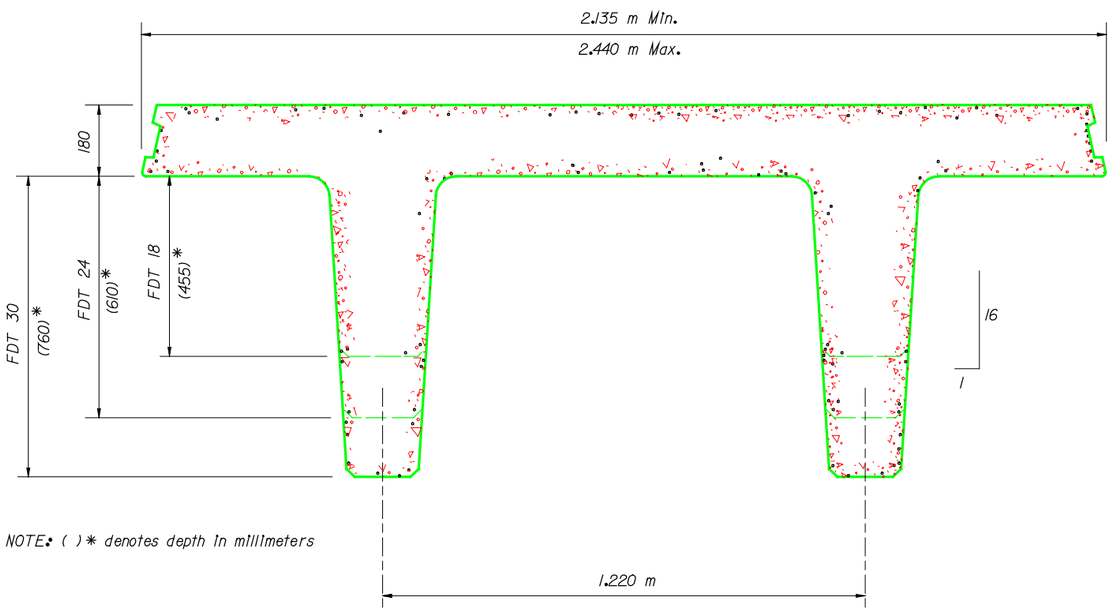
FED. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.
3	FLA.			

FLORIDA DOUBLE - TEE



NOTE: ( )* denotes depth in millimeters

LIST OF DRAWINGS

Index No.	
1-120	Florida Double-Tee General Instructions
1-121	Florida Double-Tee Bridge Sections
1-122	Florida Double-Tee Tabulated Strand Patterns
123	Florida Double-Tee Notes and Miscellaneous Details (3 Sheets)
124	FDT18 Typical Section
125	FDT24 Typical Section
126	FDT30 Typical Section
127	Florida Double-Tee Plan, Joint and Diaphragm
S-128	FDT18 Table of Variables and Strand Patterns
S-129	FDT24 Table of Variables and Strand Patterns
S-130	FDT30 Table of Variables and Strand Patterns

NOTE: All dimensions are in millimeters (mm), except as noted.

DOUBLE-TEE GENERAL INSTRUCTIONS

This FDOT Standard is intended for use in preparing construction plans for bridges on straight alignment and skew angles 30° or less. The standard is also limited to simply supported spans, over water or railroad tracks.

Three different cross-sections are provided: the Florida Double-Tee FDT18, the FDT24, and the FDT30.

Fabricators may acquire a set of forms for the FDT30 beam, and utilize these to fabricate the other sections by blocking out the lower portion of the stems.

The detailed 180 mm slab (flange) thickness provides 15 mm for grinding to improve the riding quality of the bridge if needed. Therefore, the designs should be based on a 165 mm thick structural flange.

The width of the flange may vary as shown and the 180 mm thickness may be increased to accommodate a bridge crown (crowned beam).

Designs using No. 13 (1860 MPa) low-relaxation strands and concrete with a 28-day compressive strength of 35 MPa are tabulated on Index 1-122. The designs include allowances of 720 N/m² for future surfacing and 1.0 kN/m² for railing barriers.

The Designs provided are applicable for all Environmental Classifications. Some Details, such as Concrete Class and Protective Treatment of Strands at the end of the Stem depend on the Environment. Therefore, the Designer shall include in the General Notes for the Bridge the Environmental Classification and call for all applicable dependent requirements.

Three types of drawings are included: Instructional Drawings, Semi-standard Drawings, and the Standard Drawings. The Instructional Drawings are provided to assist designers in preparing the contract drawings. These drawings help explain how the Semi-standard Drawings should be completed, provide required design information, and list the Standard Drawings that should be included in the contract set.

