Fig. 3-23. Cast-in-Place Conventionally Reinforced Slab on Precast Forms

CRACK CONTROL TYP.
OVER BEAMS (CRACK
CONTROL JOINT TO BE
DRESSED W/ABRASIVE
BLADE & SEALED W/
ISOFLEX URETHANE
SEALANT OR EQUAL)

SHEAR STUD

NOTE: TACK WELD BARS
TO TOP OF FLANGE BEFORE REMOVING
HOOKS TO PROVIDE LATERAL BRACING
FOR BEAM + SECURE P.C. FORM

TOP STEEL TO BE FIELD SET

BOTTOM STEEL PLUS
SOME TOP STEEL
CAST INTO FORM

6" SLAB +/- DEPENDS
UPON SPAN

2 1/4" FILIGREE STAY-IN-
PLACE CONCRETE FORM

STEEL BEAM

NOTE:
CONSULT MANFACTURER FOR ENGINEERING DATA REGUARDING:
– SPAN
– SHORING/RESHORING REQUIREMENTS
– REINFORCING FURNISHED
– MIN. FLANGE WIDTHS FOR BEARING REQUIREMENTS

Fig. 3-24. Typical Detail at Control Joints

WHEEL BUMPS INTO
UNDEFLECTED SLAB

SLAB DEFLECTS

DETAIL "A"

NOTE:
CANTILEVER DIMENSION SHOULD BE MINIMIZED
TO PREVENT "BUMPING" AS SHOWN IN DETAIL "A"

BLOCKOUT WIDTH FOR
EXPANSION JOINT

CLEAR DIST.

2 1/4" PRECAST
FILIGREE FORM

2" POUR
STRIP

2 1/4" PRECAST
FILIGREE FORM

STEEL BEAM

SEE NOTE

STEEL BEAM

TYPICAL DETAIL @ EXPANSION JOINT
(JOINT PERPENDICULAR TO SLAB SPAN)
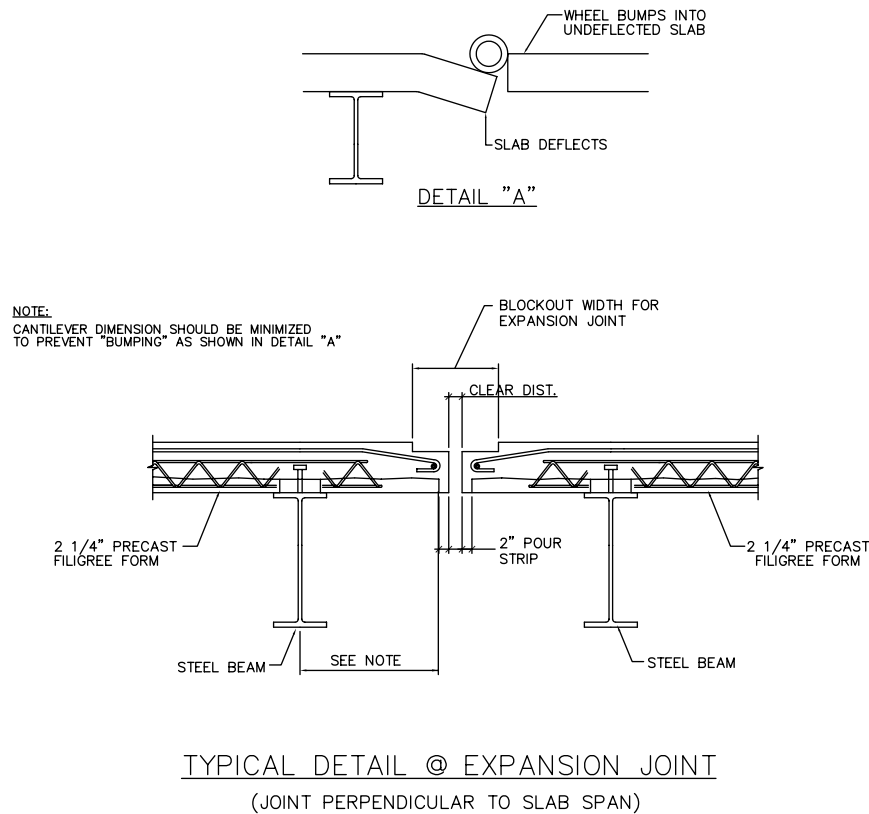
Fig. 3-25. Typical Detail at Expansion Joint—Joint Perpendicular to Slab Span

BLOCKOUT WIDTH FOR
EXPANSION JOINT

CLEAR DIST.

