

Chapter 4

Bridge Program Drawings

Section 4.03-General Plan and Elevation

Introduction

General Plan and Elevation details (GP&E) accurately describe a structure in its final form. All new bridges require a GP&E, as well as bridge widenings, hydraulic structures, retaining walls, and some maintenance projects. This section relates primarily to GP&E details associated with new bridge construction, although the other structures are detailed in a similar fashion.

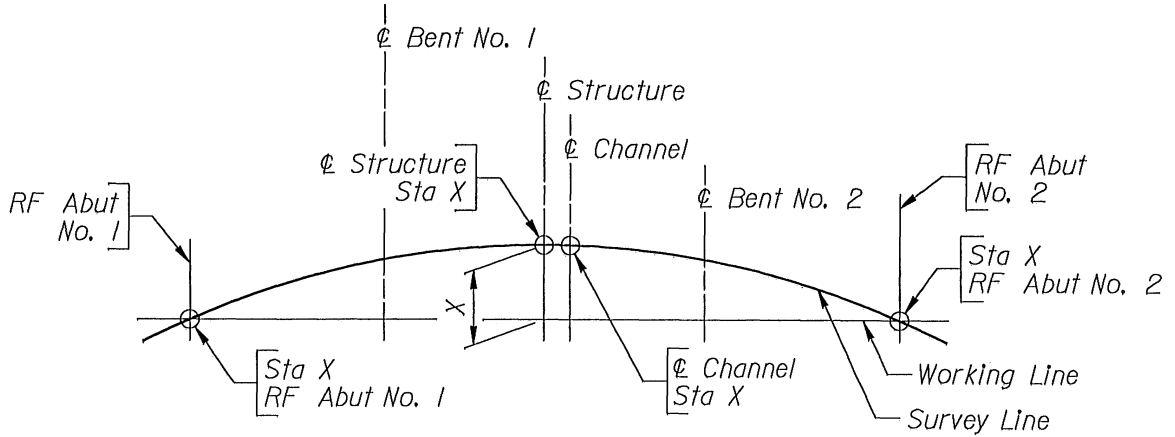
General Design and Detail Information

The **PLAN** describes the layout of the structure in relation to centerline survey, the channel, railroad, and/or the road it crosses. Plans for widenings are laid out to match the as-constructed plans, regardless of the stationing direction of the new survey. Berm widths and embankment slopes are shown in the plan; riprap may be detailed in the plan. It is important to show all existing utilities within the construction area. Utilities are noted using symbols as shown on the Plan and Profile Sheets obtained from the Project Development Program.

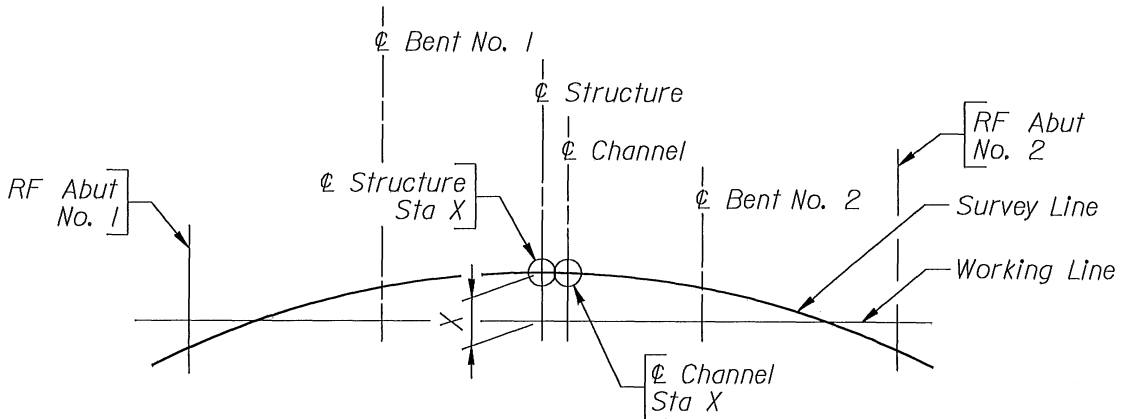
The **SKEW AND COMPLEMENT** to the major feature(s) intersected shall be shown. Show the skew and complement to the substructure if different.

The Geology Program obtains core samples near the construction site to adequately describe foundation materials for the structure. These core samples (test holes) are located on the Log Boring Sheet and plotted on the plan of the GP&E.

