



BRIDGE ENGINEERING UPDATES

Stephanie Wagner, Bridge Engineering Director



AGENDA

8:15am **INDOT Updates including Causeway Clarifications**
Stephanie Wagner, 50 min.
(with Special Guest Jon Paauwe to discuss Digital Delivery)

9:05am **The Scour Power (half) Hour**
Bill Schmidt and Jake Gould, 30 min

9:35am **Break** 15 min.

9:50am **The Great Debate: Steel vs. Concrete**
Gauri Chandore and John Donaruma, 50 min

10:40am **Cost Reduction Incentive – Steel Edition**
Bobby Steele (E&B Paving) and Ben Butz (BF&S), 30 min

11:10am **Cost Reduction Incentive – Concrete Edition**
Corey Gilreath (American Structurepoint), 30 min

11:40am

Lunch 90 min

1:40pm **Concrete 101**
Mike Nelson, 30 min

2:10pm **Break** 15 min

2:25pm **Prestressed Tips**
Pete White and James Collins (Prestress Services), 30min

2:55pm **Continuous Deck Pours – Steel Beam Bridges**
DJ Shaw, 30min

3:25pm **IHCP – A Bridge Designer’s Perspective**
Michael Black, 30min

4:00pm **Adjourn**

HOUSEKEEPING

IN-PERSON

Restrooms
Exits
Lunch

VIRTUAL

Technical ?'s → Teams Q&A

EVERYONE

Presenter Questions use Slido (or raise your hand in-person)
Attendance Tracking and Survey at the End
QR Code for attendance (on tag or in TEAMS chat)

GET INVOLVED

slido





UPDATES (Deep Dive): ~~Goose~~ Bridges Temporary Causeways

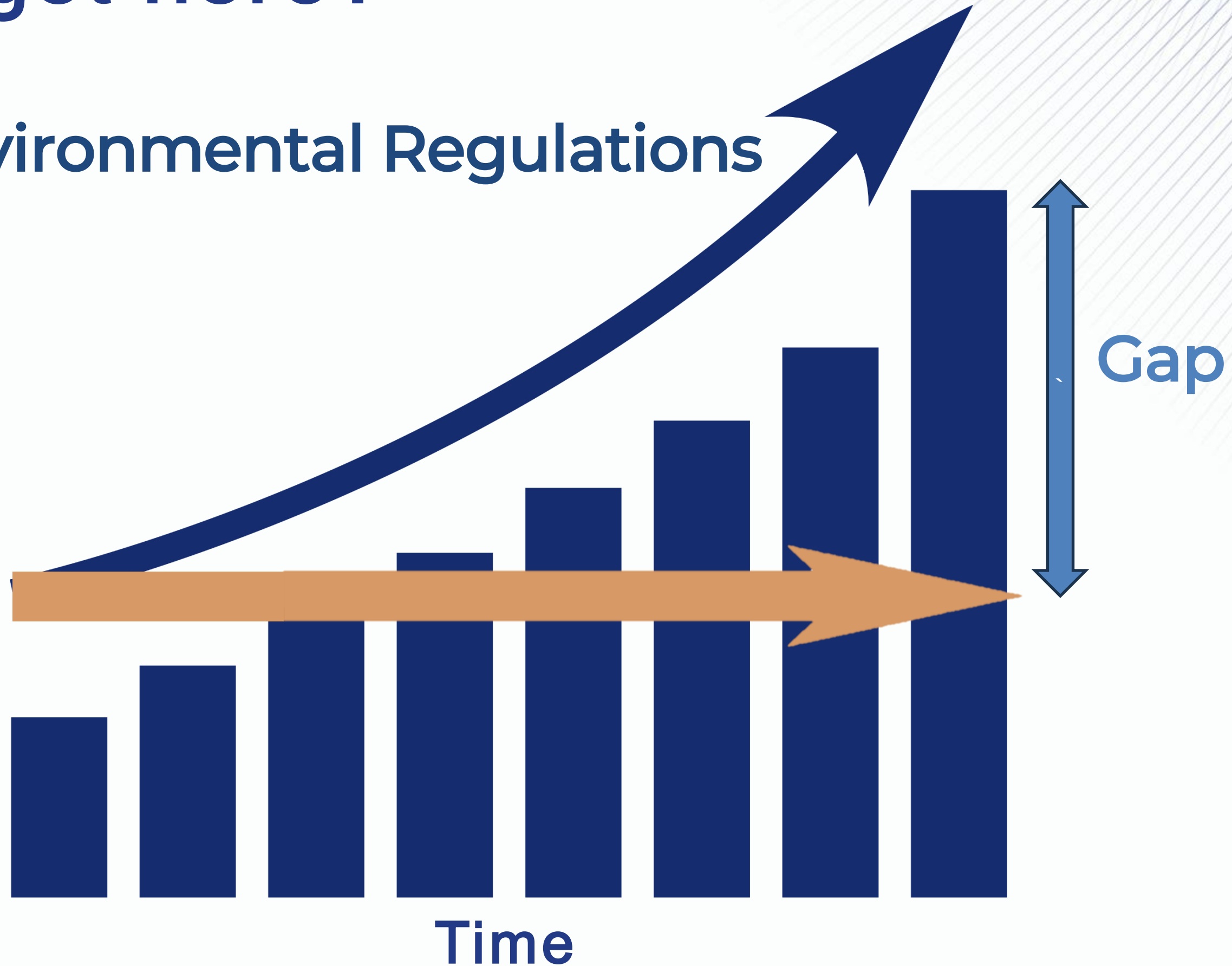


How'd we get here?



Environmental Regulations

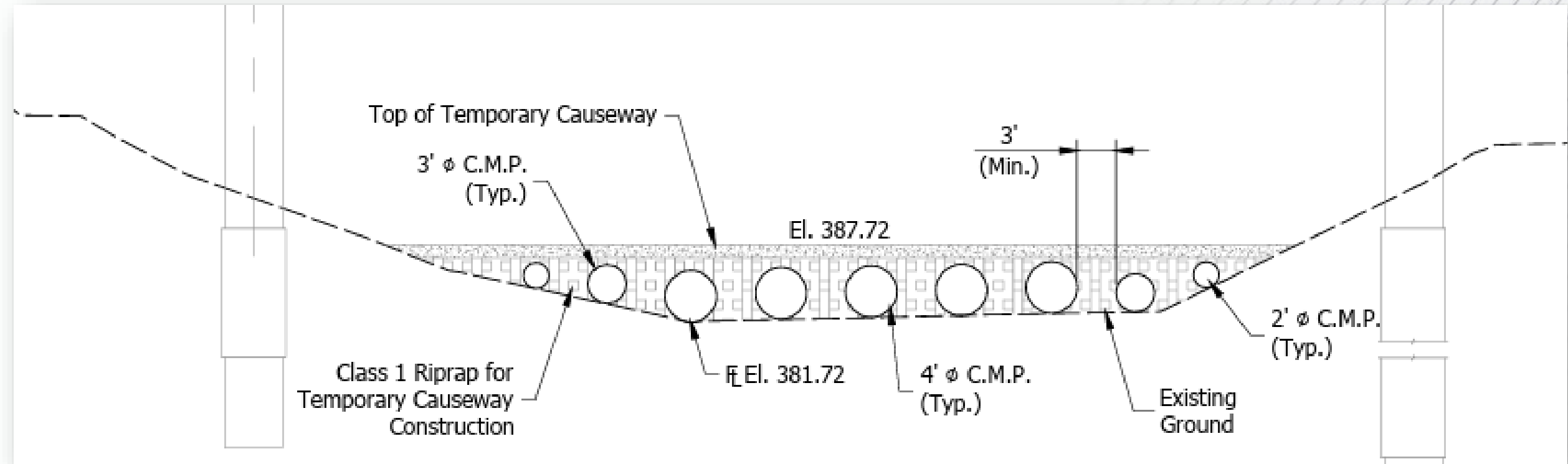
Environmental
Standard
Specifications



Approach to Standardization



- Don't want to dictate Means and Methods



- Do need guardrails for what is allowed.