In most applications, the drawings provided in this standard (and other standards) when supplemented by a Plan view of the superstructure and a typical section thru the bridge should suffice in defining the bridge superstructure. In all cases, however, the designer is responsible for providing additional drawings necessary to complete the superstructure drawings, and for designing and detailing substructure units and other bridge components.

INSTRUCTIONAL DRAWINGS:

The Instructional Drawings show the three (3) double-tee cross-sections, typical bridge sections, strand pattern designs, and provide general instructions.

STANDARD DRAWINGS:

The Standard Drawings are complete except for the title blocks. Only the applicable FDT standard drawings shall be included in the contract drawings. The Standard Drawings provide Double-Tee Notes, Construction Notes, Neoprene Pad details and general standard details for the beams.

SEMI-STANDARD DRAWINGS:

The Semi-standard Drawings are incomplete drawings. These drawings must be completed by the designer to suit the particular design. A Table of Beam Variables is provided in the Semi-standard Drawings. The designer shall complete the Table by providing all applicable information. The designer shall obtain strand patterns from Index 1-122 or from his own calculations and show patterns in the strand pattern grids provided.

DOUBLE-TEE DESIGN EXAMPLE:

As a design example a single span bridge is designed using the instructional drawings, standard drawings and semi-standard drawings. The following information is provided for the bridge:

Begin Bridge: Sta. 00+00.000
End Bridge: Sta. 00+18.000
Cross Slope: 2 %
Skew Angle: 0 degrees (Φ = 90°)
Bridge Width: 12.0 m clear roadway
Sidewalks: none

From this information, the design span length is :
(18-2(170+40)/1000) = 17.580 m (℄ - ℄ bearings). Instructional Drawing 1-122 shows that a FDT30 with twenty-eight (28) strands is required. The strand patterns should be drawn on Semi-standard Drawing S-130. The strand pattern Case 2 applies. The strand patterns Types 1 and 2 also apply. The strand pattern at the end should be drawn in the section, for Type 1, and the pattern between hold downs (center) should be drawn in the section of the stem for Type 2. The total number of strands required, in this case 28, should be written within the circles.

The Bridge Plans shall include the following drawings:
Index No. 123, 126, 127, & S-130

The Table of Variables should be filled as follows:
Since Bridge Width (o-o) = 12 + 2(475/1000) = 12.950 m
The Number of tees required = 12950/2440 = 6, and
W = (12.950/6) = 2.158 m

Note: Neglect the 6 mm gap between beams.
Clear roadway width and overall superstructure width should be denoted as 12.000 m and 12.950 m, respectively.

A = (2158 - 1220) 0.5 = 469 mm
L = 18.000 - 0.080 = 17.920 m
[L - 2(0.530)] / 1.370 = 13; THEREFORE,
N1 = 14
S1 = [L - 2(0.530)] / 13 = 1.297 m
(L - 0.700) / 0.200 = 86; THEREFORE,
N2 = 87
S2 = (L - 0.700) / 86 = 200 mm

TABLE OF VARIABLES

SPAN NO.	BEAM TYPE	NO. OF BEAMS	Φ	DIMENSIONS						POST-TENSIONING DUCT DATA		CONCRETE DATA (MPa)		REINF. STEEL DATA		STRAND PATTERN		
				A	D1	L	W	X	Y	N1	S1	f'c	f'ci	N2	S2	CASE	TYPE END	TYPE CENTER
1	2	4	90°	469	——	17.920 m	2.158 m	——	——	14	1.297 m	35	29	——	——	2	1	2
1	4	2	90°	469	——	17.920 m	2.158 m	——	——	14	1.297 m	35	29	87	200	2	1	2

REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
			97		

	NAMES	DATES
DRAWN BY	DCP	6-90
CHECKED BY	AJG	6-90
DESIGNED BY	AJG	6-90
CHECKED BY	TJB	6-90
APPROVED BY	AJG	

ENGINEER OF RECORD:
STRUCTURES DESIGN OFFICE
CENTRAL OFFICE
605 Suwannee Street, MS 33
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LOGO:

SEAL:

FLORIDA DEPARTMENT OF TRANSPORTATION
STRUCTURES DESIGN OFFICE

ROAD NO.	COUNTY	PROJECT NO.

SHEET TITLE: FLORIDA DOUBLE-TEE GENERAL INSTRUCTIONS

PROJECT NAME:

DRAWING NO. 1 of 1

INDEX NO. 1-120

DATE "" TIME

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