2 1/4" PRECAST
FILIGREE FORM

2" POUR
STRIP

2 1/4" PRECAST
FILIGREE FORM

STEEL BEAM

SEE NOTE
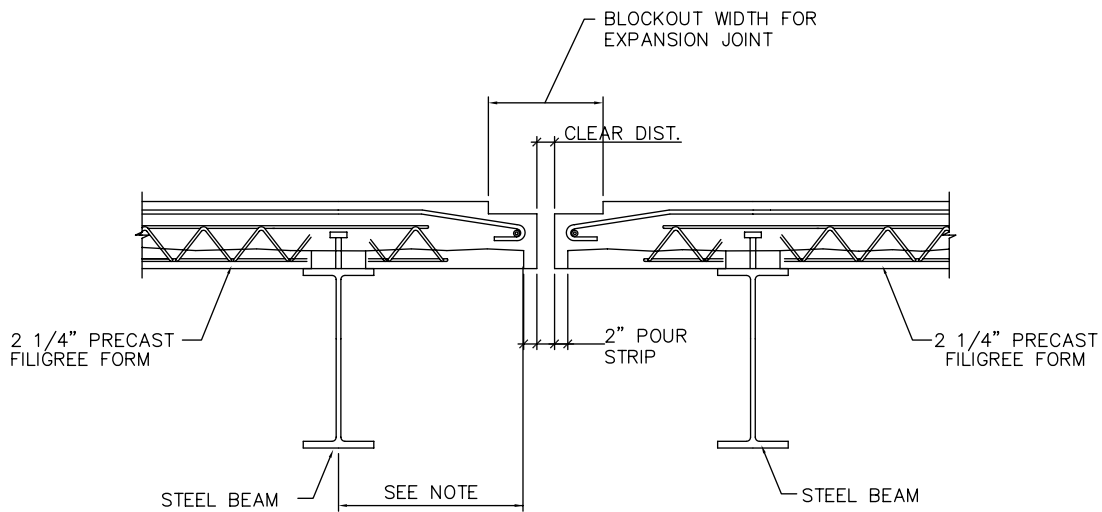
STEEL BEAM

TYPICAL DETAIL @ EXPANSION JOINT
(JOINT PARALLEL TO SLAB SPAN)

Fig. 3-26. Typical Detail at Expansion Joint—Joint Parallel to Span

PRECAST CONCRETE PANEL
CONNECT TO COLUMN FOR
GRAVITY LOADS

CAULKED JOINT

#6 @ 24"

CAST-IN-PLACE
FIELD TOPPING

2 1/4" FILIGREE FORM
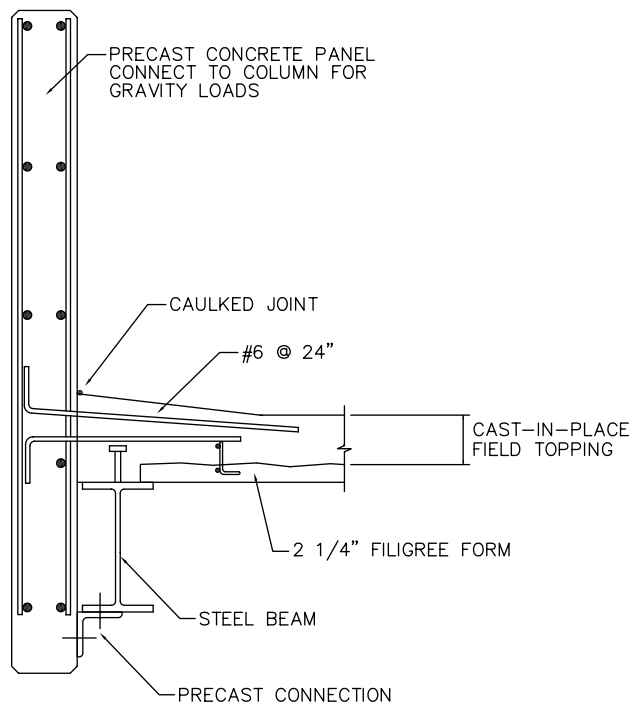
STEEL BEAM

PRECAST CONNECTION

Fig. 3-27. Typical Precast Connection to Steel Beam and Slab
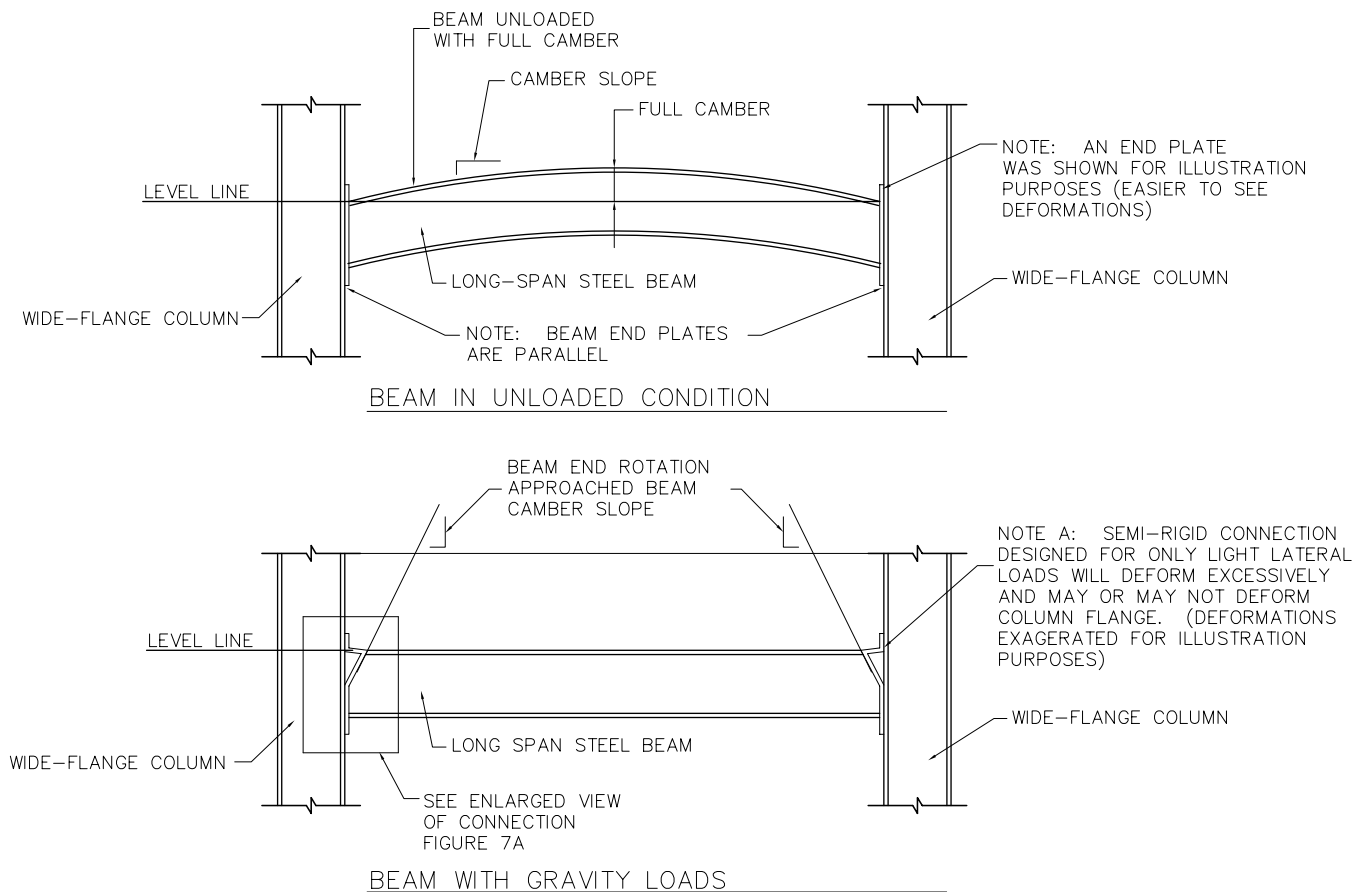
Fig. 3-28. Beam Loading Conditions

