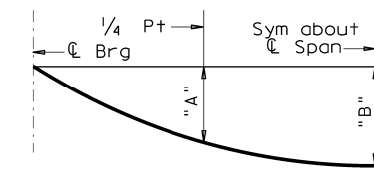
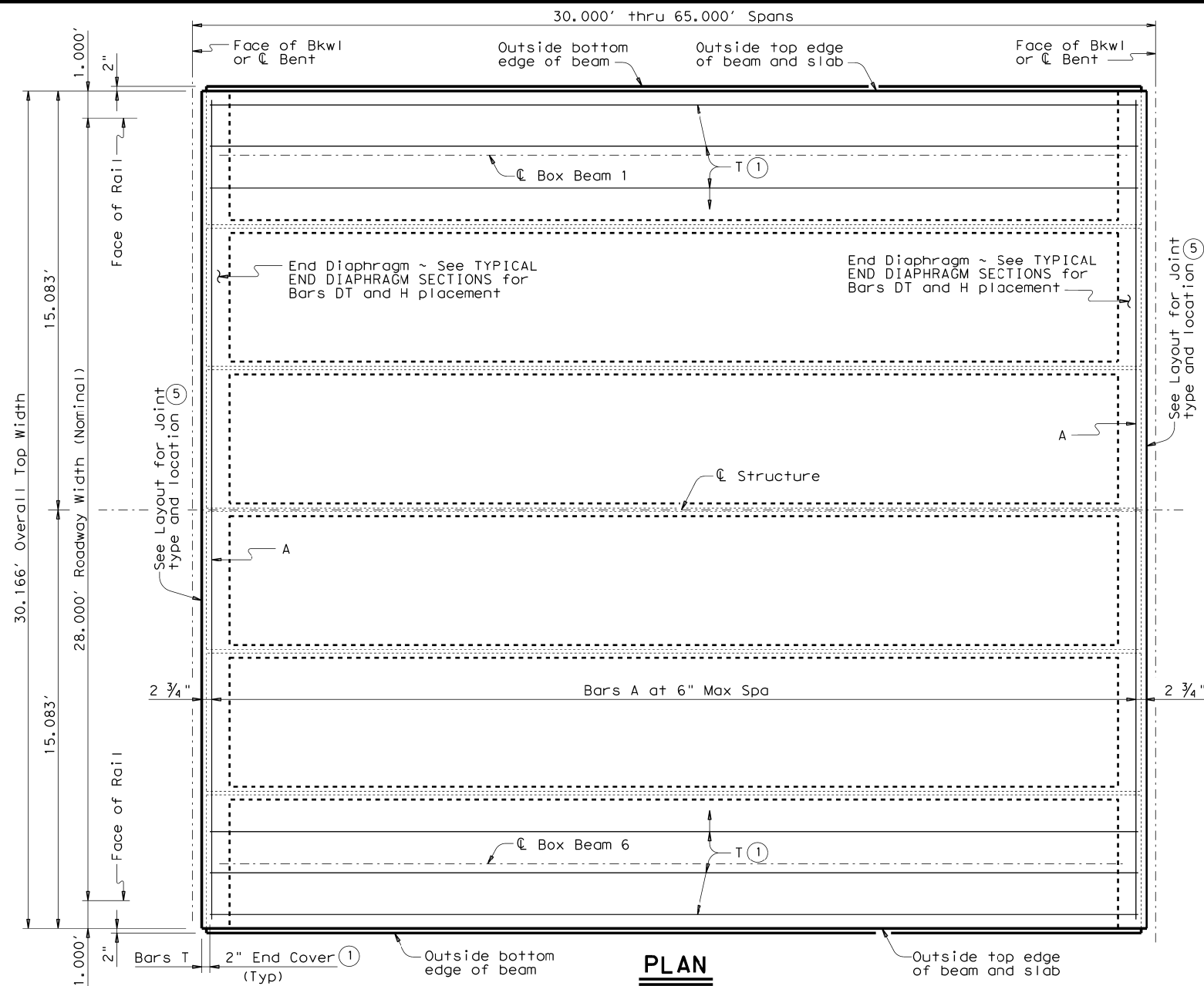


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Note: Deflections shown are due to shear key and concrete slab only, ($E_c = 5 \times 10^3$ ksi). Calculated deflections shown are theoretical and actual dimension may be less. Deflections may be adjusted based on field observation.

