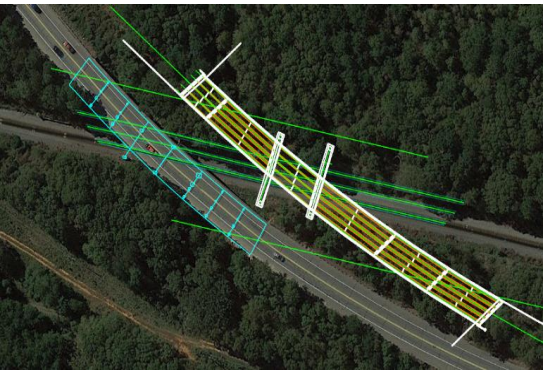
Bridge and Structures Detailing Policy Manual



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Revision 8.0
Atlanta, GA 30308

GDOT
Georgia Department of Transportation

Disclaimer

The guidelines contained in this document are for reference only. The material contained is provided without warranty or liability of any kind to the Department. Every effort has been made to make the documentation as complete and accurate as possible to address most common Plan Presentation situations and to be without errors. Engineers and technicians must follow these guidelines and use engineering discretion in unique circumstances or those not addressed by these guidelines. Additionally, all engineers and technicians are responsible for ensuring that these guidelines are implemented accurately and that the drawings show the information completely, clearly, and legibly.

This information is provided on an "as is" basis. Updates to these guidelines will be made as needed due to any errors found in the documentation, new programs, change in software, software enhancements, or as policy and management dictate. As with any documentation or guidelines, improvements can and should be made. This document is not meant to be a complete instructional document.

The latest version of this document is available at:

https://www.dot.ga.gov/PartnerSmart/DesignManuals/BridgeandStructure/GDOTBridgeDetailingGuidelines.pdf

Basic drawings, MicroStation customization tools, design programs, and other helpful resources can be accessed from the Office of Bridge Design and Maintenance home page:

https://www.dot.ga.gov/GDOT/pages/bridgesoftware.aspx

Please send constructive comments to the Bridge Detailing Committee via the following email box: BridgeDetailing@dot.ga.gov.

Acknowledgement

The original Bridge and Detailing Policy Manual was created to aid in the detailing of Bridge and Wall plans for the Georgia Department of Transportation. This document was modified from the original detailing manual by Georgia Department of Transportation personnel. The following people have donated their time and resources to contribute to the quality of transportation engineering in Georgia:

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Revision Summary

Revision Number	Revision Date	Revision Summary
1.0	5/27/10	Original Release Date
2.0	10/26/10	Change office head Instruction to import BRRBAR output into MicroStation
3.0	5/18/11	A few minor changes
4.0	1/18/12	Add some info from memos about stationing and elevations on P and E sheet, eliminate out-to-out dimensions, minor tweaks
4.1	5/9/13	Update with some recent changes in detailing policies. Significant items include breaking out quantities by stage.
5.0	5/9/13	Updated to reflect some changes in current detailing practices. Updated to reflect that stage construction quantities are now broken out.
6.0	5/24/13	Some minor changes to checklists
7.0	11/4/14	Reformatted manual to new standard template
7.1	5/8/15	Chapter 1 – Updated hyperlinks
8.0	11/30/22	Revised contents of chapters 1 through 19 and 32 through 39 to remove contradictions and reflect current practice. Also updated the template throughout entire manual to reflect GDOT branding.

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List of Effective Chapters

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Chapter 1. CAD Information and Plan Detailing - Contents

Chapter 1. CAD Information and Plan Detailing

1.1 Purpose

The following CAD information and plan detailing data is provided in order to document the process and procedures that are necessary to produce bridge and retaining wall plans for the Department.

1.2 General Guidance

An understanding of MicroStation is assumed, as well as a basic understanding of traditional drafting nomenclature and proper detailing technique.

Background information on MicroStation and basic drafting processes are beyond the scope of this document. Guidance regarding design requirements can be found in the GDOT Bridge Design Manual.

1.3 Required Practices

The following are required practices for plan production:

1.3.1 Customization of MicroStation

Detail all bridge plans using the Office of Bridge and Maintenance's Customization of MicroStation v8i. The Bridge MicroStation Customization is contained within the file CADDAllv8i.exe (CADDAll) and is available for download online. The CADDAll includes fonts, user commands, cell libraries, and various configuration files.

1.3.2 Text

Use the *GDOT Text Sizes* toolbar to detail text. When selected, the user command automatically sets the level, weight, line style, color, height, width, and spacing.

1.3.3 Text Properties

The GDOT Text Sizes tools set the text properties as follows:

- Level: BR_P_8-General-Notes-Text
- Line Weight: 2
- Line Style: 0 (Solid)
- Color: 3 (Red)
- Text Spacing: Half of the text height

1.3.4 Fonts

Detail all bridge plans using capital letters and the Office of Bridge Design and Maintenance's fonts. Lower case letters are used to access special characters.

a. There are four fonts included the Office of Bridge Design and Maintenance's customization of MicroStation. Use Fonts 2 (standard font) and 49 (monospaced font) on all projects, with the exception of metric projects, which use Fonts 3 and 48.

b. Use Font 2 (Font 3 for metric projects) for detailing.

c. Use Font 49 (Font 48 for metric projects) for the General Notes and the Bar Reinforcement Schedule.

Sections 1.3.5 through 1.3.8 detail the appearance of each font. Metric fonts contain different lowercase symbols than fonts 2 and 49. For all fonts, the open double quote is the accent under the tilde.

1.3.5 Font 2 (font002)

1.3.6 Font 49 (FONT49)

1.3.7 Font 3 (mft3)

1.3.8 Font 48 (mft48)

1.3.9 GDOT Bridge Design Seed File

Use one of the Office of Bridge Design and Maintenance's two seed files to start a dgn: *GDOT_V8_BRIDGE_2D.dgn* or *GDOT_V8_Bridge_2D_with_20sheets_grid.dgn*. These seed files are located in the CADDAll in the Corporate_Workspace\MicroStation\Seeds folder.

The working units are set to a master unit of US Survey Feet and a Sub Unit of US Survey Inches. The accuracy is set to four decimal places. Coordinate Readout will match the setting for the working units. Working units can be changed in the Design File Settings. Do not change the Advanced Working Units Settings or the Grid Settings. Changing these settings will cause the files to become distorted if referenced into a MicroStation file using the GDOT standard file settings.

There is a crosshair centered at coordinate (0,0) of the seed file. When a new DGN is created from one of the seed files, border(s) are placed in Quadrant IV (+,-). Fill in the four lines of text above the first border. See Sections 1.3.16 through 1.3.19 for additional details.

1.3.10 Cells

Details used consistently across bridge projects are available for use in the Bridge Cell Library. The *GDOT-BR-Bridge.cel* file is included in the CADDAll. Use the cells as they are presented in the bridge cell library. Modify cells only as necessary to fit a particular situation. Do not modify the cell's scale.

1.3.11 MicroStation User Commands

Custom MicroStation User Commands, used to aid in detailing bridge plans, are available in the CADDAll.

1.3.12 Basic Drawings

The Office of Bridge Design and Maintenance's Basic Drawings are available online. Use these basic drawings in all bridge plan sets for which they are applicable. Modify basic drawings only as necessary to fit a particular situation.

1.3.13 Graphics Programs

The Office of Bridge Design and Maintenance's Graphics Programs - Deck Sections, Pile Bent, and Concrete Bent - are available online. These programs can be used as a starting point for their respective plan sheets. Once installed, these programs can be found in the *GDOT Bridge Tools* dropdown menu within MicroStation.

1.3.14 BridgeNotes

The Office of Bridge Design and Maintenance's BridgeNotes program, used to generate the General Notes, is available online. After BridgeNotes is installed, run the Bridge Notes Content Update, also available online, to update the content of the notes.

1.3.15 VAX, Alpha Server & PC Programs Available

Section Removed

1.3.16 MicroStation Drawing File(s)

Use MicroStation v8i to produce all electronic drawings in the final submittal package to the Office of Bridge Design and Maintenance.

1.3.17 Final Format of MicroStation File(s)

a. For projects with multiple bridge locations, use a separate DGN file for each location.

b. Place all drawings in Quadrant IV.

c. Space the top left corner of each outside border in increments of 4 feet horizontally and 3 feet vertically.

d. Detach or merge all reference files.

e. Detail all sheets to be actual sheet size (Architectural Drawing Size D – 24″x36″ – dimensions to outside borders are 23″ x 35″).

f. Change the “X” in the three lines above the first plan sheet to the County Name, Project Number, and Site Description as shown in Figure 1.3.19-1.

g. Place the title of each drawing above each plan sheet.

h. Place plan drawings in a rectangular pattern, numbered left to right, with between 4 and 8 sheets per row.

1.3.18 Consultant’s Deliverable MicroStation File(s)

After the final bridge plan approval, or when otherwise requested by GDOT, coordinate with the GDOT Bridge Liaison for the delivery of the MicroStation file(s).

1.3.19 Example of the Final Format (Layout) of MicroStation File(s)

Figure 1.3.19-1

1.3.20 Distance Between Sections and/or Details

As a general guideline, use approximately 1” between sections and/or details and 1/2” to the sheet margin. In order to make effective use of the sheets, this clearance can be reduced; however, always seek to achieve plan clarity over reduction of plan sheets.

1.3.21 Dimensions

Dimension the following objects to the nearest 1/16″. Dimension all other objects to the nearest 1/8″.

a. Barrier Length

b. Deck Sections

   i. Beam Spacing

   ii. Overhang Width

c. Beams

i. All longitudinal beam dimensions
ii. Beam deflections
iii. Diaphragm and utility hole locations

d. Bents
i. Beam spacing
ii. Location of dowel bar, anchor bolts or 1013 bar
iii. Pile spacing for end and pile bents

1.3.22 Lines

Use the *GDOT Standard Line Styles* toolbar to detail lines. When selected, the user command automatically sets the level, weight, style, and color, and it activates the place line command.

1.3.23 Line Levels

See Table 1.3.23-1 on the following page for a list of line levels available in the GDOT Bridge MicroStation Customization.

Table 1.3.23-1 Table of Line Levels

Line Level	Color	Style	Weight	Preview
BR_P_2-Concrete-Lines	0	0	4	
BR_P_2-Hidden-Concrete-Beam-Line	6	3	3	
BR_P_2-Hidden-Concrete-Edge-Beam-Line	6	2	3	
BR_P_2-Hidden-Concrete-Detail-Line	0	5	2	
BR_P_3-Solid-Steel-Line	1	0	2	
BR_P_4-Hidden-Steel-Beam-Line	1	3	3	
BR_P_4-Hidden-Steel-Diaphragm-Line	1	2	3	
BR_P_4-Hidden-Steel-Detail-Line	1	5	2	
BR_P_5-CL-Bridge-or-Survey-CL-Line	2	6	1	
BR_P_5-Alt-CL-Bridge-Survey-CL-Survey-Prof-Grade-Line	2	7	1	
BR_P_6-Beam-Centerline-Line	2	4	1	
BR_P_7-Dimension-Line	3	0	1	
BR_P_13-Proposed-Ground-Line	2	0	2	
BR_E_13-Existing-Ground-Line	18	2	3	
BR_P_14-Cross-Hatch-Joint-Filler-Line	4	0	1	
BR_P_Const-Grid-Line	5	0	0	
BR_E_Existing-Bridge-Line	7	0	1	

1.3.24 Dimension and Extension Lines

a. A Dimension Line has a dimension above or beside the line and may include additional text below the line or beside the dimension.

   i. Place the Dimension Line closest to the detail 1/2″ from the detail.

   ii. Place additional Dimension Lines as outlined below:

      1. Place additional Dimension Lines 3/8″ from previous Dimension Line if text is not below previous line.

      2. Place additional Dimension Lines 1/2″ from previous Dimension Line if text is below line.

      3. Provide 1/8″ between the text blocks if multiple lines of text are between two Dimension Lines.

   i. A Dimension Line with a dimension beside the line (outer lead) is 1/4″ long, with or without text.

b. An Extension Line is a line extending from the detail and past the dimension line.

   i. Begin the Extension Line 1/16″ from the detail.

   ii. Continue the Extension Line 1/8″ past the dimension line.

   iii. If the Extension Line crosses another Dimension Line, break the horizontal lead line 1/16″ on either side of the vertical lead line.

See Figure 1.3.24-1 for additional information regarding dimension line placement.

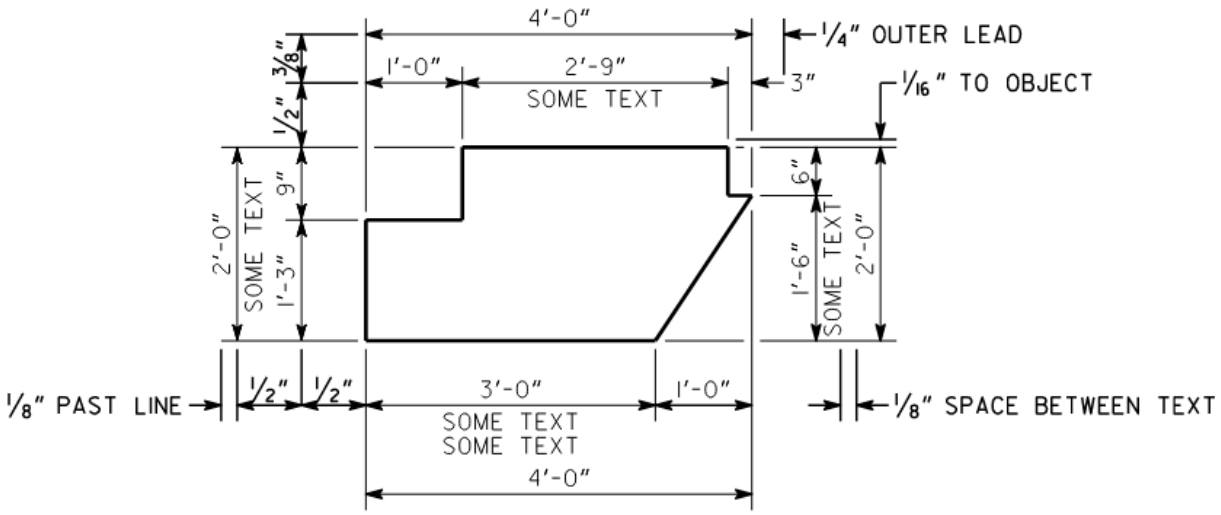

Figure 1.3.24-1

1.3.25 Data and Leader Lines

a. A Data Line extends between the detail and a Leader Line with a dimension and/or text beside the Leader Line. A Data Line starts with an arrowhead and/or circle in the detail and ends at a Leader Line.

b. A Leader Line extends from a Data Line or an arrowhead to a dimension and/or text.

   i. The length of a Leader Line extending from a Data Line is 1/8″.

ii. The length of a Leader Line extending from an arrowhead is 1/4″.

iii. Place the Leader Line as outlined below:

1. Place the first horizontal Leader Line a minimum of 1/2″ from the detail. Increase this offset by 1/8″ for each additional line of text when two or more lines are present.
2. Place each additional horizontal Leader Line a minimum of 3/8″ from the previous horizontal Leader Line. Increase this offset by 1/8″ for each additional line of text when two or more lines are present.

See Figure 1.3.25-1 for additional information regarding placement of Data Lines and Leader Lines.

