10 FOOT WIDE DOUBLE TEE
TECHNICAL DATA FOR DETAILING DOUBLE TEES

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GENERAL NOTES

1. INTRODUCTION - All details and information given within this document are generalized standards for light to moderate loading conditions. Any reinforcement or hardware which is specifically quantified in the details should be considered a minimum amount and should be properly sized during the design process. Code revisions subsequent to those referenced on page 3 may supersede the information in this document.

2. BEARING - The minimum distance from the face of the support to the end of the double tee in the direction of the span should be \( l/180 \), where \( l \) is the clear span, but not less than 3”. The bearing length detailed on the drawing should be established by the engineer of record with due consideration of standard fabrication and erection tolerances. For normal span ranges, a dimension of 6” is customary and is used in the details that follow. CTC recommends the use of minimum ½” thick neoprene bearing pads to provide uniform bearing. Bearing pads should be held back a minimum of ½” from any unarmored edges, or at least the chamfer dimension at chamfered edges.

BEARING LENGTH

3. TOP FINISH - The standard top surface finish of a double tee flange that will receive a composite topping is a transverse rake, which is normally adequate for horizontal shear transfer.

4. TOPPING - Cast-in-place topping over double tees is useful for diaphragm action and as a means of leveling the finished surface. The typical 28-day design strength for a cast-in-place concrete topping is 4,000 psi.

5. PENETRATIONS - CTC recommends that all penetrations in the flange less than 6” in diameter for mechanical, plumbing, electrical, etc. be field installed by the trades involved. Penetrations 6” in diameter or greater should be installed during double tee fabrication. Penetrations through the double tee web should be avoided, but if required should be installed during fabrication to avoid damaging prestressing strand.

6. DIAPHRAGM DESIGN AND STRUCTURAL INTEGRITY - For detailed information on designing and developing structural integrity within a system, the reader should refer to the PCI Design Handbook sections 4.3 and 4.8. (See Reference 3)

7. ADDITIONAL INFORMATION - For additional information concerning double tees, see Concrete Technology Corporation’s “10 Foot Wide Double Tee Design Criteria & Span-Load Tables.”
REFERENCES

1. *Building Code Requirements for Structural Concrete (ACI 318-19) and Commentary (ACI 318R-19)*, American Concrete Institute, Farmington Hills, Michigan, 2019.


Note: Prestressing strands and shear reinforcement are not shown. See Concrete Technology Corporation’s “10 Foot Wide Double Tee Design Criteria & Span-Load Tables” for information on prestressing strands and shear reinforcement.
END BEARING ASSEMBLIES AND REINFORCEMENT

TYPICAL BEARING ASSEMBLY

Note: See Reference 3 on page 3 for definition of notation, design procedures and limitations.
CANTILEVER AND BLOCKOUT DETAILS

CANTILEVERS

Short, lightly loaded cantilevers can normally be handled by the addition of mild reinforcement in the top flange and adjusting the strand locations or providing debonding of the strands to control stresses. Longer, more heavily loaded cantilevers may also be accommodated. A detailed stress analysis should be performed for any cantilever condition.

Contact CTC’s Marketing Department for guidelines and information regarding specific project conditions.

BLOCKOUTS / POUR SLOTS

Blockouts up to 3'-10" wide may be placed between the double tee webs as shown below. Blockouts should not extend into the web. Generally, small blockouts (i.e. mechanical and electrical blockouts) will not appreciably affect the load carrying capacity. If a large portion of the flange is blocked out, the strength may be reduced and thereby requires a detailed analysis.

Pour slots, openings in the flange over a support beam or wall, permit casting through the flange to integrate the supporting member to the double tee.
NON-STANDARD WIDTHS

The double tee flange widths noted in this document represent nominal spacings. Actual flange widths are typically ¼” less than the nominal spacing to provide ¼” joints between adjacent flanges.

SPECIAL REPETITIVE WIDTHS
Occasionally it is desirable to use special-width double tees (for instance, 7’-6” double tee to fit a 15’-0” module). The double tee is constructed to permit relatively free variations of the flange width from 6’-2” to 10’-0”, with the 5’-0” web spacing remaining fixed.

The square foot price of special-width double tees will be greater than the standard 10’-0” double tees, since the labor and material costs per lineal foot are nearly constant.

SPECIAL SYMMETRICAL HALF-WIDTHS
Half-width elements are available for difficult framing problems, such as filling in a space at the end of a long run of modular double tee elements. These single web fill-in elements can be fabricated in widths ranging from 1’-2” to 5’-0”.

SPECIAL ASYMMETRICAL WIDTHS
Special-width, asymmetrical tees can be made by forming back part of one flange. These units are useful as fill-in elements at the edge of a framed area.
BEARING AND END CONNECTION DETAILS

TOPPED DOUBLE TEE END CONNECTION DETAILING
STANDARD FLANGE CONNECTIONS

PLAN

PLAN AT ISOLATION JOINT
(Connection provides no diaphragm shear transfer)

SECTION - A
FLANGE-TO-FLANGE CONNECTION

Note: Common spacing of flange connections is 8'-0" on center. The engineer of record should confirm actual spacing based on anticipated loads and system requirements. Reference PCI Design Handbook, Chapter 4, for additional information on connection and diaphragm design.
EDGE DETAILS

FLANGE CONNECTION TO SPANDREL

TOOLED 'V' GROOVE AND SEALANT AT JOINTS BETWEEN PRECAST
SLOPE FOR DRAINAGE AS REQUIRED

CAST-IN-PLACE CONCRETE TOPPING
PRECAST DOUBLE TEE
SPANDREL

1"

TOPPING CONNECTIONS TO WALLS

TOOLED 'V' GROOVE AND SEALANT AT JOINTS BETWEEN PRECAST AND WALL
SLOPE FOR DRAINAGE AS REQUIRED

CAST-IN-PLACE CONCRETE TOPPING
PRECAST DOUBLE TEE
CONTINUOUS KEYWAY
CONCRETE SHEAR WALL
COIL INSERT WITH THREADED COIL ROD
CONCRETE SHEAR WALL
TOOLED 'V' GROOVE IN TOPPING SLAB AT ALL JOINTS BETWEEN DOUBLE TEES. ½" WIDE AND 1" DEEP. INSTALL RESILIENT JOINT SEALANT

2¼" NOMINAL JOINT

FLANGE CONNECTION NOT SHOWN FOR CLARITY

DETAILING AT FLANGE-TO-FLANGE CONNECTIONS
CORBEL DETAILS

DOUBLE TEE ON CONCRETE CORBEL

CAST-IN-PLACE CONCRETE TOPPING

PRECAST DOUBLE TEE

BEARING WALL

7”

1”

8”

8”

1/2”

DOUBLE TEE ON STEEL CORBEL

CAST-IN-PLACE CONCRETE TOPPING

PRECAST DOUBLE TEE

L 8 x 8 WITH GUSSETS

WEEP HOLE

BEARING WALL
SPANDREL DETAILS

DOUBLE TEE ON TYPICAL SPANDREL

DOUBLE TEE ON POCKETED SPANDREL
DETAILS OF FILLERS BETWEEN WEBS

PRECAST FILLER PANEL

CAST-IN-PLACE FILLER
HANGER DETAIL

Notes:

1. Hangers can also be installed by field drilling into the flange before or after topping is placed.
2. Field drilling into the double tee web is not recommended due to potential damage to prestressing strands. If attachment to web is required, contact CTC for alternate methods.