the map app. Your location will show up on the map app as an active dot – likely a blue dot.
- You can move around the map using a single finger.
- You can zoom in on the map using 1 or 2 fingers and swipe in opposite directions.
- Press and hold with one finger the location on the map where the lat/long is desired
- A pin will appear at the location your finger is centered on.
- The lat/long coordinates should appear somewhere on the screen
  - Latitude: Numbers between 42 to 47                      Example = 44.096325
  - Longitude: Numbers between -87 to -92                      Example = -89.9961711



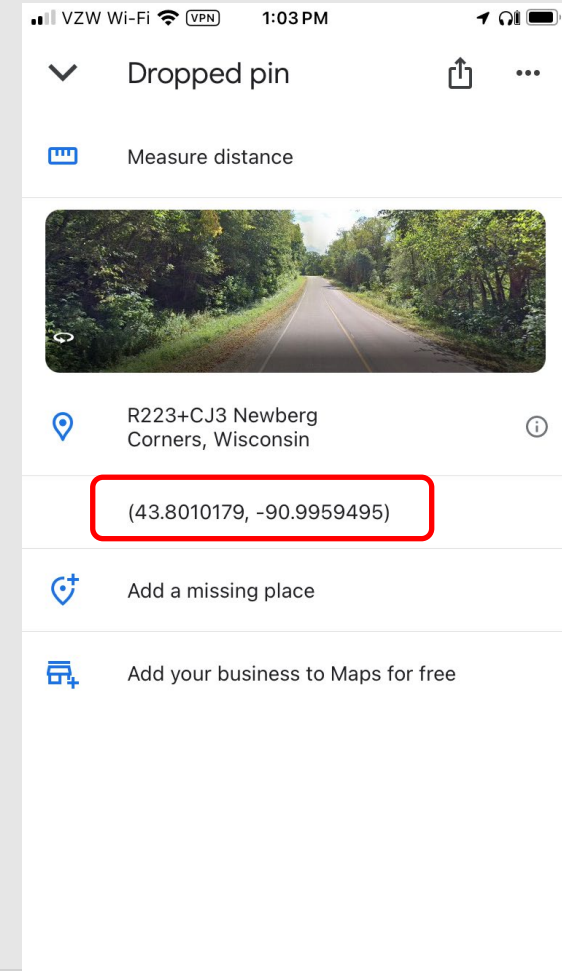
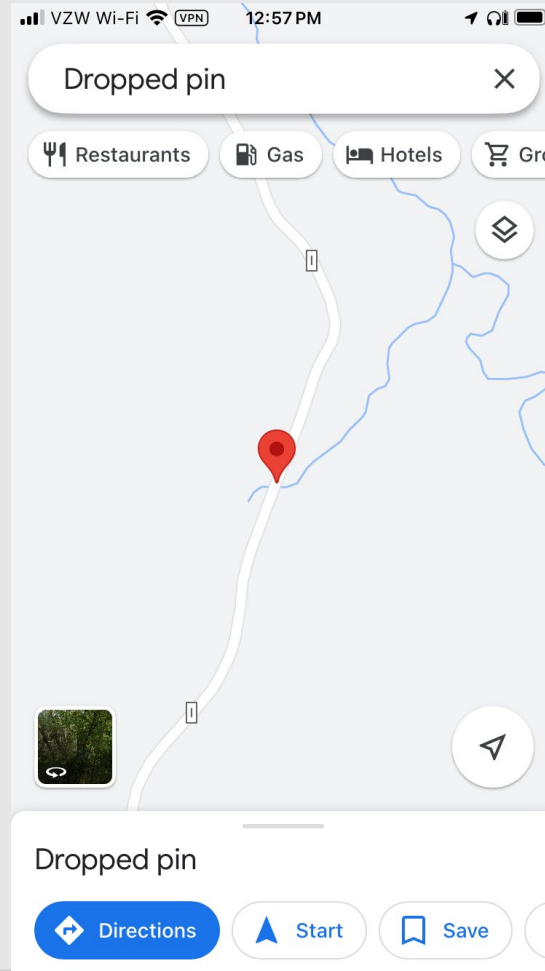


# Local Small Structure Inventory Form

## Latitude/Longitude Location

Screen shot from Google Maps app on cell phone. Place a pin where the structure is located using your finger (red bubble).