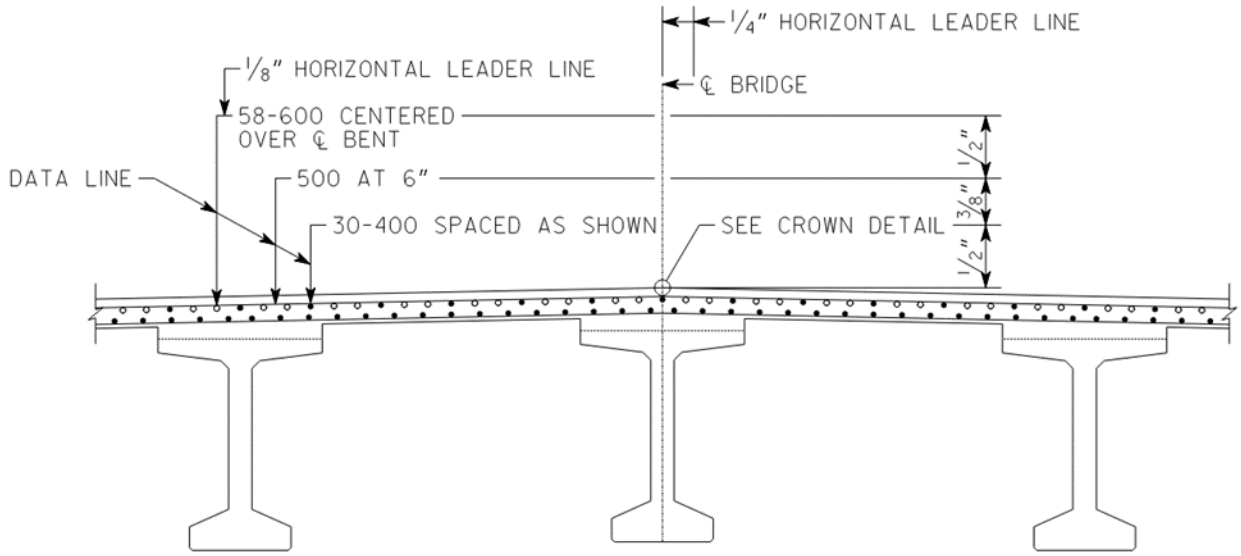

Figure 1.3.25-1

1.3.26 Text Placement

a. Center text 1/16″ away (left or right) from Leader Line.

i. If Leader Line is left of text, justify text left center.

ii. If Leader Line is right of text, justify text right center.

b. Place text one-half text height away from the Dimension Line or Section Identification Line, centered above or centered below.

i. If text is above the line, justify text center bottom.

ii. If text is below the line, justify text center top.

c. Place a Leader Line at the beginning (top left corner) or the end (bottom right corner) of the text. Text should be justified at center left or center right of the text.

See Figure 1.3.26-1 for additional information regarding text placement and angle dimension orientation.

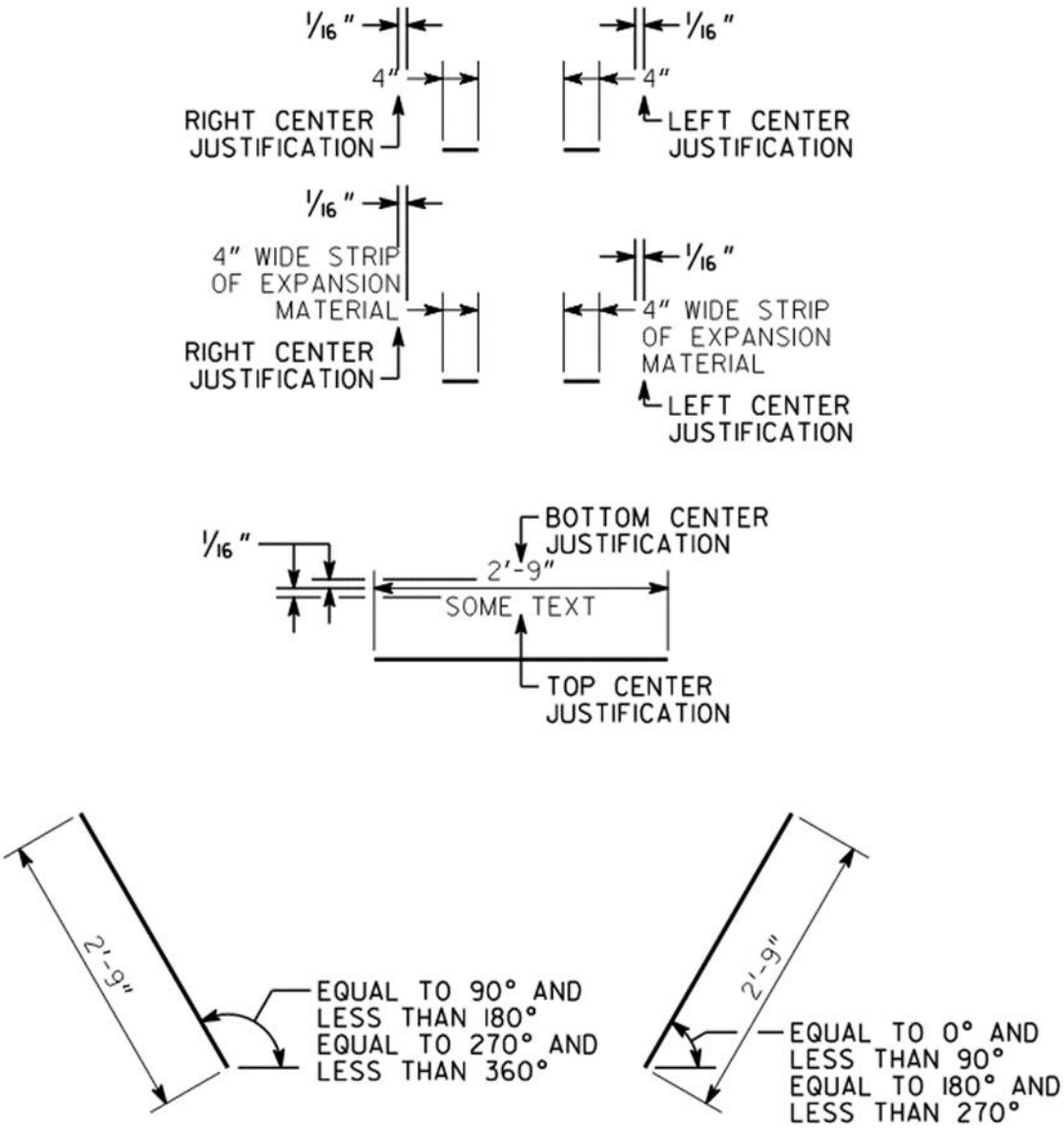

Figure 1.3.26-1

1.3.27 Preformed Foam Joint Filler

Detail Preformed Foam Joint Filler hatching as parallel lines 1/8″ apart at 45 degrees.

1.3.28 Preformed Joint Filler

Detail Preformed Joint Filler hatching as parallel lines 1/8″ apart at 135 degrees.

1.3.29 Silicone Sealant

Detail Silicone Sealant as an opaque shape with shading.

1.3.30 Existing End Fill to be Removed

Detail Existing End Fill to be Removed as parallel lines 1/4″ apart at 45 degrees with shading.

1.3.31 Shading

Use the *GDOT Shading (Grays) – Area Fill* toolbar to add shading and hatching.

1.3.32 Extra Spaces

Place Extra Spaces when using Font 2 or Font 3 as follows:

a. Double-spaces after:
   i. The number one (1)
   ii. Closed Parentheses
   iii. An inch or closed quotation mark (″)
   iv. A colon (:)
   v. At symbol (@)
b. Add a space between ones (e.g. 1space1).:

1.3.33 Station, Station and Offset, Angle and Bearing Formats

a. The format of Station is “STA.”
b. Station – STA. 34+45.45
c. Station and Offset – STA. 34+45.45, 54.45′ RT.
d. Angle
   i. 45°-45′-34.4″
   ii. Angles with no degrees: 0°-23′-34.4″
   iii. Angles with 1 to 9 minutes: 45°-08′-34.4″
   iv. Angles with no minutes: 45°-00′-34.4″
   v. Angles with 1 to 9 seconds: 45°-45′-07.7″
   vi. Angles with no seconds: 45°-45′-00″
   vii. Angle with no minutes and no seconds: 45°-00′-00″
e. Bearing
   i. N 45°-45′-34.4″ E
   ii. Angle format as above
   iii. Space between the direction and angle

1.3.34 Circles

Draw detailing circles at 1/8″ diameter and increase in 1/8″ increments.

1.3.35 Angular Dimensioning

Draw detailing angles with a 3/8″ radius and increase in 1/8″ increments.

1.3.36 Elevation Formats

a. Plan & Elevation Sheet and Substructure Cap:
   i. Calculate to .0001 foot.
   ii. Detail to 2 decimals.
   iii. Round cap step elevations down to the nearest hundredth.

b. Foundations:
   i. Detail Spread Footings and Caissons to 1 decimal with a plus/minus (e.g. EL. XXX.0 ±)
   ii. Detail Pile Footings to 2 decimals (e.g. EL. XXX.00, EL. XXX.25, EL. XXX.50, or EL. XXX.75)
   iii. Detail Seal Concrete to 2 decimals with a plus/minus (e.g. EL. XXX.00±, EL. XXX.25±, EL. XXX.50±, or EL. XXX.75±)
   iv. Detail Minimum Pile Tip to whole number without decimals.

1.3.37 Notes

In general if there are several notes on a drawing:

a. Group all notes on a drawing together.
b. Include an underlined NOTES title, using 3/16″ text. Do not include a colon in the title. Align the left side of the title with the left side of the note text.
c. Number the notes with a period sequentially, with the periods lining up vertically. This can be accomplished by putting the numbers in a separate text block from the notes with a right center justification.
d. If a note has a symbol callout, place the symbol outside of the number (e.g. * 1., ** 2.). Put notes with a symbol callout last in the list of notes.
e. Left center justify note text. Position all lines of text to align on the left side.

1.3.38 Titles

Detail the title text for a section or detail 3/16″ in size, line weight 3, centered, and 1/2″ below the section or detail.

1.3.39 Break Lines

Use cells ZIGH and ZIGV in horizontal and vertical break lines as shown in Figure 1.3.39-1. Extend break lines past the object 1/8″.

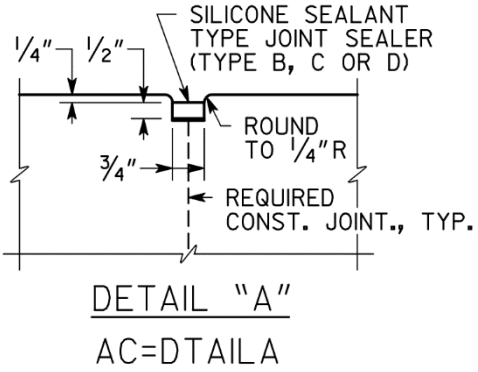

Figure 1.3.39-1

1.3.40 Use of Typical

Format Typical as “, TYP.”, and place the callout at the end of the text block or dimension as shown in Figure 1.3.40-1.

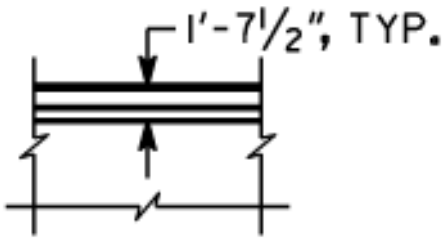

Figure 1.3.40-1

1.3.41 Quotation Marks

To apply quotation marks in notes and/or dimensions, use the following method. For opening quotation marks use the grave accent (`) key. For the close quotation mark, use the standard quotation key (“).

1.3.42 Drawing Scales

Detail all drawings/details using a standard (engineering or architectural) scale. Select a scale such that a half size drawing is clear and legible when printed.

1.3.43 Engineering Scale

Use an Engineering Scale for the Preliminary Layout and the Plan & Elevation Sheet(s). 1″ = 5′-0″ and 1″ = 15′-0″ scales are also permissible. 1″ = 30′-0″ is the maximum scale allowed.

Use a 1″ = 10′-0″ scale for Wall Envelopes.

Engineering Scale may be used for Deck Plan Sheet(s)

1.3.44 Architectural Scale

Use an Architectural Scale on all sheets not mentioned in Section 1.3.43.

1.3.45 Reference Line

1. The Reference Line is the longitudinal line about which the structure offsets are detailed in reference to the roadway alignment.
2. If the Stationing Line (e.g. Construction Centerline, Construction Baseline, etc.) is collinear with the Profile Grade Line, always use the Stationing Line as the Reference Line. This includes situations where the Stationing Line does not coincide with the Bridge Centerline.
3. If the Stationing Line and Profile Grade Lines are separate (e.g. parallel bridges where each bridge has its own Profile Grade Line but are stationed off the same Construction Centerline) use the Stationing Line as the Reference Line. Do not use the Profile Grade Line.

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Chapter 2. Bridge and Wall Plan Presentation - Contents

Chapter 2. Bridge and Wall Plan Presentation

2.1 Purpose

The purpose of producing bridge and wall plans is to give clear and concise direction to the contractor regarding the location, construction sequence, geometry, and structural details of the bridge or wall.

2.2 General Guidance

The following guidance and required practices are provided to the designer to assist in the production of the individual sheets. The guidance is not all-inclusive, and the engineer must use judgment in the preparation of the sheets. Items included below may not be applicable or may need to be augmented for any particular project.

2.3 Required Practices

The GDOT Bridge border was updated in August 2022. Use of the previous bridge border will not be permitted on projects with an accepted first submittal of bridge and wall plans for review after January 1, 2023.

2.3.1 Title Blocks on Sheets

Utilize the GDOT Office of Bridge Design and Maintenance's border on all 32 and 35 series plan sheets.

2.3.2 Upper Right Corner of Border – GDOT Title Block

Add the PI Number to upper right corner of the border. See Figure 2.3.2-1.

Figure 2.3.2-1

2.3.3 Bottom Right Corner of Border – Sheet Title Block

The list below outlines requirements for filling out the title block. See Figures 2.3.3-1 and 2.3.3-2 for more information.

a. Always detail structure type and number above the Sheet Title Block.

   i. For projects with one or more structures, use separate plan sets for each structure. Label the structures above the title block as "BRIDGE NO. 1" or "WALL NO. 1".

   ii. For projects with multiple bridges at the same location along the alignment (for example, twin bridges), both bridges share plan sheets.

      1. If any details on the sheet apply to both bridges, use both bridge designations. For example, use "BRIDGE NO. 1 LT AND RT".

      2. If every detail on the sheet applies to one bridge, use just one bridge designation. For example, use "BRIDGE NO. 1 LT".

b. There are two sets of sheet numbers to the left of the main title block:

   i. Drawing Number – Use Section 32 for special design walls and Section 35 for bridges. These numbers do not reset for each bridge or wall. This is required on all plans and ensures the plans will be assembled in the correct order. Use the format “32-XXXX” or “35-XXXX” for the drawing number.

   ii. Bridge Sheet or Wall Sheet Number– These numbers reset for each bridge or wall. Use the format “X of X” for the sheet number.

c. There are six fields inside the Title Box:

   i. Sheet Name – Use a name that describes most of the details on the sheet. See Chapter 7 for standard naming convention for sheet names.

   ii. Site Description

      1. Format the site description as [Facility Carried] over [Features Intersected]. Detail routes by number using the following priority order:

         i. I - Interstate (do not include the State Route for interstates. Use a roman numeral (Ⅰ) for the I.)

         ii. SR - Georgia State Routes

         iii. US - Federal Routes (in parentheses after the state route, as applicable)

         iv. CR/CS - County Road/City Street

      2. For local roads, add the local route name in parentheses after the route number.

      3. The site description may be two lines if additional space is needed to fit the text.

   iii. County

      1. If the entire bridge is in one county, including bridges that cross state lines, list the county in which the bridge is located. For example, use “FULTON COUNTY”.

      2. If the bridge is on the county line, list the counties in the same order as the Project Cover Sheet separated by a dash. For example, use “FULTON-DEKALB COUNTIES”.

   iv. Project Number

      1. If a Project Number is assigned, list the Project Number.

      2. If no Project Number is assigned, list the PI Number.

d. Scale – there are three typical formats for the listed scale:

   i. SCALE: X′ = X′-X″

      1. List the scale used for the sheet’s primary detail. Format the scale as “SCALE: ¾″ = 1′-0″ in the title block.

      2. When the sheet contains secondary details with a scale that differs from the primary detail, format the scale as “SCALE: ¾″ = 1′-0″ (UNLESS OTHERWISE NOTED)”. For secondary details on the sheet that use a different scale, indicate the scale beneath the detail title.

   ii. NO SCALE

      1. Format the scale as “NO SCALE” on sheets where no details are drawn to a specific scale.

e. Initials - The title block has six locations to place initials. Do not use periods in the initials. Separate multiple engineers with a forward slash.

   i. DESIGNED – Place the initials of the designer.

   ii. DRAWN – Place the initials of the sheet's drafter.

   iii. CHECKED – Place the initials of the checker.

   iv. DESIGN GROUP – Place the initials of the GDOT Bridge Office group leader assigned to the project.

   v. REVIEWED– Place the initials of the Assistant State Bridge Engineers.

   vi. APPROVED – Place the initials of the State Bridge Engineer.

f. Date

   1. Format the date as the month (spelled out) and year, with no comma (e.g. MARCH 2022). Use the same date on all sheets.

