


 June 19 - 20, 2025  
 Hollywood, FL

**TRANSPORTATION  
SYMPOSIUM**

# Use of ACROW Bridges on FDOT Projects

Bruno Vasconcelos | Will Smith  
FDOT | ACROW

Transportation Symposium  
Website

  
SCAN ME

1

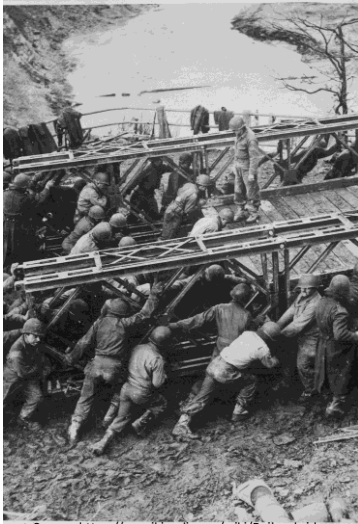
## Objectives

- What is ACROW?
- What does the Department own?
- How to request it?
- How to Deploy 300 Series
- How to Deploy 700XS Series
  - ACROW Bridge Design & Construction Considerations
  - ACROW 700XS® / FDOT Standards
  - Installation methods
  - Examples

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# What is ACROW Bridging?



Source: [https://en.wikipedia.org/wiki/Bailey\\_bridge](https://en.wikipedia.org/wiki/Bailey_bridge)

- Proprietary steel design derived from the original Bailey Bridge of WWII
- World leader in design, engineering and manufacture of prefabricated modular steel bridges
- Headquartered in Parsippany, NJ
- Offices across USA, Canada, Italy, UK, Poland
- Manufacturing facilities in Milton, PA; and Lydney, Gloucestershire, UK
- Staging yards in Lafayette, NJ; Eden, NC; and Centralia, WA

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# What is ACROW Bridging?

**ISO 9001**  
CERTIFIED



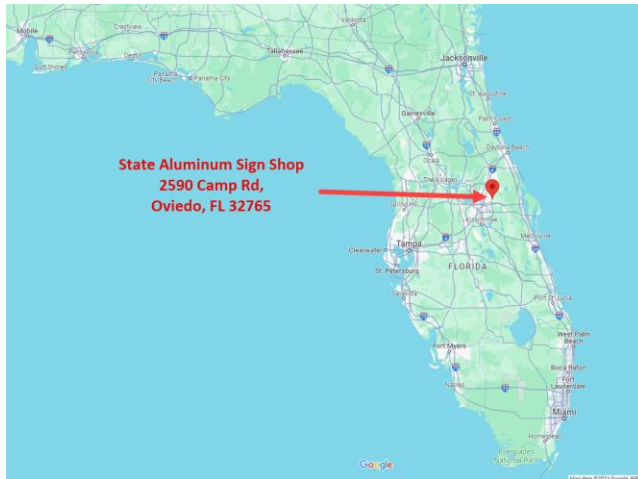
Advance Major Bridge w/ fracture critical endorsement



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# What is ACROW Bridging?



- Initial bridging created in 1989
  - Combination of Bailey Bridging and ACROW
- Virtually all single laned bridging initially
- Previous Inventory Locations
  - Defuniak Springs – NW Florida
  - S. Dade – South Florida
- Current Location
  - Oviedo – Central Florida

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# What does the Department own?

- I-10 Escambia Bay Bridges suffered damage.
- 45 roadway sections removed
- 25 concrete piers reconstructed
- 3,720 LF of ACROW Bridge
  - 300 Series



<https://www.massman.net/project/display/338>

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## What does the Department own?

- In June 2007 Bailey bridging was released to District 3
  - Much of it ended up with Forestry Department
- Defuniak yard was eliminated
- South Dade yard inventory moved to Oviedo
- Old extra wide single lane ACROW was ultimately surplused.
  - Roughly 2000 ft of bridging
- All ACROW bridging and components were centralized to Oviedo.

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## What does the Department own?

|                                     | Linear Feet |          |           |           |
|-------------------------------------|-------------|----------|-----------|-----------|
|                                     | Total       | Deployed | In Repair | Available |
| ACROW Series 300 Two Lane (24')     | 6,000       | 1,010    | 430       | 4,560     |
| ACROW Series 700XS Two Lane (24')   | 3,000       | 0        | 0         | 3,000     |
| ACROW Series 700XS Three Lane (36') | 1,300       | 160      | 0         | 1,140     |
| ACROW Series 700XS Three Lane (42') | 320         | 70       | 0         | 250       |

All ACROW Bridging kept at:  
State Aluminum Structures Shop  
2590 Camp Road  
Oviedo, FL 32765

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# What does the Department own?

## 300 Series

- <45mph
- Only available in 24ft roadway width.
- Used with a Standard Plan.
  - 60ft max span

## 700XS Series

- >45mph
- Can accommodate widths of 24ft, 36ft, and 42ft.
- ACROW must be involved with design.
- Can be launched from a single side.

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# How to Request ACROW?