Fig. 3-29. Deformation in End Connections

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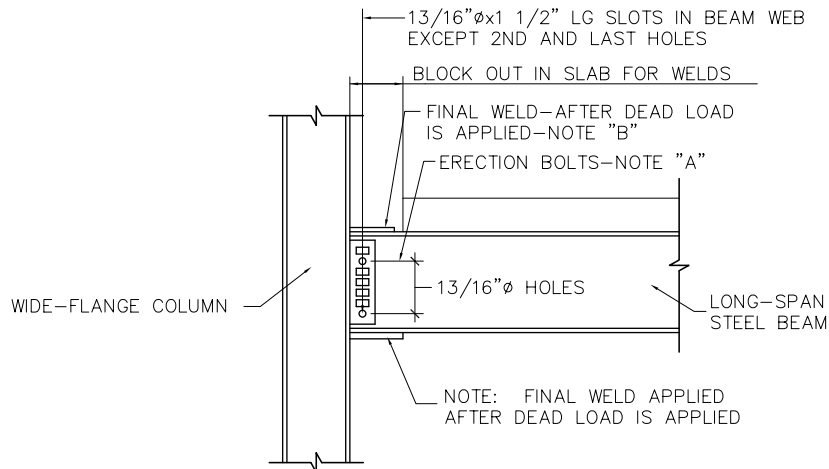
EXAMPLE OF A STAGED CONNECTION

NOTES:
A. THE ERECTION BOLTS ARE USED TO STABILIZE STRUCTURE DURING
ERECTION AND IS REMOVED WHEN DEAD LOAD IS APPLIED
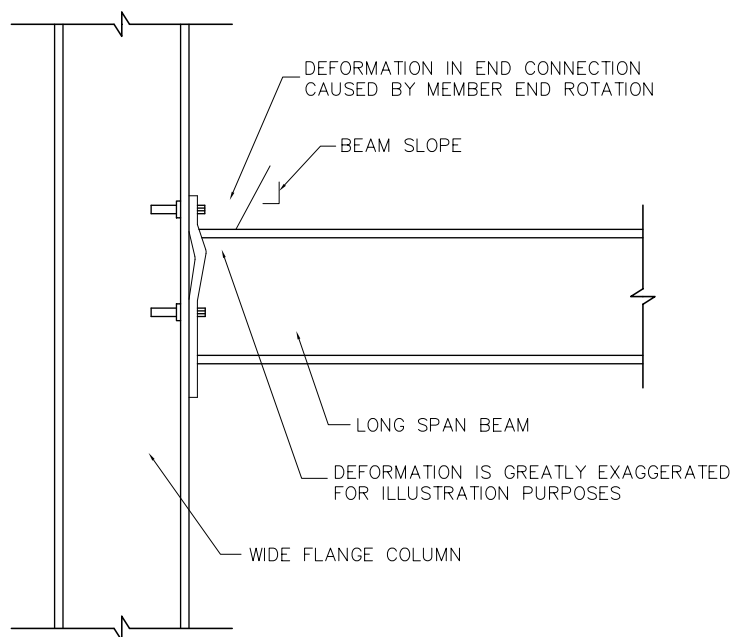(ONLY PULL BOLTS FROM BEAMS AFFECTED) THE TERM DEAD
LOAD APPLIED REFERS TO ACTIVITIES SUCH AS SLABS BEING
POURED, ETC.
B. AFTER DEAD LOAD IS APPLIED FINAL WELDING OF BEAM TO
COLUMN CONNECTION SHOULD TAKE PLACE (OR SIMILAR DETAIL).