   2. Use the month and year that the plans are submitted for review. For consultant projects, update this date for each submittal. For in-house projects, update this date to reflect the month and year the plans are approved.

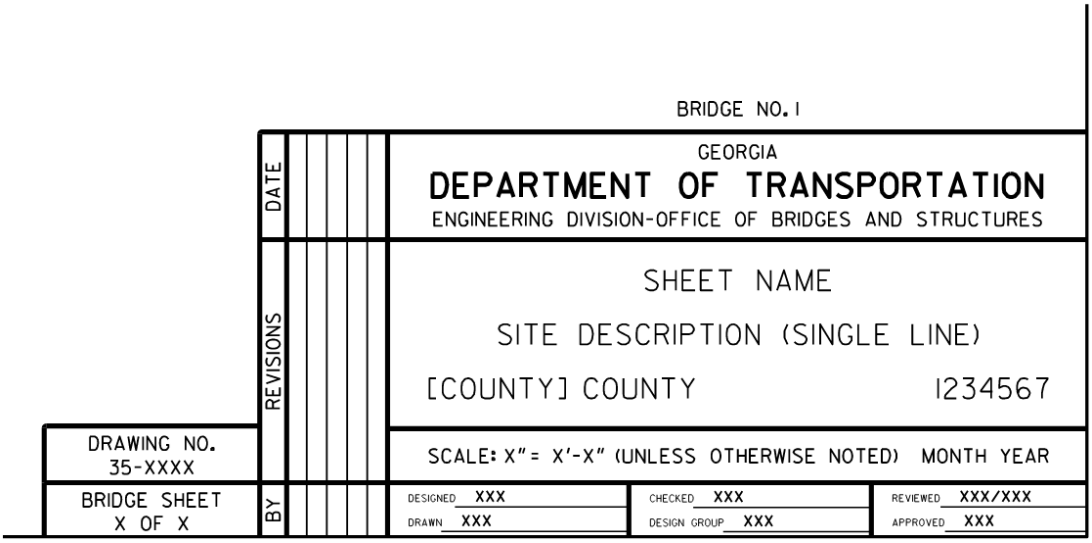

Figure 2.3.3-1

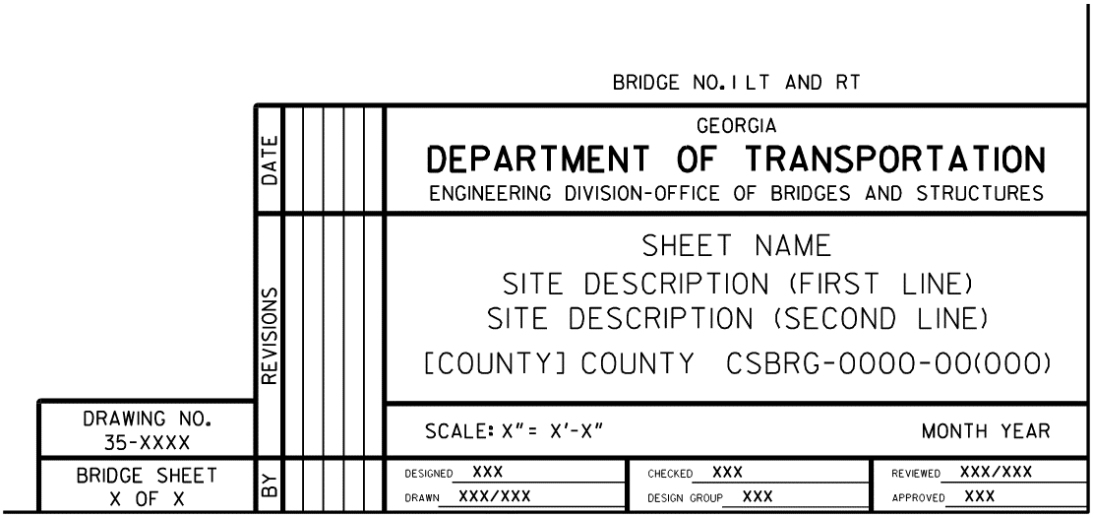

Figure 2.3.3.-2

2.4 Checklist

Not Applicable

Chapter 3. Preliminary Bridge Plans - Contents

Chapter 3. Preliminary Bridge Plans

3.1 Purpose

The Preliminary Bridge Plans show the general layout and arrangement of the bridge, including information regarding utilities, staging, hydraulics, and clearances. They are used to check that the bridge meets the overall needs of the project and as a control document for ongoing studies and plan development. They are required for the Preliminary Field Plan Review (PFPR) and used by various GDOT Offices and the Districts to coordinate the work. The plans consist of a Preliminary Layout and, if required, a Construction Sequence.

3.2 Drawing Order

The following in sequential order is list of the drawing titles for the Preliminary Bridge Plans.

- PRELIMINARY LAYOUT
- CONSTRUCTION SEQUENCE

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Chapter 4. Preliminary Bridge Plans: Preliminary Layout - Contents

Chapter 4. Preliminary Bridge Plans: Preliminary Layout

4.1 Purpose

The Preliminary Layout shows the general layout and arrangement of the bridge, along with utilities, staging, hydraulics, and clearances. It is used to check that the bridge meets the overall needs of the project and as a control document for ongoing studies and plan development.

4.2 General Guidance

The location of information not specified under Section 4.3, including but not limited to grade data, benchmark, and horizontal curve data, is based on their typical locations in standard GDOT practice and availability of space.

4.3 Required Practices

Use an acceptable scale that produces the largest drawing that will fit the bridge plan and elevation views on the sheet. See Section 1.3.43 for acceptable scales. If the bridge cannot fit and remain legible on one sheet using the largest acceptable scale, the bridge can be split across multiple sheets.

Only show utilities in the plan view of the bridge that are either attached to the bridge or directly affect the construction of the bridge (e.g. a water line that is not being removed that runs in between two footings or utilities on an existing structure that are maintained for a portion of the new bridge construction). Do not show utilities that are being abandoned or relocated away from the bridge.

4.3.1 Station and Profile Grade Elevation Presentation

Show stations and profile grade elevations at each bent on the elevation view on the Plan and Elevation Sheet. Below are the methods for showing this information:

a. For single bridges and for parallel bridges where the B.F.P.R.s and centerlines of intermediate bents are collinear and the profile is the same for both bridges, detail the station at the intersection of the stationing line (usually construction centerline) and B.F.P.R. or the centerline of intermediate bent. Detail the elevation as the profile grade elevation at that station.

b. For parallel bridges where the B.F.P.R.s and centerlines of intermediate bents are collinear, but the bridges have separate profiles, detail the bent stationing as the intersection of the stationing line (usually construction centerline) and B.F.P.R. or the centerline of the intermediate bent in the plan view. Add a table showing the stations and elevations of the intersection of B.F.P.R. or centerline of intermediate bent and the profile grade line for both left and right bridges. Depict the right bridge in the elevation view, labeling only the bents.

c. For parallel bridges where the B.F.P.R.s and centerline of intermediate bent are not collinear, detail the bent stationing as the intersection of the stationing line (usually construction centerline) and B.F.P.R. only in the plan view. Add a table showing the stations and elevations of the intersection of B.F.P.R. or centerline of intermediate bent and the profile grade line for both left and right bridges. Depict the right bridge in the elevation view, labeling only the bents.

d. When one bridge is new and the other is existing, show the new bridge in the elevation view. Show the stations and elevations for only the new bridge.

4.3.2 Placement of Details

Place the details or information below in the specified location on the sheet:

a. The plan view appears in the top left corner of the sheet.
b. The elevation view appears directly below the plan view.
c. Place Existing Bridge Information above the title block.
d. “PROPOSED BRIDGE CONSISTS OF” appears in the top right corner of the sheet.
e. The following details, and other details not listed, may be moved based on availability of space. The locations listed below reflect typical GDOT practice.
    i. Place the North Arrow is placed to the right of the plan view.
    ii. Place the Horizontal Curve and Vertical Grade information is placed on the right side of the sheet.
    iii. Place Rip Rap and/or Slope Paving details in the lower left corner of the sheet.

4.4 Checklist

A checklist for the detailer’s convenience is provided at the end of this manual. See Section 40.1.

Chapter 5. Preliminary Bridge Plans: Construction Sequence - Contents

Chapter 5. Preliminary Bridge Plans: Construction Sequence

5.1 Purpose

A Construction Sequence Drawing is required for bridge replacement projects that require staging of bridge construction or bridge widening projects.

The purpose of the construction sequence drawing is to present a graphical and narrative description of the way in which the designer has envisioned the construction of the bridge or retaining wall and staging of traffic. This sequence will control the design of individual objects as well as the detailing of reinforcing steel.

5.2 General Guidance

The bridge staging numbers do not necessarily correlate to roadway staging numbers.

5.3 Required Practices

Use line weight 1 to illustrate the existing bridge. Dimension widths of construction for each stage, including the width of any pour strip.

On the left side of the sheet, detail deck sections for each stage of construction starting with the existing bridge. Dimension the width of the travel lanes. The travel lanes may be dimensioned individually (e.g. 11′-0″ TRAVEL LANE or 4′-0″ BIKE LANE) or collectively for adjacent lanes (e.g. 3-11′-0″ TRAVEL LANES). Dimension the widths of medians, barriers, sidewalks/multi-use paths, and shoulders, as applicable. Show required temporary barrier and dimension the distance from the center of the barrier to the edge of the deck. Show the completed cross section as the final cross section.

On the right side of the sheet, provide notes that describe the removal/construction/maintenance activities involved with that stage of construction and any traffic shifts.

5.4 Checklist

A checklist for the detailer’s convenience is provided at the end of this manual. See Section 40.2.

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Chapter 6. Preliminary Wall Plans: Preliminary Wall Layout - Contents

Chapter 6. Preliminary Wall Plans: Preliminary Wall Layout

6.1 Plan Presentation Guide

Chapter 31 and Chapter 32 of the Plan Presentation Guide supersedes the contents of this chapter if information conflicts.

6.2 Purpose

The Preliminary Wall Layouts show the general layout and arrangement of the wall, along with utilities, staging, and clearances. It is used to check that the wall meets the overall needs of the project and as a control the design of individual objects as well as the detailing of reinforcing steel.

6.3 General Guidance

Scale - Use 1”= 10’-0” for most plan views. Use 1”=10’-0” for the elevation view.

Station numbers of the wall increase from left to right. Therefore if a wall is on the right of the mainline then the elevation view is drawing looking at back face of wall.

6.4 Required Practices

There are standard practices that are required for the presentation of the preliminary wall layout. These deal primarily with the location of the information on the sheet.

- The plan view should appear in the top left corner of the sheet.
- The elevation view should appear directly below the plan view.
- “WALL CONSISTS OF” appears in the top right corner of the sheet

Other information, including but not limited to, grade data, bench mark, horizontal curve data are located on the drawing based on availability of space and their traditional locations based on standard GDOT practice.

6.5 Checklist

A checklist for the detailer’s convenience is provided at the end of this manual. See Section 40.3.

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Chapter 7. Final Bridge Plans - Contents

Chapter 7. Final Bridge Plans

7.1 Purpose

Final Plans are required for the Final Field Plan Review (FFPR) and are used by the Department and its contractors to develop the bid, create a contract, and build the bridge.

7.2 Drawing Order

The following is a list of drawing titles, in sequential order, for the bridge plans.

Drawing Titles

- PLAN AND ELEVATION
- GENERAL NOTES
- CONSTRUCTION SEQUENCE
- DECK PLAN
- DECK SECTIONS
- MISCELLANEOUS SUPERSTRUCTURE DETAILS
- SPECIAL DESIGN PARAPET DETAILS
- DECK DRAIN DETAILS
- FRAMING PLAN
- BEAM SHEETS (in span order)
- BEARING PAD DETAILS (or bearing assembly details)
- END BENT(S)
- INTERMEDIATE BENT(S)
- END BENT (if last end bent differs from the first end bent)
- MISCELLANEOUS SUBSTRUCTURE DETAILS
- AS-BUILT FOUNDATION INFORMATION
- BAR REINFORCEMENT SCHEDULE

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Chapter 8. Plan and Elevation - Contents

Chapter 8. Plan and Elevation

8.1 Purpose

A Plan and Elevation Sheet provides an overall view of the structure. This includes, but is not limited to, the following: horizontal layout, vertical profile, applicable utilities, endroll details, and walls.

8.2 General Guidance

The Plan and Elevation sheet is created from the information provided on the Preliminary Bridge Layout.

8.3 Required Practices

Use an acceptable scale that produces the largest drawing that will fit the bridge plan and elevation views on the sheet. See Section 1.3.43 for acceptable scales. If the bridge cannot fit and remain legible on one sheet using the largest acceptable scale, the bridge can be split across multiple sheets.

Only show utilities in the plan view of the bridge that are either attached to the bridge or directly affect the construction of the bridge (e.g. a water line that is not being removed that runs in between two footings or utilities on an existing structure that are maintained for a portion of the new bridge construction). Do not show utilities that are being abandoned or relocated away from the bridge.

Refer to Section 4.3 for information regarding the presentation of stations and elevations.

Place the details or information below in the specified location on the sheet:

a. Place the plan view in the top left corner of the sheet.
b. Place the elevation view directly below the plan view.
c. Place Existing Bridge Information above the title block.
d. The following details, and other details not listed, may be moved based on availability of space. The locations listed below reflect typical GDOT practice.
    i. Place the North Arrow to the right of the plan view.
    ii. Place the Horizontal Curve and Vertical Grade information on the right side of the sheet.
    iii. Place Rip Rap and/or Slope Paving details in the lower left corner of the sheet.
    iv. Show bents with alternate foundation types as separate details below the elevation view, near the associated bent.

8.4 Checklist

A checklist for the detailer’s convenience is provided at the end of this manual. See Section 40.4.

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Chapter 9. General Notes - Contents

Chapter 9. General Notes

9.1 Purpose

The General Notes Sheet provides general bridge information, notes related to the overall design and construction of the bridge, and pay item information.

General Notes Sheet is always required and provides the following information:

1. Design and construction parameters and specifications.
2. Construction notes unique to the site.
3. Summary of quantities.
4. Maintenance work directed by the deck condition survey and salvage letter(s), if applicable.

9.2 General Guidance

Present the General Notes Sheet in an easy to read manner that utilizes the available whitespace on the sheet.

9.3 Required Practices

Use the BridgeNotes program to generate the content for the General Notes Sheet. See Section 1.3.14. Use the notes as they are presented in the program and only modify notes as necessary to convey project-specific information.

The information is provided under the following headings. Center a 3/16″ underlined heading at the top of each note section.

- BRIDGE CONSISTS OF
- DRAINAGE DATA
- TRAFFIC DATA
- UTILITIES
- GENERAL NOTES
- DESIGN DATA
- SUMMARY OF QUANTITIES

Use Font 49 (Font 48 for metric projects) for text on the General Notes Sheet. Use a line spacing equal to the height of the text. Leave a blank line between each note. Leave two blank lines between pay items in the SUMMARY OF QUANTITIES. Do not use stacked fractions on the General Notes Sheet.

9.4 Arrangement of Sheet

If the notes will fit on one drawing, arrange the notes on the drawing in three columns as shown in Figure 9.4-1. If there are too many General Notes to fit on one column, label the header in subsequent columns as GENERAL NOTES (CONT'D).

BRIDGE CONSISTS OF	GENERAL NOTES	DESIGN DATA
DRAINAGE DATA		SUMMARY OF QUANTITIES
TRAFFIC DATA		
UTILITIES		

Figure 9.4-1

If the notes will not fit onto one drawing, create a second sheet. Place SUMMARY OF QUANTITIES and (if needed) DESIGN DATA on the second sheet. Do not split GENERAL NOTES across multiple sheets.

9.5 Checklist

Not Applicable

Chapter 10. Construction Sequence - Contents

Chapter 10. Construction Sequence

10.1 Purpose

The purpose of the construction sequence drawing is to present a graphical and narrative description of the way in which the designer has envisioned the construction of the bridge and staging of traffic. This sequence will control the design of bridge elements as well as the detailing of reinforcing steel.