- Contact Central Office (me)
- Fill out the request form and provide parts list
- Coordinate pick-up
- Lead times to follow:
  - 30 day for request form
  - 10 days for pick-up
  - 10 days for drop-off
- Initial Inspection for 300 series performed by Department. (me again)

The image shows a detailed form for requesting temporary bridging. It includes sections for project information, bridge details, and a table for bridge specifications.

| Model Type   | Nominal Width | Description     | Total Length Requested (in increments) |          |          |
|--------------|---------------|-----------------|--|----------|----------|
|              |               |                 | Bridge 1                               | Bridge 2 | Bridge 3 |
| Series 300   | 24'           | Double-Single   |  |          |          |
| Series 700XS | 24'           | Triple-Single * |  |          |          |
| Series 700XS | 36'           | Triple-Single * |  |          |          |
| Series 700XS | 42'           | Triple-Single * |  |          |          |
| Series 700XS | 42'           | Triple-Double   |  |          |          |

Bridging is held and maintained at:  
State Aeronautics Structures Shop  
2500 Camp Road  
Davids, FL 32165  
(407) 877-6330

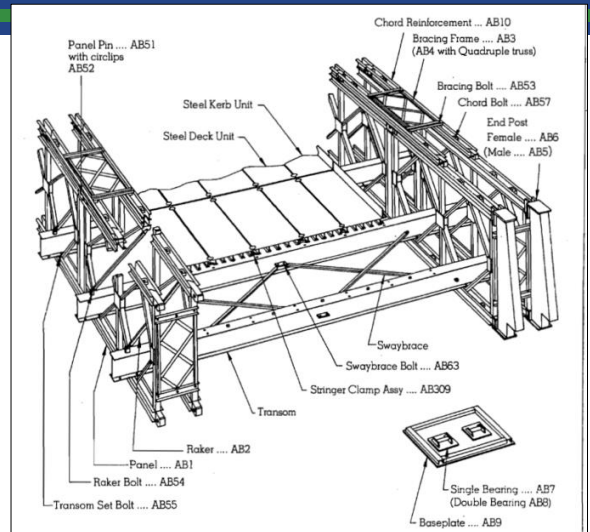
Minimum Number of Days required for:  
• Request: At least 30 days' notice  
• Pick-up: At least 14 days' notice  
• Return: At least 14 days' notice

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## How to Deploy 300 Series

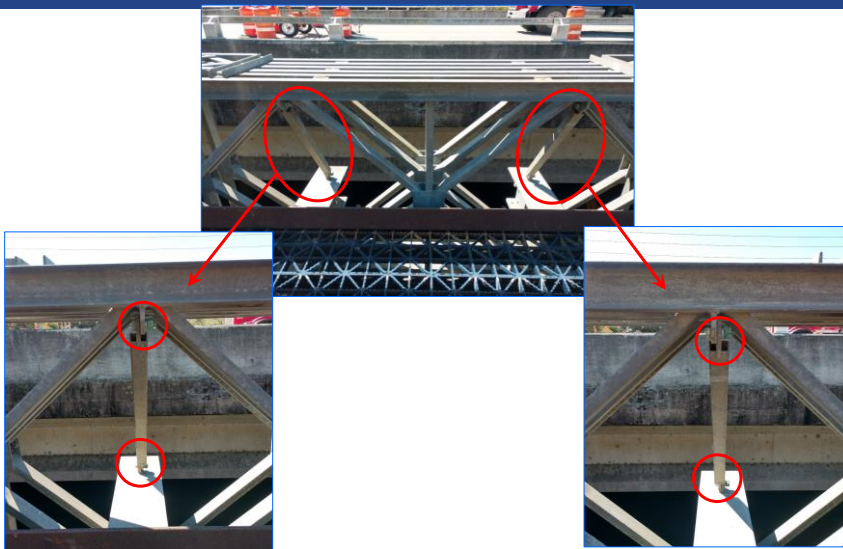
- Relatively simple to assemble.
- ACROW Bridge manager (me) performs initial inspection.
- Contractor must provide personnel for training at Oviedo.
- A sample bridge is kept erected on site to instruct staff.
- All repairs are made on site to bridging.
- Always placed with a crane.



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## How to Deploy 300 Series

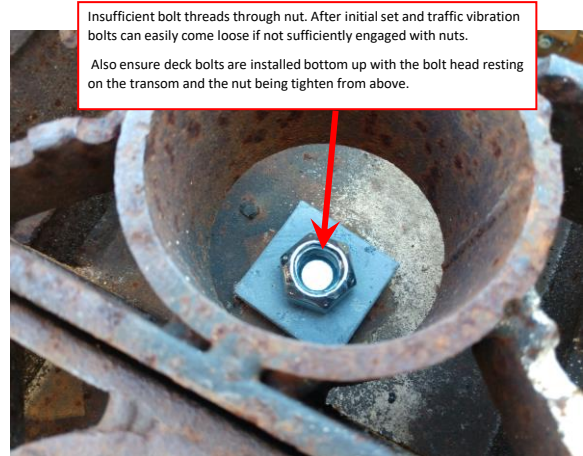
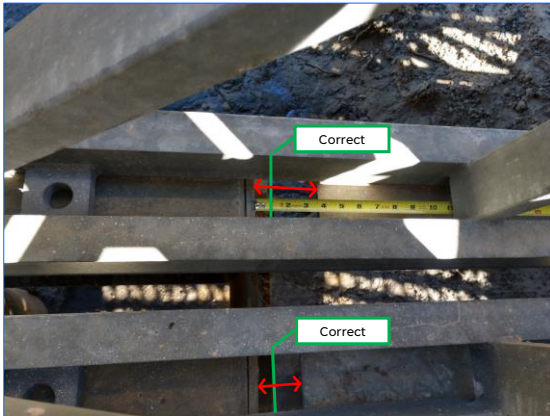


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## How to Deploy 300 Series



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## How to Deploy 700XS Series

### Three Main Components

1. Truss Panel – AB701, Shear Truss Panel – AB702, Heavy Shear Truss Panel – AB708. Dimensions = 10' long x 7.5' wide, pinhole to pinhole.
2. Orthotropic AB601/C Deck & AB602/C Curb Unit – 10' x 6'. Curb unit is the same but has 6" high welded curb. FDOT owns plain steel decks and new epoxy aggregate coated decks. Bridges using plain steel decks require an asphalt overlay typically to provide a crown or cross slope.
3. Transom Beams – SC0017 and AB1006 - 24' roadway width, AB957 - 36' roadway width, and AB978 - 42' roadway width.