Fig. 3-30. Staged Connection
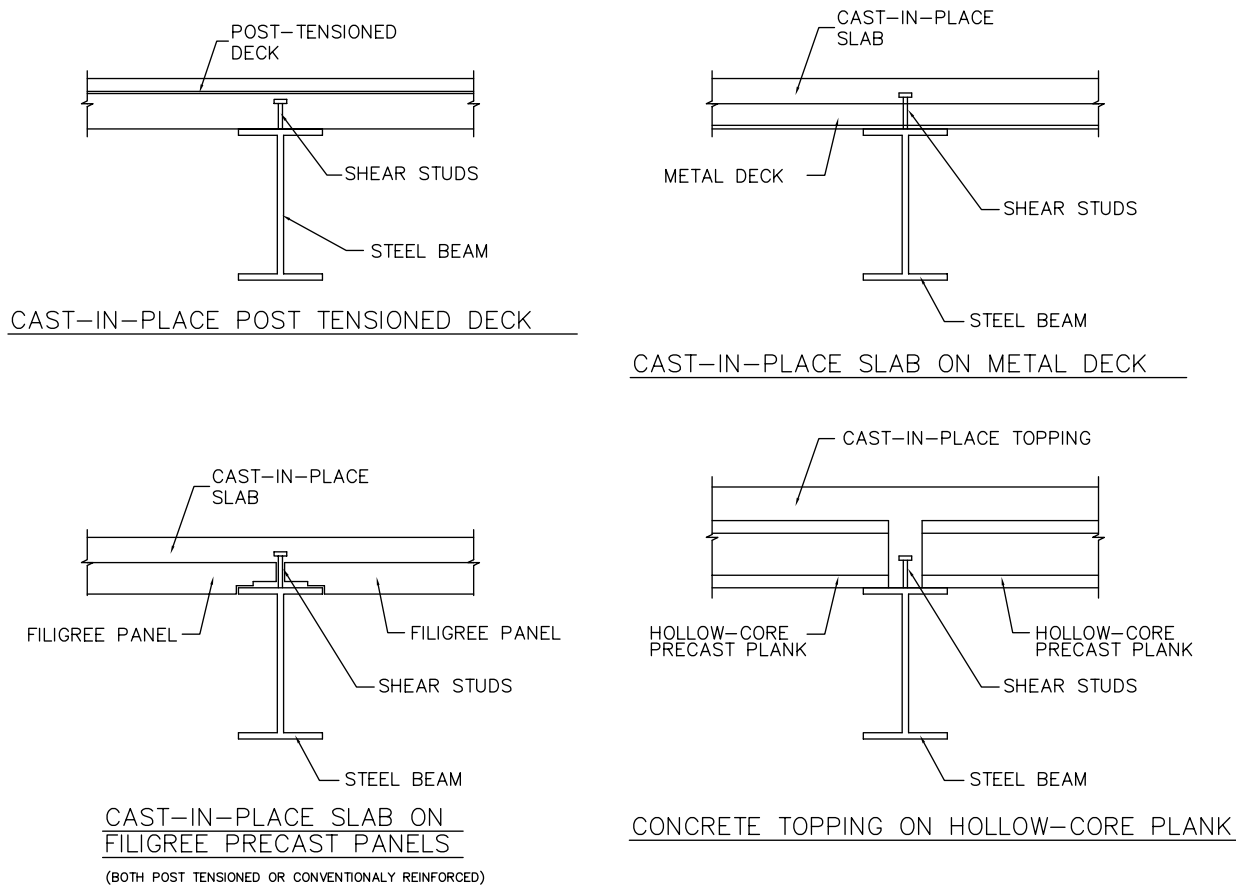
Fig. 3-31. Composite Beams

FORM DECK SUPPORTED BY GRADE OR SLAB BELOW

Labels: GLU LAM DECK SUPPORT BEAM — FORM WOOD LAMINATE DECK — SHORING BEAMS — BEAM DESIGNED AS "SHORED" — SHORING POSTS TYPICAL — GRADE OR SLAB BELOW

FORM DECK SYSTEM SUPPORTED BY BEAM—NO SHORING

Labels: FORM BEAM HANGER — FORM WOOD DECK LAMINATE — FORM BEAM HANGER — GLU LAM DECK SUPPORT BEAM ALUMINUM EXPANDABLE BEAM OR EXPANDABLE STEEL FORM JOIST — STEEL BEAM — STEEL BEAM

NOTE:
FORM SYSTEM MUST LATERALLY BRACE BEAM FOR UNBALANCED LOADING AGAINST LATERAL-TORSIONAL BUCKLING

Fig. 3-32. Form Deck System Supported by Beam—No Shoring

Labels: P.C. PERIMETER PANEL — VERTICAL REINFORCING DESIGNED FOR VEHICLE IMPACT — 3/4"⌀ INSERT CAST IN PANEL — 2" WASH 3'-0" — HORIZONTAL BARS DESIGNED FOR LATERAL GRAVITY LOADS & PANEL LOADS — CAST IN PLACE SLAB — #6 @ 24" (THREADED 1-E) — THIS PANEL TO SLAB BOTH BRACES PANEL
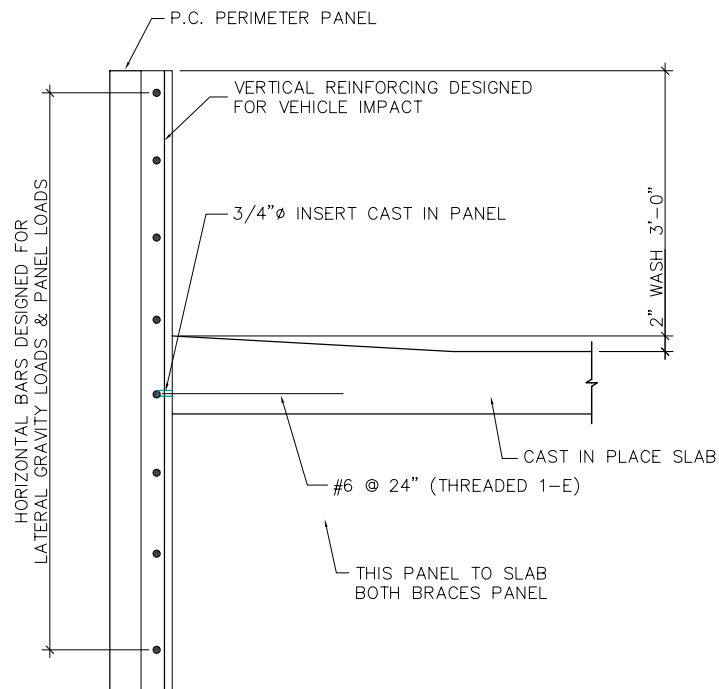
Fig. 3-33. Perimeter Panel Beams