New Standards (Provision and Drawing)



- 205-B-326 Temporary Causeway
– Define Acceptable Materials

Materials

Materials shall be in accordance with the following:

Temporary Pipe.....	713.05
Coarse Aggregate No. 2.....	904.03
Geotextile.....	918.02

Other accepted materials shall be non-erodible. No soil or other materials with fine particles susceptible to being washed away shall be utilized in the temporary causeway.

The causeway shall be constructed of clean materials that are free of any aquatic invasive species, including zebra mussels, as defined by section 312 IAC 9-9-3.

New Standards (Provision and Drawing)



- 205-B-326 Temporary Causeway
 - Contractor to detail and submit for acceptance (check against permits & spec)
 - Contractor to acquire additional permits if outside permitted limits
 - Maintenance and removal requirements

The temporary causeways shown in the permits are conceptual and developed to obtain the necessary permits. The Contractor shall be responsible for detailed causeway design, safe ingress and egress of equipment, access to the work, stability and serviceability, and installation in accordance with the permit conditions.

New Standards (Provision and Drawing)



- 205-B-326 Temporary Causeway
Payment included in other items

Method of Measurement

Temporary causeways will not be measured for payment.

Basis of Payment

Temporary causeways will not be paid for directly. The cost thereof shall be included in the cost of other items.

The cost of design, materials, installation, maintenance, repair, permit modifications or addendums, and removal for the temporary causeway will not be paid for directly. The cost thereof shall be included in the cost of other pay items.

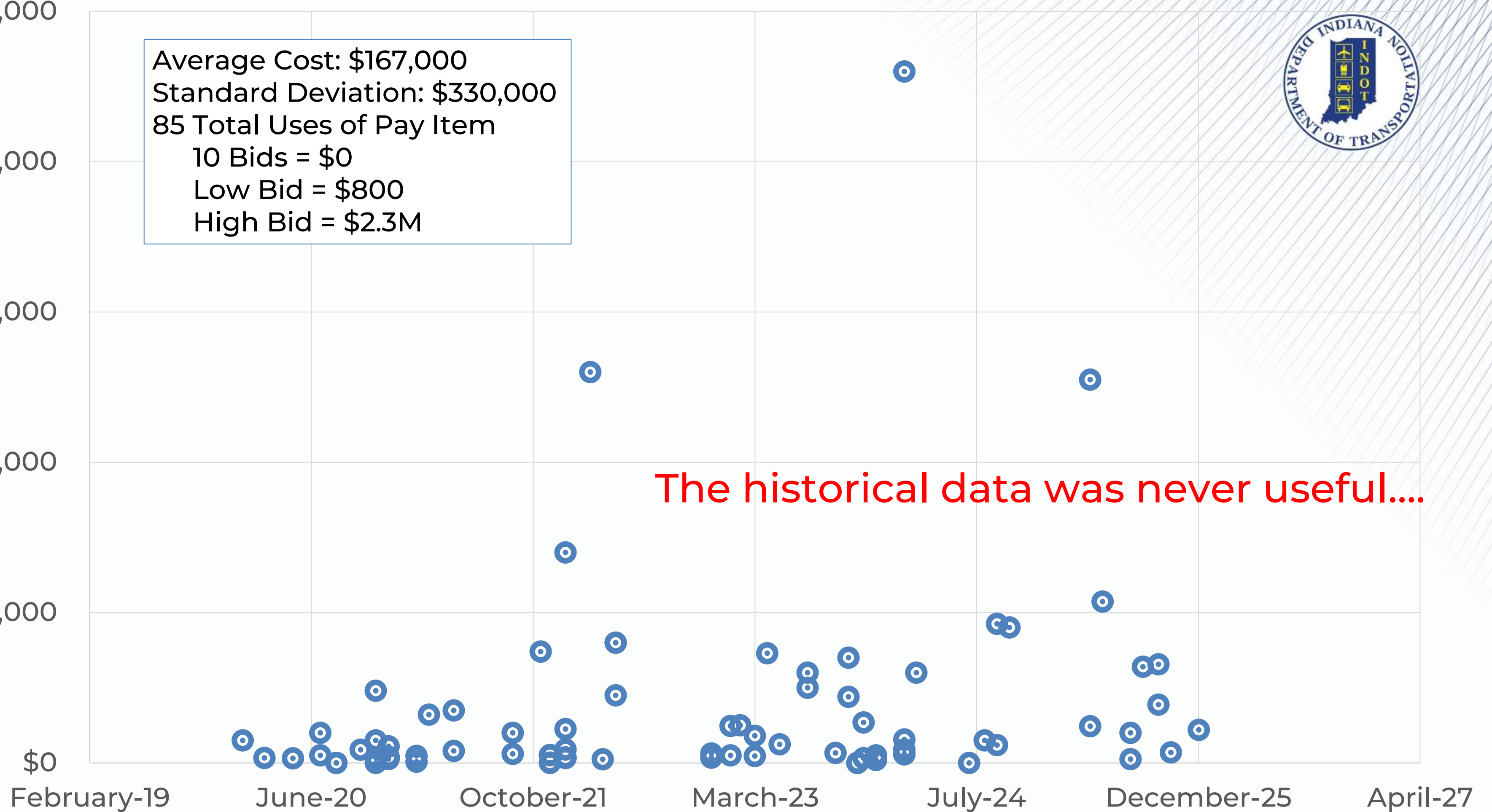
**NO MORE TEMPORARY CAUSEWAY PAY ITEM!
(Cost included in other items)**

Temporary Causeway, LSUM (Letting Years 2020-2025)



Average Cost: \$167,000
Standard Deviation: \$330,000
85 Total Uses of Pay Item
10 Bids = \$0
Low Bid = \$800
High Bid = \$2.3M

The historical data was never useful....