10.2 General Guidance

The version of this sheet provided in the final plans will be essentially the same as what was provided in the preliminary plans. See Chapter 5 for more information.

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Chapter 11. Special Design Parapet or Railing Details - Contents

Chapter 11. Special Design Parapet or Railing Details

11.1 Purpose

Special Design Parapet Drawings are used to provide the details needed to construct architectural rails. See Section 3.3.2.2.3 (Architectural Rails) of the Bridge and Structures Design Manual for approved rails.

11.2 General Guidance

At the time of publication, the C411 Texas Rail is the only architectural rail allowed for use on GDOT bridge projects. The Texas Rail parapet is characterized by a regular pattern of rectangular depressions or “windows” along its length to give a pleasing appearance at locations specifically selected by project requirements.

The uniform window patterns are fitted within the typical expansion joint segments in the parapet by adjusting the end spaces of each segment with variable spacings of 12 to 18 inches. These end spacings are uniform within a span but may be different from adjacent spans to allow for different span lengths along the bridge.

Drawings for the C411 Texas Rail are available by request from the Office of Bridge Design and Maintenance.

11.3 Required Practices

11.3.1 Texas Rail

The special design parapet detail sheet consists of a plan view, elevation view, sectional views, rustication detail at parapet “end post”, reinforcing bar bend details, and tables for section lengths and reinforcing.

Show the location of each parapet segment within the bridge on the Deck Plan sheet.

1. Elevation View – Full-size detail located to the upper left of the drawing which shows the size of the windows, window spacing, end spacing, and segment spacing for both internal and end spans. The elevation view also shows sectional locations through the windows and end sections.
2. Sectional Views – Full-size details located to the left center and lower left of the drawing. A separate section view is required for, but not limited to, the following items:
    a. Longitudinal Section through parapet “end post”
    b. Longitudinal section through parapet window
    c. Partial top-down section through parapet “end post”
    d. Partial top-down section through interior end space post.
3. Rustication detail – Exaggerated-size detail located where appropriate in the drawing showing width and depth of recess in parapet “end post”.
4. Reinforcing bar bend details – Exaggerated-size detail located where appropriate in the drawing showing the bar types, leg lengths, and hook locations.

5. Reinforcing Schedule – Text table located where appropriate in the drawing showing the information required for the contractor to purchase the reinforcing necessary for the parapet.
6. Section Length Table - Text table located where appropriate in the drawing showing variable dimensions of parapet sections noted in the elevation view.

11.4 Checklist

A checklist for the detailer's convenience is provided at the end of this manual. See Section 40.5.

Chapter 12. Deck Drainage System Details - Contents

Chapter 12. Deck Drainage System Details

12.1 Purpose

When drainage of the deck is required and cannot be accommodated by conventional scuppers or barrier openings, or if dictated by environmental considerations, details of a deck drainage system are required to be shown in the plans.

12.2 General Guidance

See Section 3.15.4 of the Bridge and Structures Detailing Manual for additional information .

12.3 Required Practices

Include the following details in the Deck Drainage System Details sheet:

a. Pipe hanger details and spacing of hangers

b. SCHEMATIC OF DECK DRAINAGE SYSTEM detail, showing the elevation view of the system along the bridge, including blockouts through endwalls, edge beams, and diaphragms and the dimension from finished deck surface to the center of the blockout.

c. Cross section with vertical drop drain between beams, the scupper in the deck, the drainage pipe, and supports.

d. Cross section detailing the thickened slab and additional reinforcement in deck required around scupper.

e. EXTRA SLAB REINFORCEMENT FOR DECK DRAIN detail, showing a plan view of any additional necessary reinforcement in the deck around the scupper.

f. Location and spacing of expansion devices

Call out material, hardware, and sizes of all components of the deck drain system, including any necessary scour protection underneath the bridge. There are no individual pay items for each component. Detail the system from the inlet to the outfall or, if the system connects to the roadway drainage, to B.F.P.R.

Show placement of drains on the deck plan sheet, with stations.

12.4 Checklist

A checklist for the detailer’s convenience is provided at the end of this manual. See Section 40.6.

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Chapter 13. Concrete Bridge Superstructures - Contents

Chapter 13. Concrete Bridge Superstructures

13.1 Purpose

Chapters 14 through 19 of the manual are specific to the detailing of concrete bridge superstructures, including bridges with cast-in-place concrete T beams and bridges with precast, prestressed concrete beams. Guidance and basic drawings for Concrete Box Beams and Cored Slabs are available on the Office of Bridge Design and Maintenance's website.

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Chapter 14. Concrete Superstructure: Deck Plan - Contents

Chapter 14. Concrete Superstructure: Deck Plan

14.1 Purpose

The Deck Plan sheet is a plan view of the superstructure. The drawing presents a graphical location of beams, diaphragms, edge beams, paving rests, endwalls, end posts, expansion joints, wingwalls, and many of the critical controlling dimensions.

14.2 General Guidance

Place the Deck Plan, which consists of a plan view for each unique span, in the top left corner of the sheet.

Show and dimension the barrier segments on the Deck Plan sheet. Show and identify the placements of longitudinal deck reinforcement and barrier reinforcement on the Deck Plan sheet.

Show deck appurtenances such as barriers/parapets, sidewalks, handrails, fence posts, deck drains, raised medians, median barriers, deck taper geometry, utility centerlines, light standards, and any other unusual deck features on this sheet.

Shade the top flange of all PSC beams in beam-slab bridges to provide visual definition in the deck plan.

Detail Barrier dimensions to the nearest 1/16″. Detail individual section lengths so that the longitudinal bars in all barrier sections on one side of one span will match. Adjust one section length to account for roundoff error of the other lengths on that side. Measure the barrier lengths along gutter on curved bridges, disregarding the effect of the barrier transition. Round rebar lengths down to a whole inch increment.

14.3 Required Practice

14.3.1 Scale

Use appropriate Architectural Scale (1/X″= 1′-0″) for this drawing. A 1″ = 10′-0″ scale is acceptable if a 1/8″ = 1′-0″ scale cannot fit the entire span on one sheet .

14.3.2 Details to Add to this Sheet

Add the following details to this sheet, as required for detailing. If all the required details will not fit on the Deck Plan sheet(s), add the remaining details to the Deck Section sheets. Prioritize placing details on the sheet that contains the bridge element it portrays. For example, place the barrier transition detail on the deck plan sheet, as the deck section sheet does not show the barrier transition. If all details will not fit on the Deck Section and Deck Plan sheets, add a Miscellaneous Superstructure Details Sheet.

- End bent joint details
- Chart of T1 & T2 for T beam spans
- Barrier Transition Details
- Expansion Joint in Barrier Detail

- Median and Sidewalk/Parapet details
- Drain details
- Skewed Corner Detail (if applicable)
- Bar Bending detail at Skewed Joint (if applicable):

14.3.3 Epoxy Coated Reinforcement

a. Use a 9 in the second slot for the bar designation to denote epoxy coated bars (e.g. 490 or 1091).
b. Add the following notes under the SUPERSTRUCTURE QUANTITIES table:
    i. BARS P501 AND P701 IN THE END POST SHALL BE EPOXY COATED.
    ii. ALL X9X SERIES BARS SHALL BE EPOXY COATED.

14.3.4 Beam Numbers

1. Label each beam number.
2. Number new beams from leftmost new beam/girder to the right starting with 1.
3. Number existing beams from leftmost existing beam/girder to right starting with 1 and using the suffix of "E". (e.g. BEAM 1, BEAM 2, BEAM 3, BEAM 1E, BEAM 2E, BEAM 3E, BEAM 4E, BEAM 5E, BEAM 4, BEAM 5)
4. Do not abbreviate BEAM.
5. Do not use the label GIRDER.
6. Do not use beams marks to detail the plans. (example: 101, 203, 304, etc.)

14.3.5 Quantity Tables

a. Round concrete quantities to the nearest tenth of a cubic yard. Round reinforcing steel and structural steel to the nearest whole pound.
b. Break out quantities by span and then by stage, if applicable (e.g. SPAN 1 STAGE I and SPAN 1 STAGE II).
c. If possible, put all spans and stages in one quantity table on the first Deck Plan sheet.
d. Use a TOTAL column in the SUPERSTRUCTURE QUANTITIES table only if all spans and stages are in one table.
e. Do not use commas in quantities.
f. A sample SUPERSTRUCTURE QUANTITIES table is shown in Figure 14.3.3-1 below.

SUPERSTRUCTURE QUANTITIES				
ITEM	SPAN 1	SPAN 2	SPAN 3	TOTAL
LUMP – CY SUPERSTR CONCRETE, CLASS D	78.3	71.4	76.5	226.2
LUMP – LB SUPERSTR REINF STEEL	18532	16458	17938	52928
LUMP – LB EPOXY COATED SUPERSTR REINF STEEL	9251	8571	8887	26709
LUMP – LB STR STEEL	109253	99523	106721	315497

Figure 14.3.3-1

g. Add the following notes under the quantity table:

   i. ENDPOST CONCRETE AND BAR REINFORCING STEEL INCLUDED IN END SPAN QUANTITIES.

   ii. 600 BARS INCLUDED IN SPAN(S) X.

14.4 Checklist

A checklist for the detailer's convenience is provided at the end of this manual. See Section 40.7.

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Chapter 15. Concrete Superstructure: Deck Sections - Contents

Chapter 15. Concrete Superstructure: Deck Sections

15.1 Purpose

The Deck Sections sheet(s) include transversely and longitudinally cut sections and details from the superstructure of the bridge.

The Deck Section Sheet(s) should indicate locations of all components and reinforcement in the superstructure.

Indicate all unique sections, utilities that interact with the superstructure, and “D” dimensions on the Deck Section sheet(s).

15.2 General Guidance

Use the following to aid in plan sheet creation:

a. Use the “Deck Sections Program” for assistance in detailing the majority of sections.

b. Use GDOT Bridge Cells for the majority of required details.

For bridge widenings and bridge maintenance projects, break lines may be used to cut portions of the existing bridge where no work is being done if clarity of the drawing is not compromised. Do not use break lines for new bridges.

15.3 Required Practices

Superstructure Sections are a series of transversely cut cross-sectional views through portions of the superstructure at the following locations, where applicable:

- SECTION THRU SLAB
- SECTION THRU DIAPHRAGM
- SECTION THRU ENDWALL
- SECTION THRU EDGE BEAM
- SECTION THRU SLAB AT INTERMEDIATE BENT

If the bridge is symmetric, half sections (e.g. HALF SECTION THRU SLAB) at the above locations can be shown to reduce the number of sheets. Provide a full cross section of the deck for each of the above locations if any details in the section are not symmetric. For example, a diaphragm with a utility blockout in only one bay or an endwall with an end post on only one side would not be considered symmetric.

Superstructure Details are a series of longitudinally cut cross-sectional views through portions of the superstructure at the following locations, where applicable:

- SECTION THRU DIAPHRAGM
- SECTION AT ENDWALL (endwall section outside exterior beam is not required)
- SECTION THRU EDGE BEAM
- For RCDG (T-Beam) bridges only: Show a full longitudinal beam elevation which includes shear reinforcing spacing and main reinforcing bar cut-offs.

- CROWN DETAIL
- Any necessary details pertaining to:
    - Barriers
    - DETAIL “A” (with SECTION THRU EDGE BEAM)
    - Expansion joint details at intermediate bents
    - Fences
    - Utilities/Hangers

If all the required details will not fit on this sheet, add the remaining details to the Deck Plan sheets. Prioritize placing details on the sheet that contains the bridge element it portrays. If all details will not fit on the Deck Section and Deck Plan sheets, add a Miscellaneous Superstructure Details Sheet.

If bridge plans for two parallel bridges only show a deck section for one of the two bridges, include a TYPICAL DECK SECTION SCHEMATIC to illustrate the location of each bridge relative to the reference line. Include beam labels and cross slope in the schematic.

The dimension from the edge of the overhang to the center of the first longitudinal bar in the bottom mat is 4 3/8″. This is to locate the bar so that it will sit in the corner of the barrier stirrup. When the overhang width or beams spacing in a span varies, dimension the minimum and maximum dimensions in the Superstructure Sections.

For skewed bridges with diaphragms that are not collinear, indicate that the 1″ diameter bar is not continuous by exaggerating the location of the bars vertically to show that there are different bars from each side of the beam.

15.3.1 Scale

Use a 3/8″ = 1′-0″ architectural scale for the Deck Sections portion of this drawing. Smaller architectural scales may be used if the bridge is too wide to be accommodated by a 3/8″ = 1′-0″ scale as long as the clarity of the drawing is not compromised.

15.3.2 Dimensions to Reference Line

Reference all sections to the longitudinal line about which the plans are detailed. Dimension the distance from the Reference Line to the nearest adjacent beam.

15.3.3 Diaphragm and Edge Beam Stirrups under PSC Wide Flanged Beams

Add an additional diaphragm and edge beam stirrup bar under the top flanges of wide flanged prestressed concrete beams (e.g. Bulb Tees). This stirrup is not depicted in the standard cells.

15.3.4 Reinforcement around Utility Openings

Include reinforcing bars around the openings for the passage of utilities through diaphragms, edge beams, and endwalls on both faces. Use closed circular stirrups for round openings and rectangular closed stirrups for non-circular openings.

Size utility openings to clear the utility by 2″ minimum on all sides, unless otherwise specified by the utility owner. It is not necessary to clear the bell of bell and spigot pipes. Size the openings to accommodate the skew of the utility with respect to the endwall or edge beam.

15.4 Checklist

A checklist for the detailer's convenience is provided at the end of this manual. See Section 40.8.

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Chapter 16. Concrete Superstructure: Miscellaneous Superstructure Details - Contents

Chapter 16. Concrete Superstructure: Miscellaneous Superstructure Details

16.1 Purpose

The Miscellaneous Superstructure Details sheet is used only if there is not sufficient space on the Deck Plan and Deck Sections sheets for the complete detailing of the superstructure.

16.2 General Guidance

Many of these details are in the Bridge Cell Library. If additional details are needed, detail all the outlines, dimensions, reinforcement, and notes needed for construction.

16.3 Required Practices

Place details in groups of similar details. For example, place BARRIER TRANSITION DETAIL, BARRIER DETAIL, and 1″ EXPANSION JOINT IN BARRIER either side by side or one above the other.

16.4 Checklist

Not applicable.

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Chapter 17. Concrete Superstructure: Framing Plan - Contents

Chapter 17. Concrete Superstructure: Framing Plan

17.1 Purpose

The Framing Plan is a supplement to the Deck Plan sheet and is used to define the layouts of the beams, diaphragms, and/or cross frames.

17.2 General Guidance

Include a Framing Plan sheet in the plan set when any of the following situations are present:

a. Any portion of the bridge is in a horizontal curve.
b. One or more beam centerlines are not parallel to the bridge centerline.
c. The beam layout is complex.

17.3 Required Practice

Include the following required components:

- B.F.P.R. Line
- Centerline Bent
- Centerline Beams
- Diaphragms
- Angles of intersection between:
  - B.F.P.R. and Centerline Beam
  - Centerline Bent and Centerline Beam
  - Centerline Beam and Diaphragm
- Description of the beam layout
- Reference Line

Show all applicable dimensions listed in the checklist in Section 40.9. Format all dimensions in feet to 2 decimal places.

17.4 Checklist

A checklist for the detailer's convenience is provided at the end of this manual. See Section 40.9.

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Chapter 18. Concrete Superstructure: PSC Beam Details - Contents

Chapter 18. Concrete Superstructure: PSC Beam Details

18.1 Purpose

The Beam sheet is used to define beam details, dimensions, reinforcement, and material properties of the PSC beams.

18.2 General Guidance

Basic drawings for PSC Beams are available on the Office of Bridge Design and Maintenance's website. Coordinate with the Office of Bridge Design and Maintenance for any PSC Beam that does not have basic drawings available. Basic Drawings are not drawn to scale. Indicate NO SCALE on the drawings.

18.3 Required Practices

Use the Basic Drawings for the appropriate PSC Beam. Include a unique beam sheet for each beam type or unique strand pattern used in a set of bridge plans.

The PSC Beam basic drawings include the following cells. Remove any cells that are not applicable to the beam:

- RECESS DETAIL FOR DIAPHRAGM BAR ENDS
- BEVEL DETAILS for top flange beveling. Choose the detail most representative of the correct bridge skew. Do not adjust the skew in this detail to match the bridge skew.