PRECAST CONCRETE
ARCH. PANEL

STAGGED UPPER CONNECTION
MUST PERMIT ADJUSTMENT
FOR SHRINKAGE AND SLAB
DEFLECTION

STEEL COLUMN NOT
SHOWN FOR CLARITY

SLAB DEFLECTION TENDS
TO MAKE PANEL ROTATE
SLIGHTLY INWARD

#6 THREADED ROD @ 24"
CAST-IN-PLACE SLAB

SLAB SHRINKAGE TENDS
TO PULL PANEL IN

BEAMS @ COLUMN LINE
MAY HELP WITH SLAB
DEFLECTION—BUT NOT
NECESSARY

ADJUSTABLE INSERT
IN PANEL

LOAD-BEARING ANGLE

BOLT @ COLUMN FOR COL. TO
L CONN. + TH'D. ROD + INSERT
IN PANEL FOR ALIGNMENT

NOTE:
MAKE SURE EVERY P.C. PANEL CONNECTION
HAS 3 DEGREES OF ADJUSTMENT WITH ANY
COMBINATION OF SHIMS, SLOTS AND ADJUSTABLE
INSERTS IN PRECAST PANEL.

Fig. 3-34. Attachment of Precast Panels

2-COLUMNS AT GARAGE INTERIOR
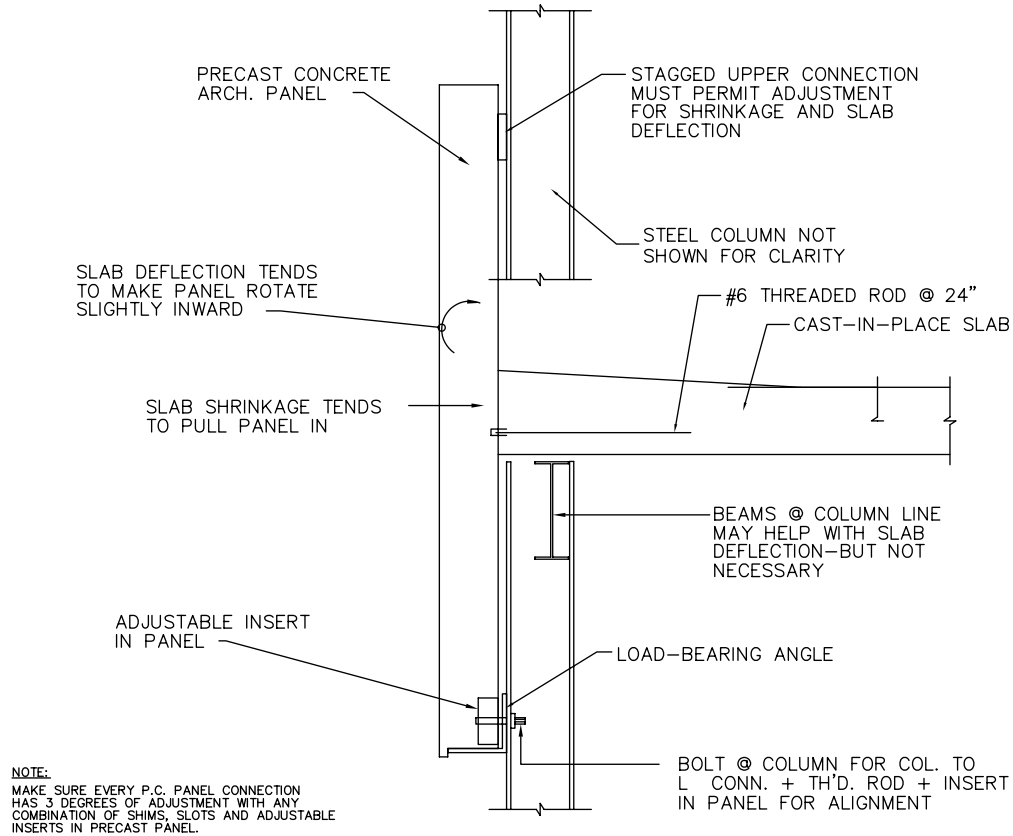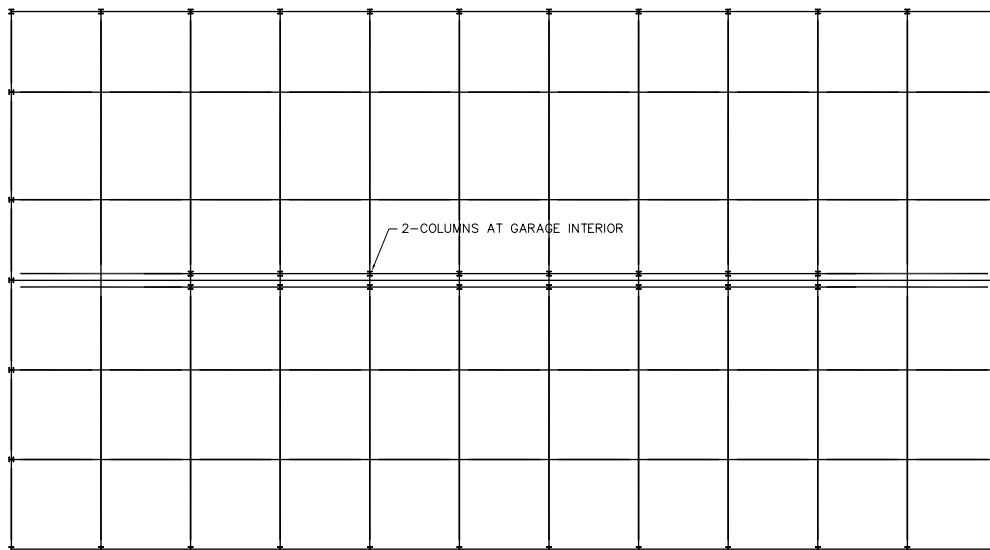
EXAMPLE OF OLDER 2 COLUMN LAYOUT
(DO NOT USE) IS MORE EXPENSIVE PLUS ADDED FLOOR AREA