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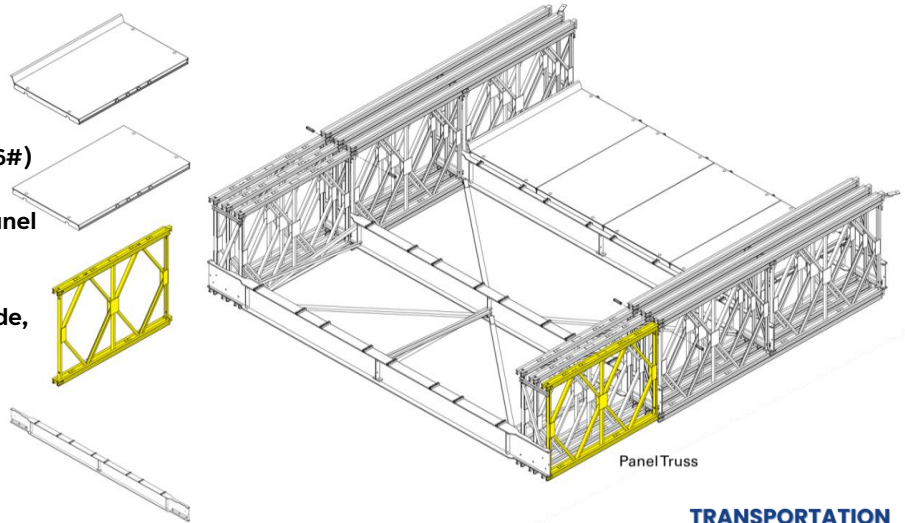
## 700XS Series / Truss Panel (AB701/AB702/AB708)

\*AB701 - Truss Panel (693#)

\*AB702 - Shear Truss Panel(896#)

\*AB708 - Heavy Shear Truss Panel (1300#)

Dimensions = 10' long x 7.5' wide, pinhole to pinhole.



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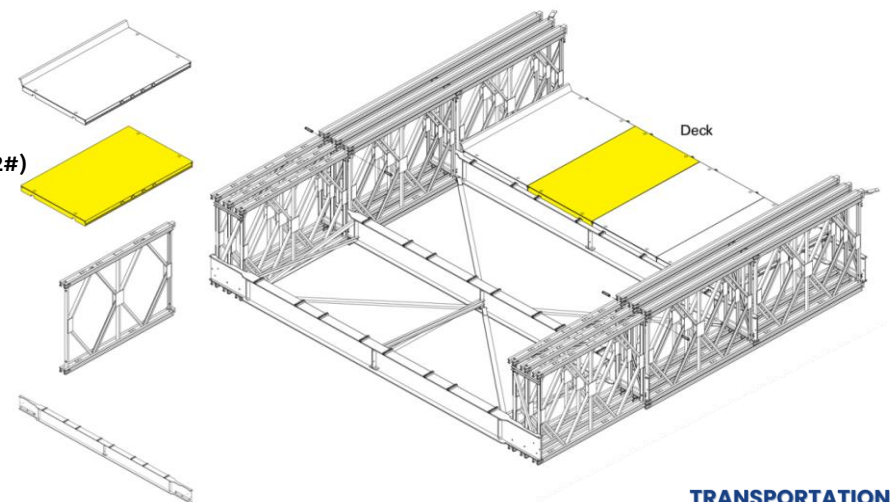
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## 700XS Series / Deck Panel (AB601)

Orthotropic AB601/C Deck Unit

\*Dimensions– 10' x 6' x 5 3/8".  
(AB601 - 1525# / AB601C - 1632#)

FDOT owns plain steel curbs.  
Bridges using plain steel decks  
require an asphalt overlay  
typically to provide a crown or  
cross slope.



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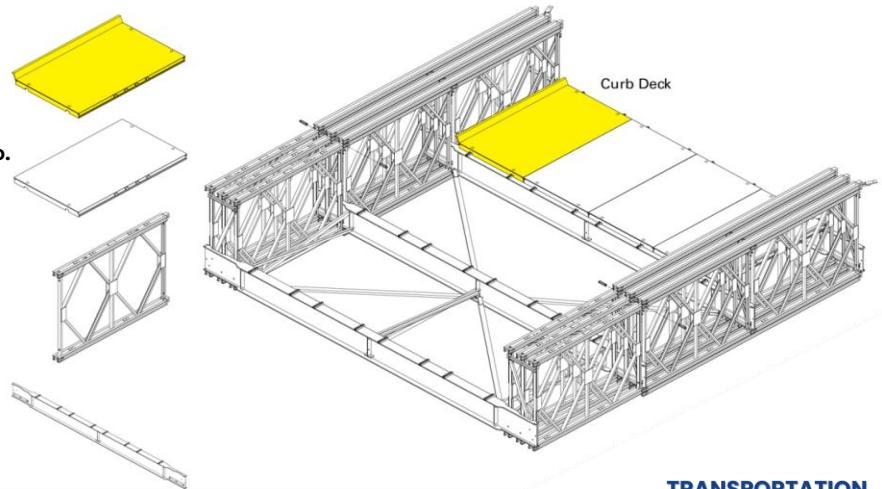


## 700XS Series / Curb Panel (AB602)

### Orthotropic AB602/C Curb Unit

- \*Dimensions– 10' x 6' x 5 3/8".
- \*Curb unit with 6" high welded curb.
- (AB602 - 1552# / AB602C - 1714#)

FDOT owns plain steel curbs.  
Bridges using plain steel decks  
require an asphalt overlay typically  
to provide a crown or cross slope.