205-B-326d Temporary Causeway Details

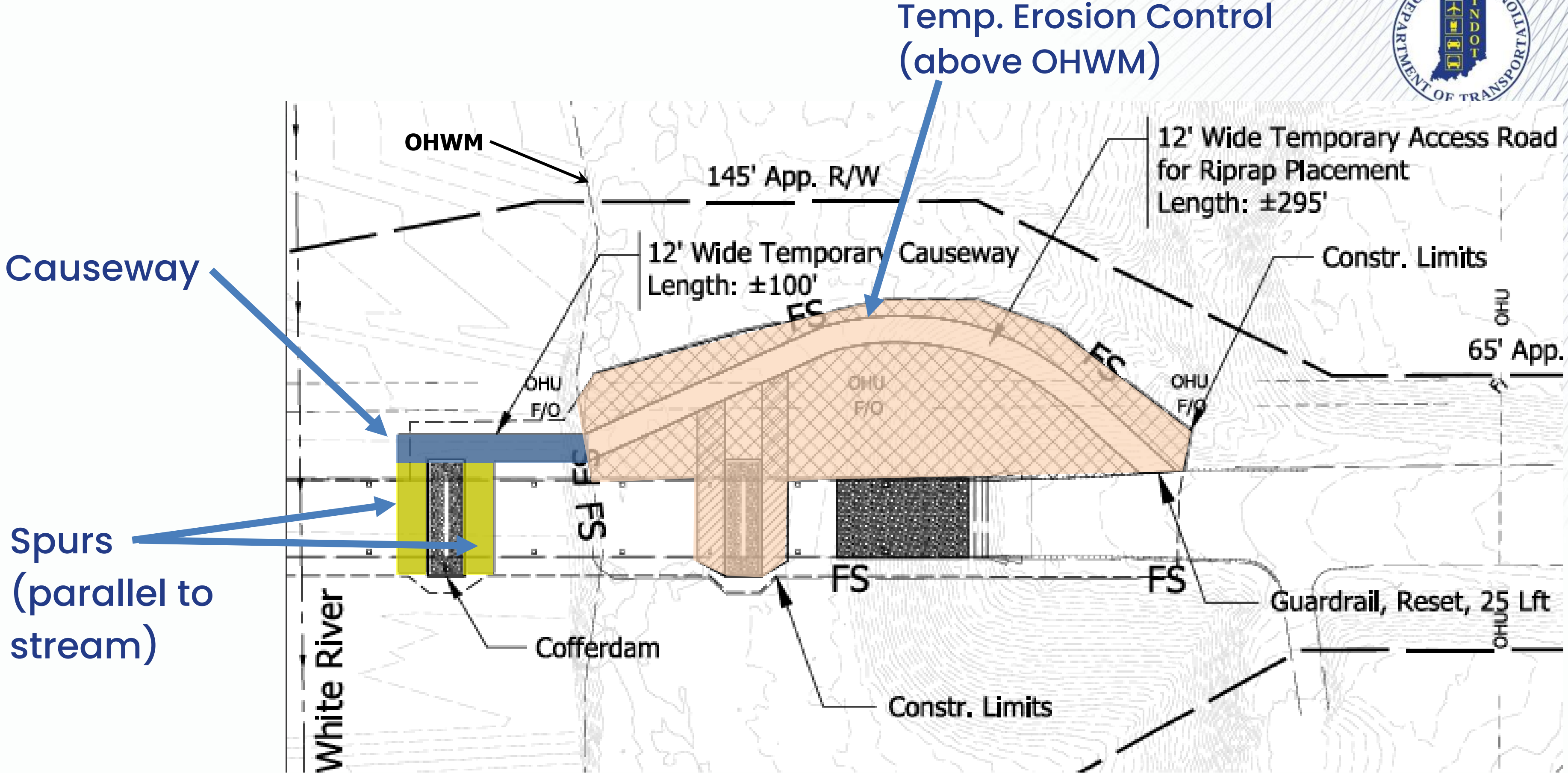


- 3 Types: Fords, Culverts and Platforms

GENERAL NOTES:

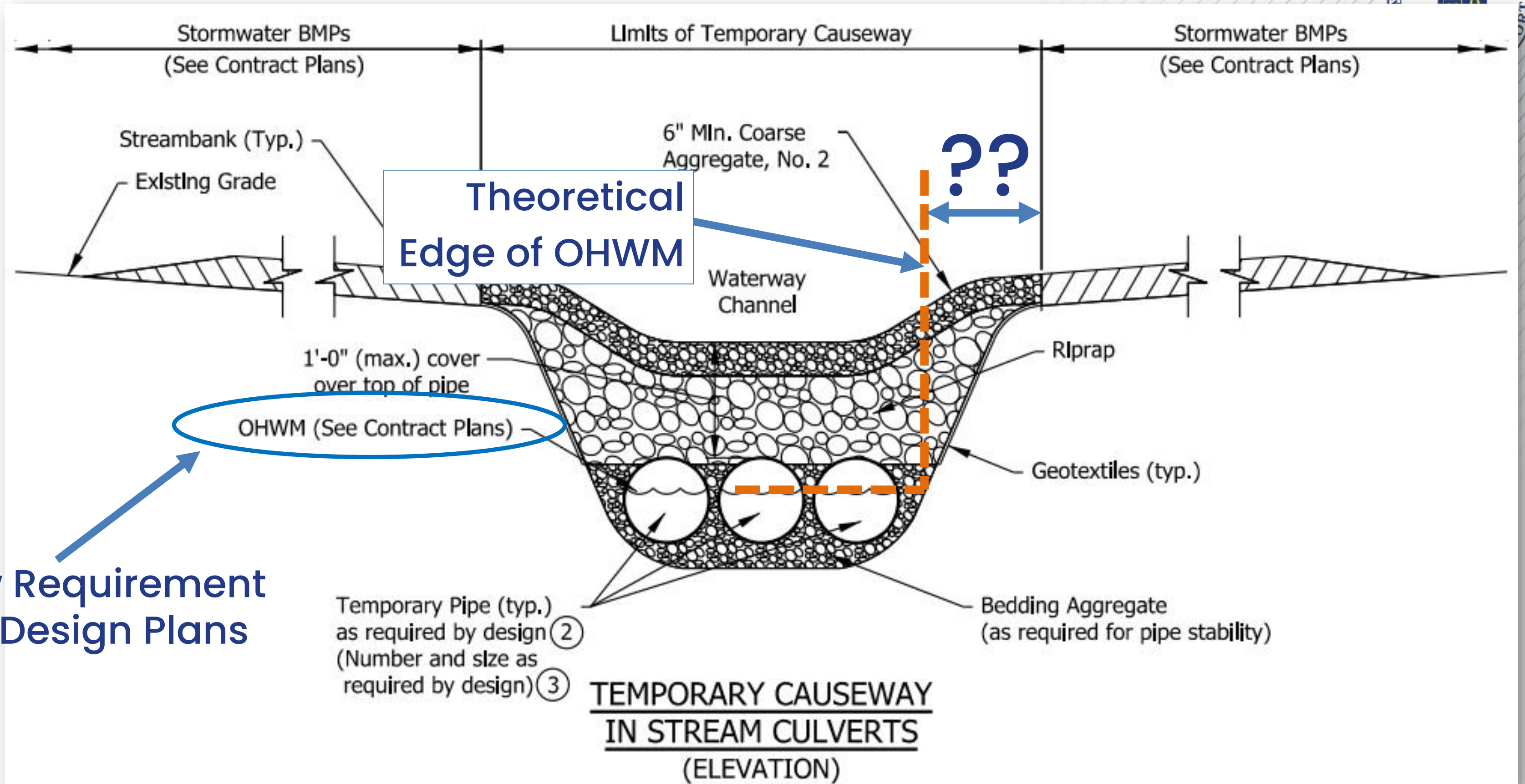
1. The temporary causeway shall remain in place no longer than the time specified in the permits.
2. The Contractor shall confirm that all regulatory requirements are met prior to construction of any crossing.
3. The crossing shall be perpendicular to the stream flow. Spurs constructed parallel to the stream may be acceptable to access pier locations. Spurs shall meet the same requirements as the main causeway and shall not create additional restrictions to the flow.