NOTE:
RATIONALE BEHIND THIS LAYOUT WAS
SIMPLIFYING STEEL DETAILING. ONE
RAMP FRAMING INTO ONE COLUMN—NOT
TWO AS WITH ONE COLUMN.

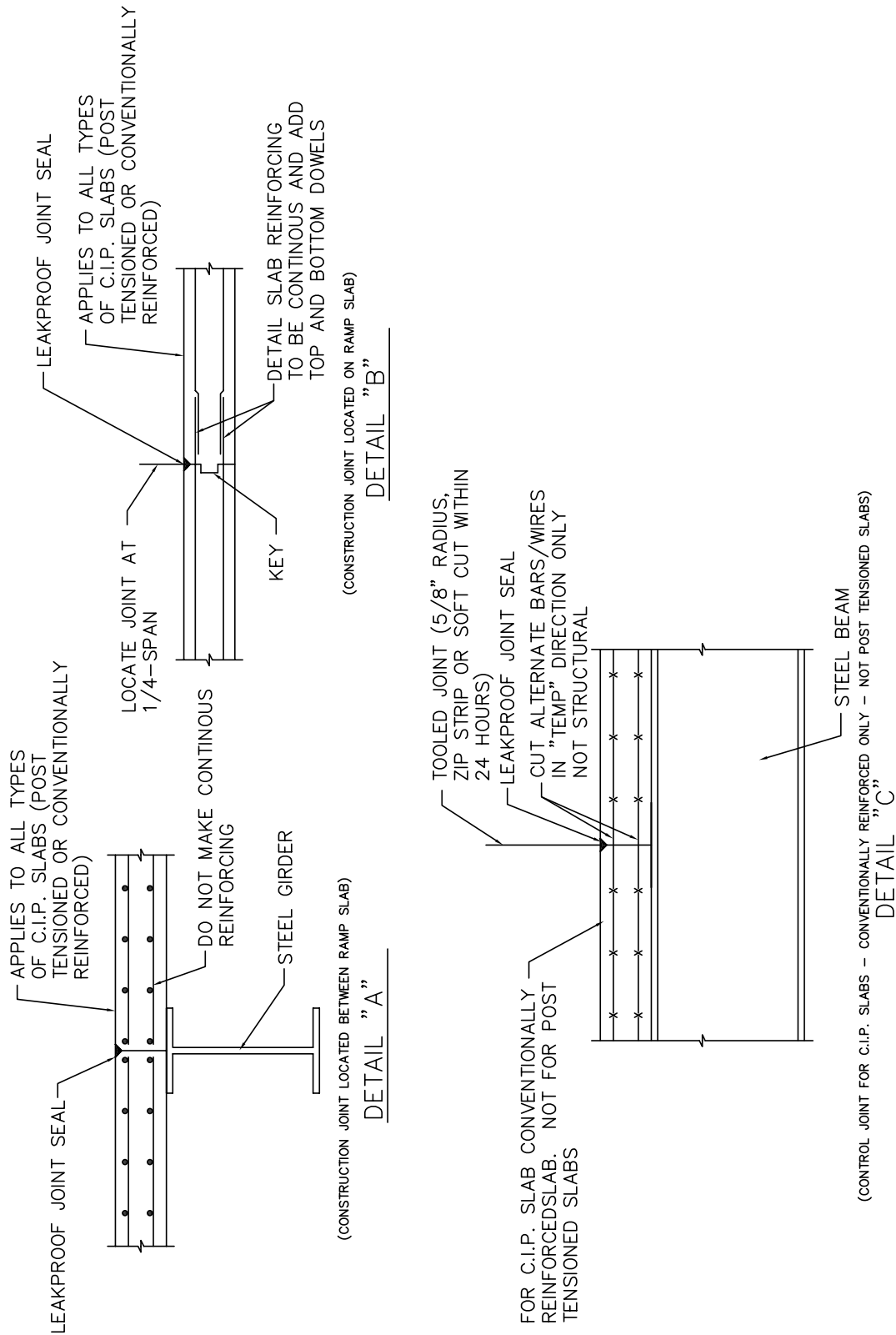*Fig. 3-35. Reinforcement of Older 2-Column Layout*
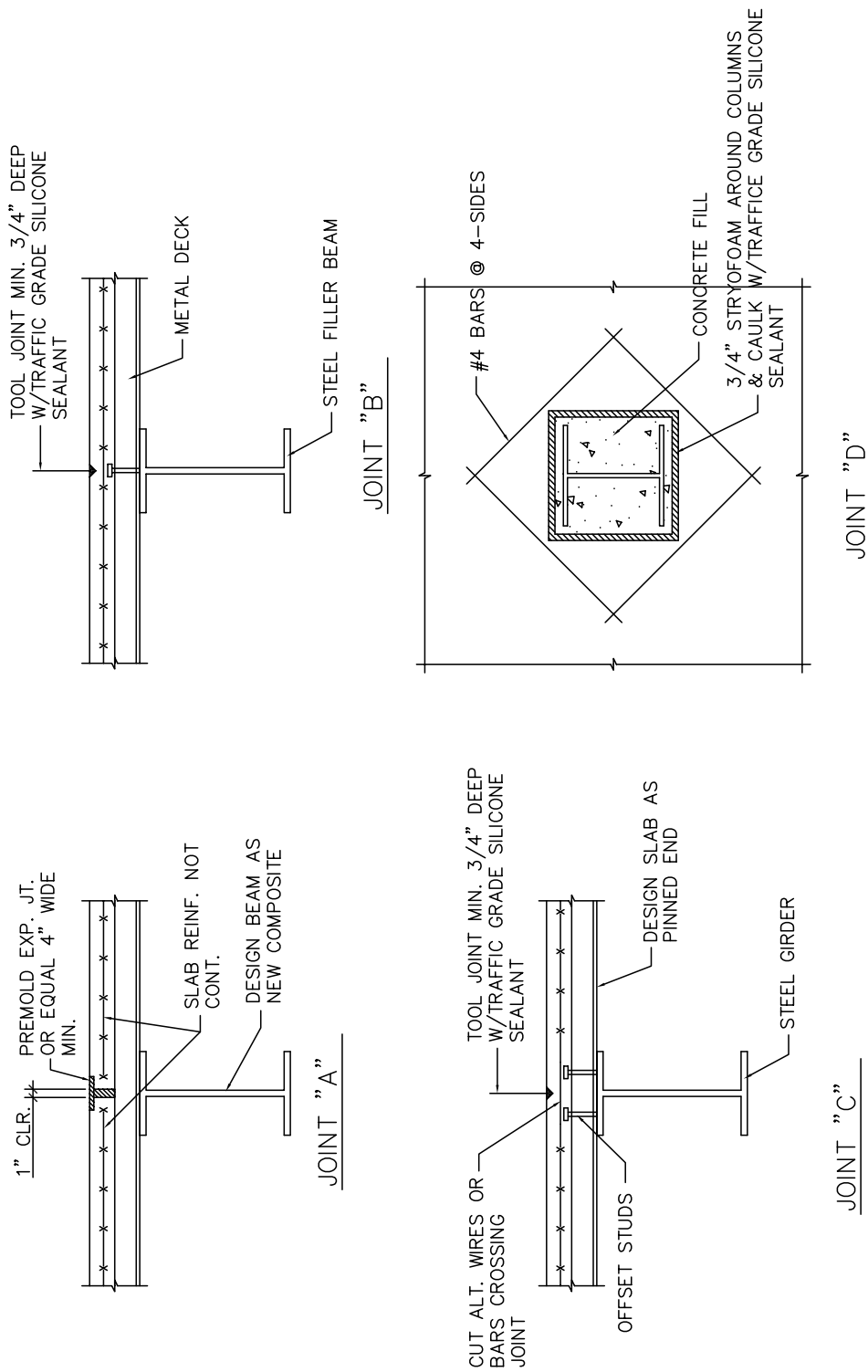
DETAIL "A"

