

## **SECTION 2**

# **DEFINITIONS**

## 2 DEFINITIONS

The following list of definitions of terms commonly used on bridge drawings is provided for the guidance.

The list of definitions listed below as well as those adopted for use by AS 5100 should be used in preference to other terms.

A more comprehensive list will be found in:

- AS/NZS 1100.501 - Technical Drawing
- AS 1348.1 - Road and Traffic Engineering - Glossary of Terms  
Road Design and Construction
- The RTA Road Design Guide

- |                         |   |   |
|-------------------------|---|---|
| Abutment                | - | the part of the substructure which supports the superstructure at its extremities   |
| Afflux                  | - | the rise in water level on the upstream side of a construction in a stream (bridge or culvert) relative to the water level on the downstream side of the construction   |
| Alignment               | - | the geometric form of the centreline (or other reference line) of a carriageway with respect to the horizontal and vertical axes<br>horizontal - plan geometry of the road<br>vertical - elevation geometry of the road |
| Approaches              | - | a relatively short length of carriageway leading up to a bridge, including embankments, pavement and safety barriers  |
| Approach Slab           | - | a reinforced concrete slab supported on the abutment curtain wall and the approach fill   |
| Asphalt                 | - | a mixture of bituminous binder and aggregate with or without with a mineral filler produced hot in a mixing plant, delivered spread and compacted while hot – used as a road surface                                    |
| Australian Height Datum | - | a level datum, uniform throughout Australia, based on an origin determined from observations of mean sea level at tide gauge stations, located at more than 30 points along the Australian coastline                    |
| Bailey Bridge           | - | a temporary bridge structure of latticed steel members designed for rapid assembly from prefabricated parts – usually used in emergency situations to effect necessary repairs to structures                            |
| Base Centreline         | - | the pegged centreline of the road alignment   |
| Batter                  | - | the slope of an embankment or wall given in the ratio of horizontal to vertical eg 2 to 1, 1.5 to 1   |
| Bearing (structural)    | - | a device for transmitting horizontal and vertical forces of a bridge superstructure to the supporting structure   |