Terminology



205-B-326d Temporary Causeway Details: CULVERT

- Most Common



New Requirement
for Design Plans

205-B-326d Temporary Causeway Details: CULVERT



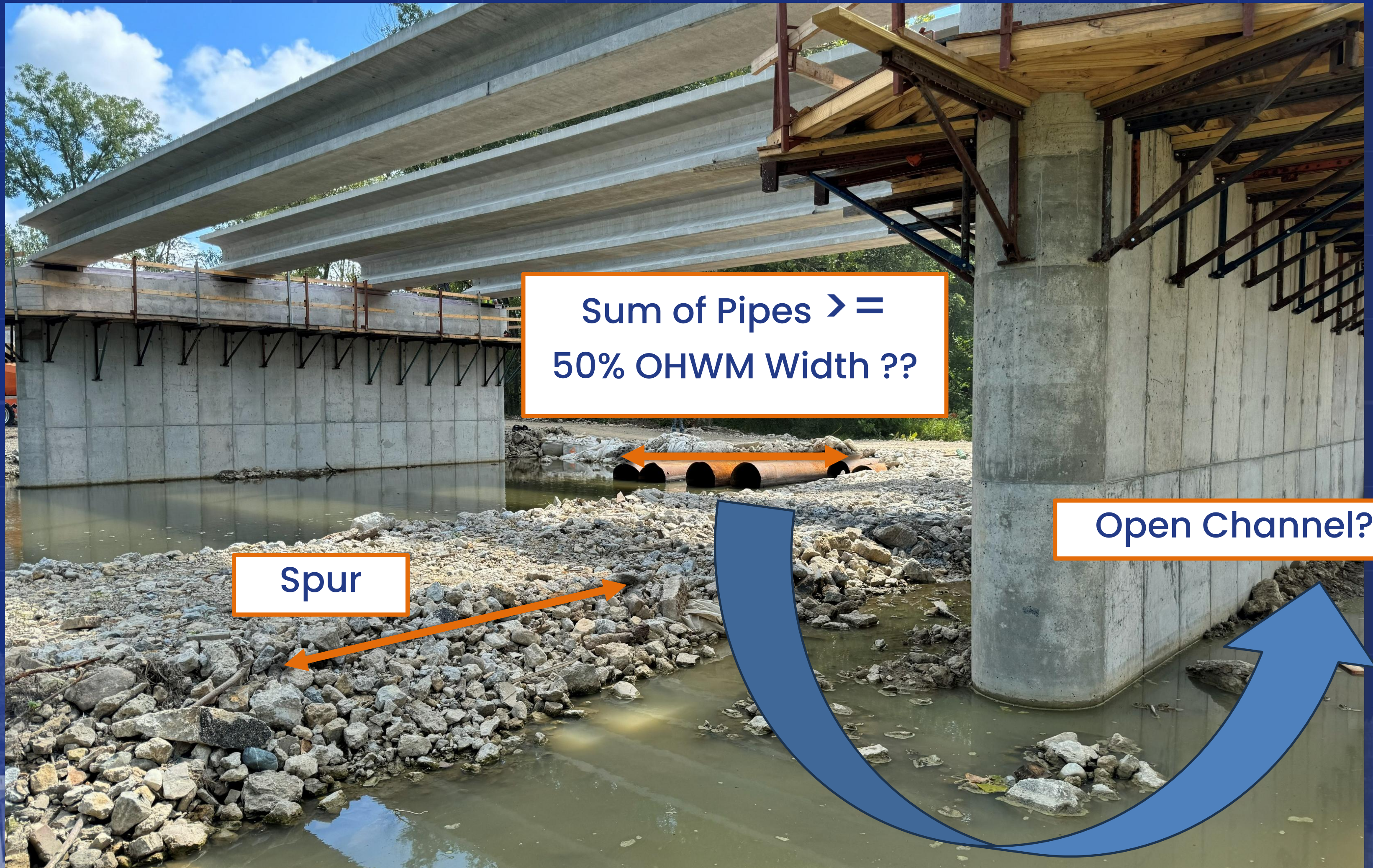
NOTES:

1. For use in perennial or intermittent streams as classified in the waters report in the permits.
- ② The diameter of a single pipe or the sum of the diameters of multiple pipes shall be at least 1/2 of the OHWM width. For a partial causeway, any open stream width shall be included with the sum of the pipe diameters
- ③ Pipe diameters shall be as large as will fit into the existing stream channel without excavating. Minimum pipe diameter for any individual pipe shall be 14 in.
4. Multiple pipes may be installed to meet the design flow capacity.
5. The Contractor shall design and install the temporary causeway to minimize channel backwater during low flow. The pipe slope shall follow the slope of the existing stream.
6. Clearing and excavation of streambanks, streambed, and approach shall be minimized.
7. The length of any individual pipe shall not exceed 40 ft.
8. Pipe outlets shall be designed to avoid scour damage to the stream channel. Temporary energy dissipation may be required.
9. Stormwater BMPs shall be installed prior to construction of the temporary causeway.
10. Sufficient bedding aggregate shall be placed to support the pipe for the intended use. The pipe flow lines shall be kept as close to the existing channel flow line as possible.
11. All stone above the OHWM shall be placed on geotextiles.
12. The stream channel and stream banks shall be reestablished to the original grades unless otherwise noted on the plans.



Sum of Pipes \approx
50% OHWM Width

Approximate
Width of OHWM



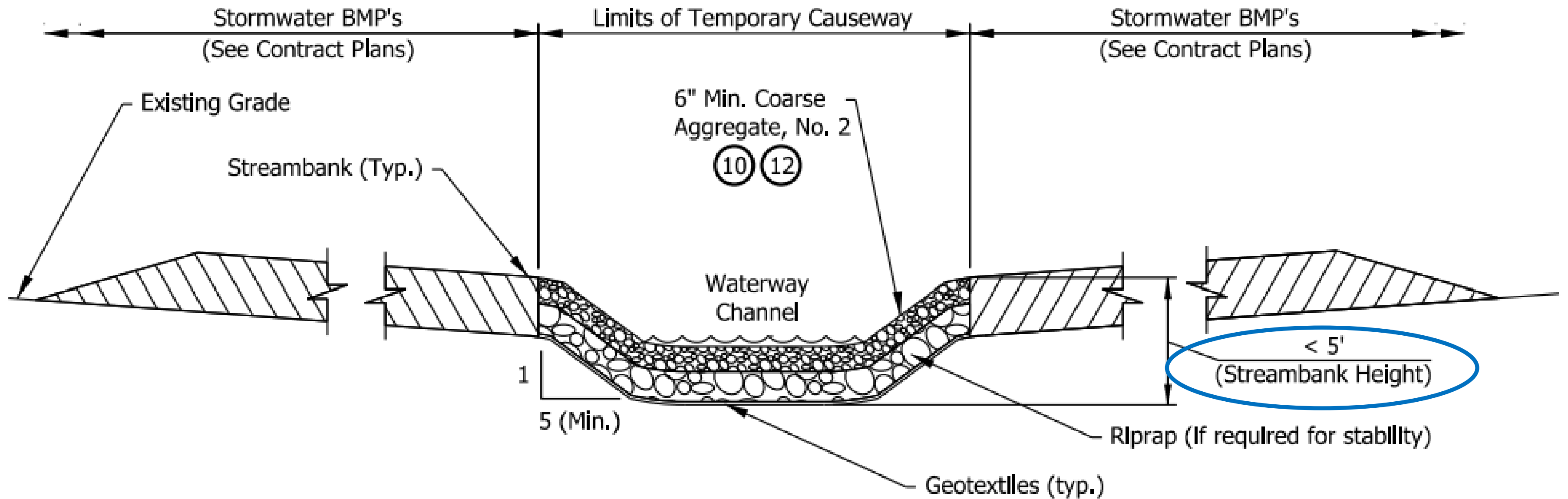
Sum of Pipes \geq
50% OHWM Width ??

Spur

Open Channel?