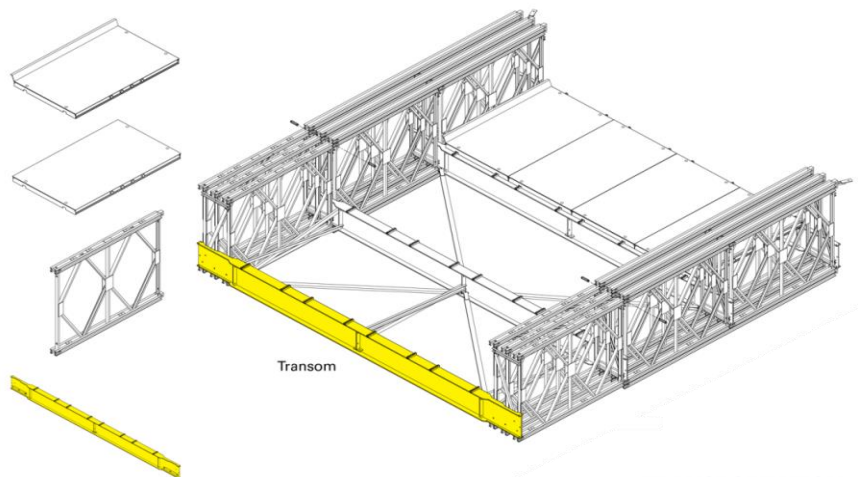
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## 700XS Series / Transom Beams (SC0017 & AB1006-24' / AB957-36' / AB978-42')

### Transom Beams

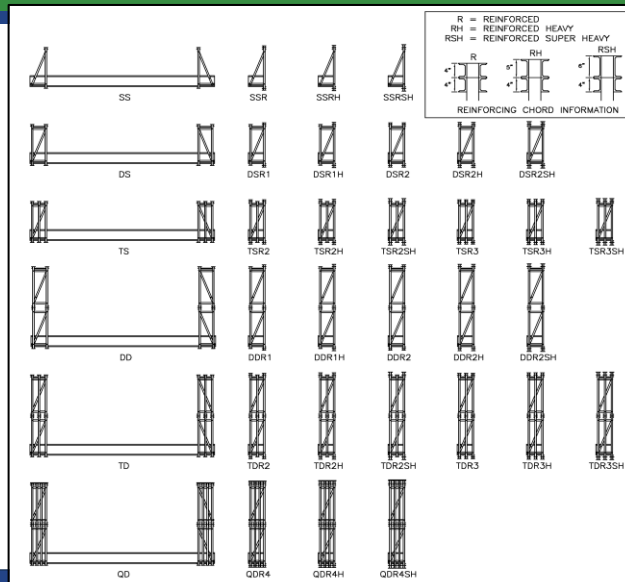
- \*SC0017 - 24' roadway width (3,000#)
  - Approximately 3,000' available in FDOT inventory
- \*AB1006 - 24' roadway width (3,700#)
  - Approximately 1,100' available in FDOT inventory
- \*AB957 - 36' roadway width (7600#)
  - Approximately 1,320' available in FDOT inventory
- \*AB978 - 42' roadway width (9600#)
  - Approximately 280' available in FDOT inventory



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# 700XS Series / Truss Configurations

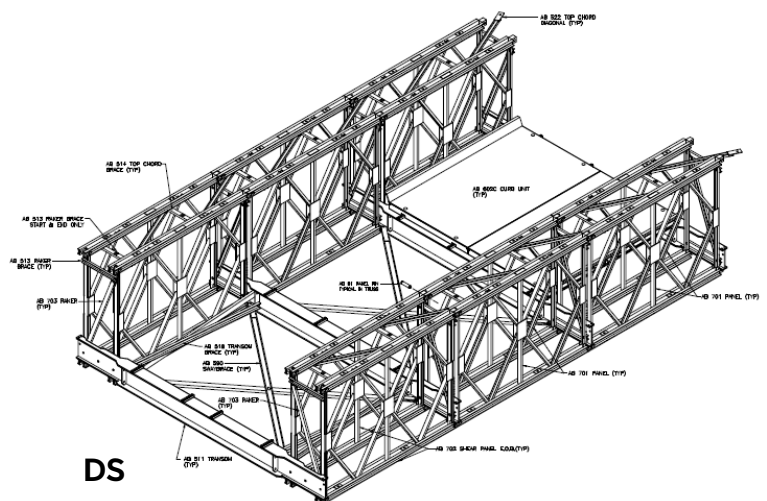


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# 700XS Series / Truss Configurations

DOUBLE  
SINGLE  
(DS)



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**TRIPLE  
SINGLE  
(TS)**

**TSR3**

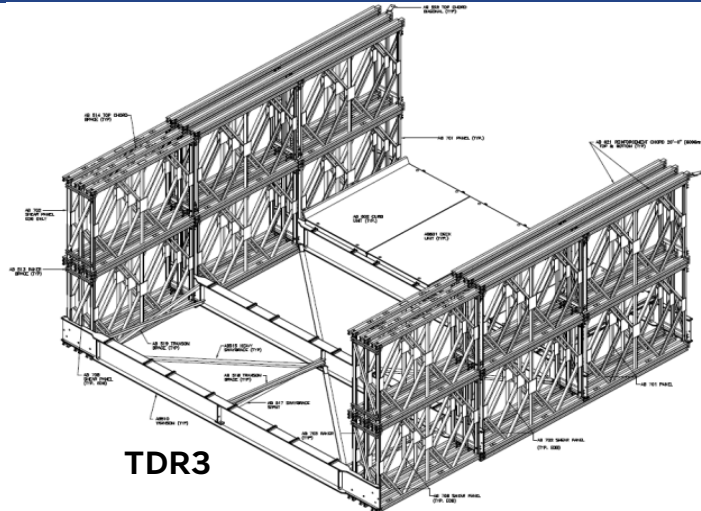
**DOUBLE  
DOUBLE  
(DD)**



## DDR2

## 700XS Series / Truss Configurations

**TRIPLE  
DOUBLE  
(TD)**



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## 700XS Series

### Engineering/Consultant Support

- Contact Acrow (Me) about pre-planning & engineering support.
- If an FDOT owned Acrow 700XS is required, truss construction, preliminary general arrangement drawings and preliminary reactions can be provided to assist with the project design including the substructure design.
- Acrow only provides superstructure submittals which includes the design from the bottom of the bearings up. Design of substructure is by others.