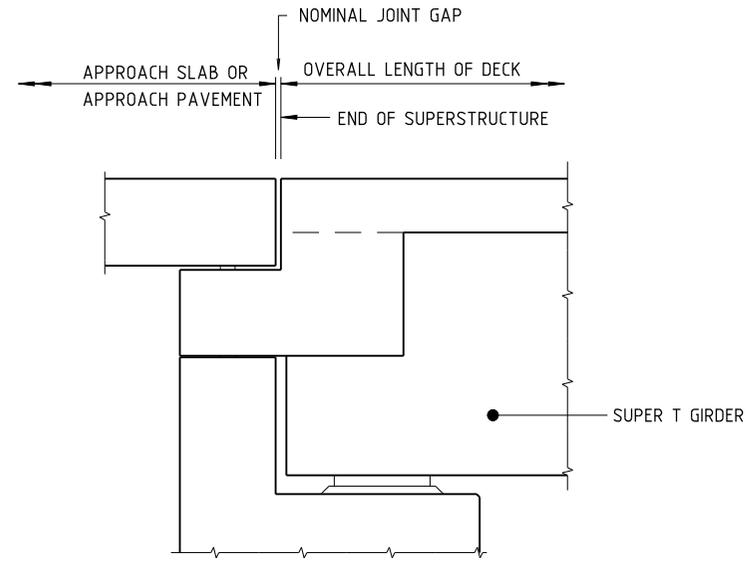
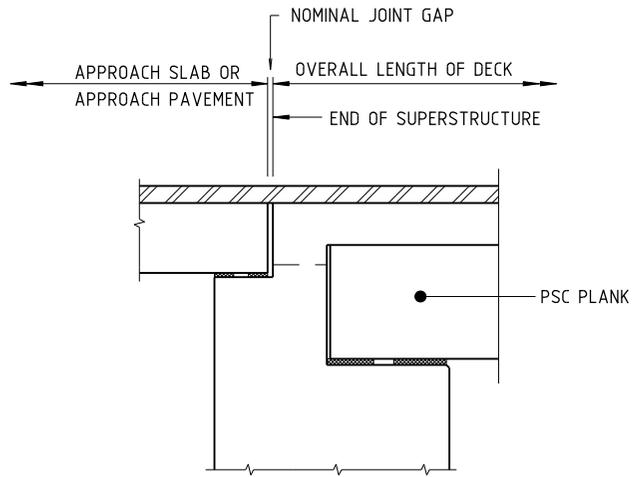
- Bearing (surveying) - The bearing of a line is the angle measured clockwise from grid north to the subject line and is given in degrees, minutes and seconds.  
The bearing of the Control Line shall always be given in the direction of increasing chainage along the line.
- Bench Mark - a defined mark of a permanent nature, the level of which, relative to some datum, has been determined or assumed and to which the level of other points may be related
- Bituminous - having physical properties similar to those of bitumen or tar, or containing substances having such properties
- CAD - Computer Aided Drafting
- Carriageway - that portion of a road or bridge devoted particularly to the use of vehicles inclusive of shoulders and auxillary lanes
- Cast-in-Place (Cast-in-situ) - shall mean concrete which is cast directly into it's final position
- Column - generally vertical or inclined load bearing members that form part of a pier. The portion of a cast-in-place pile that significantly extends above the existing surface level shall also be termed a column
- Concrete Safety - shall mean a reinforced concrete barrier, which conforms to the Barrier shape and height requirements of the Australian Standard AS 5100 – Bridge Design, placed a nominal distance from the centreline of carriageway
- Contraction - a provision made in a structure or pavement to allow contraction of Joint components, induced by temperature change or other causes, to occur in a controlled manner
- Construction Joint - a joint made during the placing of concrete or pavement base material to divide the work into parts for convenience of construction or to provide for unavoidable interruption to placing
- Contours - lines on a map or plan joining all points of the same level
- Contract Documents - those documents which form part of the "Formal Instrument of Agreement" which is executed between the Contractor and the Principal, and which includes a copy of the Tender, Drawings, Specification, General and Special Conditions of Contract
- Contract Level - the level shown on the drawings representing the extent of the work in the foundations to be included in a lump sum tender
- Control Line - a line, generally at or near the centreline of a road, on which design is based and from which measurements for setting out construction may be conveniently made

Coordinates	-	distances measured in a certain way from fixed straight lines (axes of reference) which intersect at the origin - used to locate a point. Systems include MGA and ISG
Corbel	-	a short projection supporting a beam at its end and designed to Provide adequate bearing on the structure beneath
Cover (nominal)	-	(a) the thickness of concrete between a reinforcing bar, tendon or duct and the nearest surface of a concrete member - (b) the depth of material between the surface of the ground or carriageway and the top of a culvert or pipe
Culvert	-	a covered channel consisting of one or more adjacent pipes or enclosed cells of rectangular or other shape, for conveying a watercourse or stream below formation level.
Curtain Wall	-	a narrow continuous reinforced concrete vertical wall forming part of an abutment to prevent the earth fill from spilling into the bearings
Datum	-	a defined horizontal or level plane to which the relative elevations of other points may be referred
Deck	-	the bridge floor directly carrying traffic loads
Designed Surface Level	-	a required level of the road as a basis for construction which is generally located on a control line, such as a base centreline, a true centreline, or gutter lip line or any other line so nominated
End of Deck	-	shall mean the rear face of the curtain wall or the end of the superstructure concrete as applicable and as shown in Figure 2.1
Existing Surface Level	-	the surface of the earth formation existing at the bridge site prior to construction of bridge <b>The term Natural Surface shall not be used</b>
Expansion	-	a space between two parts of a structure or slab formed to allow Joint relative movements to occur
Footing	-	the widening at the base of a structure (pier or abutment) to spread the load above to the foundation material
Foundations	-	that part of the substructure which transfers the structure loads to the foundation material
Girder	-	a load bearing member which supports the deck of a bridge
Gabion	-	a wire basket filled with selected stones used to retain earth or to prevent scour of the earth
Grid	-	a coordinate reference system used in surveying
Headstock	-	part of a pier spanning between the piles or columns that supports the superstructure
Hog	-	in a prestressed concrete member, the vertical deflection