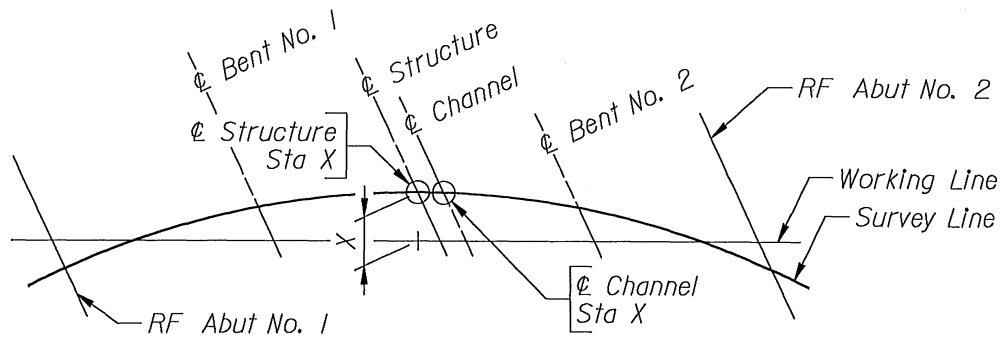
The intersected station of centerline survey and the major element to be crossed must be called out in the plan. The substructure stations are called out in the plan unless a working line is required, in which case the following sketches shall apply. Stationing shown shall increase from left to right on the sheet, except for widenings which are laid out to match the as-constructed plans, regardless of the stationing direction of the new survey.



WORKING LINE AND SURVEY LINE INTERSECT AT BRIDGE ENDS



NORMAL



SKEWED

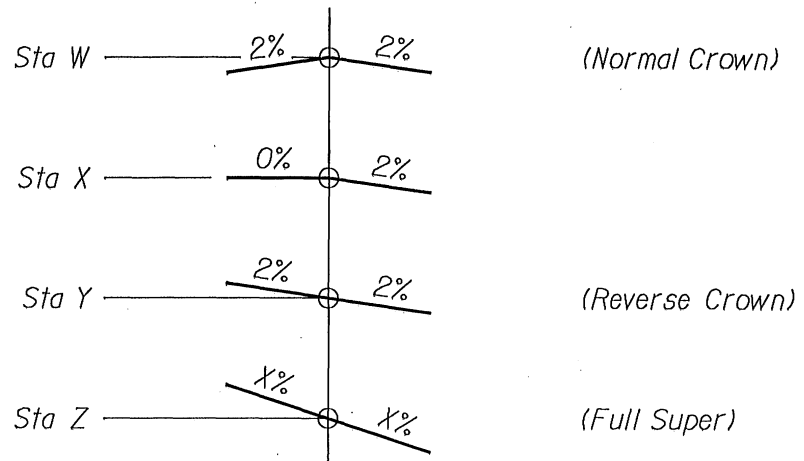
WORKING LINE AND SURVEY LINE DO NOT INTERSECT AT BRIDGE ENDS

The **ELEVATION** shows various structure components projected from the plan at centerline bridge roadway. The skew shall not be reflected in the elevation view. The bridge superstructure, substructure, approach slabs, and railing are shown in this elevation. Finished grade elevations at rear face abutments are shown along with the bridge grade. If the bridge is on a vertical curve, the bridge grade shall be indicated as "Grade on vertical curve." Existing ground line, berm widths, and embankment protection, such as RC slope paving, gabions, and riprap, are shown in cross section as they appear along centerline survey or working line. Generally, top of riprap and gabions elevation is located 1'-0" above design highwater as determined by the Hydraulic Section.

Skewed riprap or gabions, as indicated in the plan, are given a station to the nearest one-tenth of a foot to clearly indicate where the slope intersects the Channel Bottom (See Chapter 5 – Quantities Calculations for calculating this station).

CHANNEL EXCAVATION is not required unless it is called out on a Hydraulic Report or Structure Selection Report. The material shown within the limits of the proposed channel cross section and the existing ground line shall be labeled to show whether it is to be removed or remain in place.

A **SECTION** is cut looking ahead station on the plan and is included on the GP&E sheet. This typical section through the slab defines the clear roadway and sidewalk widths as well as the bridge deck cross slopes. Cross slopes indicated as being variable require a **SUPERELEVATION DIAGRAM** to define the variability of superelevation along the centerline of survey. The information for the superelevation diagram is shown in the Engineer's design. Screed elevation lines shall be shown at finished grade above centerline of each girder, at any change in superelevation, and at top of slab along the outside edges of the bridge deck.



SUPERELEVATION DIAGRAM

Other details shown on the GP&E sheet are the **GRADE DATA** and the **HORIZONTAL CURVE DATA** (when on horizontal curve). The Project Development Program supplies this information to the Bridge Program. Information will be shown on the detail sheet with the bridge, located in its approximate position (often the curves are exaggerated for clarity).

