

COLORADO DEPARTMENT OF TRANSPORTATION STAFF BRIDGE BRIDGE DETAIL MANUAL	Chapter: 9 Effective: September 25, 1981 Supersedes: New
Construction Layout	

9.1 Purpose

This drawing is to show a plan of the superstructure showing pertinent information necessary for construction of the structure.

9.2 Responsibility

This drawing shall be prepared and checked in the design unit. The graphic presentation of information on this drawing shall be the responsibility of the individual preparing the drawing.

9.3 Scales

Scales shall be used that will proportion the "Construction Layout" to the drawing. Suggested scales are as follows:

1" = 10' - 0"	3/16" = 1' - 0"
3/32" = 1' - 0"	1/4" = 1' - 0"
1/8" = 1' - 0"	

9.4 Combining Details

The "Construction Layout" and the "Footing and Piling Layout" should be placed on the same sheet if practical. Other details may be placed on this sheet; i.e., drain details, etc.

If the "Construction Layout" is combined with other details, it should occupy the top half of the sheet. Other configurations may be used depending on the type of structure or structures. (Left half, upper left corner, etc.)

9.5 Horizontal Control Line

The horizontal control line shall be shown and labeled consistently with the plans. For twin structures the horizontal control line shall

#### 9.5 Horizontal Control Line (continued)

be shown and labeled for each structure such as: "Proj. Line - Str. No. G-18-L".

#### 9.6 Layout Line

For structures on tangent, the layout line and the horizontal control line will coincide, and shall be labeled such as "Survey Line", "Proj. Line", etc.

For structures located on a curve, the layout line may be:

- (a) Ahead Tangent: The tangent ahead of the point of intersection (P.I.) of the curve.
- (b) Back Tangent: The tangent back of the P.I. of the curve.
- (c) A chord between two specified points.
- (d) A tangent to the horizontal control line at some given point (P.O.C.) on the horizontal control line.

The layout line shall be shown and labeled such as "Tangent from T.S. Sta. 31+48.08", "Chord from P.O.C. Sta. 38+41.00 to P.T. Sta. 39+78.00", "Tangent from P.O.C. Sta. 382+10.00", etc.

Bearings shall be given for all layout lines, to the nearest second.

#### 9.7 Stationing

Stationing shall be shown on the horizontal control line where it intersects with the centerline of bearing at abutments and centerline of piers. Stationing shall be given to two decimal places.

#### 9.8 Centerlines

The following centerlines shall be shown and labeled:

- (a) Centerlines of bearings at abutments and piers.

### 9.8 Centerlines (continued)

- (b) Centerlines of piers.
- (c) Centerlines of all girders.
- (d) Centerline of roadway, median, etc., where required.
- (e) Centerlines of diaphragms if not shown elsewhere on the plans.

### 9.8 Dimensions

All dimensions shall be given in feet and inches (to the nearest 1/8 inch) except as noted.

- (a) The following dimensions shall be shown for all structures:
  1. End of wingwall to end of wingwall along outside of deck.
  2. End of wingwall to Centerline Abutment Bearings, Centerline Abutment Bearings to Centerline Piers, Centerline Piers to Centerline Piers, etc. along outside edge of deck.
  3. Back Face Abutments to Centerline Bearings. (Use design dimension - normal to Centerline Bearing or parallel to girder.)
  4. Centerline Pier Bearings to Centerline Piers (Use design dimension - normal to Centerline Pier or parallel to girders.)
  5. Normal (radial) from Horizontal Control Line to Centerline Girders. (Except straight girders on curved structures - see below.)
  6. Normal (radial) from Horizontal Control Line to inside of curbs, inside of curbs to outside of deck, etc.
  7. Normal (radial) outside of deck to outside of deck.

### 9.9 Dimensions (continued)

8. Normal (radial) Horizontal Control Line to Profile Grade Line.

9. Location of Centerline Diaphragms (if shown).

Dimensions along edge of deck (1. And 2. Above) need not be repeated if they are the same on both sides of the structure.