205-B-326d Temporary Causeway Details: FORD

- Least Common



TEMPORARY CAUSEWAY
IN STREAM FORD
(ELEVATION)

205-B-326d Temporary Causeway Details

- Ford

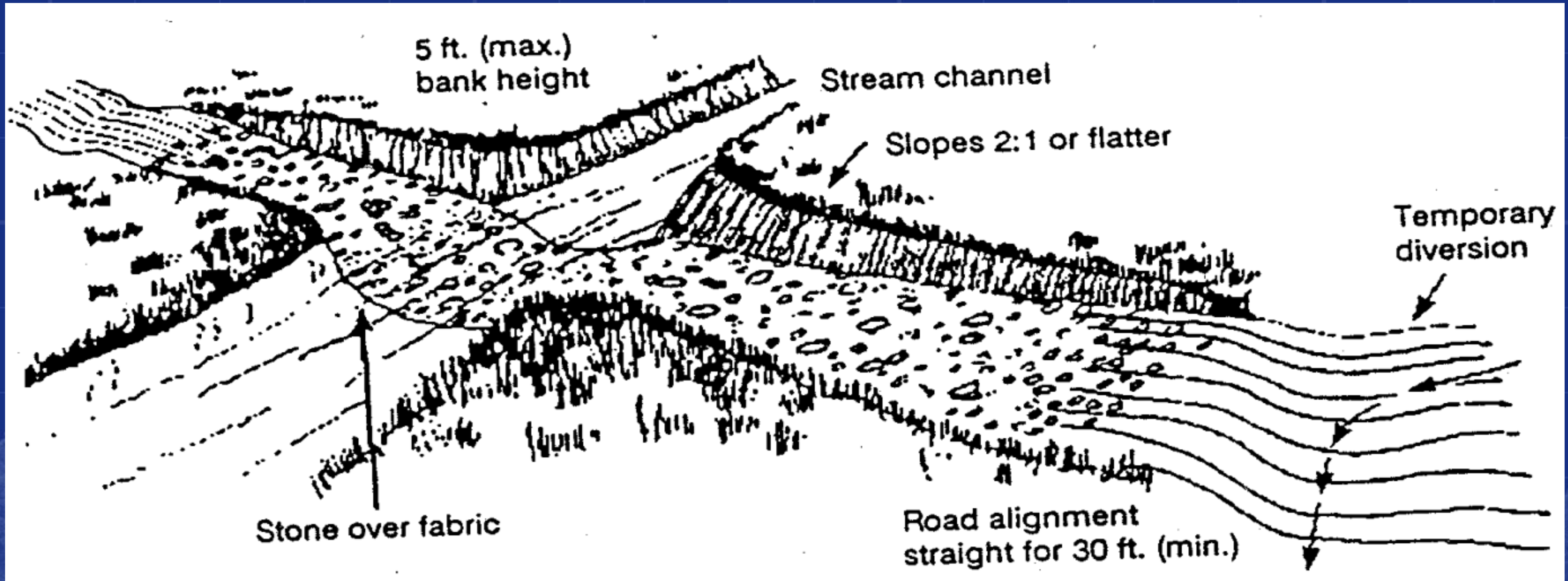


NOTES:

1. For use in ephemeral or intermittent streams as classified in the waters report in the permits only.
2. For use in channels with minimal construction traffic.
3. For use in channels with a streambank height less than 5 ft above the streambed.
4. For use in channels where the water depth does not exceed 2 ft under typical flow conditions and the drainage areas are less than 1 sq mi. **No excavation in the stream bed for installation!**
5. The streambed should support the low water crossing without special site preparation.
6. The causeway shall not be constructed in an officially designated trout stream, on a wild, scenic, or recreational river, or on an officially designated water trail route unless authorized by the permits.
7. The ford shall not direct water out of the channel.
8. Soil or other material shall not be placed in the channel. Existing material shall not be excavated from the channel except to lay back the stream bank for access.
9. Banks shall be laid back to no steeper than 5:1.
10. The maximum driving surface width shall be 30 ft.
11. All stone shall be placed on geotextile.
12. Temporary construction mats may be substituted for the coarse aggregate and riprap. Creosote-treated materials shall not be used.
13. The stream channel and stream banks shall be returned to their original condition after the temporary causeway is removed unless otherwise noted on the plans.

BASED ON: IDNR DRAINAGE HANDBOOK

Section 5.9 Stream Crossing Construction and Repair





Could also be a crane mat



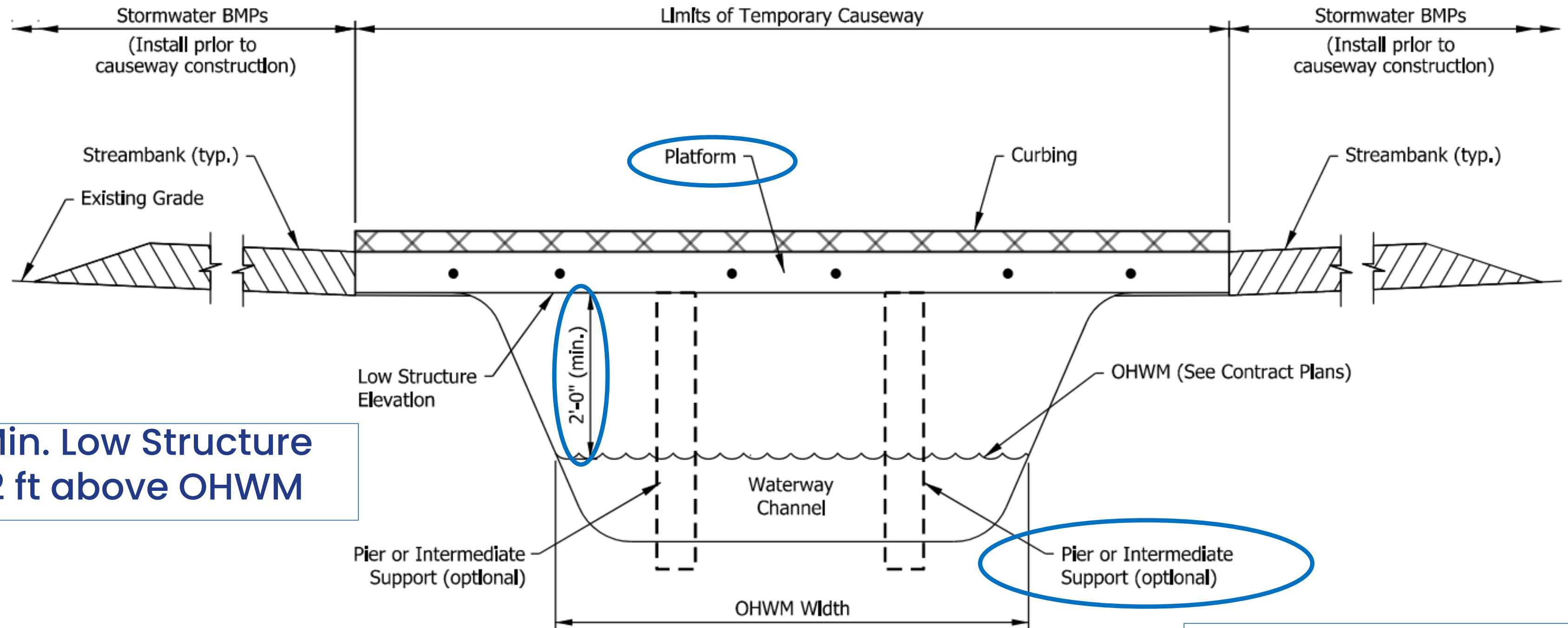
Per RSP this would all be placed on geotextiles