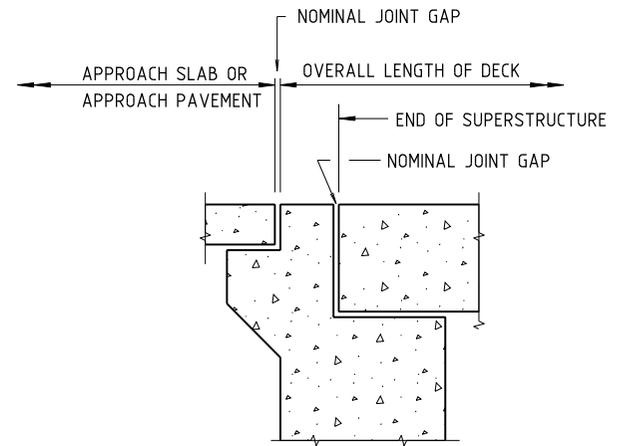
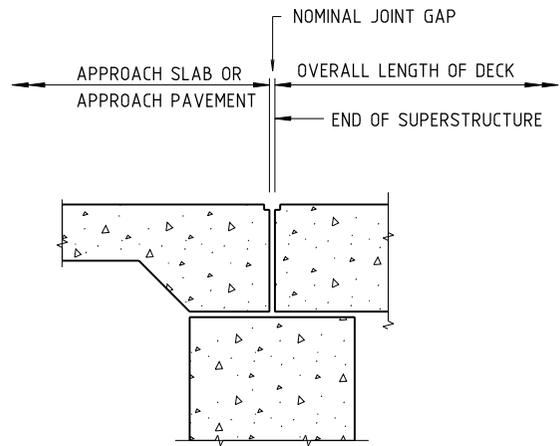
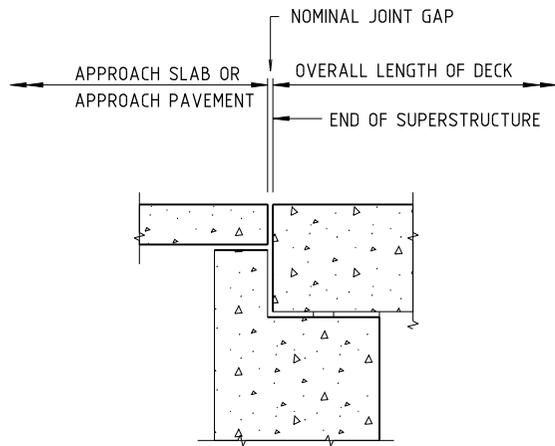
	-	caused by the application of prestress
Invert	-	the lowest portion of the internal surface of a culvert or drain
Kerb	-	a raised border of rigid material formed at the edge of a carriageway – can be either concrete or timber
Mass Concrete	-	unreinforced concrete, commonly used in a thin layer to provide a clean even surface for support of reinforcement during construction
Obvert	-	the highest portion of the internal surface of a culvert or drain
Overall Length of Deck	-	the distance between the ends of the deck (see definition of latter)
Pavement Anchor Beam	-	a reinforced concrete beam placed a short distance from the abutment that supports the pavement and anchors horizontal forces for the reinforced concrete pavement
Pavement Transition	-	a reinforced concrete slab extension of a reinforced concrete pavement that is supported on the abutment at one end and on a pavement anchor beam at the other end
Pedestrian	-	shall mean a railing, fabricated from either steel or aluminium, Barrier which consists of two rails separated by balusters, placed on the edges of a bridge structure for pedestrian safety
Pier	-	a part of the substructure which supports the superstructure at ends of span and which transfers the loads on the superstructure to the foundations
Pile	-	shall mean a slender member driven into or formed in the ground to resist loads
Pile Cap	-	a structural member that connects and distributes the load from above to a group of piles
Post-tensioning	-	a method of prestressing in which tendons are tensioned after the concrete has hardened eg segmental box girders, cast-in-place box girders and voided slabs
Prestressed Concrete (PSC)	-	concrete in which effective internal stresses are introduced deliberately, usually by means of tensioned steel tendons, prior to the application of service loading to the structure
Pretensioning	-	a method of prestressing in which tendons are tensioned before the concrete is placed eg PSC Planks, Super T Girders and PSC Driven Piles
Protection Angle	-	a steel section, usually a rolled steel angle, cast into the end of the structure or approach slab to protect concrete against damage by construction plant and vehicular traffic
Public Utilities	-	those services owned by other authorities, e.g. water mains, gas mains, power and telephone lines etc