Revise the Basic Drawing when needed to indicate:

- Total number of strands
- Draped strands
- The noted strand size
- Diaphragm hole locations
- Strand hold down location

For uniformly dimensioned beams, fill in the dimensions on the elevation view. For multiple similar beams with differing dimensions, add a table of BEAM DIMENSIONS. Dimension in feet, inches, and fractions of inches.

Revise all notes to include actual values of design and material properties.

Indicate non-composite and composite deflections. Revise the load deflection notes to indicate all applicable loads accounted for in the deflection value. See Section 3.4.3.6 of the Bridge and Structures Design Manual for further information regarding deflection values.

Indicate the number of stirrup spaces and spacing along the elevation view. Modify the stirrup spacing at the ends of the beam only if required to satisfy anchorage zone requirements.

18.4 Checklist

A checklist for the detailer's convenience is provided at the end of this manual. See Section 40.10.

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Chapter 19. Concrete Superstructure: Neoprene Bearing Details - Contents

Chapter 19. Concrete Superstructure: Neoprene Bearing Details

19.1 Purpose

The Bearing Pad Details sheet is used to define and dimension the bearings used in the concrete beam (cast-in-place or prestressed) bridge design.

19.2 General Guidance

Basic drawings for Neoprene Bearing Pads are available on the Office of Bridge Design and Maintenance's website. Select the applicable basic drawing based on the presence of shim plates and the project design specifications. Base the Bearing Pad Details sheet on the Basic Drawings.

Remove any of the basic drawing's cells that are not applicable to the bridge.

If a superstructure utilizes a combination of standard unreinforced neoprene bearing pads for RCDG spans (as defined in Section 3.12.2.3 of the Bridge and Structures Design Manual) and special design reinforced neoprene bearing pads, specify the unreinforced bearing pads as PAD A and the reinforced bearing pads as PAD B in the table.

PAD A refers to a standard design pad that does not need to be tested. PAD B refers to a designed pad that requires testing. If multiple PAD B designs are specified on the sheet, all pads are labeled as PAD B. Do not use labels of PAD C, PAD D, etc. for multiple designs.

19.3 Required Practices

Use the appropriate skew and bevel details and eliminate the non-applicable details. Do not modify any of the details on the basic drawing.

Fill in the table for each unique bearing, defining :

- Overall Dimensions
- Number of Internal Plates
- Design Shear Deflection
- Design Loads
- Shim Plate Dimensions (if applicable)

Ensure the NOTES portion of this drawing follows all current specifications and practices. Update the noted gage of internal plates to match the design.

19.4 Checklist

A checklist for the detailer's convenience is provided at the end of this manual. See Section 40.11.

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Chapter 20. Steel Bridge Superstructure - Contents

Chapter 20. Steel Bridge Superstructure

20.1 Purpose

The following sections of the manual are specific to the detailing of steel bridge superstructures, including bridges with rolled beams and bridges with plate girders.

Consult with the Office of Bridge Design for guidance regarding Steel Box Beam bridges.

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Chapter 21. Steel Superstructure: Deck Plan - Contents

Chapter 21. Steel Superstructure: Deck Plan

21.1 Purpose

The Deck Plan sheet is an overview of the superstructure by span. The drawing presents a graphical location of beams, edge beams, paving rests, endwalls, endposts, expansion joints and wingwalls and many of the critical controlling dimensions.

The Deck Plan sheet is the only location where the barrier segments are dimensioned and shown as well as the identity and placement of longitudinal deck reinforcement and barrier reinforcement.

Deck appurtenances such as barriers/parapets, sidewalks, handrails, fence posts, scupper holes, deck drains, raised medians, median barriers, deck taper geometry, utility centerlines, and any other unusual deck features are indicated on this sheet.

Quantities for superstructure concrete, reinforcing steel and structural steel are presented in a quantity summary table on this sheet.

21.2 General Guidance

The Deck Plan is located in the top left corner of the drawing and consists of a plan view for each unique span.

Transverse reinforcing bars are detailed full length in the reinforcing schedule; however, these bars are either cut in the field or fabricated to allow for skewed bridge bents.

If bridge bent has a skew angle that is 85 degrees or greater, transverse rebar is placed parallel to the bent.

If bridge bent has a skew angle that is 75 degrees or less (15 degrees or more measured from a radial line) then transverse bars are placed perpendicular to the centerline of bridge and skewed corner bars are added.

If all the required details will not fit on this sheet, add the remaining details to the additional deck plan sheets (if present) or to the Miscellaneous Superstructure Details Sheet.

21.2.1 Scale:

Use appropriate Architectural Scale (1/X”= 1’-0”) for this drawing.

21.2.2 Details to Add to This Sheet:

If space allows add the following details to this drawing, as required for detailing:

- Sections thru endwall, edge beam and diaphragm
- Joint details
- Barrier/Parapet details
- Barrier Transition Details
- Expansion Joint in Barrier Detail
- Median details
- Drain details
- Skewed Corner Detail (if applicable)

- Bar Bending detail at Skewed Joint (if applicable)

21.3 Required Practices

For tangent bridges, the detailer may use the Preliminary Layout MDL command to construct the main edges of the deck plan. All other features must be added per the previous guidelines regarding line type.

21.3.1 Epoxy Coated Reinforcement (When Required):

1. Use a “90” suffix on the bar designation to designate epoxy coated bars (i.e. 490).
2. Add the following notes under the SUPERSTRUCTURE QUANTITIES Table.

   BARS P501 AND P701 IN THE END POST SHALL BE EPOXY COATED.

   ALL 90 SERIES BARS SHALL BE EPOXY COATED.

21.3.2 Beam Numbers:

1. Detail each beam number.
2. Number new beams from left most new beam/girder to the right starting with 1.
3. Number existing beams from left most existing beam/girder to right starting with 1 and using the suffix of "E". (e.g. BEAM 1, BEAM 2, BEAM 3, BEAM 1E, BEAM 2E, BEAM 3E, BEAM 4E, BEAM 5E, BEAM 4, BEAM 5)
4. Do not abbreviate BEAM.
5. Do not use the term PLATE GIRDER.
6. Do not use beams marks to detail the plans. (example: 101, 203, 304, etc.)

21.3.3 Quantity Tables:

1. The description under ITEM shall be the same as the UNIT and PAY under the SUMMARY OF QUANTITIES on the General Notes Sheet.
2. All quantities shall be rounded as follows:
   a. Concrete – nearest tenth of a cubic yard
   b. Reinforcing Steel and Structural Steel – nearest pound
3. Use a TOTAL column in the SUPERSTRUCTURE QUANTITIES Table.
4. Do not divide quantities into Stages or Pours
5. Use commas (blank space)
6. Simple Span Quantities Table example:

SUPERSTRUCTURE QUANTITIES				
ITEM	SPAN 1	SPAN 2	SPAN 3	TOTAL
LUMP – CY SUPERSTR CONCRETE, CL AA	78.3	71.4	76.5	226.2
LUMP – LB SUPERSTR REINF STEEL	18,532	16,458	17,938	52,928
LUMP – LB STR STEEL	109,253	99,523	106,721	315,497

7. If multiple Deck Plan drawings are required, the quantity summary table should be shown on the first Deck Plan sheet.
8. Add the following notes:

   ENDPOST CONCRETE AND BAR REINFORCING STEEL INCLUDED IN END SPAN QUANTITIES.

   600 BARS INCLUDED IN SPAN X.

21.4 Checklist

See Section 40.12.

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Chapter 22. Steel Superstructure: Slab Pour Sequence - Contents

Chapter 22. Steel Superstructure: Slab Pour Sequence

22.1 Purpose

The slab pour sequence sheet depicts the required pour sequences and directions.

Depict, in plain view the individual pours numbered by sequence.

22.2 General Guidance

Not Applicable

22.3 Required Practices

Add the following notes:

- ☐ No pour shall be placed until previously placed pour has achieved 2500 PSI strength
- ☐ After placement of the first pour, succeeding pours shall begin at the end farthest away from and proceed toward the previously placed pour. Arrows on the pour sequence indicate direction of placement.
- ☐ Pours shall be placed in order indicated on the pour sequence diagram.

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Chapter 23. Steel Superstructure: Deck Sections - Contents

Chapter 23. Steel Superstructure: Deck Sections

23.1 Purpose

The Deck Sections sheet(s) include transversely and longitudinally cut sections and details from the superstructure of the bridge.

This sheet(s) should indicate locations of all components and reinforcement in the superstructure.

All unique sections, utilities that interact with the superstructure, and “D” dimensions should be indicated on this sheet(s).

23.2 General Guidance

1. Computer software:
    a. Use BRDECK or “Deck Sections Program” for assistance in detailing the majority of sections.
    b. Use GDOT Bridge Cells as starting point of the majority of required details.
2. For wide bridges, break lines can be introduced in the deck section to minimize the width of bridge detailed as long as clarity of the drawing is not compromised.

23.2.1 Scale:

Use appropriate Architectural Scale (1/4”/ft. or 3/8”/ft.) for the Deck Sections portion of this drawing. Use “No Scale” for details.

23.3 Required Practices

The Superstructure Sections and Details sheet(s) includes:

1. Superstructure Sections: series of transversely cut cross-sectional views through potions of the superstructure at the following locations (where applicable):
    a. Section Thru Slab
    b. Section Thru Diaphragm
    c. Section Thru Cross Frame
    d. Section Thru Edge Beam
2. Superstructure Details:
    a. Series of longitudinally cut cross-sectional views through potions of the superstructure at the following locations (where applicable):
        i. Section Thru Edge Beam
    b. Crown Detail
    c. Any necessary details pertaining to :
        i. Barriers/Parapets
        ii. Sidewalks

iii. Medians

iv. Joints

v. Fences

vi. Utilities/Hangers

If all the required details will not fit on this sheet, add the remaining details to the additional deck plan sheets or to the Miscellaneous Superstructure Details Sheet.

23.3.1 Dimensions to Reference Line:

All sections shall be referenced to the longitudinal line about which the plans are detailed.

23.3.2 Reinforcement around Utility Openings:

Voids for passage of utilities through edge beams require reinforcing bars around the openings on both faces.

Use a closed circular stirrups for round openings and rectangular closed stirrups for non-circular openings.

Openings should be sized to clear the utility by 2” minimum on all sides. It is not necessary to clear the bell of bell and spigot pipes. Opening should allow for the skew of the utility with respect to the edge beam.

23.4 Checklist

See Section 40.13.

Chapter 24. Steel Superstructure: Miscellaneous Superstructure Details - Contents

Chapter 24. Steel Superstructure: Miscellaneous Superstructure Details

24.1 Purpose

Miscellaneous Superstructure Details Drawing is used only if there isn't enough space on the Plan and Elevation, Deck Plan and/or Deck Sections Drawings for the additional superstructure details.

24.2 General Guidance

Many of these details are in the Bridge Cell Library. If additional details are needed, the detail shall consist of all the outlines, dimensions, reinforcement and notes needed for construction.

24.3 Required Practices

Place details in groups of similar details. (e.g. place BARRIER TRANSITION DETAIL, BARRIER DETAIL and 1" EXPANSION JOINT IN BARRIER either side by side or one above the other).

24.4 Checklist

See Section 40.14.

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Chapter 25. Steel Superstructure: Steel Beam Details - Contents

Chapter 25. Steel Superstructure: Steel Beam Details

25.1 Purpose

The steel beam sheet(s) is used to define beam details, dimensions, reinforcement and material properties for simple span and continuous bridges where the superstructure consists of steel beams with a reinforced concrete deck.

Steel beams for this kind of structure are characterized as one of three major types.

1. Simple span bridges built using multiple standard “W” section rolled beams as the primary longitudinal load carrying elements.
2. Simple span or multiple continuous span bridges built using beams fabricated from common rolled sections including plates and beams as the primary load carrying elements. Such beams are usually fabricated as “I” sections from ‘W” section rolled beam, “W” section beams with cover plates or welded plate girders built from steel plate. Note that the terms “girder”, “built-up girder”, “built-up beam” and “welded plate girder” all refer to the manufacture of fabricated beams covered by this section of the manual.
3. Simple span or multiple continuous span bridges built using beams fabricated as steel box girders or “tubs” (steel box with concrete top flange) may be used for special situations, including bridges built to significant horizontal curvature – consult with the Bridge Office before beginning work involving this type of structure and whenever significant horizontal curvature is present.

25.2 General Guidance

Title

The sheet is entitled as follows:

Steel Beam Details

or Steel Beam Details, Span(s) ____, ____, & ____

or Continuous Beam Details

or Continuous Beam Details, Spans ____, ____ & ____

Scale

Label the sheet as having “No Scale”
Draw the details to an engineering scale that horizontally best fits the span or unit to the full width of the sheet. Use an exaggerated scale vertically to depict plan & elevation details as clearly as is possible.

25.3 Required Practices

The basic sheet element is an Elevation View required for each span or section of beam and located across the top of the drawing depicting:

- Top flange

- Web
- Bottom flange
- Bearing and web stiffeners.
- Centerlines of bearing and BFPR

The elevation shall show all critical dimensions including:

- Top plates
- Web plates
- Bottom plates
- Stiffener plates
- Nominal girder length (Centerline Bent or BFPR to Centerline Bent or BFPR).
- Fabrication girder length (end to end)
- Dimensions to plate size change location, transition from prismatic to variable depth sections, etc.
- Location of bearing & web stiffeners
- Spacing & location of shear studs
- Location of shop and field splices

Additional required details on the elevation includes the weld sizes & locations, bending radius for bottom flange plates at web depth transition locations and designation of fracture critical elements (flagged with a Charpy V Notch “CVN” label).

Notes to be Provided

- Add a note regarding the CVN label
- Define steel properties for all elements

Optional Practices

For skewed or curved bridges and where individual beam dimensions vary draw the elevation at nominal length and use a reference ID and table of dimension to provide full dimensions for all girders of the span. The table of dimensions may be placed on the steel girder sheet or on a sheet that follows the steel girder sheets.

If necessary, additional clarification shall be provided by the addition of top and bottom flange plan views above and below the elevation view.

Girder Grade & Camber Details

Girder Grade & Camber Details must be provided. The information can be provided on the girder sheet if room is available or on a separate sheet that follows the girder sheets.

The information provided shall be extracted from a GDOT approved software program and shall provide the anticipated deflections at every 1/10th of the girder due to the following:

- Self Weight deflection (due to all steel erected as a continuous unit)
- Self Weight deflection (due to concrete deck pours).
- Superimposed dead load deflection due to sidewalk and parapets placed on the completed composite bridge.
- Total deflection due to all effects summarized over the erection cycle of the bridge.

If the plans depict a series of pours then individual tabulation shall be provided for deflections due to each pour with the complete model modified to include the stiffness of the composite deck already poured as future pours are made.

The information shall be predicted in graphical and tabulated format and for skew or curved span and shall be provided for all beams within the span.

If space dictates the table of deflection dimensions may be placed below the graphical depictions or may be included as a separate sheet that follows the graphical depictions.

In addition, a girder grade and camber ordinate diagram and data tabulation shall be provided.

The grade and camber diagrams combine the required final vertical curvature of the bridge with the camber to be built in to offset the predicted deflections and adjusts the data to show the required shape of each individual shop length of girder (between shop and field splice points).

This is critical information that will be used by the beam fabricator to set up the shape and end cut geometry of shop fabrications.

25.4 Checklist

See Section 40.17.

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Chapter 26. Steel Superstructure: Butt Joint Details - Contents

Chapter 26. Steel Superstructure: Butt Joint Details

26.1 Purpose

Use to define the requirements for required shop and field splices of steel girders.

26.2 General Guidance

All splices for steel girders shall be detailed as fully welded splices using the Butt Joint, Basic Drawing Sheet. Review the sheet for adequacy for the intended purpose, removing any irrelevant details. In general, no modification or enhancement is required.

26.3 Required Practices

Scale No scale

Intentionally Left Blank

Chapter 27. Steel Superstructure: Structural Steel Details - Contents

Chapter 27. Steel Superstructure: Structural Steel Details

27.1 Purpose

This sheet is used to depict miscellaneous details of some or all of the following:

1. Bearing Stiffeners
2. Diaphragm Details
3. Cross Frame Details
4. Lateral Bracing Details (if any)
5. Shear Stud Details
6. Bearing Details

Scale

No scale.