LEAKPROOF JOINT SEAL

APPLIES TO ALL TYPES OF C.I.P. SLABS (POST TENSIONED OR CONVENTIONALLY REINFORCED)

LOCATE JOINT AT 1/4–SPAN

DO NOT MAKE CONTINOUS REINFORCING

STEEL GIRDER

(CONSTRUCTION JOINT LOCATED BETWEEN RAMP SLAB)

DETAIL "B"

LEAKPROOF JOINT SEAL

APPLIES TO ALL TYPES OF C.I.P. SLABS (POST TENSIONED OR CONVENTIONALLY REINFORCED)

DETAIL SLAB REINFORCING TO BE CONTINOUS AND ADD TOP AND BOTTOM DOWELS

KEY

(CONSTRUCTION JOINT LOCATED ON RAMP SLAB)

DETAIL "C"

TOOLED JOINT (5/8" RADIUS, ZIP STRIP OR SOFT CUT WITHIN 24 HOURS)

LEAKPROOF JOINT SEAL

CUT ALTERNATE BARS/WIRES IN "TEMP" DIRECTION ONLY NOT STRUCTURAL

FOR C.I.P. SLAB CONVENTIONALLY REINFORCEDSLAB. NOT FOR POST TENSIONED SLABS

STEEL BEAM

(CONTROL JOINT FOR C.I.P. SLABS – CONVENTIONALLY REINFORCED ONLY – NOT POST TENSIONED SLABS)

Fig. 3-36. Construction Joints

TOOL JOINT MIN. 3/4" DEEP W/TRAFFIC GRADE SILICONE SEALANT

METAL DECK

STEEL FILLER BEAM

JOINT "B"

#4 BARS @ 4-SIDES

CONCRETE FILL

3/4" STRYOFOAM AROUND COLUMNS & CAULK W/TRAFFICE GRADE SILICONE SEALANT

JOINT "D"

1" CLR.

PREMOLD EXP. JT. OR EQUAL 4" WIDE MIN.

SLAB REINF. NOT CONT.