DEAD LOAD DEFLECTION DIAGRAM

- (1) If multi-span units (with slab continuous over Interior Bents) are indicated on the Bridge Layout, Bars T must be continuous through joint. See Continuous Slab Detail.
- (2) Based on theoretical beam camber, dead load deflections of 5" Cast-in-place slab, shear key dead load and a constant grade. The contractor must adjust these values for any vertical curve.
- (3) Slab thickness at midspan of Beams may not exceed 7 inches.
- (4) This standard does not provide for changes in roadway cross slopes within the structure.
- (5) If using Type A expansion joints, the maximum distance between joints is 100 feet.
- (6) Form bottom of shear keys with foam backer rod or other material acceptable to the Engineer.

TABLE OF DEFLECTIONS AND SECTION DEPTHS

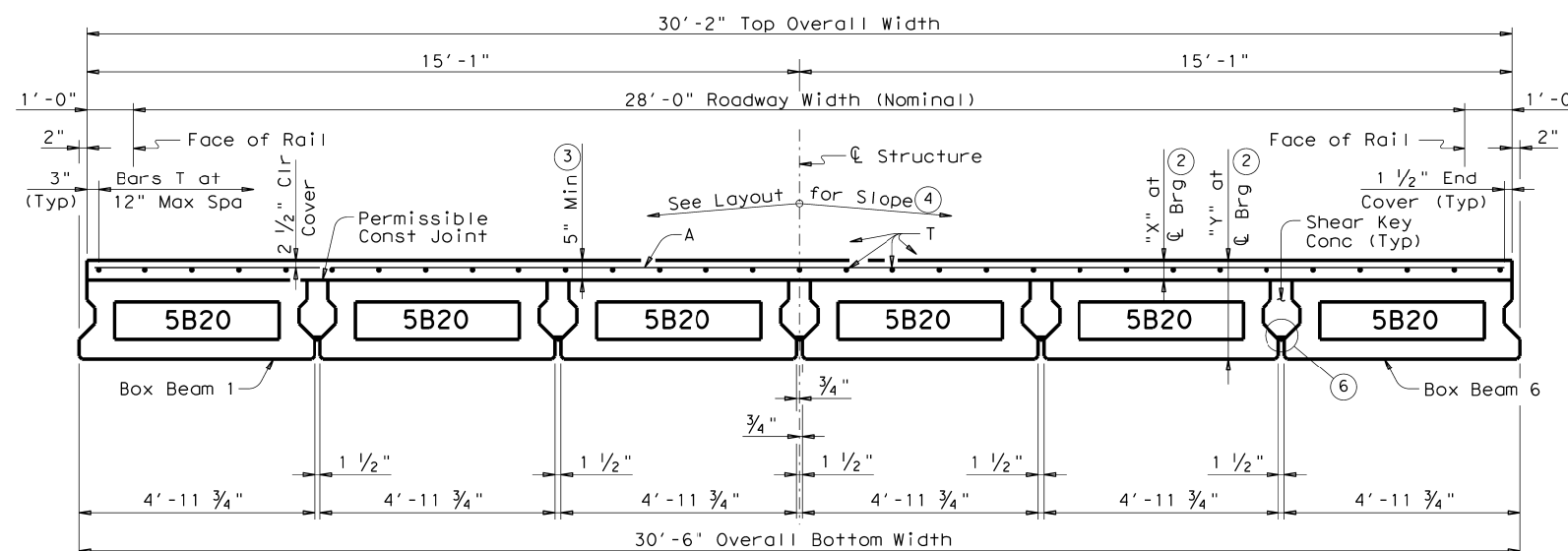
| SPAN LENGTH (FT) | BEAM NO. | POINT | DEAD LOAD DEFLECTIONS (FT) | | | SECTION DEPTHS | |
|------------------|----------|-------|----------------------------|-------|-------|-----------------------|-----------------------|
| | | | SHEAR KEY | SLAB | TOTAL | "X" AT ℓ BRG (2) | "Y" AT ℓ BRG (2) |
| 30 | ALL | "A" | 0.000 | 0.002 | 0.002 | 5 1/4" | 2'-1 1/4" |
| | | "B" | 0.000 | 0.003 | 0.003 | 5 1/4" | 2'-1 1/4" |
| 35 | ALL | "A" | 0.001 | 0.003 | 0.004 | 5 1/4" | 2'-1 1/4" |
| | | "B" | 0.001 | 0.004 | 0.005 | 5 1/4" | 2'-1 1/4" |
| 40 | ALL | "A" | 0.001 | 0.005 | 0.006 | 5 1/4" | 2'-1 1/4" |
| | | "B" | 0.002 | 0.008 | 0.010 | 5 1/4" | 2'-1 1/4" |
| 45 | ALL | "A" | 0.003 | 0.009 | 0.012 | 5 1/2" | 2'-1 1/2" |
| | | "B" | 0.003 | 0.012 | 0.015 | 5 1/2" | 2'-1 1/2" |
| 50 | ALL | "A" | 0.003 | 0.014 | 0.017 | 5 1/2" | 2'-1 1/2" |
| | | "B" | 0.005 | 0.019 | 0.024 | 5 1/2" | 2'-1 1/2" |
| 55 | ALL | "A" | 0.005 | 0.020 | 0.025 | 5 3/4" | 2'-1 3/4" |
| | | "B" | 0.007 | 0.028 | 0.035 | 5 3/4" | 2'-1 3/4" |
| 60 | ALL | "A" | 0.008 | 0.029 | 0.037 | 6" | 2'-2" |
| | | "B" | 0.010 | 0.041 | 0.051 | 6" | 2'-2" |
| 65 | ALL | "A" | 0.010 | 0.040 | 0.050 | 7" | 2'-3" |
| | | "B" | 0.014 | 0.056 | 0.070 | 7" | 2'-3" |