Geoweb/Geocell sheets

Photo Credit: USDA Forest Services

205-B-326d Temporary Causeway Details: PLATFORM

- Purposefully not called a temporary bridge, term reserved for live traffic



**Min. Low Structure
2 ft above OHWM**

**Pier or Intermediate
Support (optional)**

**Purposely Vague for
Max. Flexibility**

**TEMPORARY CAUSEWAY
PLATFORM
(ELEVATION)**

205-B-326d Temporary Causeway Details

- Platform



NOTES:

1. The low structure elevation shall be a minimum of 2 ft above the OHWM.
2. Construction shall minimize impacts to stream flows.
3. The width of piers and intermediate supports shall be less than 1/2 the OHWM width.
4. The platform shall be constructed and maintained to prevent soil tracked onto the platform from falling into the stream. Curbing shall be placed and securely fastened on each side of the platform.
5. Debris and soil shall be removed from the driving surface at least once daily. The removal process shall not allow debris and soil to enter the stream channel.
6. The temporary causeway shall not be constructed in an officially designated trout stream, on a wild, scenic, or recreational river, or an officially designated water trail route unless authorized by the permits.
7. The maximum driving surface width shall be 40 feet.
8. The platform ends, or abutments, shall be placed on stable banks.
9. All stone used above the OHWM shall be placed on geotextile.
10. No excavation shall occur within the stream unless authorized by the permits.
11. The Contractor shall remove all temporary materials, restore all disturbed areas to their original condition, and revegetate in accordance with 621, as shown as the final condition on the contract plans or as directed.



**Interior Support
Stone Example**

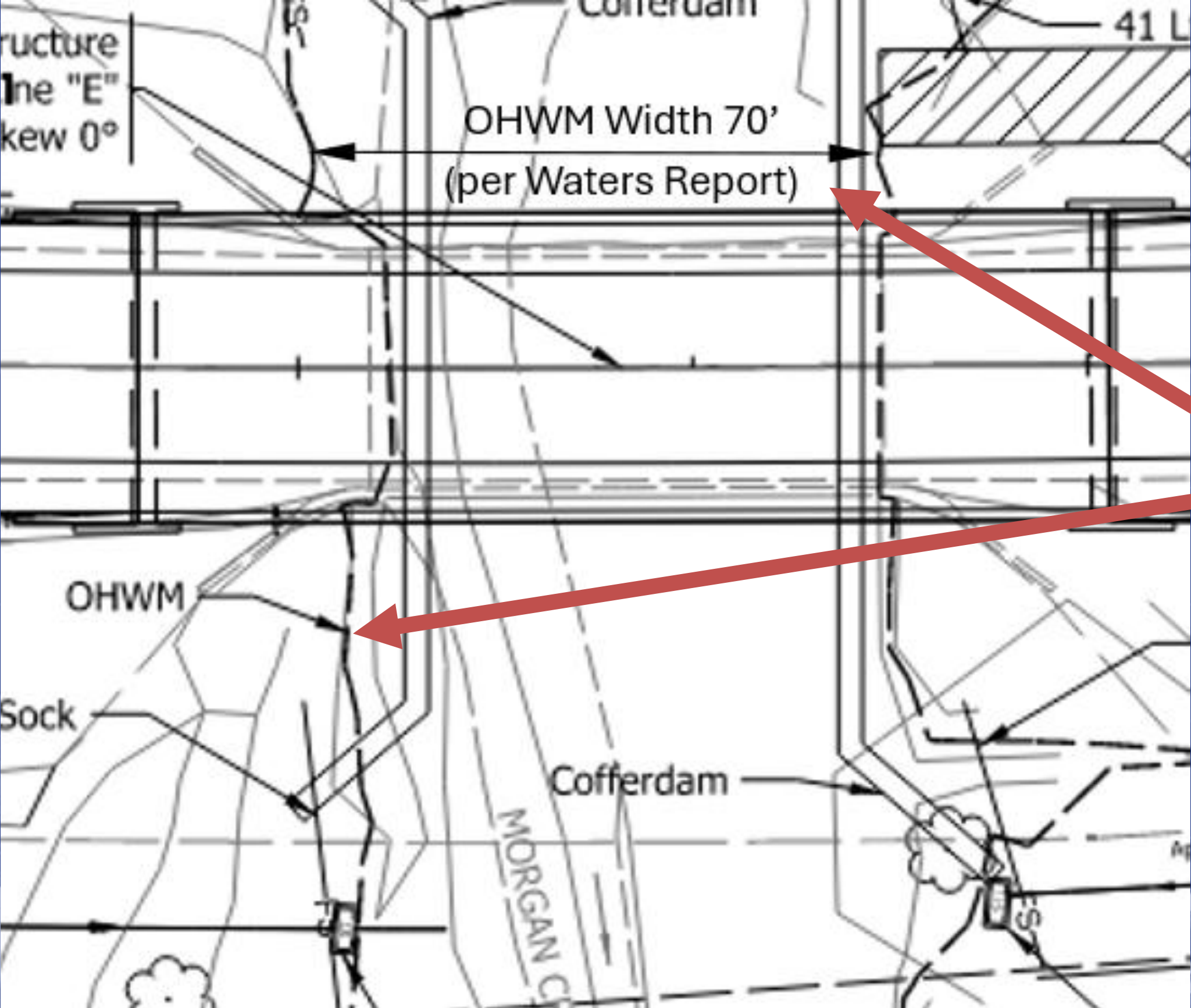
**Platform
Steel Sections**









Spur

Width of Open Channel

NEW IN DESIGN PLANS



LEGEND

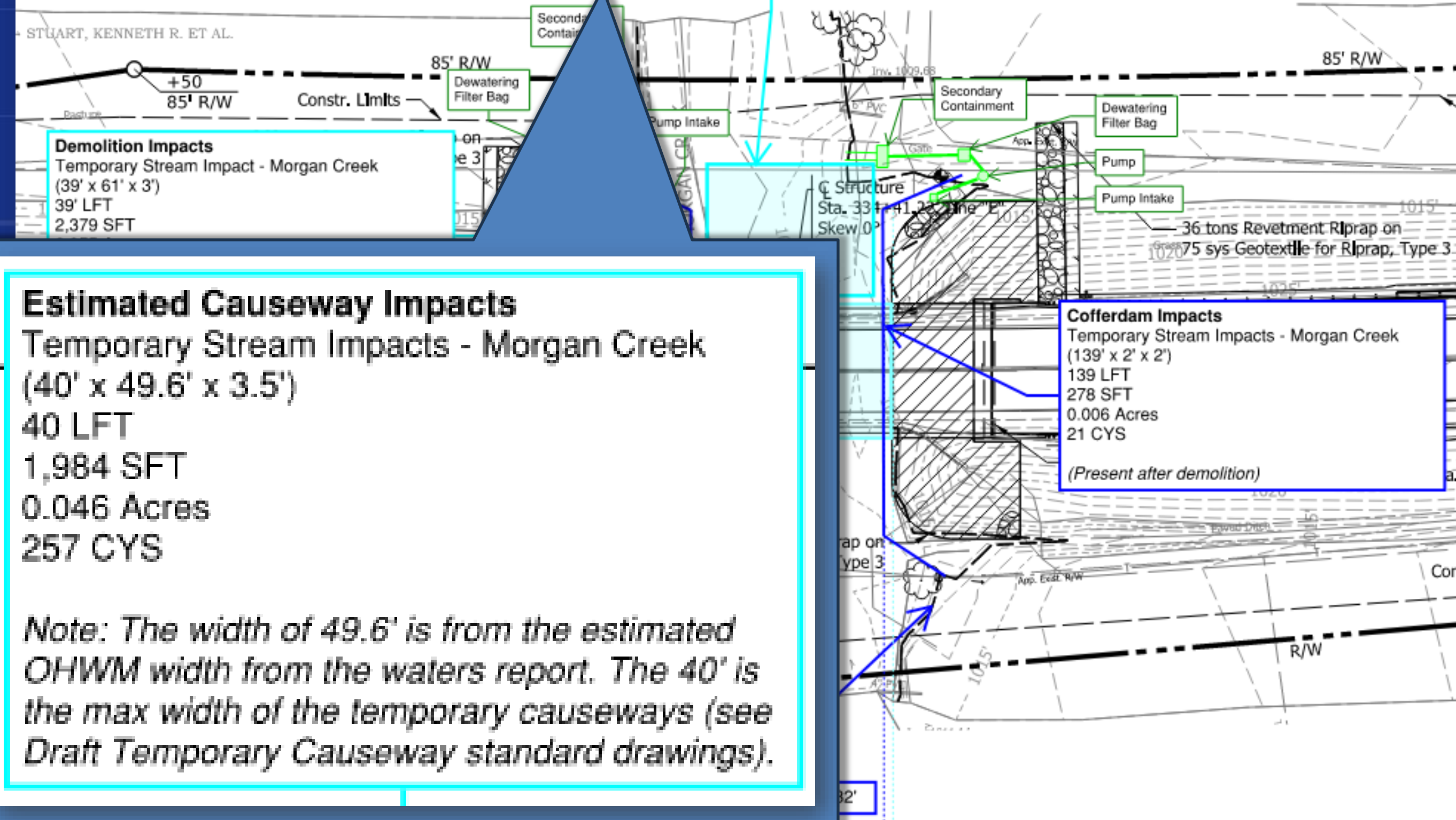
-  Temporary Sediment Trap
-  Modified Check Dam
-  Silt Fence
-  Filter Sock
-  Est. OHWM (Depth = 3.5 ft)
-  Construction Entrance