DESIGN BEAM AS NEW COMPOSITE

JOINT "A"

TOOL JOINT MIN. 3/4" DEEP W/TRAFFIC GRADE SILICONE SEALANT

DESIGN SLAB AS PINNED END

STEEL GIRDER

CUT ALT. WIRES OR BARS CROSSING JOINT

OFFSET STUDS

JOINT "C"

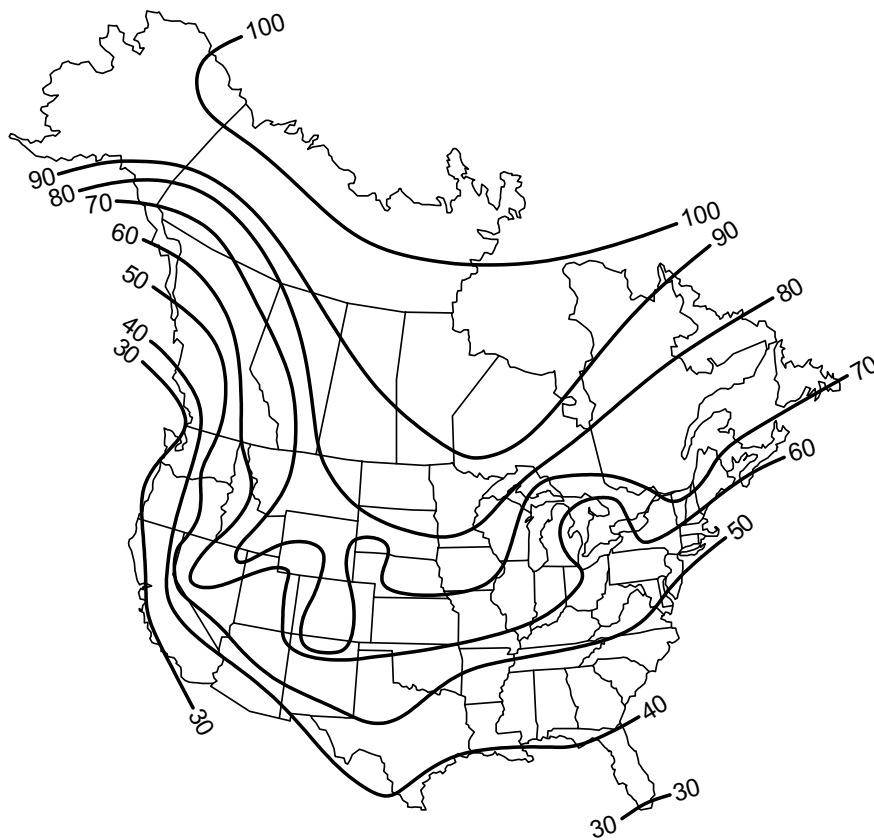*Fig. 3-37. Control Joints*

MAXIMUM SEASONAL CLIMATIC TEMPERATURE CHANGE, °F
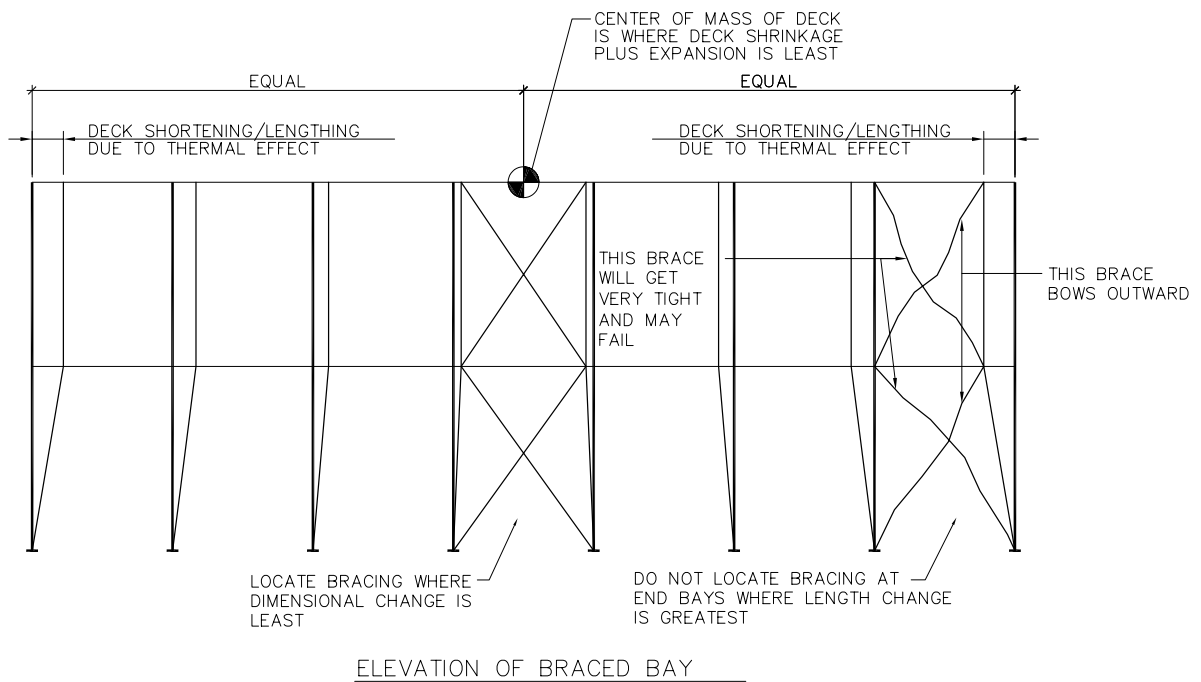
Fig. 3-38. Thermal Map of the United States

ELEVATION OF BRACED BAY

Fig. 3-39. Location of Bracing

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