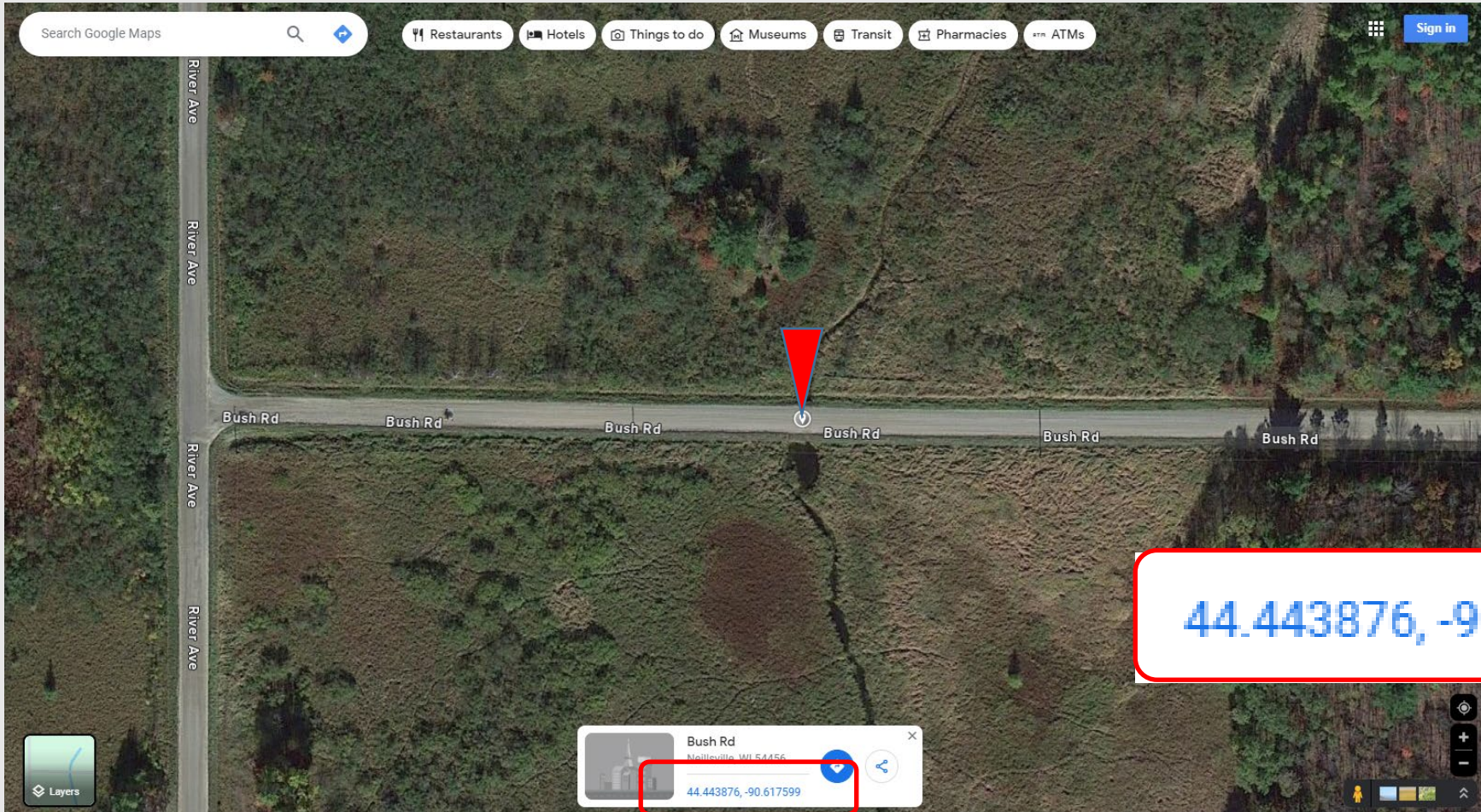
Scroll down using your finger to find the latitude and longitude.



# Local Small Structure Inventory Form

## Use Google Maps to find Latitude/Longitude

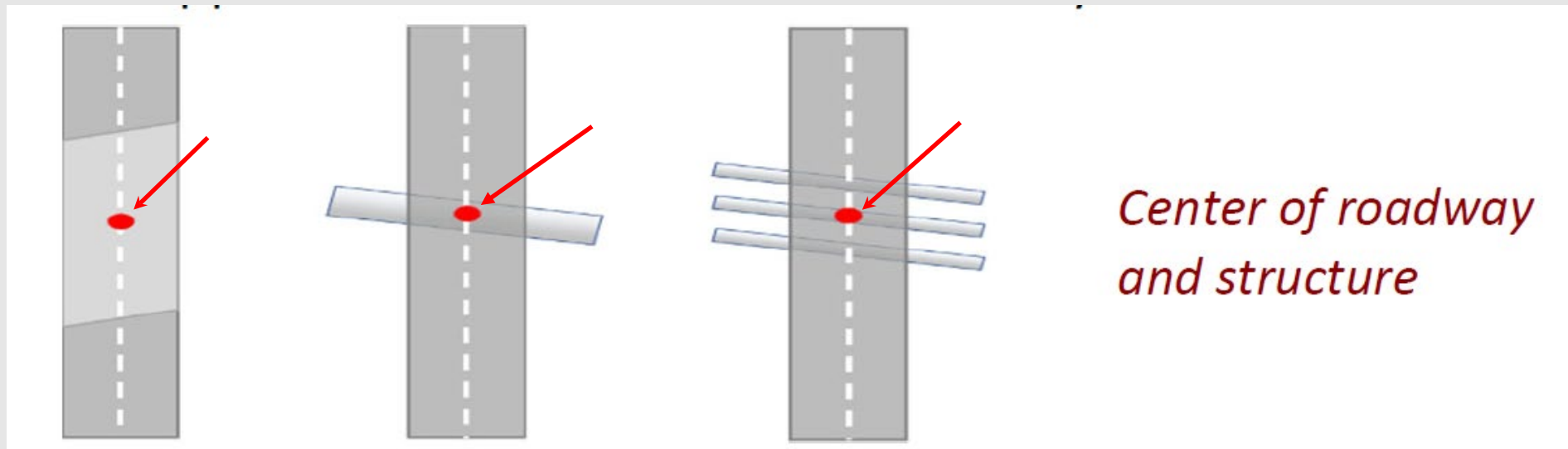
In Google Maps, click the location where the structure is located.



# Local Small Structure Inventory Form

## Latitude/Longitude Location

Record the lat and long at the estimated center of the roadway and the structure.



