Index 21600 Series Temporary Detour Bridge

Design Criteria

AASHTO Standard Specifications for Highway Bridges, 17th Edition (superstructure); ***AASHTO LRFD Bridge Design Specifications***, 6th Edition (substructure); ***Structures Design Guidelines (SDG)***; ***Acrow Panel Bridging Series 300 Technical Handbook***

Design Assumptions and Limitations

These Standards apply to non-limited access facilities with design speeds of 45 mph and less. A variation is required otherwise.

These Standards are based on the FDOT current inventory of temporary bridge components which are manufactured in accordance with Acrow Series 300 Double Wide design. Details presented in these Standards are for a Double Single configuration and incorporating the Double Wide Light Transom. Refer to "***Acrow Panel Bridging Series 300 Technical Handbook***" for temporary bridge dimensions, capacities and component designations. Contact the Structures Design Office to obtain a copy of this handbook.

The Acrow Panel Bridging with the Double Single configuration with two lanes of traffic is designed to meet a HS20-44 loading for simple spans up to 50 feet and continuous spans up to 60 feet (ref. page 86 of the Technical Handbook). Department policy allows only Florida Legal Trucks (ref. FDOT Bridge Load Rating Manual) to cross Acrow Panel bridges. If permit trucks are allowed to cross an Acrow bridge, a Variation is required.

The FDOT Office of Maintenance maintains the inventory of FDOT owned temporary bridge components. Contact the Office of Maintenance to coordinate the availability of temporary bridge components that are required for a given project.

In cooperation with the State Bridge Evaluation Engineer (Office of Maintenance), assess the impact on commercial truck mobility and determine the necessary plan requirements for rerouting of vehicles exceeding Legal Weights to prevent them from crossing these structures. See ***PPM***, Volume 1, Chapter 10 for guidance on signage and possible Temporary Traffic Control Plan Details and include them in the Contract Plans. Refer also to Index No. 17355 of the FDOT Design Standards for design and installation of special signing.

Establish temporary bridge length to accommodate project geometric needs, environmental permits, drainage requirements, etc., using the following span length and arrangement criteria.

Details presented in the standards assume one single span or the use of continuous spans for multiple span bridges. Limit continuous length of bridge to 360' in accordance with these standard details. If a total bridge length in excess of 360' is required, supplemental details are required for the mid-bridge expansion joint(s) and associated intermediate bent support(s).

Vary span lengths in increments of 10' with 30' minimum and 60' maximum span lengths. For continuous spans the ratio of adjacent span lengths shall not be less than 6:10 to prevent the shorter span from lifting off its bearings under live load. Specify Distributing Beams at all intermediate supports for all span lengths.

The Approach Span and Ramp Span are to be simple spans, each 5' -0" in length, to eliminate Live Load uplift at the backwall bent and grade beam support.

Do not place the temporary bridge on a vertical curve. A constant grade is acceptable. Refer to "***Acrow Panel Bridging Series 300 Technical Handbook***" for maximum grade and elevation tolerance from constant grade (Bent to Bent and Cross-Slope) for final cap elevations.

The temporary bridge is to have a zero cross-slope. Provide asphalt buildup transitions to a zero cross slope outside the limits of the temporary bridge.

To accommodate debris drift clearances, set Low Member Elevation as follows:

For single span bridges, at the bottom of the Transom.

For multiple span bridges, at the bottom of the Distributing Beam.

Design the pile cap connection to pile assuming the truss reaction with a minimum of 3" eccentricity. Design of this connection detail is the responsibility of the Engineer of Record.

Select the pile type considering the driving capacity requirements of the production piles on the permanent bridge, free standing height, water levels if present and soil conditions.

Design the substructure according to current ***AASHTO LRFD Bridge Design Specifications*** Strength Limit States III & V and Service Limit State I:

Calculate reactions using superstructure dead load unit weight = 1.26 Kip/Ft. Include a concentrated dead load = 250 Lbs. per truss plane at abutments. This load accounts for 1 end post and 1 bearing per truss plane.

Calculate wind force on superstructure (WS) using basic wind force of 0.45 Kip/Ft. Ratio the above loading using wind pressures in Table 3.8.1.2.2-1 of ***AASHTO LRFD Bridge Design Specifications***.

Example-

For wind skew of 30°

W Lateral = 0.45 (0.065/0.075) = 0.39 Kip/Ft.

W Longitudinal = 0.45 (0.028/0.075) = 0.17 Kip/Ft.

Plan Content Requirements

Plans for temporary bridge shall, as a minimum, cover the following:

1. General Note Sheet.
2. Simple span bearing details if non-continuous spans are selected.
3. Grade change details at the extremities of the bridge.
4. Plan and elevation sheets with span lengths, stationing, alignment, grade and boring locations.
5. Foundation layout sheet including pile spacing & bent stationing.
6. Pile data table showing pile type, size, cut off elevations, capacity & estimated lengths.
7. Bent detail sheet.
8. A parts list as required for shipping purposes.
9. Plans for special signing for vehicles exceeding Legal Weights and, if necessary, Traffic Control Plans for detouring vehicles exceeding Legal Weights. Include references to Index 17355 for required special signing.

Payment

Item number	Item description	Unit Measure
102-2-AA	Special Detour	LS