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## 700XS Series

### Engineering/Consultant Design Criteria

#### When designing.....Specify:

- Bridge length, single or multiple spans, span lengths & roadway width.
- Loading Design – Typically LRFD HL93 and load rating if required for highway bridges based on FDOT 120 Permit loads
- Bridge deck type:
  - ✓ FDOT owns plain steel deck requiring an asphalt overlay as well as decking with an epoxy aggregate non-skid surface.
  - ✓ If a highway application, the asphalt deck and a paving membrane are required
- Bridge profile: If asphalted, a crown is preferred, can accommodate some superelevation/cross slope. Both crown and superelevation using asphalt with limits or special beams for superelevation. If an epoxy aggregate non-skid deck, the deck will be level with no cross slope or crown.
- Bridge Rail Test Level Design TL-2 up to TL-4

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## 700XS Series

### Consultant/Construction Support

- For projects utilizing FDOT owned Acrow 700XS bridging Acrow provides PE stamped superstructure submittals and load rating if required
- Develop site-specific bridge assembly and installation procedure with contractor using one of three methods; either cantilevered launch, crane-assisted launch, or crane lift-in
- Onsite field support / advisor for contractor's installation
- Rental of required launch equipment. This usually involves rollers, and bridge components for the launch “nose” and/or launch “tail”
- Bridge inspections and certification as needed

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## 700XS Series

### Performed by “Others”

- Assembly & erection by contractor/installer
- Abutment engineering & abutments including bolsters for end-of-span floorbeams
- Asphalt overlay & paving membrane (if required). See info on paving thickness in FDOT 700XS standards
- Approach guard rail to bridge guide rail transitions (FDOT has standard design)
- Anchor bolts and retention angles
- Lighting or signage (if required)
- Bridge inspections and certification, if not provided by Acrow
- Bridge assembly tools, including jacks (tool list provided to installer/contractor)

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## FDOT ACROW 700XS DESIGN STANDARDS

- ✓ Developed by FDOT in coordination with Acrow Bridge
- ✓ Based specifically on the Acrow 700XS components owned by FDOT and stored in the Oviedo, FL yard
- ✓ Other options available but would have to be rented and/or purchased from Acrow.

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## FDOT ACROW 700XS DESIGN STANDARDS / General Notes & Details

This index is only applicable to the current FDOT inventory of temporary bridge components which are manufactured in accordance with Acrow Series 700XS (three lane 24'-36' and 42' widths). Asphalt Overlay is required on the Bridge deck; see Sheet 2 for details.

Work this index with Index 102-210, 102-220 and 102-230.

### STRUCTURAL STEEL

Steel Plates shall be ASTM A509 Grade 36.

### EXPANSION BEARINGS

- Inspect the PTFE (Teflon) layer and stainless steel plate prior to installation.
- Do not use bearings that have a severely damaged or uncoated PTFE layer.
- Clean PTFE of all grit and grime prior to installation.
- Clean Stainless steel plate of all grit and grime prior to installation and finish to a smooth buffed surface.

### DISTRIBUTION BEAMS

- Distribution beam stops restraining the distribution beams may be lengthened or shortened to center the distributing beam bearing on the cap beam.
- The longitudinal stops are to bear on the distributing beam end frame.

### EXPANSION JOINT SETTINGS

- Install the expansion joint considering the total continuous bridge length, location
- off fixed bearings and ambient temperature at the time of installation, assume a 40° expansion joint opening at 70 degrees F. (Expansion joint depends on span/bridge length and configuration).

### STORAGE FACILITY

Contact:  
FDOT Statewide Aluminum Shop  
2590 Camp Rd.  
Oviedo, FL  
407-278-2127

For shipping weights and dimensions of Temporary Bridge elements.

Contractor to coordinate with Storage Facility and Acrow to obtain required parts list. Shipping weights and dimensions of other bridge components can be referenced in "Acrow Panel Bridging, Series 700XS, Technical Handbook".

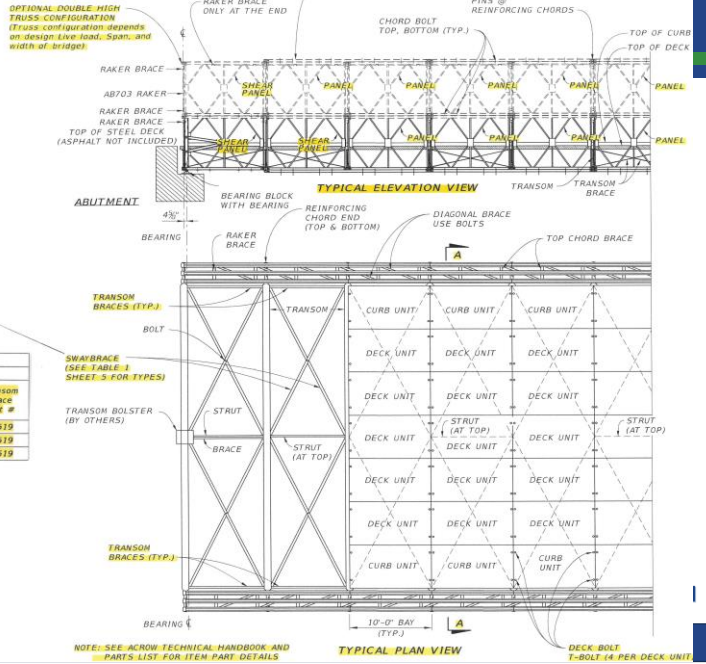
| Bridge Roadway width (ft) | Transom | Swaybrace Part # (Single) | Swaybrace Part # (Double) | Transom Brace Part # |
|---------------------------|---------|---------------------------|---------------------------|----------------------|
| 24                        | SC0017  | AB590                     | AB515                     | AB519                |
| 36                        | AB957   | AB891                     | AB891                     | AB519                |
| 42                        | AB978   | AB979                     | AB979                     | AB519                |

### PAYMENT

Temporary Detour Bridge is to be paid for under Contract Unit Price for Special Detour.