PERMITS

- Posted w/ Letting Docs
- Include Application
- Steam Type
- Impacts Shown as Highlighted Areas

Estimated Causeway Impacts
Temporary Stream Impacts - Morgan Creek
(40' x 49.6' x 3.5')
40 LFT
1,984 SFT
0.046 Acres
257 CYS

Note: The width of 49.6' is from the estimated OHWM width from the waters report. The 40' is the max width of the temporary causeways (see Draft Temporary Causeway standard drawings).



Demolition Impacts
Temporary Stream Impact - Morgan Creek
(39' x 61' x 3')
39' LFT
2,379 SFT

Estimated Causeway Impacts
Temporary Stream Impacts - Morgan Creek
(40' x 49.6' x 3.5')
40 LFT
1,984 SFT
0.046 Acres
257 CYS

Note: The width of 49.6' is from the estimated OHWM width from the waters report. The 40' is the max width of the temporary causeways (see Draft Temporary Causeway standard drawings).

Cofferdam Impacts
Temporary Stream Impacts - Morgan Creek
(139' x 2' x 2')
139 LFT
278 SFT
0.006 Acres
21 CYS
(Present after demolition)

CONTRACT DOCS - PERMITS

Posted Documents for View and Download

Results Found:

Permit application must be included with the permit approval letter at Final Tracings so the contractor can find it here and know what is permitted!

Expand All Collapse All

Contract Information Books

Plan/Drawing Sets

Existing Plans

Revisions

Q And A Forms

Permits

Number of Records: 1

Select File Wanted

Select File

Reports

Utilities Information & R

Project Commitments

Additional Information

Construction Changes

Proposals

Number of Records: 1

Permits

Number of Records: 1

Select File Wanted	Contract Number	Title	Content Id	Document Type	District	Letting Date	Primary Designation Number	Last Updated On	File Size in kB's
Select File	B 40367	FT Permits 1700925 For Contract Services	UCM11GDOT6776267	Permits	Greenfield	3/9/22		1/18/23	6451

Next Up...



Pump Arounds



Cofferdams

UPDATES: Rapid Fire Topics



Prestressed Beam Imposed Deformations

Memo No. 26-05

- Positive Restraining Moments
- Plan Notes RE: Beam Age



Prestressed Beam Camber and Fillet Loads

Memo No. 26-04

- Guidance related to fillet heights
- Camber table and notes for plans

Rigid (Concrete) Bridge Deck Overlays

Memo No. 25-15



- Overlay, Rigid Pay Item, No more optional bids
- Specific material pay items for LMC still available for use

Lean Concrete Base

Memo No. 25-11

- Base Option for Isolated RCBA Replacement

Pay Items

- **New.** Effective June 1, 2025, the following pay item should be used as noted in this memo.

Pay Item	Description	Unit	Notes
309-12695	Lean Concrete Base, 9 in.	SYS	LCB will be identified in the approved pavement design. When LCB is utilized a subgrade treatment below the LCB is not required.

Memos Covered Last Year...



<u>25-06</u>	2/13/25	Prestressing Strands	406-10.0, 406-12.02(03)
<u>25-05</u>	2/13/25	Reinforcing Bar Support Devices	406-12.03(03), Fig. 405-3D, Fig. 405-3E, Fig. 406-12D[New]
<u>25-04</u>	2/13/25	NEXT Beams	406-12.02(01), Fig. 406-14BB, Fig. 406-14DD

Extended Pile Bend Retrofits BDA 412-06



- Best Practices for Repairs
- Specific Example Projects



NEXT Beam Tips BDA 406-02

- Best Practices & Pilot Project Information



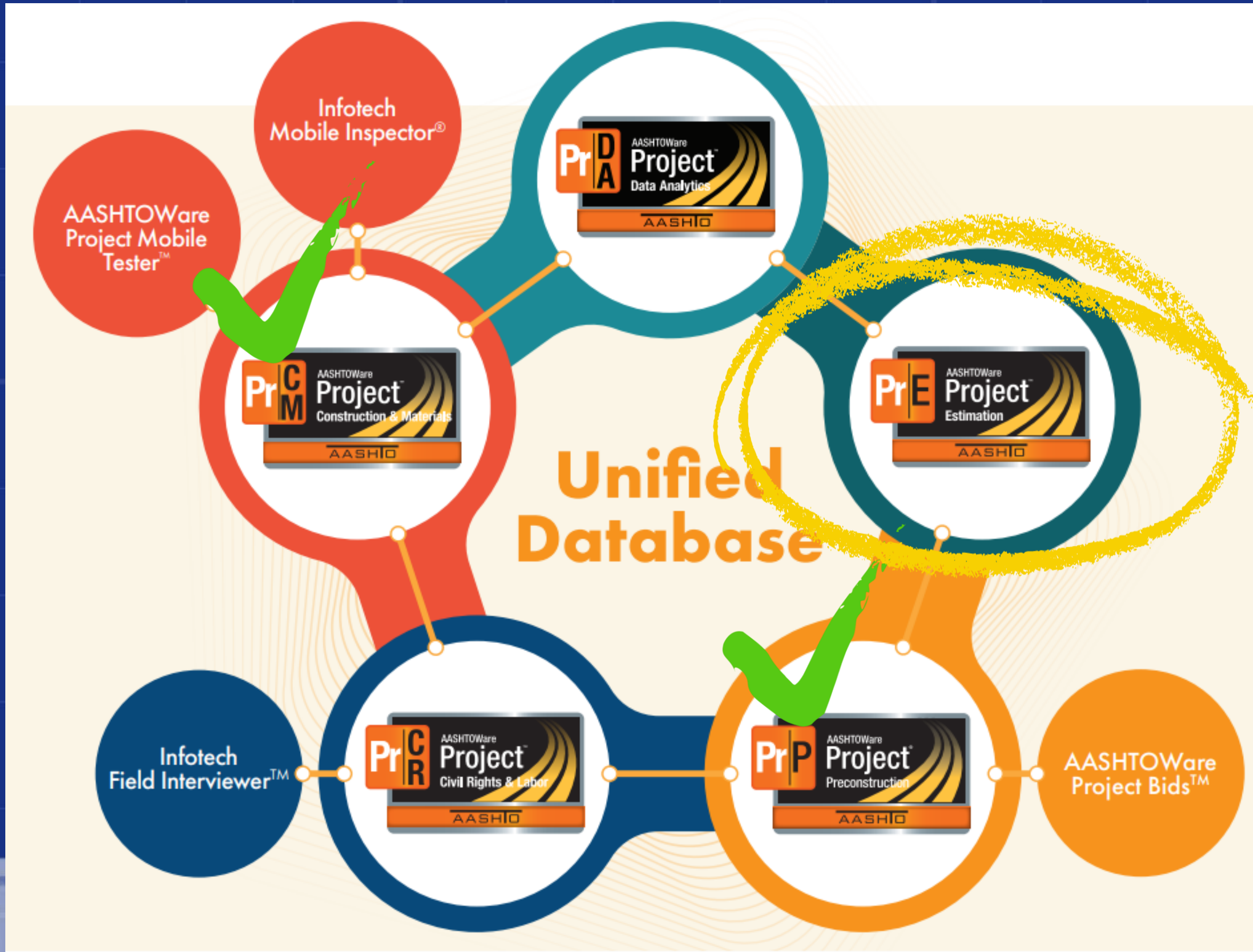
For bridge design policy and BDA questions
you can reach us @