Show an architectural scale for each detail presented that provides good clarity when the drawing is reduced to half size.

27.2 General Guidance

Cross Frames & Stiffeners

Detail gusset plates, frame members and connection details including all welded and bolted connections. Fully define member sizes but member lengths are better left for the fabricator to calculate and submit in the Shop Drawing Review process. Show bolt and bolt hole sizes, weld types and sizes, gusset plate clips and any required construction details.

Cross Frames are typically K-Type or X-Type (for deeper girders). Typical details for cross frames are available from the Bridge Office and should be used as the basis for drawing development.

See examples that follow.

Diaphragms

Diaphragms are typically channel sections bolted to gusset plates during erection and welded before the deck is poured. Detail gusset plates, channel member size, bolt & bolt hole sizes, weld type, size and location, and any required construction details. Diaphragms standard details are available in the GDOT cell library.

Shear Stud Connector Detail

Show Pitch, transverse spacing, stud size and length.

27.3 Checklist

See Section 40.14.

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Chapter 28. Steel Superstructure: Beam Layout - Contents

Chapter 28. Steel Superstructure: Beam Layout

28.1 Purpose

The Beam Layout sheet (also known as a “framing plan”) is a supplement to the Deck Plan sheet and is required to be used to define the layouts of the beams, diaphragms and/or cross frames when any of the following situations are present:

1. Any portion of the bridge between the BFPR to BFPR is on the horizontal curve.
2. The beam layout is by coordinates.
3. The beam layout is "complex".

28.2 General Guidance

List of required Components:

See Section 35.002.B.9 Framing Plan Drawing of the “Plan Checklist Document” for the list of required components for this drawing.

Details shall include:

- BFPR
- Centerline Bent
- Centerline Beam
- Diaphragm
- Angles of intersection between:
  - BFPR and Centerline Beam
  - Centerline Bent and Centerline Beam
  - Centerline Beam and Diaphragm
- Note indicating a description of the beam layout methodology
- Reference Line

28.3 Required Practices

All dimensions shall be feet to 2 decimals.

28.4 Checklist

See Section 40.16.

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Chapter 29. Steel Superstructure: Neoprene Bearing Details - Contents

Chapter 29. Steel Superstructure: Neoprene Bearing Details

29.1 Purpose

The Bearing Sheet is used to define and dimension the bearings used in the steel beam bridge design.

29.2 General Guidance

If the designer proposes to use neoprene bearings with steel beams, detailer shall produce a drawing depicting the bearing to be used and its connection to the beam and substructure for approval by the Office of Bridge Design. For in-house work GDOT does not use neoprene bearings, so there are no go-by's or guidelines available.

Bearings of same type but different dimensions may be defined on the same sheet with a "table of lettered dimensions

29.3 Required Practices

Provide a table of lettered dimensions, as needed, for each unique bearing, defining:

- Overall Dimensions
- Number of Internal Plates
- Design Properties

Ensure the "Notes" portion of this drawing follows all current specifications and practices.

29.4 Checklist

No checklist available.

Intentionally Left Blank

Chapter 30. Steel Superstructure: Steel Plate Bearing Details - Contents

Chapter 30. Steel Superstructure: Steel Plate Bearing Details

30.1 Purpose

The Steel Plate Bearing Details Sheet is used to detail and dimension the steel fabricated plate bearings used in the steel beam bridge design. Plate bearings consist of bearing plates and sole plates; and may include neoprene sheet under the sole plates. In addition, longer span expansion bearings will include self-lubricating bronze plates.

30.2 General Guidance

Every unique plate bearing type and size is fully detailed and dimensioned on the Bearing Details Sheet.

30.3 Required Practices

Individual plate bearing components shall be detailed. These details shall include member sizes and material properties.

Provide bearing assembly details for each type, size, and location of bearing showing the full bearing assembly on the cap in plan and elevation view.

Provide notes specifying material properties for the bearing and sole plates, self-lubricating bronze plates, anchor bolts, and washers and nuts. Ensure the “Notes” portion of this drawing follows all current specifications and practices.

Provide individual plate or neoprene pad details including plan and elevation views for each unique plate or neoprene pad. Include overall size, thickness, hole or slot size, and hole or slot location.

30.4 Checklist

A checklist for the detailer’s convenience is provided at the end of this manual. See Section 40.18.

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Chapter 31. Bearings: Pot Bearing Details - Contents

Chapter 31. Bearings: Pot Bearing Details

31.1 Purpose

To depict the general characteristics and dimensions of the pot bearing assumed in the design and to state the required forces, displacements and rotations required of the bearing.

31.2 General Guidance

Use the basic drawing sheet for pot bearings and modify the “Design Data” table with actual forces and preliminary dimensions for each location. Review the sheet for adequacy for intended purposes.

31.3 Required Practices

If the designer proposes to use pot bearings, he shall contact Office of Bridge Design for approval prior to commencing final design.

Use the appropriate Pot Bearing Details basic drawing based on freedom of movement required.

Bearings of same type but different dimensions may be defined on the same sheet with a “table of lettered dimensions.

Scale No Scale

31.4 Checklist

No checklist is available.

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Chapter 32. End Bent - Contents

Chapter 32. End Bent

32.1 Purpose

The End Bent Sheet consists of the Plan, Elevation, and Sectional details of the first and/or last bents, including concrete quantities, rebar quantities, and foundation information.

32.2 General Guidance

Use the “Pile Bent” program for assistance in detailing the end bent sheet .

32.3 Required Practices

Use 3/8” = 1′-0″ architectural scale to detail the plan and elevation view of the end bent. Use a 1/4″ = 1′-0″ scale if necessary to fit the bent on one sheet. If the bent will not fit on one sheet at a 1/4″ = 1′-0″ scale, use a 3/8″ = 1′-0″ scale and split the bent across multiple sheets.

If end bents are similar, a separate sheet is not required. Locate a half-scale schematic of the plan and elevation views for the ahead end bent to the upper right of the drawing (space permitting) showing the following:

- Station of B.F.P.R.
- Cap elevations
- Beam numbers and centerlines
- Skew angle
- Other pertinent elevations (e.g. wingwall elevations, bottom of cap, etc.)

With the exception of end bent sheets created using the Box Beam or Cored Slab basic drawings, do not use a Table of Dimensions for end bents. Label the elevations on the elevation view.

In the title block, the drawing name is “END BENT X” or “END BENTS X AND X”.

Place the plan view in the top left of the drawing and an elevation view below.

32.3.1 Plan View

Caps

End bents have 2′ triangular fillets between each wingwall and back face of cap. The two 2′ dimensions are measured normal to B.F.P.R. and along B.F.P.R. from the intersection of the back face of cap and the inside face of wingwall. The fillet is not present if there is no wingwall or if the end post is integral with the substructure.

Cap step lengths are detailed to the nearest 1” increment, and fractional remainders are accommodated in the outermost steps. See Design Manual Section 4.3.2 for more detailing information.

Locate Dimension strings below the Plan View of the cap ad measure along the front face of the cap between wingwalls.

Typically, three strings of dimensions are shown:

- Beam Centerlines (Dimension string closest to the cap)
- Cap Step lengths
- Overall cap length

Wingwalls are typically dimensioned to be 1’-0” wide.

32.3.2 Elevation View

Depict the elevation view as a vertical projection of the plan view. For Bent 1, detail the Elevation View looking back with the label **(LOOKING BACK)** under the title. For the Last Bent, detail the Elevation View looking ahead. Do not include the label **(LOOKING AHEAD)** under the title.

For skewed bents, show the projected view of the wingwalls and pile boxes.

Show labeled Section cuts through the cap between piles and at a pile.

Locate cap section arrows alphabetically from left to right in the elevation view, starting with A-A. Detail all section arrows in the elevation view pointing to the right.

32.3.3 Section Views

There are typically a minimum of two end bent section views shown in the end bent sheet. Locate the sections in the upper right of the sheet if space permits.

Detail section views at a 3/4″ = 1′-0″ scale.

Typically, these sections are:

- Section A-A = Section at pile
- Section B-B = Section between piles

Additional sections may be required for reinforcement arrangements not covered in the section views above. For example, another section is needed if some steps require additional cap step reinforcement while others do not. For bridges with fascia beams, detailing the difference in cap height and the additional reinforcement will also require additional sections. Additional section views will also be needed if a wall interacts with the end bent.

Do not cut sections through the wingwall or pile box.

32.3.4 Plan Driving Objective/Geotechnical Data

Locate the Plan Driving Objective to the lower right, directly above the title block.

32.3.5 Quantity Table

Locate a quantity table at the bottom of the sheet.

Round concrete quantities to the nearest tenth of a cubic yard. Round reinforcing steel to the nearest whole pound.

A sample SUBSTRUCTURE QUANTITIES table is shown in Figure 32.3.5-1 below:

SUBSTRUCTURE QUANTITIES	
ITEM	BENT 1
CY CLASS AA CONCRETE	78.3
LB BAR REINF STEEL	18532

32.4 Checklist

A checklist for the detailer's convenience is provided at the end of this manual. See Section 40.19.

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Chapter 33. Intermediate Bent - Contents

Chapter 33. Intermediate Bent

33.1 Purpose

The Intermediate Bent Sheets consist of the Plan, Elevation, and Sectional details of the intermediate bents, including concrete quantities, rebar quantities, and foundation information.

33.2 General Guidance

Use the “Concrete Bent” and “Pile Bent” programs for assistance in detailing the intermediate bent sheets.

Separate intermediate bent sheets are not required if the only differences between intermediate bents are stations, elevations, beam angles, and/or beam throw. Tabulate the variable dimensions if multiple bents are represented on one sheet.

33.3 Required Practices

Use 3/8″ = 1′-0″ architectural scale to detail the plan and elevation view of the intermediate bent. Use a 1/4″ = 1′-0″ scale, if necessary, to fit the bent on one sheet. If the intermediate bent is comprised of multiple bents and will not fit on one sheet at a 1/4″ = 1′-0″ scale, use a 3/8″ = 1′-0″ scale and split the bent across multiple sheets.

If alternate foundations need to be depicted, show the entire bent with the different foundations on two different sheets. The exception is when different pile types are required in a pile footing, which can be depicted using separate details and notes.

Detail Elevations to nearest .01 (hundredth) of a foot.

In the title block, the drawing name is formatted as INTERMEDIATE BENT X, INTERMEDIATE BENTS X AND X, or INTERMEDIATE BENTS X THRU X.

Place the plan view in the top left of the drawing and an elevation view below.

33.3.1 Plan View

The plan view is used to describe the horizontal layout of the bent and centerlines of bearing. Locate the plan view at the upper left of the sheet.

Caps

Detail the station and skew angle at the intersection of the centerline of bent and the reference line.

Dimension the offset of the centerlines of bearing from the centerline of bent, the distance from the centerline of bent to both edges of cap, and the total width of the bent. If the cap has a riser that is offset from the center of the cap, dimension the offset from the center of the cap to the edge of the riser.

Dimension the angle(s) between the centerline of bearing and beam centerlines. Dimension the distance along the bent from the intersection of the beam centerline and the bent centerline to the intersection of the beam centerline and centerline of bearing (Dimensions A and B in the Beam Throw Detail).

Dimension the distance from the reference line to the nearest beam centerline at their intersections with the bent centerline. If the stationing line and PGL are different lines, dimension the offset between the stationing line and PGL.

Dimension cap step lengths to the nearest whole inch increment.

Show smooth dowel holes, 1013 dowels, and anchor bolt holes in the cap plan view. If beam angles and offsets vary and cannot be clearly dimensioned in the plan view, create a beam throw detail and corresponding table, as shown in Figure 33.3.1-1. Use an angle label of alpha for ahead and beta for back (α and β).

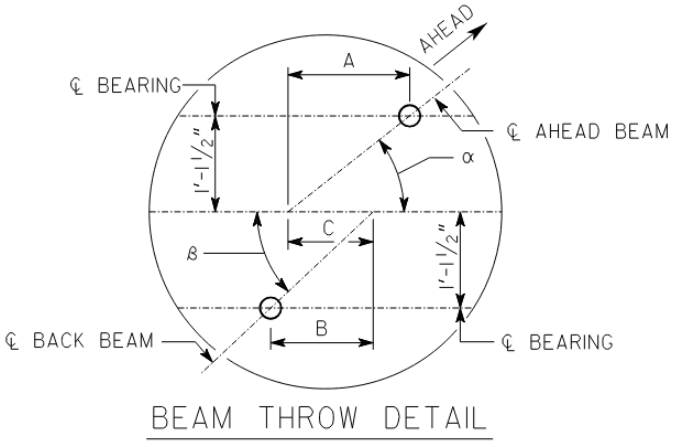


TABLE OF LETTERED ANGLES AND DIMENSIONS		
	BEAM 1	BEAM 2
A	1'-3⅞"	1'-2⅜"
B	1'-2⅝"	1'-1⅛"
C	0'-9⅜"	0'-8⅞"
α	37°-02'-12.4"	34°-51'-05.2"
β	35°-54'-55.3"	34°-51'-05.2"

Figure 33.3.1-1

33.3.2 Elevation View

The elevation view is used to show the relationship between the cap, columns, and foundations. Cap step elevations and major reinforcing are also detailed in this view.

Show the intermediate bent elevation view as a vertical projection of the plan view looking ahead. Do not put LOOKING AHEAD beneath the elevation view title. Show the bent cap, columns, and foundations. For foundations, show piles, footings, and other foundation elements in the elevation view. If footings are present, dimension the footing depth and width.

Show reinforcement in the cap (aside from skin reinforcement), columns, and footings or caissons. Main reinforcement cutoff locations in the top of the cap are dimensioned from the centerline of column.

Show cap step elevations as EL. XXX.XX. Show bottom of cap elevations at cap ends, column junctions (face of column) for concrete intermediate bents, and breaks in the bottom of cap slope. Show only bottom of cap elevations at cap ends for intermediate pile bents. If the bottom of cap is level, only show one elevation, followed by LEVEL (e.g. EL. XXX.XX, LEVEL).

Dimension the distance from edge of cap to centerline of column or pile and the distance between columns or piles in one dimension line.

For concrete intermediate bent caps:

a. Detail the spacing of stirrups in the cantilever as follows:
    i. Place the outermost stirrup 3″ from the end of the cap.
    ii. Place the innermost stirrup in the cantilever 2″ from the column face.
    iii. Detail the remaining stirrups in the cantilever by specifying the number of bars at equal spacing (e.g. 13-520 AT EQUAL SPACES). Only specify a measurement for the spacing if the spacing measures at a whole inch increment (e.g. 13-520 AT 8″).
b. Detail the spacing of stirrups between the columns as follows:
    i. Place the stirrup closest to the column 2″ from the column face. This dimension may be adjusted ±1″ only if necessary to meet spacing requirements in the rest of the cap.
    ii. Detail the number and spacing of stirrups for each stirrup range in the cap between columns (e.g. 8-620 at 5″). Do not use spacings at less than half-inch increments.
    iii. A gap is required between stirrup ranges with different spacings and/or different bar types. Dimension the length of the gap to match the smaller of the two spacings. This dimension can be adjusted to a value between the smaller and larger spacing as necessary to avoid violating maximum or minimum spacing requirements.

Double stirrups can be accomplished by using overlapping stirrups of about 2/3 the width of the cap [7 SPACES AT 8″ 16 - 521 (DOUBLE)] or by overlapping a regular full width stirrup with one in the center half of the cap (6 - 520 AND 521).

When dimensioning stirrup ranges with double stirrups, the dimension string is formatted as follows:

Above the dimension line: Spacing of reinforcing bars (e.g. 7 SPACES AT 8″ or 9 EQUAL SPACES). Do not use the @ symbol.

Below the dimension line: Bar designation and quantity [e.g. 16-521 (DOUBLE)].

33.3.3 Section Views

Locate section views of the cap and column in the upper right of the drawing. Include a cap section that illustrates each unique reinforcement configuration in the cap and significant changes in the cap cross section. Provide enough cross sections to sufficiently show each bar placement. For pile intermediate bents, include a section at the pile and between piles at a minimum. Show the rebar clearance in the column cross section. Take the column section view through the bar lap above the footing, if present.