# Local Small Structure Inventory Form

- Item 4: **County** – county where the structure is located.
  - **Adams, Ashland, Barron,... , Winnebago, Wood, Menominee County.**





# Local Small Structure Inventory Form

- Item 5/6: **Municipality Type and Name** – type and name of the municipality where the structure is located.
  - **Examples:**
    - **City of Appleton**
    - **Town of La Grange**
    - **Village of West Salem**

NOTE: A structure located on a county highway, owned by the county, is still located in a municipality.



# Local Small Structure Inventory Form

- Item 7: **Owner code** – use one of the codes to indicate the structure owner.
  - **30 – County**
  - **40 – Town**
  - **41 – City**
  - **42 – Village**



# Local Small Structure Inventory Form

- **Item 8: Location** – the distance (tenths of a mile) and direction (N, S, E, W) from the nearest public highway intersection (vehicle odometer is accurate enough).
  - **Examples:**
    - 1.2 miles West of Pine Road
    - 0.6 miles North of CTH A
    - 0.8 miles east of STH 35



# Local Small Structure Inventory Form

- **Item 9: Structure Length (or total span length)**
  - **Structure length** = the clear distance measured along the center of the roadway, between under-copings on bridge like structures or extreme ends of the opening (inside of exterior wall to inside of exterior wall) on culvert like structures. When multiple pipes/cells/barrels make up a structure, measure the distance from inside to inside of the furthest walls.
  - **Skew (angle)** = the angle a structure is aligned as measured perpendicular to the roadway.



# Local Small Structure Inventory Form

- Item 9: **Structure Length** (continued)

**6' or less – does not qualify under this program.**

- Multiple pipes/cells with distance between is less than  $\frac{1}{2}$  the distance of the smallest pipe/cell greater than 6' do qualify.

**Greater than 20' – likely qualifies as a structure under the bridge program**

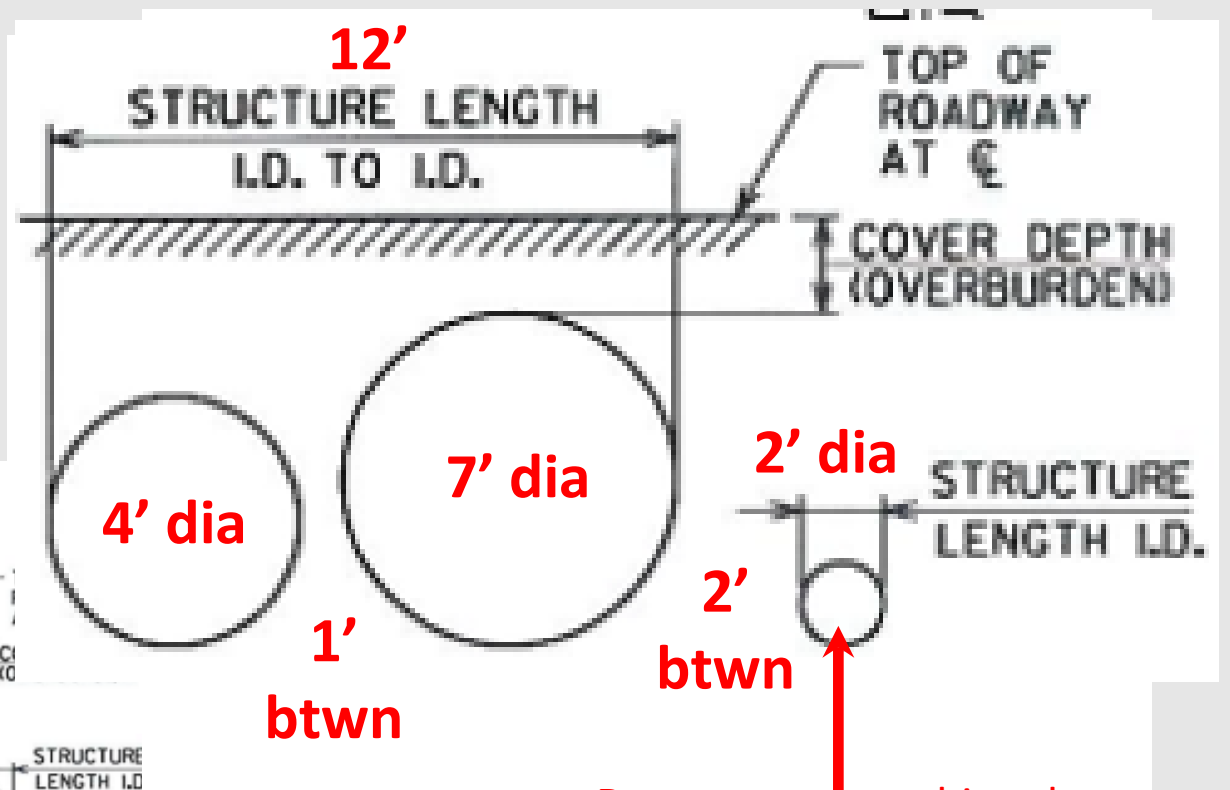
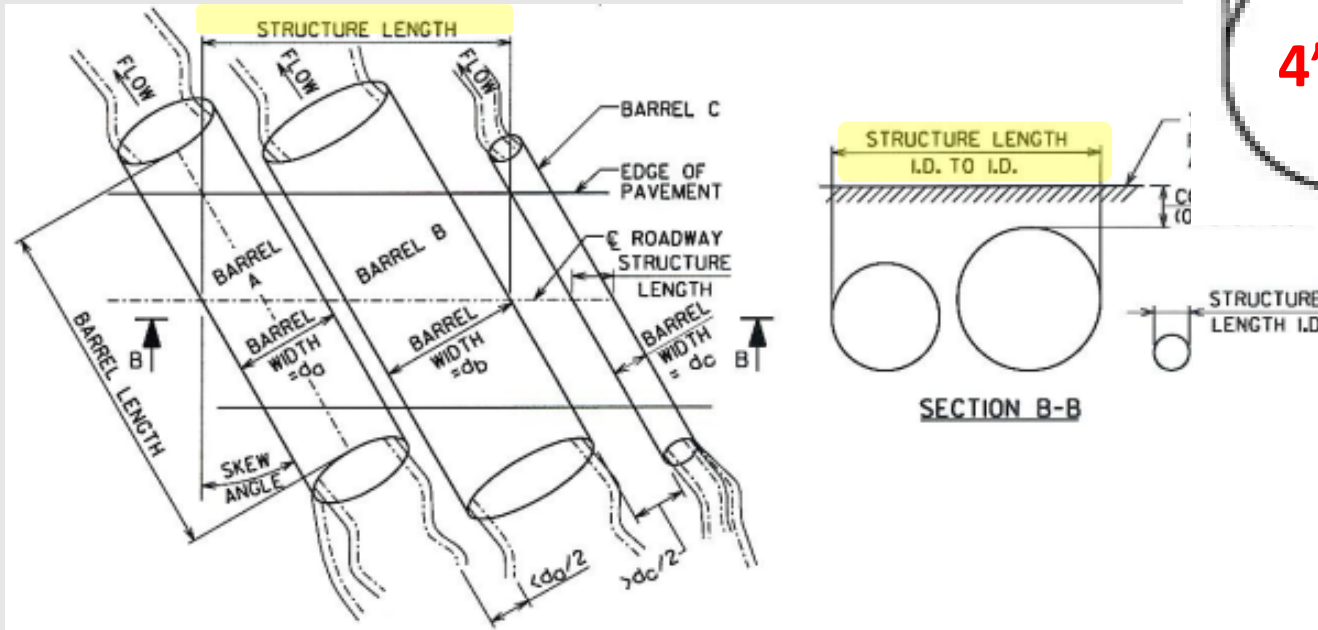
- Contact the county highway commissioner to schedule an inventory & inspection.
- If confirmed the structure is a bridge, contact the WisDOT region bridge inspection program manager to assign a bridge ID and enter into HSIS.