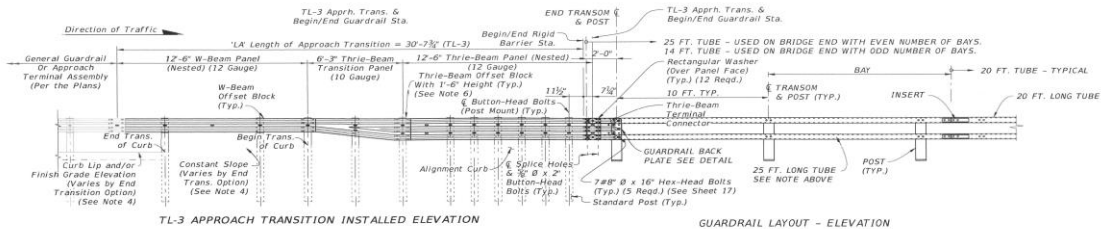
If a temporary bridge system other than that shown herein is used, the Contractor is responsible for renting or purchasing their own system. Payment for Temporary Guardrail work and Transition Block will be made under Pay Item Temporary Guardrail, LF.

Furnish and install Bridge Three-Beam Panels and all associated hardware as shown. Payment will be made with the Temporary Detour Bridge under the Pay Item Special Detour, LS. Turn over Bridge Three-Beam Panels and all associated hardware to the Department with the Detour Bridge. (continued on next Specification Section, 102-230)

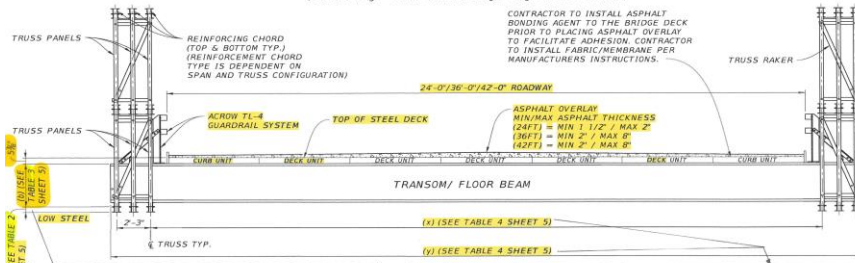


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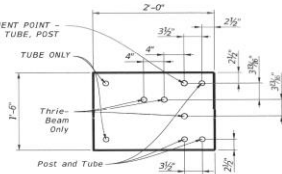
## FDOT ACROW 700XS DESIGN STANDARDS / Beam & Guardrail Details



SECTION A-A  
(Double High Truss shown, Single High Truss Similar)



Guardrail Transition designed by others  
(Must allow for expansion of tube rails)



GUARDRAIL BACK PLATE DETAIL

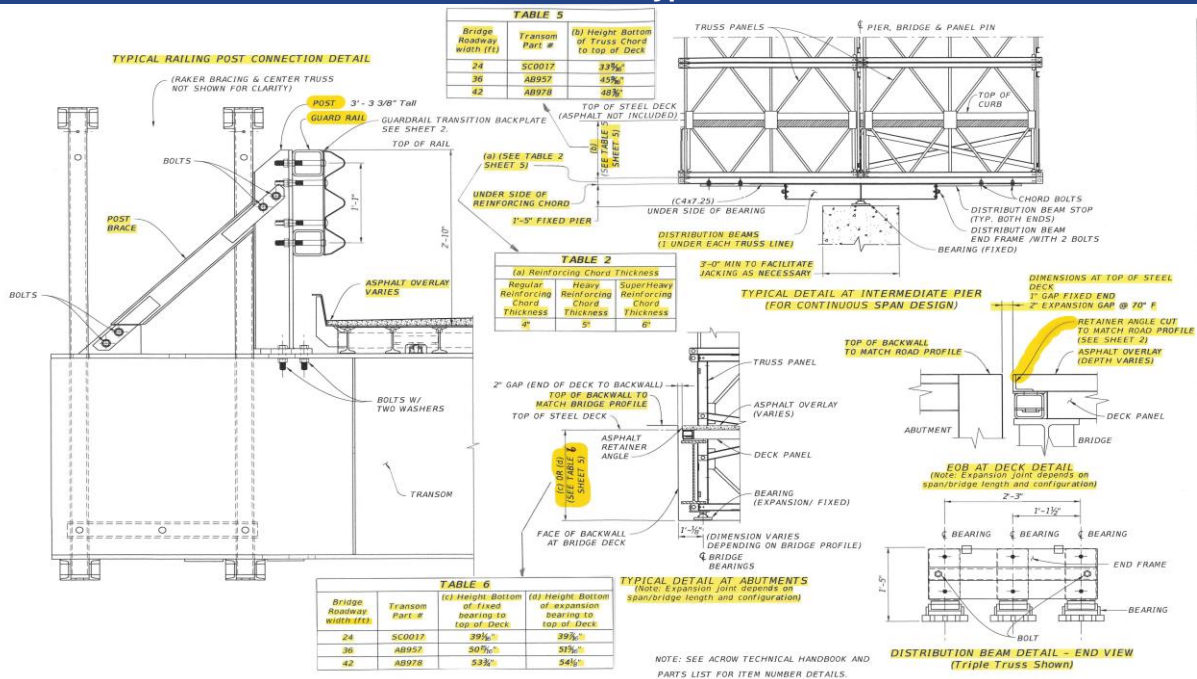
| Bridge Roadway width (ft) | (a) Reinforcing Chord Thickness | (b) Reinforcing Chord Thickness | (c) Reinforcing Chord Thickness |
|---------------------------|---------------------------------|---------------------------------|---------------------------------|
| 24                        | 4"                              | 5"                              | 6"                              |
| 36                        | 4"                              | 5"                              | 6"                              |
| 42                        | 4"                              | 5"                              | 6"                              |