Reduced Level	-	a level relative to an agreed datum (see definition of Datum)
Reinforced Concrete	-	concrete containing more than 0.2% by volume of reinforcing steel
Reinforcement	-	bars or fabric, usually of steel, embedded in concrete for the purposes of resisting particular stresses
Reinforced Soil	-	a method of constructing retaining walls or abutments in which suitable filling is retained by vertical steel or concrete units anchored by friction into the fill by means of galvanized steel strips
Road	-	a route trafficable by motor vehicles
Safety Screens	-	screens attached to bridges over roads or railways in order to prevent objects being dropped or thrown toward vehicles or trains below. The screens usually consist of steel posts or frames attached to concrete surfaces. Welded steel mesh panels are fixed to and span between the posts or frames and are attached to the concrete surface
Setting Out Line	-	is a straight reference line between known fixed points from which the bridge structure is set out
Skew Angle – Right – Left	- -	the angle between a line at right angles to the pavement centreline and the pier or abutment of a bridge
Span Length	-	(i) for end spans, the distance between the end of the superstructure and the centre of the nearest pier  (ii) for intermediate spans, the distance between centres of piers  <u>Note:</u> for design purposes the span length is the length between centres of supports
Specification	-	a detailed description of materials and workmanship required for the construction of the structure
Substructure	-	that part of the structure, i.e. piers and abutments which support the superstructure and which transfers the structure load to the foundation material
Superelevation	-	the continuous transverse slope normally given to the carriageway at horizontal curves
Superstructure	-	that part of the structure which is supported by the piers and abutments – it includes the deck slab, girders / planks, railings etc
Tender Documents	-	the documents required by a contractor to produce his tender for a contract (these include a description of the contract work, general and special conditions of contract  the specification and drawings, together with estimated quantities and a tender form)

Tenderer	-	a person or firm who submits a price for the construction of the Works
Tendon	-	a tension element usually made up of a number of steel strands or wires, used in a concrete member, to impart prestress
Traffic Barrier Railing	-	shall mean a railing, fabricated from steel, which consists of one or two parallel rails and a series of support posts at varying centres, placed on a reinforced concrete parapet immediately adjacent to traffic lanes to restrict lateral movement of vehicles
Truss	-	a frame structure comprised of steel or timber that acts as a beam
Waterway Area	-	the area of the cross section of the stream at right angles to the direction of flow, up to the flood level assumed
Waterway Calculations	-	a method for the determination of required waterways and drainage requirements for a structure
Widening	-	the widening of an existing pavement or carriageway generally without alteration of level
Width of Carriageway	-	the clear width, measured at right angles to the longitudinal centreline of the bridge, between the inner traffic faces of the bridge, i.e. the bottom inside face of the concrete safety barriers or face of traffic railing, whichever projects inwards the most, or between the bottom of kerbs where kerbs are located forward of traffic or other barriers
Width of Footway	-	the clear width, measured at right angles to the longitudinal centreline of the bridge, from the extreme inside portion of the pedestrian barrier to the extreme portion of the footway side of the traffic barrier, truss or girder, or to the bottom of the kerb face
Width of Pavement	-	the width of that portion of a roadway, excluding shoulders, placed above the sub-grade for the support of, and to form a running surface for, vehicular traffic
Width of Road Formation	-	the part of the road between the outer edges of the shoulders
Width of Road Reserve	-	the whole width between abutting property boundaries when the road is in a surveyed road reserve
Wing Wall	-	a wall at abutments that extends beyond the bridge to retain earth behind the abutment - an extension of an end wall at a culvert used to retain earth behind the culvert
Work-as-Executed Plans	-	a set of A1 size black and white paper plans on which all variations to the original design, made during construction, are recorded in red ink, in accordance with the requirements of Section 16 of this Manual



DECKS OF SEMI-INTEGRAL BRIDGES



DECKS OF FULLY ARTICULATED BRIDGES

END OF DECK DEFINITION

FIGURE 2.1