(b) For structures on a curve with curved girders, the following dimensions shall be added to the above:

1. Along layout line from point of tangent to centerline of abutments and piers. (Nearest hundredth of a foot) (A note similar to "538.12 ft. back on tangent from S.T. Sta. 1281+48.00" shall be used if the point of tangent cannot be shown on the drawing.)
2. From layout line to Horizontal Control Line along centerline of abutment bearings and piers (nearest hundredth of a foot).
3. From layout line to outside of deck along centerline of abutments and piers.

(c) For structures on a curve with straight girders the following dimensions shall be added to (a) and (b) above:

1. Length of chords. (if used)
2. Location of chords if not located on Horizontal Control Line. (Nearest hundredth of a foot)
3. Girder offsets from chords.

### 9.9 Dimensions (continued)

4. For flared girders, dimension from horizontal control line along centerline of bearings. (Nearest hundredth of a foot)
5. Length of girders. (CL to CL Bearings)
6. Offsets from centerline of outside girders to outside of deck at 10<sup>th</sup> points (100 ft. spans or less) or 20<sup>th</sup> points (spans of more than 100 ft.) along girders.

### 9.10 Angles

Angles shall be shown to the nearest second:

- (a) Angles between Layout Line and centerlines of abutments and piers.
- (b) Angles between straight girders and centerline of bearings, if girders are not parallel to the Layout Line.

### 9.11 Bench Mark

A bench mark shall be indicated on each structure.

- (a) For two-way structures, locate on right hand curb approximately 10 feet from Centerline Abutment 1.
- (b) For one-way structures, locate on outside curb approximately 10 feet from Centerline Abutment on the approach end of the structure.

### 9.12 Electrical Conduit

Electrical conduit shall be shown on this drawing if required.

Use 1-1/2" electrical conduit for longitudinal runs and 3/4" electrical conduit for transverse runs.

### 9.13 Drains

Drains shall be shown and located on this drawing as required. A detail may be required for clarity.

### 9.14 Check Items

The following is a summary of information to be shown on the drawing, as required. Additional information may be shown according to the individual structure.

- (a) Standard North Arrow
- (b) Label horizontal control line and give bearing, if structure is on tangent.
- (c) For structures on a curve, label and give the bearing of the layout line and point of tangency, or the end points for a chord.
- (d) Stationing
- (e) All centerlines
- (f) All necessary dimensions
- (g) Curb offsets
- (h) All required angles
- (i) Bench mark
- (j) Electrical conduit
- (k) Drains
- (l) Title the plan "CONSTRUCTION LAYOUT". For more than one structure, title each plan as above, and add the structure number.
- (m) Label back face of abutments, centerline of bearings, centerline of piers.
- (n) Dimensions widths of curbs and sidewalks
- (o) Project number in proper locations.
- (p) Typical notes

9.14 Check Items (continued)

- (q) Complete title block

9.15 Title Block

This drawing is titled "CONSTRUCTION LAYOUT" and shall be so indicated in the title block.

If other details are combined on this drawing, they should be so indicated in the title. Examples: If the "Piling Layout" is placed on a drawing with the "Construction Layout", the title of the sheet would be:

CONSTRUCTION LAYOUT

PILING LAYOUT

9.16 Typical Notes

The following notes shall appear on the drawings, as applicable:

- (a) Edge Offsets Note-

All edge offsets are placed at 10<sup>th</sup> points (or 20<sup>th</sup> points) normal to the girder.

- (b) Bench Mark Note-

Approximate location of Bench Mark, see Std. M-612-A.

- (c) Electrical Conduit Notes-

1. 1-1/2" Electrical Conduit. Project 2'-0" at ends.
2. "J" = 6" X 6" X 4" Junction Box flush with bottom of slab.  
Drain for interior condensation.

- (d) Drain Notes-

1. 6" Ø X \_\_\_\_\_' Drain Pipe. Cup asphalt 0" at 1'-0"  
radius to 2" deep at drain.

9.16 Typical Notes (continued)

3. 1'-0" Curb Drain. Move to clear rail posts, move or bend reinforcing to clear.