# Structure Length

- Length is measured along the center of the roadway
- If the distance between structures is less than half the opening width of the smallest adjacent structure, include the distance between in the total structure length

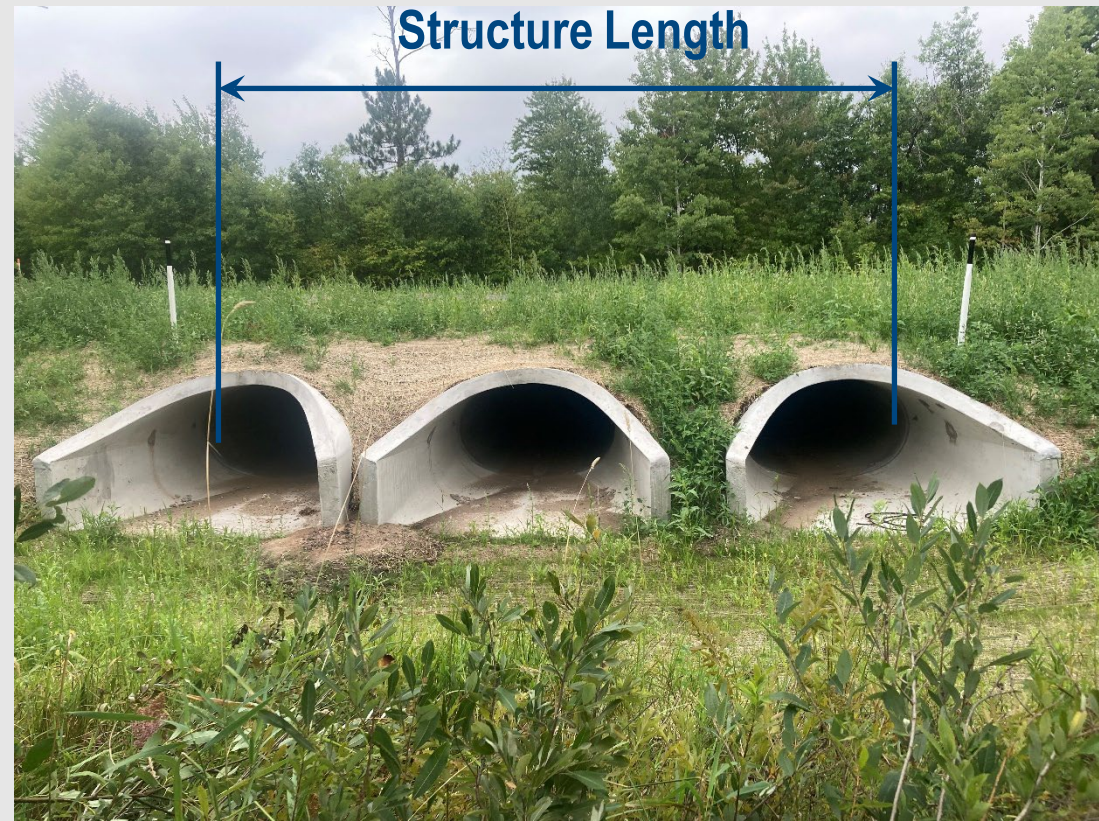
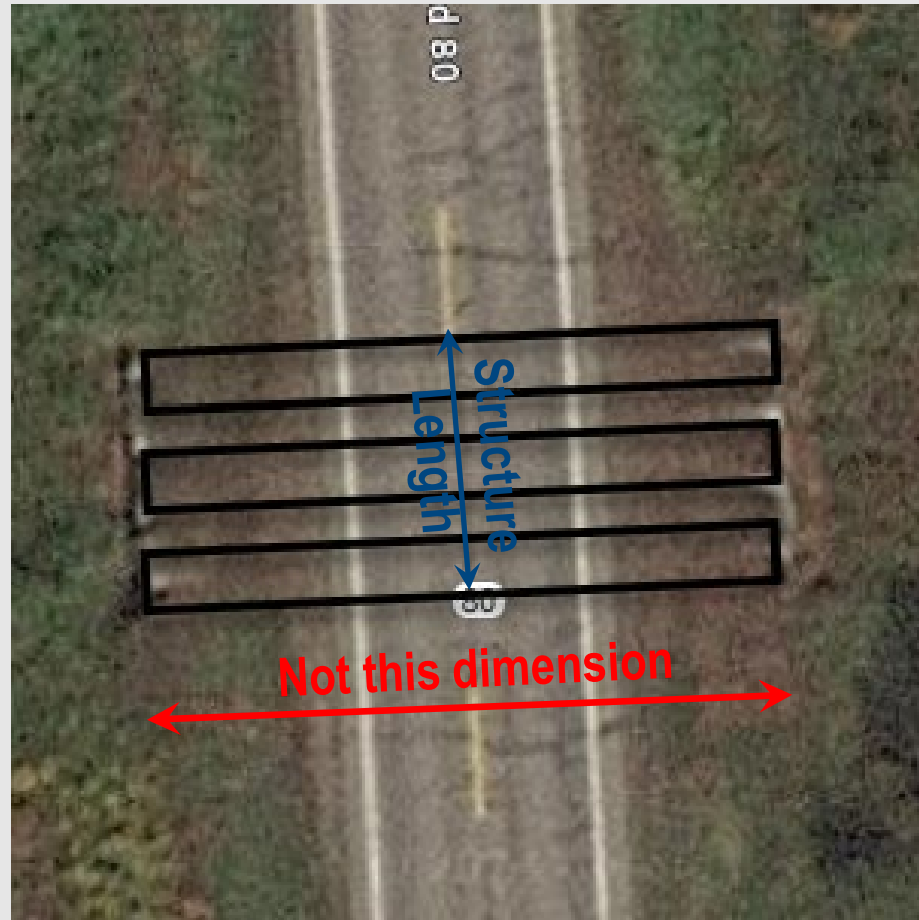


Do not measure this culvert as part of the structure length.

Structure length is measured from inside of walls

# Structure Length

Structure Length (NBIS definition): The distance in the direction of travel measured at the center of the roadway.



# Structure Length

## Example Structure

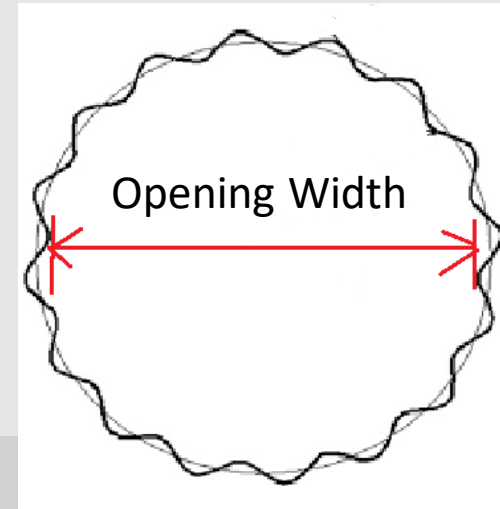


**7' DIA STEEL PIPE CULVERT, 0° SKEW**

**7' OPENING or SPAN LENGTH**

**Structure Length = 7' along C/L**

**Measure from the top of corrugations**





# Structure Length

## Example Structure



**6'x6' CONC BOX 50° SKEW**

**6' OPENING or SPAN LENGTH**

**Structure Length = 9.3' along C/L**

**Options:**

$$6' / \cos(50^\circ) = 9.3'$$

**Estimate C/L and use tape measure on top or from inside**

# Structure Length

## Example Structure



**STEEL PIPE ARCH, 0° SKEW**

**8' OPENING or SPAN LENGTH**

**Structure Length = 8' along C/L**



# Structure Length

## Example Structure



**PRECAST CONCRETE ARCH, 0° SKEW**

**12' OPENING or SPAN LENGTH**

For an arch, measure from the spring line  
– point from which the arch rises from the vertical