Cells

Name	Description
GPBARR	Barrier Rail for GP&E Section A-A
GPCORR	Corrugated Rail for GP&E Section A-A
GPCURB	Curb for GP&E
GPEPIL	Plan View of GP&E Pile
GPGIRD	Precast I-Girder for GP&E
GPPED4	4 Rail Pedestrian Rail for GP&E Section A-A
GPPED5	5 Rail Pedestrian Rail for GP&E Section A-A
GPPOST	Post for Railing on GP&E
GPRAIL	TL-3 Rail for GP&E
HP10X42P	Hidden Plan of HP 10X42
HP12X53P	Hidden Plan of HP 12X53
HP12X74P	Hidden Plan of HP 12X74
HP14X73P	Hidden Plan of HP 14X73
HP14X89P	Hidden Plan of HP 14X89
HPPLANH	Pile Plan Hidden
LOGHOL	Log Boring Test Hole
Q100	High Water Q ₁₀₀ Note
Q25	High Water Q ₂₅ Note
Q50	High Water Q ₅₀ Note
RFELE	Elev in Box
RRELEV	Elevation for GP&E Railroad
RRGHO1	Ghosted RR Pattern for GP&E
RRSOL1	Solid RR Pattern for GP&E
SCALE	Scale for GP&E Elev
SLOPEIND	Slope Indicator Symbol

General Plan and Elevation Checklist

Plan

- Detail to Scale
- Centerline Survey w/Stationing and Bearing
- Centerline Survey at Cross Road w/Stationing and Bearing
- Centerline Bridge Roadway (may be concurrent w/Centerline Survey)
- Centerline Feature Intersected/Structure/Bents/Piers
- Working Line/Construction Line Call-out
- Skew and Complement at Centerline Feature Intersected (also show at substructure if different)
- Centerline Railroad Track to Centerline Railroad Track Dimension
- Longitudinal Dimensions
- Channel Bottom Dimension
- Riprap/Gabions Dimensions (if no Riprap/Gabions Sheet is used)
- Berm Dimension
- Stockberm/Bike Path/Access Road Dimensions
- Offsets (throw on curve)
- Horizontal Clearance Between Centerline Railroad Track and Edge of Substructure
- Station Call-outs at Substructures/Structure/Feature Intersected
- Flow Arrow w/Name of Channel
- North Arrow
- Utilities
- To X (destinations)
- Test Holes Call-out
- Riprap/Gabions/Slope Paving/Retaining Wall Call-out
- Approach Slab Call-out
- Section Symbols
- Line Styles/Patterning

Elevation

- Detail to Scale/Projected from Plan
- Grade/Vertical Curvature/Profile Grade
- Detail Skewed w/Superelevation
- Railroad/Cross Road
- Finished Grade Elevations
- Top of Riprap/Gabions Call-outs w/Elevation
- Berm/Stockberm/Access Road Call-out w/Elevations
- Ordinary High Water Call-out w/Elevations

Elevation (Cont'd)

- Design Q/Review Q High Water Call-out w/Elevations
- Bottom of Channel Elevation
- Riprap/Gabions Stations
- Exp/Fix at Bearing Locations
- Pile/Drilled Shaft/Footing Call-out/Number Required
- Riprap/Gabions/Slope Paving/Retaining Wall Call-out
- Existing Ground Line Call-out w/Symbols
- Channel Material To Remain in Place or Removed
- Elevation Scale
- Field Splices
- Railing
- Pedestrian Safety Railing
- Splashboard w/Length (railroad)
- Light Standard
- Deck Drainage System
- Vertical Clearances (cross road/stockberm/railroad)
- Line Styles/Patterning
- Span Subtitles w/Lengths
- Substructure Subtitles
- Superstructure Type (under title)

Section A-A

- Centerline Bridge Roadway
- Clear Roadway Width
- Sidewalk Width
- Girder Spacing
- Screed Elev Line Call-out/No.
- Road Grade Underneath/Vertical Clearance (if not shown in Elevation)
- Cross Slope(s) in Percent
- Overlay (precast concrete bridge)
- Railing
- Splashboard w/Vertical Dimensions (railroad)
- Line Styles/Patterning

Horizontal Curve Data

- Centerline Survey/Construction
- Stationing
- Bearings
- Structure Located on Curve
- Curve Information

Grade Data

- Grade(s)
- Structure Located on Grade Line
- Curve Information

Notes

- Finish Grade Elevations
- Berm Slopes