| Bridge Roadway width (ft) | Transom Part # | (a) Height Bottom of Truss Chord to top of Transom |
|---------------------------|----------------|--|
| 24                        | SC0017         | 40 3/4"  |
| 36                        | AB952          | 40 3/4"  |
| 42                        | AB978          | 43"  |

| Bridge Roadway width (ft) | Transom Part # | (a) Q to inner truss to Q | (b) Transom beam Length |
|---------------------------|----------------|---------------------------|-------------------------|
| 24                        | SC0017         | 36'-11"                   | 31'-4"                  |
| 36                        | AB957          | 39'-4 3/4"                | 43'-7 3/4"              |
| 42                        | AB978          | 44'-4 3/4"                | 49'-7 3/4"              |

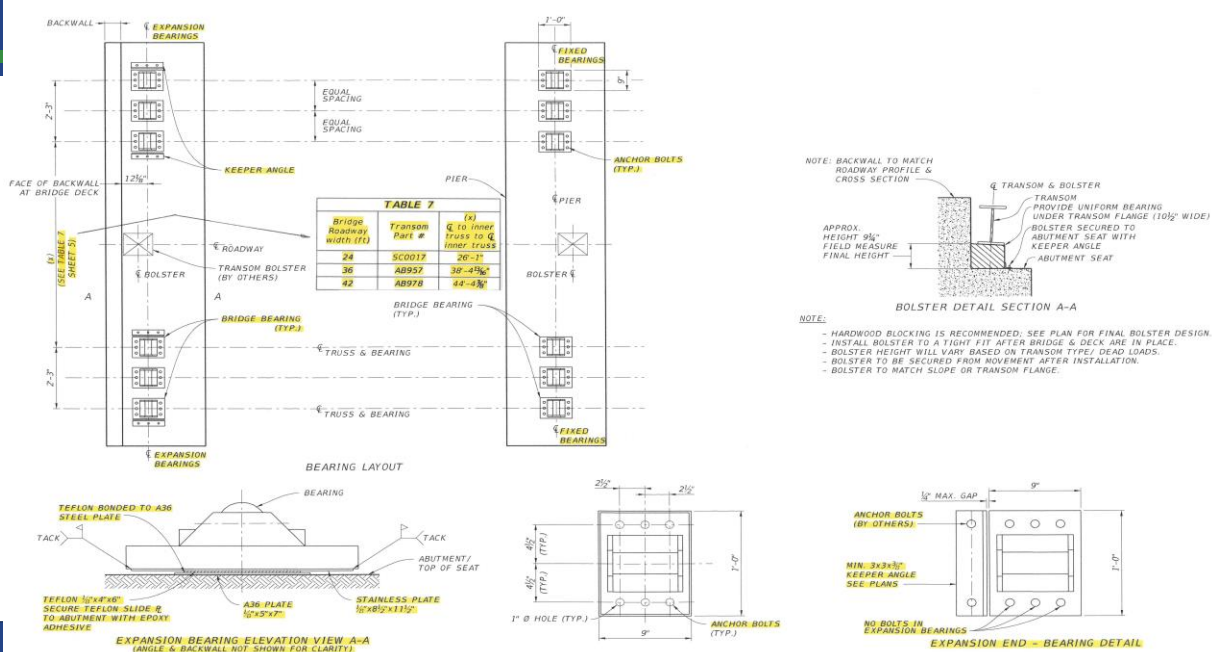
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# FDOT ACROW 700XS DESIGN STANDARDS / Other Typical Details



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## FDOT ACROW 700XS DESIGN STANDARDS / Bearing Layout Details



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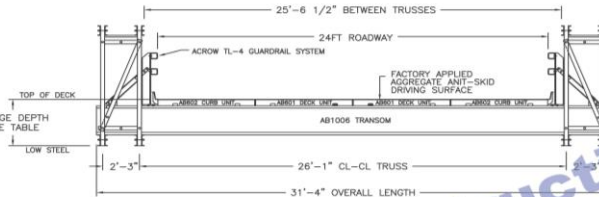
# New Acrow AB1006 Transom Beam

## SC0017 VS

## AB1006

- W24 x 94
- 3000#
- No Hwy use
- No asphalt

- W30 x 118
- 3700#
- Hwy loads
- 2"-4" asphalt

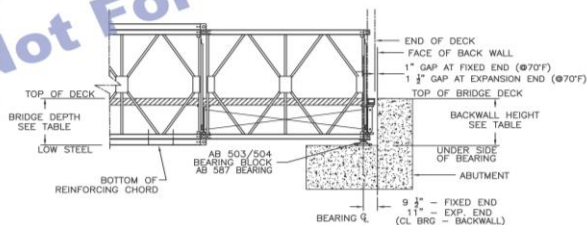


\* New FDOT Acrow 700XS design standards will include AB1006 dimensions

| Transom | Properties   |         |             |
|---------|--------------|---------|-------------|
|         | Weight (lbs) | Size    | Height (in) |
| AB1006  | 3820         | W30x118 | 30          |

| Backwall Ht. (in) |       | Bridge Depth - Plain Deck (in) |                |        |       |       |        |
|-------------------|-------|--------------------------------|----------------|--------|-------|-------|--------|
|                   |       | Fixed Brg.                     | Expansion Brg. | No R/C | R/C   | H R/C | SH R/C |
| 44.75             | 45.13 | 39.38                          | 43.38          | 44.38  | 45.38 |       |        |

| Backwall Ht. (in) |       | Bridge Depth - Epoxy Deck (in) |                |        |       |       |        |
|-------------------|-------|--------------------------------|----------------|--------|-------|-------|--------|
|                   |       | Fixed Brg.                     | Expansion Brg. | No R/C | R/C   | H R/C | SH R/C |
| 44.94             | 45.31 | 39.56                          | 43.56          | 44.56  | 45.56 |       |        |



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## 700XS Series

### 1. Cantilevered

- ✓ The exact method & procedures are determined by site specific conditions such as bridge design, build area, equipment availability, grade and contractor experience. The goal is to keep the COG behind the home abutment.