**Structure Length = 12' along C/L**

# Structure Length

## Example Structure



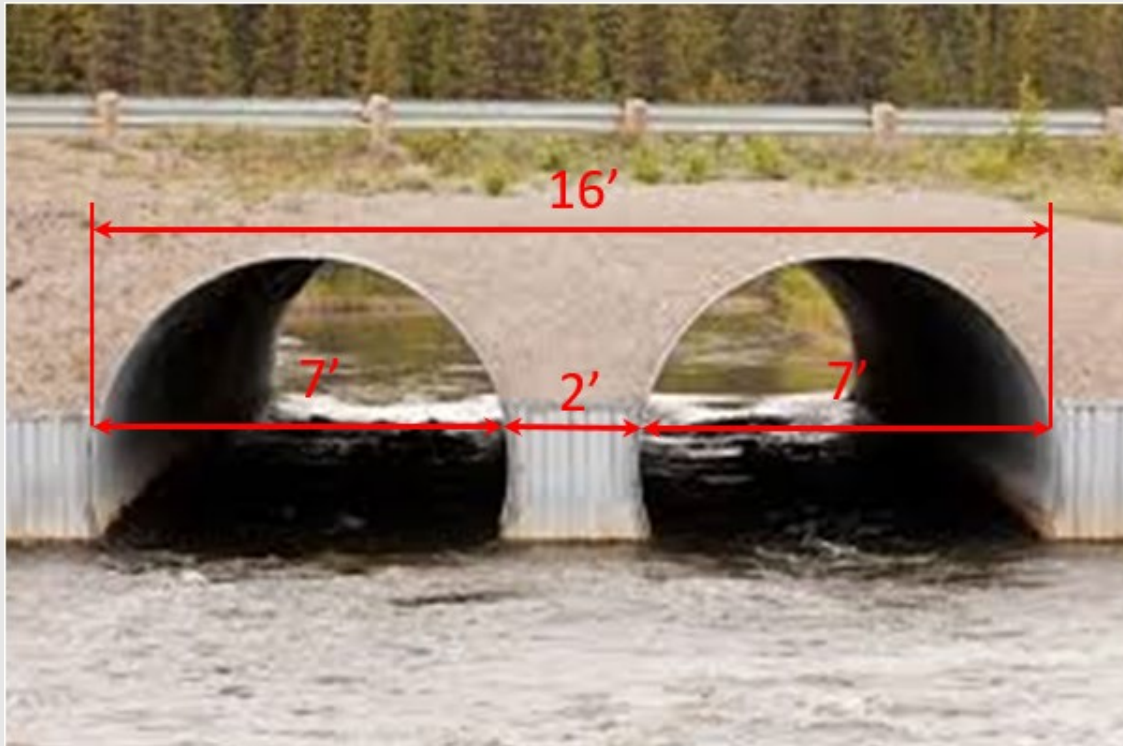
**CONCRETE FLAT SLAB  
ON TIMBER ABUTMENTS, 0° SKEW**  
(bridge like structure)

**14' SPAN LENGTH**

**Structure Length = 14' along C/L  
between faces of outcroppings**

# Structure Length

## Multi-pipe Structure Example



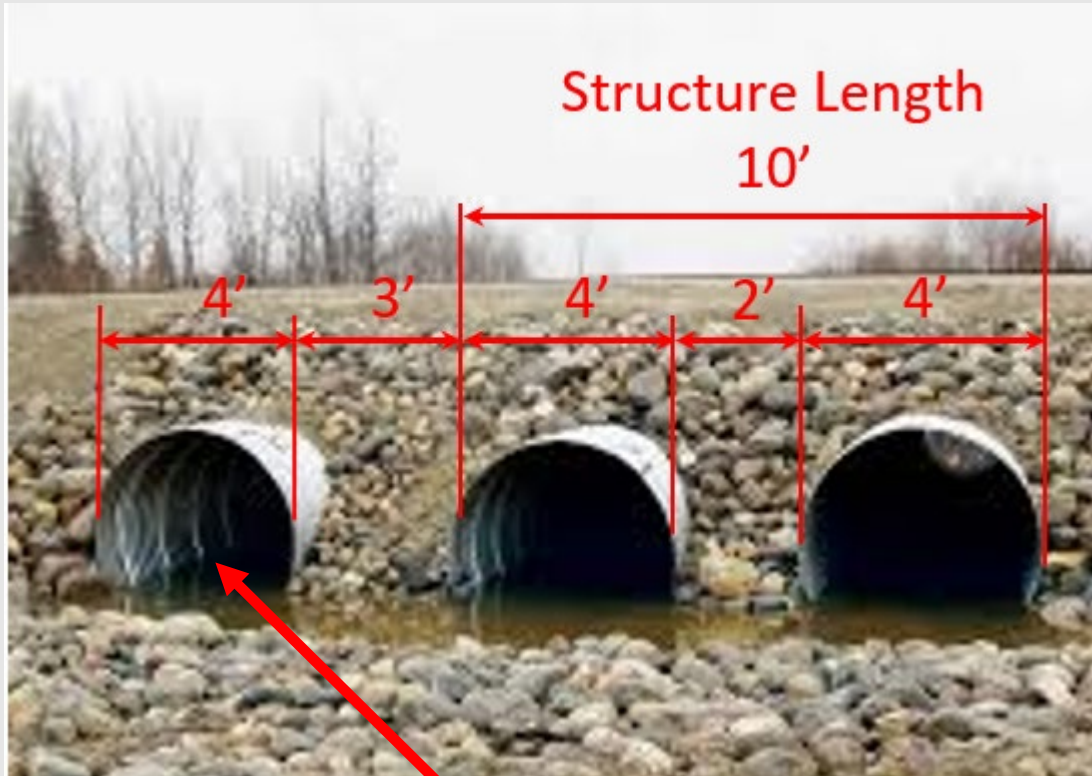
**2 – 7' DIA STEEL CULVERT PIPES  
SPACED = 2', 0° SKEW**