BAR TABLE

| BAR | SIZE |
|-----|------|
| A | #4 |
| DT | #4 |
| H | #5 |
| T | #4 |

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.
 Provide Class S concrete ($f'_c = 4,000$ psi) for slab and shear key. Provide Class S (HPC) concrete if shown elsewhere in the plans. All reinforcing must be Grade 60.
 Two-span or three-span units, with the slab continuous over Interior Bents, may be formed with the details on this standard. Unit Length cannot exceed 3.5 times length of the shortest end span.
 Bar laps, where required, will be as follows:
 Uncoated ~ #4 = 1'-5"
 Epoxy coated ~ #4 = 2'-1"
 It is recommended, with crown cross-slope, to erect beams adjacent to crown point first. For structures without a crown point, it is recommended to erect beams on the high side of cross-slope first and progress to the low side.
 This sheet does not support the use of Transition Bents.
 See railing details and standard BBRAS for rail anchorage.



HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation Bridge Division Standard

PRESTRESSED CONCRETE BOX BEAM SPANS

TYPE B20 28' RDWY (WITH SLAB)

SBBS-B20-28

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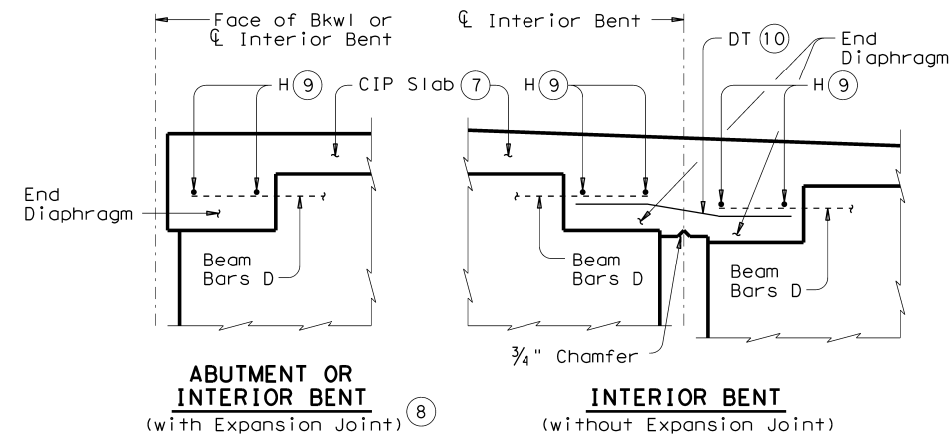
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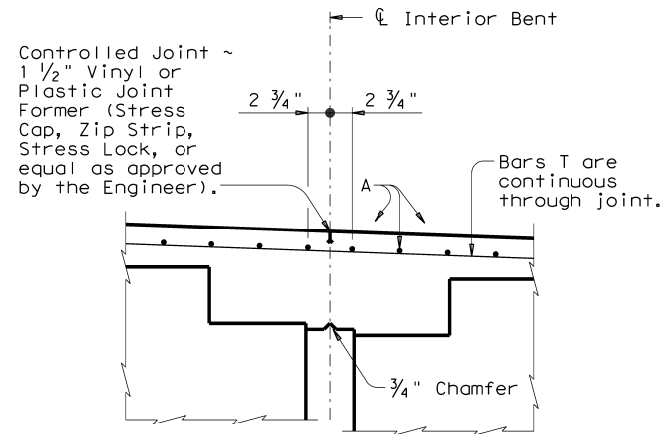
01-12: Cover, 10-15: Table of Est Quantities, Notes. DIST COUNTY SHEET NO.