### 2. Crane-Assisted

- ✓ The exact method & procedures are determined by site specific conditions such as bridge design, build area, equipment availability, grade and contractor experience. Like with the cantilevered launch, the goal is to keep the COG behind the home abutment.

### 3. Crane Lift-in



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## CANTILEVERED



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## CRANE-ASSISTED



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## CRANE LIFT-IN



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## FDOT ACROW 700XS DETOUR EXAMPLES

- Considered Accelerated Bridge Construction (ABC)
- Ensures safe detours around construction sites
- Compliant with AASHTO and state design codes
- Increases safety for motorists & workers
- Rapidly installed in days
- Expert site support services as required

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## I-75 Sarasota, FL / Diverging Diamond



- I-75 NB/SB
- Heavily-travelled interstate traffic
- In place for 2 years
- 2% crown using asphalt with paving fabric (fabric helps asphalt adhere to deck)
- Length: 280' two-span
- Width: 42' (widest yet in US)
- Design Load: HL-93 + Florida 120 permit loads

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## I-75 Tampa, FL / over Bruce B. Downs Blvd.

- I-75 NB/SB
- Heavily-travelled interstate traffic
- In place for 2 years
- Offset 2% crown using asphalt with paving fabric (fabric helps asphalt adhere to deck)
- Length: 320' three-span
- Width: 36' for 2-lanes
- Design Load: HL-93 + Florida 120 permit loads



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# 700XS Series

## Superelevated/Cross Sloped Roadways

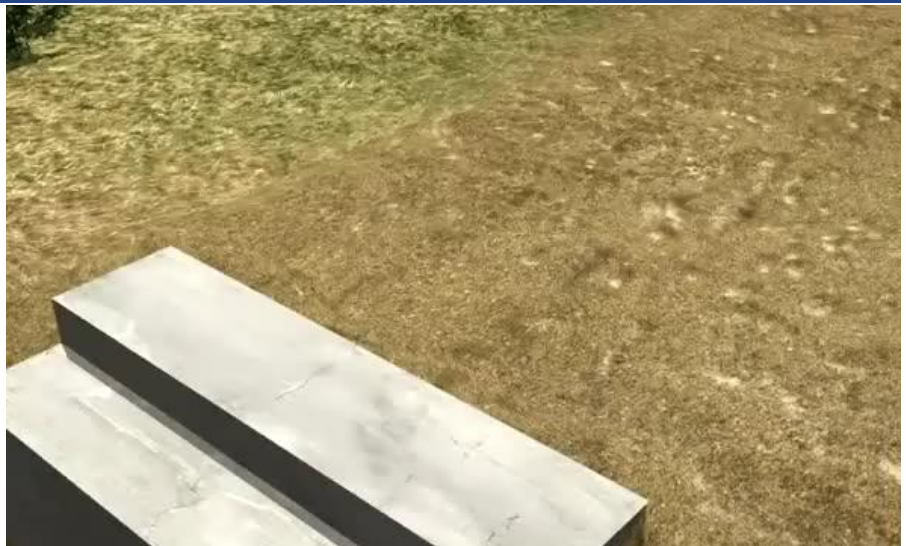
- Starting to see more requirement for an increasing amount of cross slope
- A cross slope can be achieved in different ways on a truss panel bridge
  1. Asphalt overlay higher on one side with a 2" thick base layer
    - Membrane required for highway bridges to assist with asphalt adhesion.
    - SC0017/AB1006 24' roadway transom -> 2" base + 4" asphalt on high side = 1.4% cross slope. (The SC0017 transom can only accept a 2" average max overlay using HL93 design load)
    - AB957 36' roadway transom -> 2" base + 4" asphalt on high side = 0.92% cross slope
    - AB978 42' roadway transom -> 2" base + 4" asphalt on high side = 0.8% cross slope
  2. Tilt Bridge (NOT PERMITTED). Per AASHTO bridge girders "must" be in vertical plane.
  3. PREFERRED - Prefer a crown be designed into the bridge profile, or an even layer of asphalt applied. Special transoms with cross slope built in can be utilized but they are not part of the FDOT inventory.

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ACROW

## CANTILEVER INSTALLATION



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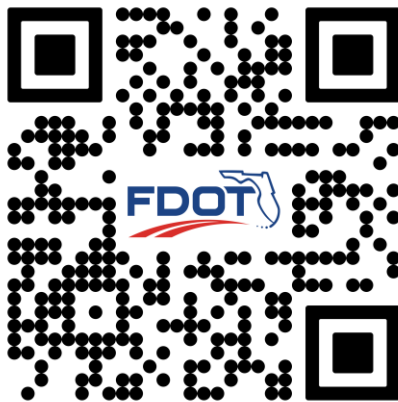
## Safety Message



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## Contact Us



# Thank you!



Bruno Vasconcelos, PE  
o: 850-410-5808 | c: 850-688-7061  
<https://www.fdot.gov/maintenance/acrow-bridge>


Will Smith, SE:  
o: 251-928-8450 | c: 251-408-1340  
[wsmith@acrow.com](mailto:wsmith@acrow.com)


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 June 19 - 20, 2025  
 Hollywood, FL





Please be sure to **certify your attendance** before leaving this event or no later than **Monday, June 30**, in order to receive PDH/CEC. Detailed instructions are available on the Transportation Symposium website.

Transportation Symposium  
Website



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