For intermediate wall piers, show a cross section of the entire bent (cap, wall stem, and footing), including all reinforcement.

Detail section views at a 3/4″ = 1′-0″ scale.

33.3.4 Foundations

Different foundations require different details as follows:

a. For pile footings, show a separate detail of the plan view of the pile layout.

b. Show a sectional view of drilled caissons if the cross section or reinforcement differ from that of the column.

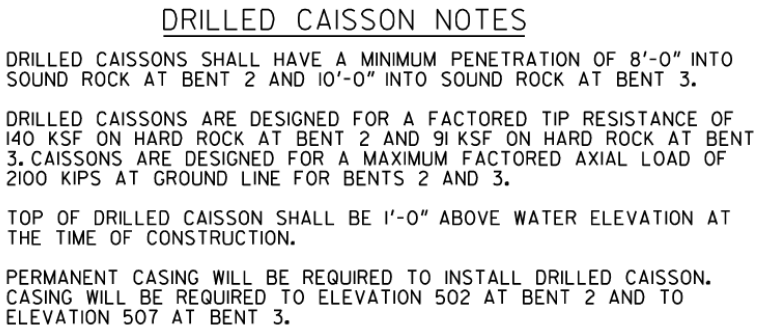
c. Include the pile encasement detail for H-Pile intermediate bents at stream crossings.

d. For abutments, show a shear key detail between the stem and footing.

33.3.5 Plan Driving Objective/Geotechnical Data

Locate the Plan Driving Objective directly above the title block. Intermediate bents with caissons will not have a plan driving objective, and its requirements are instead listed in notes, located in the same place on the sheet.

For concrete intermediate bents with drilled caisson foundations, place the caisson notes above the title block, separate from the other bent notes. The notes are unnumbered and placed under the heading DRILLED CAISSON NOTES. See Figure 33.3.5-1 below for an example.


DRILLED CAISSON NOTES

DRILLED CAISSONS SHALL HAVE A MINIMUM PENETRATION OF 8'-0" INTO SOUND ROCK AT BENT 2 AND 10'-0" INTO SOUND ROCK AT BENT 3.

DRILLED CAISSONS ARE DESIGNED FOR A FACTORED TIP RESISTANCE OF 140 KSF ON HARD ROCK AT BENT 2 AND 91 KSF ON HARD ROCK AT BENT 3. CAISSONS ARE DESIGNED FOR A MAXIMUM FACTORED AXIAL LOAD OF 2100 KIPS AT GROUND LINE FOR BENTS 2 AND 3.

TOP OF DRILLED CAISSON SHALL BE 1'-0" ABOVE WATER ELEVATION AT THE TIME OF CONSTRUCTION.

PERMANENT CASING WILL BE REQUIRED TO INSTALL DRILLED CAISSON. CASING WILL BE REQUIRED TO ELEVATION 502 AT BENT 2 AND TO ELEVATION 507 AT BENT 3.

Figure 33.3.5-1

33.3.6 Quantity Table

Locate a quantity table at the bottom of the sheet.

Round concrete quantities to the nearest tenth of a cubic yard. Round reinforcing steel to the nearest whole pound.

A sample SUBSTRUCTURE QUANTITIES table is shown in Figure 33.3.6-1 below.

SUBSTRUCTURE QUANTITIES		
ITEM	BENT 2	BENT 3
CY CLASS AA CONCRETE	78.3	74.1
LB BAR REINF STEEL	18532	17233

Figure 33.3.6-1

33.3.7 Table of Elevations

If a table of elevations is needed, locate the table at the bottom of the sheet. Do not use a table if only one bent is detailed on the sheet.

33.4 Checklist

A checklist for the detailer's convenience at the end of this manual. See Section 40.20.

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Chapter 34. Miscellaneous Substructure Details - Contents

Chapter 34. Miscellaneous Substructure Details

34.1 Purpose

Miscellaneous Substructure Details sheet is used only if there isn't enough space on the End Bent or Intermediate Bent sheets for the additional substructure details.

34.2 General Guidance

If additional details are needed, detail all the outlines, dimensions, reinforcement, and notes needed for construction.

34.3 Required Practices

Place details in groups of similar details. For example, place Sections thru Cap either side by side or one above the other. Follow practices for End Bent and Intermediate Bent Detail Sheets.

34.4 Checklist

See End Bent and Intermediate Bent Checklists, as applicable.

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Chapter 35. As-Built Foundation Information - Contents

Chapter 35. As-Built Foundation Information

35.1 Purpose

The purpose of the As-Built Foundation Information is to provide a standard sheet for use by field personnel during the installation of the foundation elements to record various foundation elevations. The information in this sheet is used for future analysis of the bridge.

35.2 General Guidance

For pile end bents and pile intermediate bents where there is a pile underneath each beam, describe the pile by location (e.g. Left Wing, Beam 1, Beam 2, etc.). For pile footings and all other pile bents, describe the pile by pile number.

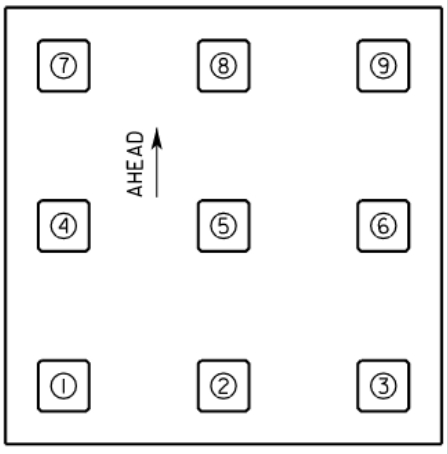
35.3 Required Practices

Include an AS-BUILT FOUNDATION INFORMATION sheet in each set of bridge plans.

This sheet includes tables for field personnel to record the elevations of the following items:

- Pile tip
- Caisson tip
- Top of caisson
- Bottom of seal
- Bottom of footing elevation

Include plan view sketches for pile footings with piles identified by number. Number the piles in pile footings from left to right, and then from back to ahead, as shown in Figure 35.3-1. The numbering restarts with each footing.



PILE LAYOUT

Figure 35.3-1

Elevation View sketches are required for spread footings, pile footings, and caissons. Include seal concrete in the sketch if present. Show the bottom of footing and bottom of seal elevations in the sketch, as shown in Figure 35.3-2 below. Show the top of caisson and caisson tip elevations in the sketch, as shown in Figure 35.3-3 below.

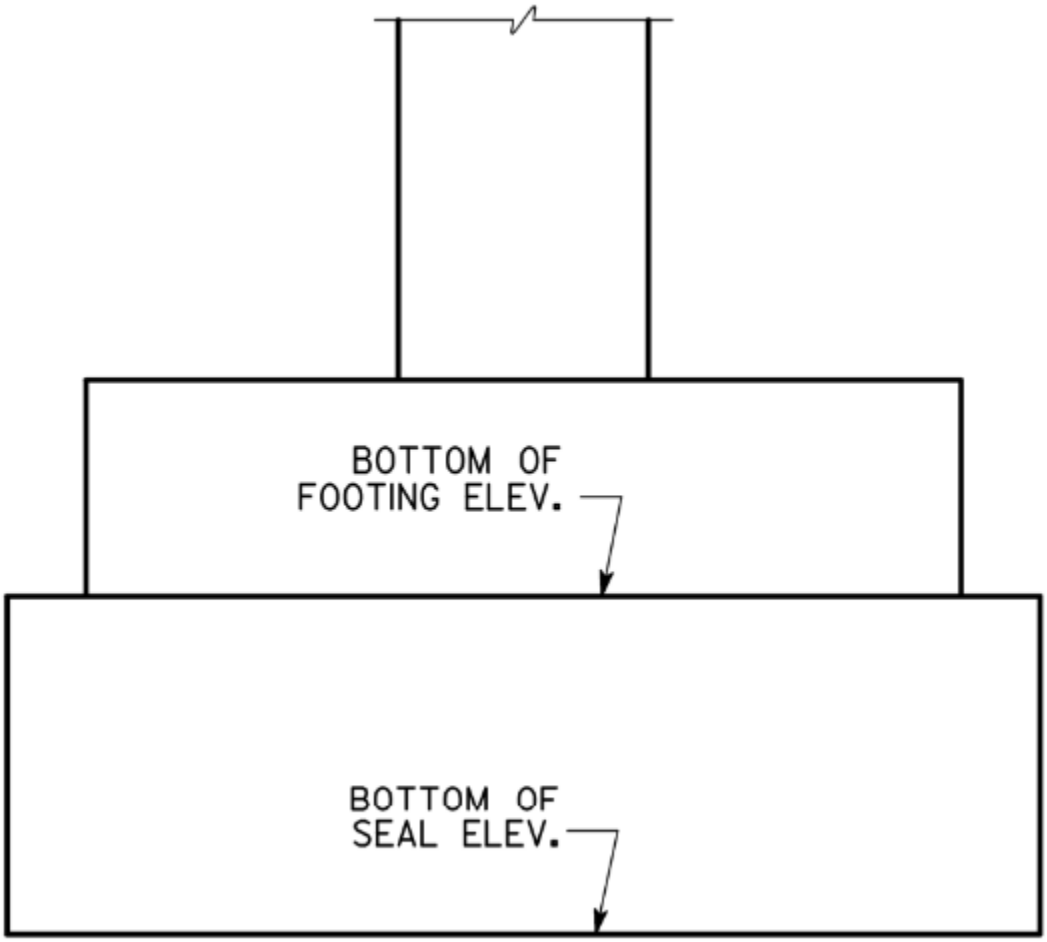


Figure 35.3-2

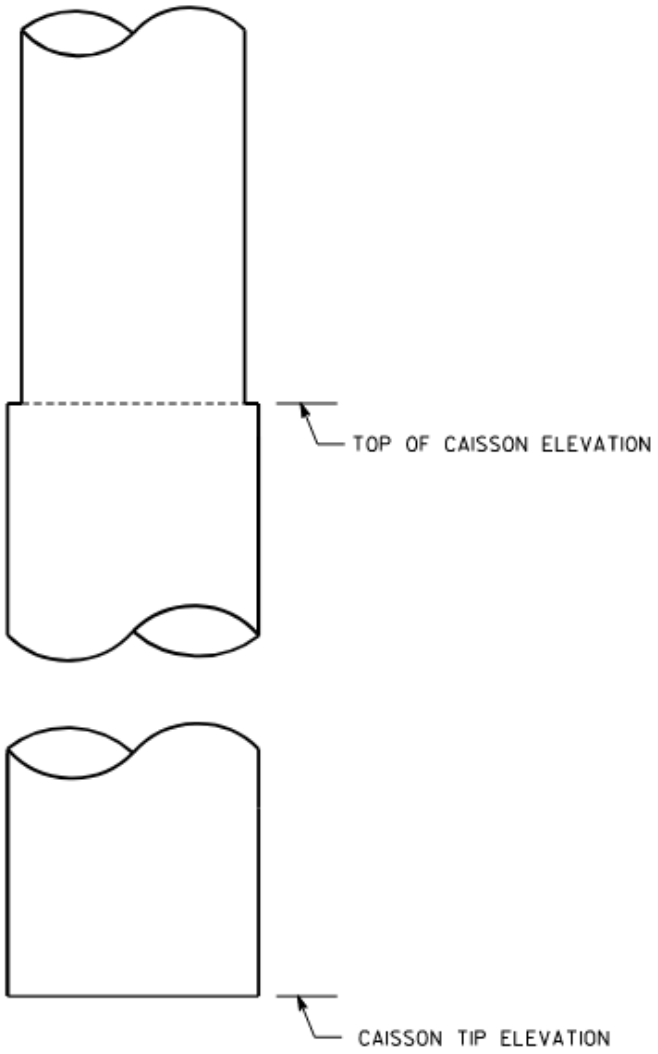


Figure 35.3-3

35.4 Checklist

A checklist for the detailer's convenience is provided at the end of this manual. See Section 40.21.

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Chapter 36. Bar Reinforcement Schedule - Contents

Chapter 36. Bar Reinforcement Schedule

36.1 Purpose

This sheet is used to detail the dimensions and shapes of steel reinforcement bars used in bridges.

36.2 General Guidance

Import the output from the BRRBAR program onto the rebar table provided in the bridge cell library.

There are two rebar tables in the bridge cell library preformatted to fit on a plan sheet (Cells REBAR1 and REBAR2). Only use REBAR2 if it saves using an additional sheet.

36.3 Required Practices

Detail reinforcing bars for bridges according to Georgia Standard 3901 (8-69). Use BRRBAR to calculate quantities and create the table file. This data and dimensions are indicated on the rebar table of lettered dimensions on the Bar Reinforcing Schedule Sheet.

Bars are partitioned by structural units of spans and bents, then further separated by stages if present. Superstructure Spans are presented first, followed by substructure bents, with spans and bents grouped by stage when present. When one section covers multiple units, use OR instead of AND (e.g. SPANS 1 OR 2 instead of SPANS 1 AND 2). AND indicates that rebar for both spans is being detailed in one unit together.

36.3.1 Reinforcement Detail Programs

Create an ASCII input file for the BRRBAR program using a text editor, based on the information below.

a. Bar types correspond to the bar types shown on GDOT Standard 3901. In the event that a required bar type is not provided on the standard, detail a unique bar type on the rebar sheet. Start with bar type 60 and increase sequentially for each additional unique bar.

b. Format bar marks as described below and shown in Figure 36.3.1-1.

   1. A bar mark consists of three components: the rebar size, the rebar location, and the rebar identifier. Bar marks can be 3 or 4 digits and may include a letter.

Figure 36.3.1-1

   a. The rebar size is the size number of the rebar. This component may be two digits if the rebar size is two digits.

b. The rebar location is 0 for rebar in the superstructure and corresponds to the bent number for rebar in the substructure with the following exceptions:

i. Use 9 as the rebar location for epoxy coated rebar, corrosion resistant rebar, or any other reinforcement that differs from typical reinforcement steel.

ii. If multiple similar bents are detailed on the same sheet, the lowest bent number included on the sheet may be used for each bent's rebar location.

iii. If the bridge has a double-digit number of bents, create groupings of similar bents for the rebar location to keep it a single digit number. Do not use a double-digit number for this component.

c. The rebar identifier begins from 0 and increases sequentially without skipping numbers. Do not use unlettered bars and lettered bars within a mark. For example, do not use 406 and 406A, instead use 406A and 406B. Do not use lettered bars if there is only one bar with that bar mark. For example, do not use a 502A if there is no 502B. Only use 502. Do not use the letters I, O, or X.

2. List bar marks in sequence.

a. First by bar size

b. Second by last two numbers

c. Third by the letter

c. Format bar dimensions as described below:

1. If the dimension does not include a fraction, leave fraction input blank. Do not use 0/0. Example: 1- 0

2. If the dimension does not include inches, enter a 0 for inches. Do not use 00. Example: 2- 9

3. If the dimension uses inches and the inches are 1 to 9, enter the single digit. Do not use 09. Examples: 31- 1 1/8, 3- 0 3/4

4. If the dimension is less than 1'-0", enter a 0 for feet. Do not leave the feet dimension blank and do not use 00 for the feet dimension. Example: 0- 8

d. Insert a blank line after the last bar of the same size

e. Insert 2 blank lines after the last bar of each unit

36.3.2 Place Table on Sheet

a. Use BRRBAR to generate a bar table text file.

b. Create a BAR REINFORCEMENT SCHEDULE sheet using the grid cell REBAR1 and the third column grid cell REBAR 2, as applicable. Snap the upper left corner of REBAR1 in the upper left corner of the inner border. Place REBAR2 so that it lines up with the edge of REBAR1 and is roughly centered vertically between the title block and top border. Do not remove any empty rows or columns from the tables.

c. Run the MicroStation User Command to place English Rebar. In the user environment, this is a button with red text “E REB” on the BD Text Commands toolbar. A dialog box will ask you to select the bar table text file.

d. The user command will then ask you to place the text at a data point. The rebar grid cells have a green point in the first row under LOCATION that can be used to snap the text to the correct location. If snapping to the green point when first placing the text from the tool, use a tentative snap.

36.4 Checklist

No check list is provided for this sheet.

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Chapter 37. Wall Plans for Contractor Designed Walls - Contents

Chapter 37. Wall Plans for Contractor Designed Walls

37.1 Plan Presentation Guide

Chapter 31 and Chapter 32 of the Plan Presentation Guide supersedes the contents of this chapter if information conflicts.