**16' SPAN LENGTH**

**Structure Length = 16' along C/L**

# Structure Length

## Multi-pipe Structure Example



**2 – 4' DIA STEEL CULVERT PIPES  
SPACED = 2', 0° SKEW**

**10' SPAN LENGTH**

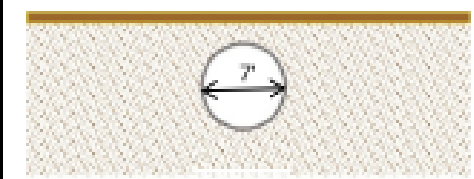
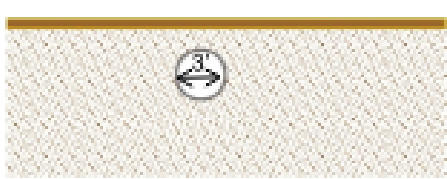
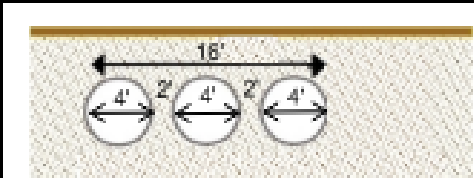
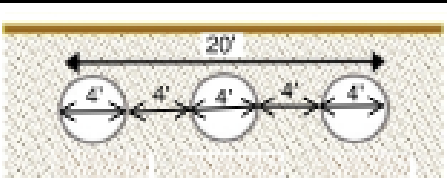
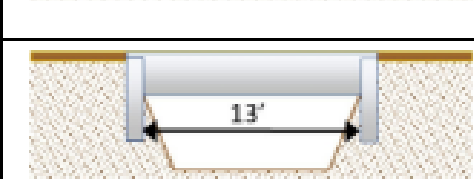
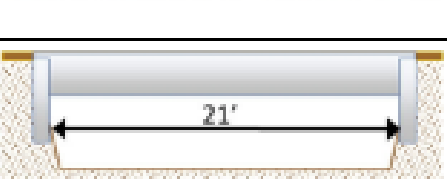


**Structure Length = 10' along C/L**

Furthest 4' pipe on the left does not qualify because the spacing is greater than  $\frac{1}{2}$  the span length of the adjacent structures



# Structure Length

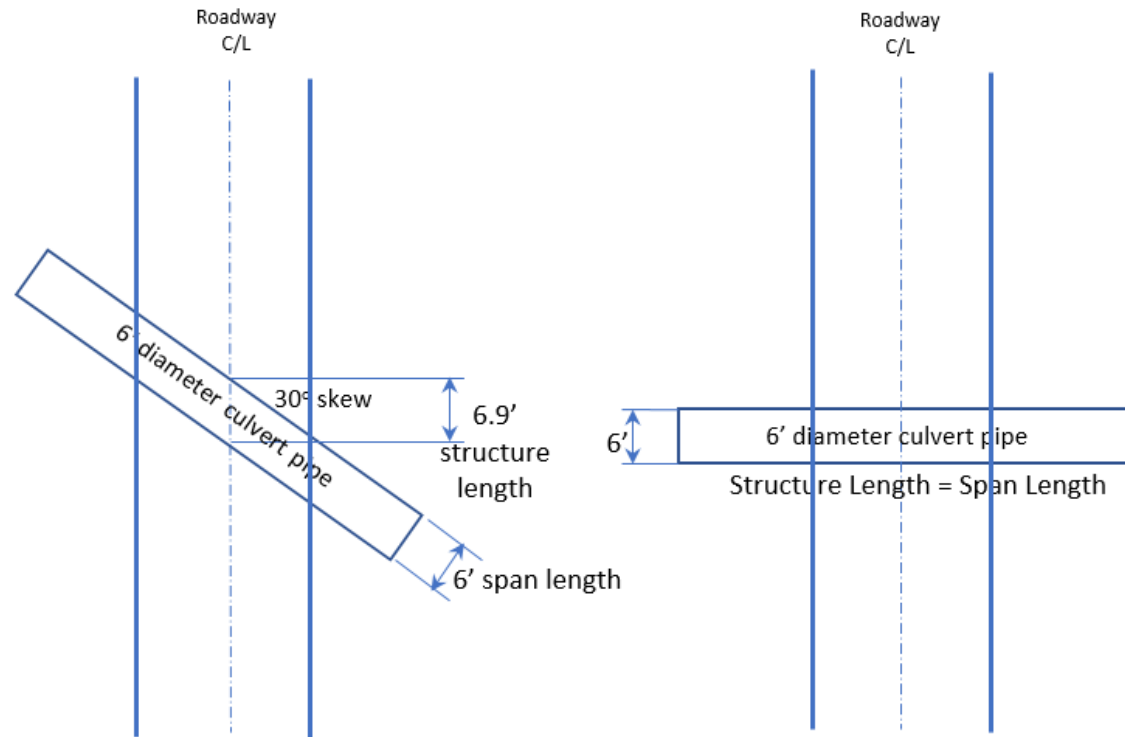
## More Example Structure Configurations

	Small Structure	Not Small Structure
Individual Pipe Culvert		 3' diameter pipe
Multiple Pipe Culverts		 Spacing between pipes is > 1/2 the adjacent pipe diameter, individual pipes are > 6'
Bridge Like Structure		 Length > 20'
Box Culvert		 Length > 20'



# Structure Length

## How skew affect's structure length



Structure Length = measured along the C/L of the roadway from inside to inside of furthest exterior wall  
Span Length = measured perpendicular to the structure from the inside to inside of furthest exterior wall

### SKEWED STRUCTURE EXAMPLE

Qualifies for the Local Small Structure Program because the structure length > 6'.