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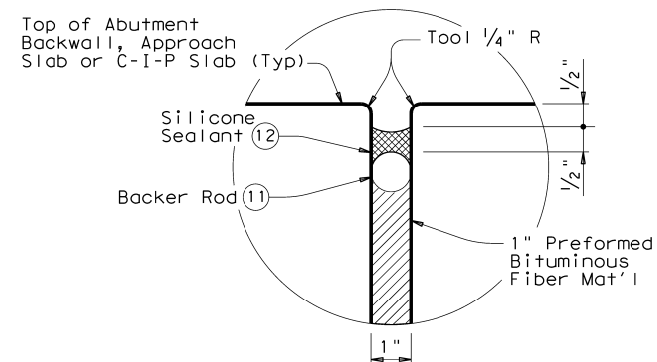
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TYPICAL END DIAPHRAGM SECTIONS
(along centerline of Box Beam)



CONTINUOUS SLAB DETAIL
(Diaphragm reinforcing not shown for clarity)



TYPE A JOINT DETAIL (5)

TABLE OF ESTIMATED QUANTITIES

| SPAN LENGTH | SHEAR KEY | REINF CONC SLAB (BOX BEAM) | PRESTR CONCRETE BOX BEAMS (TY 5B20) | TOTAL REINF STEEL (14) |
|-------------|-----------|----------------------------|-------------------------------------|------------------------|
| | | | (13) | |
| FT | CY | SF | LF | Lb |
| 30 | 4.0 | 905 | 177.00 | 1,810 |
| 35 | 4.6 | 1,056 | 207.00 | 2,112 |
| 40 | 5.3 | 1,207 | 237.00 | 2,414 |
| 45 | 6.0 | 1,357 | 267.00 | 2,714 |
| 50 | 6.6 | 1,508 | 297.00 | 3,016 |
| 55 | 7.3 | 1,659 | 327.00 | 3,318 |
| 60 | 8.0 | 1,810 | 357.00 | 3,620 |
| 65 | 8.6 | 1,961 | 387.00 | 3,922 |

- (5) If using Type A expansion joints, the maximum distance between joints is 100 ft.
- (7) Slab reinforcing omitted for clarity.
- (8) See Bridge Layout for Joint type.
- (9) Provide 1 1/2" end cover to Bars H. After all beams have been placed, weld one Bar H to two Bars D at each end of all beams.
- (10) Lap Bars DT 9" Min with each Beam Bar D at Interior Bents without Expansion Joints. Bars DT shown bent for clarity only.
- (11) Backer rod must be 25% larger than joint opening and must be compatible with the sealant.
- (12) Use Class 7 silicone sealant. Prepare joint and seal in accordance with Item 438 "Cleaning and Sealing Joints".
- (13) Fabricator must adjust beam lengths for beam slopes as required.
- (14) Reinforcing steel weight is based on an approximate factor of 2.0 lbs per square foot of slab.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation Bridge Division Standard

PRESTRESSED CONCRETE BOX BEAM SPANS
TYPE B20 28' RDWY (WITH SLAB)

SBBS-B20-28

| | | | | |
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| REVISIONS | | | | |
| 01-12: Cover | | | | |
| 10-15: Table of Est Quantities, Notes. | DIST | COUNTY | | SHEET NO. |