BridgeDesignOffice@INDOT.in.gov



On the Horizon... AASHTOWare Project: Estimation

- Continuity:
Scoping>Design>Contracts
- Unified Database
- CES no longer supported
- More to come!
 - Guidance Docs
 - Training



More on the Horizon

- Bentley Infrastructure Cloud
 - Design Submittal ERMS Replacement
 - Cradle to Grave Project Collaboration hub
- Digital Delivery – baby steps
 - RFP for Requirements gathering – March
 - Models for information – legalese
 - Pilots



INDOT
**DIGITAL
DELIVERY**

Infrastructure Cloud



Infrastructure Cloud | Lead Des 1900162 | Contract R-42570 - Major Projects ...

Search any datatype in this project or asset

Project View

Lead Des 1900162
IMPRO
Contract R-42570 - Major Projects Improve 64 (ATL and Interchange Reconstruction on I-6...

Sunday Feb 15
44°F
57° 29°
Rain
Wind: 4 mph, NE
Humidity: 100%

MON	TUE	WED	THU
58° 36°	62° 53°	66° 49°	70° 48°

My recent activity

Comment Tracking Form - Copy #CTF-00054 Amanda's Issue 1 day ago	Viewed
Comment Tracking Form - Copy #CTF-00021 Ramp 5 days ago	Viewed
Comment Tracking Form - Copy #CTF-00019 Test PMP February 6, 2026	Viewed
Submittal Issue #SUB-00008 February 6, 2026	Viewed

My work

My work | My role | All

ID: SUB-00008 Assigned to: Jonathan Paauwe Status: Unresolved
ID: CTF-00019 Test PMP Assigned to: Jonathan Paauwe Status: Fixed

Create

- Change Order Request
- Comment Tracking Form
- Construction Submittal
- Contract Wage Determination and Interview
- Daily Log
- Daily Log
- IC-652

Home | Work | Documents | Deliverables | Map | iModels | Dashboard | Carbon Analysis | Administration

What is Infrastructure Cloud?

From this.....



ProjectWise Explorer 2023

Datasource Folder Document View Tools Window Help

Address: pw:\\indot-pw.bentley.com:indot-pw-01\Documents\Crawfordsville\2300202\

2300199
2300202
 Butler, Fairman and Seufert, Inc.
 Shared
 Saved Searches
 Saved Searches
2300222
2300226
2300227
2300228
2300229
2300230

Name	File Name	Description	File Size
Enter text here	Enter text here	Enter text here	Enter text here
Butler, Fairman and Seufert, Inc.		Butler, Fairman and Seufert, I...	

To this



Infrastructure Cloud

https://infrastructurecloud.bentley.com/0253e480-4a6d-496f-a1bd-2e4a4bf2711d/documents/files

Infrastructure Cloud | Sandbox BIC Prototyping Sandbox PROJECT ☆

Search any datatype in this project or asset

Documents | Plan set | Specification | Media explorer | Components

Home | Work | Documents | Deliverables | Map | iModels | Dashboard | Carbon Analysis | Administration

BIC_Prototyping > Project Development

View: Global

<input type="checkbox"/>	Name	File Name	Description	File Size	File Updated	Fi
<input type="checkbox"/>	_Proposed Design					
<input type="checkbox"/>	Design					
<input type="checkbox"/>	Environmental Services					
<input type="checkbox"/>	General Correspondence					
<input type="checkbox"/>	Geotechnical Design					
<input type="checkbox"/>	Hydraulics					
<input type="checkbox"/>	MOT					
<input type="checkbox"/>	Pavement Design					
<input type="checkbox"/>	Project Management					
<input type="checkbox"/>	Railroad					
<input type="checkbox"/>	Right of Way					
<input type="checkbox"/>	Scoping					

IC Rollout Phase I-Design Deliverables



B Infrastructure Cloud | **WPRC** Lead Des 1900162 Contract R-42570 - Major Projects ... **PROJECT** ☆

Search any datatype in this project or asset

Deliverables management > Drafts > new

Transmittal draft
Draft, new Save draft

General | Recipients | Documents | Scheduling | Responses | References

* indicates required fields

Project Contract R-42570 - Major Projects Improve 64 (ATL and Interchange Reconstruction on I-64 and I-265 in New Albany)

Subject *

Purpose * ... Confidential data included ⓘ

Distribution rule Select purpose to populate this list ⓘ

Comments

Status
Draft
New draft

Issue Save draft Close

Home
Work
Documents
Deliverables
Map
iModels
Dashboard
Carbon Analysis
Administration

On going Tasks

- Procedures are being developed
- Training based on those new procedures to follow
- "Go Live" dates coming soon – targeting Spring 2026



Let's Get Started!



Digital Delivery

🏠 [INDOT](#) > [INDOT](#) > Digital Delivery

- Register with Bentley (if you aren't already) for an IMS account:

[Licensing, Cloud and Web Services – Bentley User Registration – Communities](#)

- **Bookmark and check the Agency's "Digital Delivery" website often**
- [INDOT: Digital Delivery](#)
- **Give us your feedback and great ideas**

INDOT Digital Delivery 10 Year Strategic Plan

- Phase 1: Planning & Foundations (2025–2026)
- Phase 2: Pilot Development (2026–2027)
- Phase 3: Evaluation & Scaling (2028–2029)
- Phase 4: Statewide Rollout (2030–2032)
- Phase 5: Optimization & Sustainability (2033–Future)



Digital Delivery Today – Phase 1.5



- RFP in March
 - Data requirements
 - System Assessment
 - Process Modification

- Models for Informational Purposes
 - Pilot workflows
 - Contractor and Construction Management feedback
 - Legal/Contractual Questions