### PERPENDICULAR STRUCTURE EXAMPLE

Does not qualify for the Local Small Structure program because structure length is ≤ 6'

- Measure the span length (opening) parallel to the structure from the interior to interior of the exterior most walls
- Skewed structures, those not perpendicular to the roadway, measure the structure length along the center of the roadway at an estimated location of the inside edges of the structure's exterior walls.

# Local Small Structure Inventory Form

- **Item 11: Service Feature Under** – select the service type under. Include the name of waterway or pedestrian path, if known. If the structure has another purpose, include a description in Box 13 (Comments). If the structure serves as a waterway and a cattle pass, code as a waterway and include a comment about the cattle pass in Box 13.

## Types of Service:

- **Waterway**
- **Pedestrian**
- **Land/Cattle Pass**
- **Other**



# Local Small Structure Inventory Form

- **Item 12: Feature Over/Road Name** – enter all road names and route numbers/letters carried over the structure. If there are multiple road names or route numbers/letters, include them all separated.

## Examples:

- **Main Street**
- **County Hwy A**
- **CTH T**
- **CTH X | Business 151**
- **Pine Street | CTH I**
- **Henry Ave | 22<sup>nd</sup> St**



# Local Small Structure Inventory Form

- Item 13: **Comments** – area for general comments, location information, access issues, or inspector safety concerns/critical findings.
- If a plaque is present with an ID #, note the # and date shown on the plaque.



- Include any information about an existing load posting.

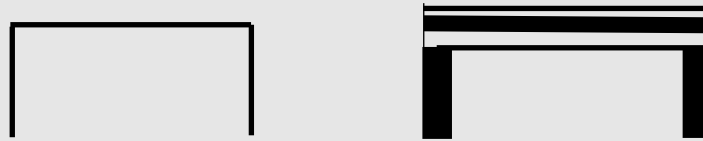


- Include the number of traffic lanes located over the structure.

# Local Small Structure Inventory Form

- Item 14: **Structure Type** – this is the basic shape of the structure looking from the end

- Bridge Type**



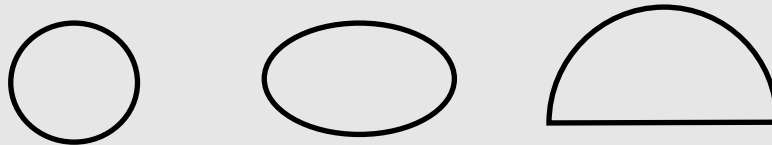
- Box**



- Arch**



- Pipe**





# Local Small Structure Inventory Form

- **Item 15: Structure Material** – record the primary load carrying material. If the structure is a bridge type structure with beams, code the beam material.
  - **Concrete**
  - **Precast concrete**
  - **Steel**
  - **Galvanized Steel**
  - **Aluminum**
  - **Timber**
  - **Masonry**
  - **Plastic**



# Local Small Structure Inventory Form

- **Item 16: Inspector Name** – name of the person completing the field inventory
- **Item 17: Inventory Date** – the date the field inventory was completed.



# Local Small Structure Inventory Form

- **Item 18: Critical Finding** – A critical finding is a safety or structure concern that may require immediate attention. If a safety concern is found, contact the structure owner. Describe the condition found under Item 18.

Examples of some safety or structure concerns are include on the next slide.



# Local Small Structures

## Example Critical Findings

- Pipe culvert - issues of concern
  - Serious crushing or buckling
  - Missing areas of the culvert
  - Separation of the culvert sections





# Local Small Structures

## Example Critical Findings

- Concrete box culvert - issues of concern
  - Large areas of deteriorated concrete and exposed rebar
  - Large cracks (may have material coming through)





# Local Small Structures

## Example Critical Findings

- Bridge like structures - issues of concern
  - Missing sections of steel beam
  - Holes through the deck





# Local Small Structures

## Example Critical Findings

- Roadway or slope concerns
  - Holes in the roadway above the structure
  - Slope failures above the structure



# Local Small Structure Inventory

## Photos

- Will not be required for inventory phase
  - Take photos of any concerns or critical findings and provide to owner
  - Can be taken for the owner's records - discuss with the structure owner.
- 
- **WisDOT does not currently have the ability to store photos as part of inventory phase.**
  - **Photos/sketches will be part of the inspection phase.**



# Inventory Phase Summary

- Agreement between WisDOT and each County (72 agreement)
- WisDOT purchase order created
- Complete inventory by county, locals, or consultant
- Structure inventory data is provided to County
- County uploads spreadsheet to HSIS to assign structure ID
- County invoices WisDOT for inventoried structures at \$100 each
- WisDOT reviews invoices and pays County
- County pays local or consultant for inventory completed



# Timeline

**INSPECTION  
EFFORT**

*February 9<sup>th</sup> 2024: Inventory and  
inspection webinar*

*March 1<sup>st</sup> 2024: Counties make  
decision on inspection resourcing*

*June 30<sup>th</sup> , 2025: All funds must  
be encumbered.*

**DECEMBER 31, 2025  
INSPECTIONS  
COMPLETE**



2024

2025

**INVENTORY  
EFFORT**

*April 15<sup>th</sup> 2024: Local  
owners' decision on inventory*

**DECEMBER 31, 2024  
INVENTORY  
COMPLETE**



2024





# Questions?

*Contact information:*

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