37.2 Purpose

Wall plan sheets shall provide sufficient information and details to allow the contractor to design and detail retaining walls.

These wall plans typically consist of Plan, Elevation, and Sectional details, General Notes, Design Data & Summary of Quantities for Mechanically Stabilized Embankment, (MSE) Walls or a Tie Back Walls.

37.3 General Guidance

1. Use a vertical scale of 1” = 10 ft.
    a. The horizontal scale will be determined by the length of the wall, but preferably 1”= 10 ft.
2. Detail dimensions to nearest 1/8” unless noted otherwise.
3. Detail Elevations to nearest .01 (hundredth) of a foot.
4. Coordinate with Roadway plans so that all wall designations are uniquely numbered and consistent.

37.4 Required Practices

TITLE BLOCK

Place WALL NO. “X” over the Title Block

The following is an example of Wall Sheet Titles

PLAN AND ELEVATION - WALL No. 1
I-75 WIDENING
XXX COUNTY PROJECT #

PLAN VIEW

The Plan View shall locate the wall with respect to the mainline or other construction reference line.

ELEVATION VIEW

The Elevation View should give the general profile of the top and bottom of the wall.

The bottom of the wall is normally 2 feet below finish grade unless noted otherwise.

The top and bottom limits of the wall should be defined by elevations of front and back face of the wall given at the following locations:

- wall begin and end
- major break points
- staging lines
- 50 ft. intervals.

Additionally, elevations at the following points shall be shown:

- The maximum top of coping
- minimum bottom of wall

The elevation view is drawn with stationing shown from left to right which may force the elevation view to be looking at the back face of the retaining wall.

Because of the nature of stationing on wrap around abutments, always look at the front face of these walls.

SECTION VIEWS

Sections through the wall shall be provided to illustrate representative design conditions along the face of the wall.

Examples of Section through wall might include Sections at:

- end bents
- side barrier
- coping with concrete gutter

GEOMETRIC DATA

Plans should show Geometric data for the reference line, including Vertical and Horizontal Alignment, as well as Super Elevation Data.

If Wall serves as a vertical abutment for the end of a bridge, include the Geometric data for the Bridge Centerline.

GENERAL NOTES

1. Concrete finish, coatings and color requirements. Specify plain concrete finish by default.
2. Notes regarding shoring
3. Waiting period requirements, if applicable.
4. Note for backfill stabilizing Device added to the end bent (if a bridge is present).

DESIGN DATA

Provide applicable geotechnical information. A section addressing the required information is part of the selections in the BRNOTES program.

SUMMARY OF QUANTITIES

Provide all applicable pay items numbers, descriptions, and quantities. A typical selection of retaining wall quantities is included in the selections in the BRNOTES program.

37.5 Checklist

A checklist for the detailer's convenience is provided at the end of this manual. See Section 40.22.

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Chapter 38. Accepted Abbreviations - Contents

Chapter 38. Accepted Abbreviations

38.1 Purpose

The following abbreviations are accepted for use on GDOT bridge and retaining wall plans.

38.2 General Guidance

Abbreviations are generally used to save room in a drawing, not to reduce typing.

38.3 Required Practices

Pay Items have non-standard abbreviations that must match the Pay Item Index. When writing out a note, avoid abbreviating the words marked with an asterisk.

38.3.1 List of Definitions and Approved Abbreviations

Ahead	AH (e.g. BENT 3AH)
Alternate (i.e. Design Alternate)	ALT.
* Alternate, Alternating	ALT.
* Approximate	APPROX.
American Society of Testing and Materials	ASTM
American Association of State Highway and Transportation Officials	AASHTO
Average Daily Traffic	ADT
Back	BK (e.g. BENT 4BK)
Back face of pavement rest	B.F.P.R.
Baseline	℄
Bearing	BRNG.
* Bent	BT
Business	BUS (e.g. SR 52 BUS)
Centerline	℄
City Street	CS
* Clearance	CL.
* Concrete	CONC.
Construction	CONST.
Continued	CONT'D
County Road	CR
Cubic Feet per Second	CFS
Cubic Yard	CY
Georgia Department of Transportation	GDOT
* Design Hourly Vehicles	DHV
Diameter	DIA. (Do not use symbol)
* Diaphragm	DIAPH.

Double	DBL.
* Each	EA.
* Each face	E.F.
Eastbound	EB
* Elevation	EL.
* Equal	EQ.
* Expansion	EXP
Feet	FT
* Fixed	FIX
Georgia	GA
Grade (material properties)	GR (e.g. A-709, GR 36)
Identification number	I.D. NO.
Inch	IN (e.g. 16 IN SQ PSC PILE)
* Joint	JT. (e.g. EXP. JT.)
Left	LT
Maximum	MAX.
Miles Per Hour	MPH
Minimum	MIN.
Northbound	NB
Number	NO.
On Center	O.C.
Outer Diameter	O.D.
Plate	PL.
Point of Curvature	PC
Point of Intersection	PI
Point of Tangency	PT
Point of Vertical Intersection	PVI
Pounds	LBS
Pounds per Square Inch	PSI
Prestressed/Precast Concrete	PSC
Profile Grade Line	PGL
Project ID Number	P.I. NO.
* Quarters	QTRS.
* Radius	R
Radially Measured	R
* Reinforcement	REINF.
* Required	REQ'D
Right	RT
Southbound	SB
* Space, Spaced	SP.
* Spaces	SPS.
* Square	SQ.
Square Miles	SQ MI
Standard	STD.
State Route	SR

Station	STA.
Superelevation	S.E.
* Superstructure	SUPERSTR
* Tangent	TAN
Tangent of Curve	T.O.C.
Top, Middle, Bottom	TMB
Typical	TYP. (preceded by a comma)
* Vertical Curve	V.C.
* Weight	WT.
Westbound	WB
Yards	YDS
Year	YR

38.4 Checklist

Not Applicable

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Chapter 39. Discipline Specific Words and Symbols - Contents

Chapter 39. Discipline Specific Words and Symbols

39.1 Purpose

The following are the correct usage and spelling of words used specifically on GDOT bridge and retaining wall plans.

39.2 General Guidance

Not Applicable

39.3 Required Practices

Not Applicable

39.3.1 List of Discipline Specific Words

Edge beam
End post
Endwall
Floodstage
Groundline
Highwater
Rip Rap
Sub-Section
Wingwall

39.3.2 List of Discipline Specific Symbols

^{d} as in 10^{d} for 10 penny nail

39.4 Checklist

Not Applicable

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Chapter 40. Design Checklists - Contents

Chapter 40. Design Checklists

The following Design Checklists are provided to assist the detailer in making sure the plans contain the required information. The checklist is provided for the users benefit and is by no means considered all-inclusive or to relieve the designer of any responsibility in the preparation of plans.

40.1 Preliminary Plans – Preliminary Layout Checklist

See Chapter 4.

40.1.1 Plan View

LINEWORK

Transverse Lines
- ☐ B.F.P.R
- ☐ Centerline Bent
- ☐ Front Face of Wall

Longitudinal Lines
- ☐ Reference line (may be Construction Centerline, Centerline Roadway, and/or Centerline bridge)
- ☐ Outside edges of bridge
- ☐ Inside and outside edges of barrier, parapet, sidewalk and raised median
- ☐ Construction Joints and/or Expansion Joints
- ☐ CL Utilities

Outlines
- ☐ Wingwalls (show pile boxes if present)
- ☐ End posts
- ☐ Existing bridge including centerline of bents

LABELS
- ☐ Begin and end bridge stations
- ☐ Equality Stations
- ☐ Limits of Existing Bridge
- ☐ Angles of intersection at reference line and B.F.P.R and CL Bents
- ☐ Bent numbers
- ☐ LIMITS OF EXISTING BRIDGE (TO BE REMOVED)
- ☐ Limits of each Stage of construction
- ☐ North arrow
- ☐ Roadway destinations with arrows
- ☐ Profile Grade Line = CL Construction = CL Bridge, etc.
- ☐ Bearing
- ☐ PC Station and/or PT Station
- ☐ Existing and proposed utilities from Centerline bridge
- ☐ Temporary Shoring, as necessary
- ☐ Culverts or utilities not on the bridge but that would have an effect on the method of construction
- ☐ Temporary Barrier
- ☐ Utilities

DIMENSIONS
- ☐ Gutter to Gutter
- ☐ Gutter to edge of deck

- ☐ Inside face of parapet/barrier to edge of deck
- ☐ Gutter to reference line
- ☐ Sidewalk
- ☐ Raised median
- ☐ Edge of raised median to reference line
- ☐ Stage Construction widths

CASE-SPECIFIC ITEMS

Grade Separation – Roadway

- ☐ Width of roadway
- ☐ Ahead arrow
- ☐ Roadway destinations with arrows
- ☐ Profile Grade Line
- ☐ Bearing
- ☐ PC Station and/or PT Station
- ☐ Station and angle at the intersection of the bridge reference line and intersecting roadway
- ☐ Minimum horizontal clearance from edges of roadway to the face of the bents
- ☐ Point of minimum vertical clearance
- ☐ Limits of slope paving

Grade Separation – Railroad

- ☐ Centerline
- ☐ Ahead arrow
- ☐ Railroad destinations with arrows
- ☐ Bearing
- ☐ PC Station and/or PT Station
- ☐ Station, angle, and distance to nearest Milepost (with Milepost No.) at the intersection of the bridge and railroad
- ☐ Minimum horizontal clearance at CL tracks to the face of the bents
- ☐ Point of minimum vertical clearance
- ☐ Limits of slope paving

Stream Crossing

- ☐ Flow direction, ebb, or flood tide directions
- ☐ Approximate edge of bank lines at normal flow
- ☐ Limits of Rip rap

40.1.2 Elevation View

LINEWORK

Vertical Lines

- ☐ B.F.P.R and Centerline bent
- ☐ Front face of Walls

Horizontal Lines
- ☐ Top of Fence (can be partial length) (optional)
- ☐ Top of Barrier or parapet
- ☐ Top of Deck
- ☐ Bottom of Deck
- ☐ Bottom of Beam

Outlines
- ☐ Wingwalls (show pile boxes if present)
- ☐ End posts
- ☐ Architectural rail details (Texas; may be detailed partially)
- ☐ Intermediate bents
- ☐ Caps
- ☐ Column or Pile above ground line

LABELS

- ☐ Vertical line above B.F.P.R and CL Bents with station above line and elevation below (stations match plan view)
- ☐ Bent numbers in circle below each B.F.P.R or bent
- ☐ Approximate original, (the natural ground line), proposed and future ground lines
- ☐ Hatch existing fill to be removed and note – EXISTING FILL TO BE REMOVED. SEE ROADWAY PLANS FOR PAYMENT.
- ☐ 2:1 end slope with *
- ☐ Elevation marks along each end of elevation view starting 20 feet below the ground line and ending above the highest point of the bridge using 5 or 10 foot increments
- ☐ Station marks beneath elevation view starting 50 feet before the beginning wingwall and ending 50 feet after the ending wingwall using 50 foot increments (Stations detailed on 100 foot increments)

DIMENSIONS:

- ☐ Total length of bridge measured along reference line
- ☐ Length of each span measured along reference line

CASE-SPECIFIC ITEMS

Grade Separation – Roadway
- ☐ Paved limits (travel lanes; include shoulder line if it controls)
- ☐ Minimum Vertical clearance

Grade Separation – Railroad
- ☐ CL of track
- ☐ Railroad rails and tie (exaggerated to show detail)
- ☐ Show railroad fill and ditches
- ☐ Minimum Vertical clearance (also include actual for CSX)

Stream Crossing
☐ Flood stage elevations at design flood, 100, and 500 years (stops at Rip-Rap)
☐ Abnormal flood elevations
☐ High and tide elevations
☐ Approximate 500 year scour line
☐ Horizontal and vertical clearances for navigable waterways

40.1.3 Details

Place details in groups of similar details.
(e.g., place Vertical curve data and Horizontal curve data either side by side or one above the other)

☐ Proposed Vertical Curve/Grade Data
☐ Proposed Horizontal Curve Data
☐ Superelevation transition data
☐ Benchmark data
☐ Traffic Data
☐ Drainage Data
☐ Utilities
☐ Berm Elevations table
☐ Existing bridge elevations table
☐ Theoretical Scour Data
☐ Existing bridge serial no., Existing bridge ID No., Project PI No.

BRIDGE CONSISTS OF
☐ Number of spans, Span lengths and types of beams
☐ Type of end bents
☐ Type of intermediate bents
☐ Size and Type of Riprap
☐ Width and length of Detour Bridge
☐ Decorative Barrier or Parapet, Special Design

Grade Separation – Roadway
☐ Slope paving detail with Section X-X

Grade Separation – Railroad
☐ Slope paving detail
☐ RR section with end roll and side ditch detail
☐ Construction Clearance Diagram
☐ Track Curve Data
☐ Track Profile Data

Stream Crossing

☐ Riprap detail
☐ Hydraulic and scour data table

40.1.4 Notes

☐ All bents parallel (to some bent if a grade separation or on curve) (if applicable)
☐ End bent piles not shown
☐ *Slope normal to end bent
☐ **Stations and Elevations are at intersection of profile grade line and B.F.P.R. or centerline bent
☐ Bridge crown or superelevation data
☐ Minimum allowable bottom of beam for RCDG
☐ Detour Bridge length, length and minimum beam elevation

40.2 Preliminary Plans – Construction Sequence Checklist

See Chapter 5.
Each deck section should include the following:

LINE WORK:
- ☐ Existing bridge
- ☐ Temporary barrier, barrier, parapet, sidewalk and raised median
- ☐ Slab
- ☐ Beams and coping
- ☐ Median, sidewalk

Details
- ☐ Reference Line
- ☐ Utilities
- ☐ Traffic direction arrows

LABELS:
- ☐ Label each section by Stage
- ☐ Reference line
- ☐ Temporary Barrier
- ☐ Construction Joints
- ☐ Existing and proposed beams
- ☐ Utilities

DIMENSIONS:
- ☐ from Reference Line to construction joint or cutlines
- ☐ Distance to Temporary Barrier from edge of deck
- ☐ from Cut lines and Construction joints
- ☐ Distance to and width of traffic lanes
- ☐ Width of stage
- ☐ Overhang dimension
- ☐ Beam spacing
- ☐ Utilities by stage
- ☐ Hatched sections that are to be removed

NOTES:
- ☐ Narrative description of the construction sequence in a numbered list
- ☐ COORDINATE THE AFOREMENTIONED SEQUENCE WITH ROADWAY OPERATIONS, SEE ROADWAY PLANS.
- ☐ IN LIEU OF THE ABOVE CONSTRUCTION SEQUENCE, THE CONTRACTOR MAY SUBMIT A PROPOSED CONSTRUCTION SEQUENCE FOR APPROVAL BY THE ENGINEER.

40.3 Preliminary Wall Plans Checklist

See Chapter 6.

Plan View

- ☐ Begin and end wall station and offset
- ☐ Station and offset at each bend in wall or change in taper or curvature
- ☐ Show reference line that wall parallels and distance if it is constant
- ☐ Show station tickmarks along reference line
- ☐ Show staging line
- ☐ Show roadway vertical curve info that affects wall envelope (top or bottom)
- ☐ North arrow

Elevation View

- ☐ Begin and end wall station and elevation (top and bottom)
- ☐ Top of leveling pad (2’ below groundline or bottom of ditch)
- ☐ Proposed ground line
- ☐ Stations and elevations at all wall vertexes and staging lines
- ☐ Dimension actual lengths of each wall segment and overall length of wall
- ☐ Staging line (joint)
- ☐ Top of coping (labeled), bottom of coping (not labeled, 1’ below top of coping)
- ☐ Top of wall (labeled)
- ☐ If abutment wall, show end bent with begin bridge station

Section Views

- ☐ Show sections for each unique situation (under bridge, with ditch, without ditch, different types of coping, etc.)

Other

- ☐ Curve data
- ☐ Expansion and contraction joints
- ☐ Approximate original ground line
- ☐ Horizontal and Vertical Scales

40.4 Plan and Elevation Checklist

See Chapter 8.

40.4.1 Notes

- ☐ ALL BENTS ARE PARALLEL (If the bridge is curved or a grade separation, specify which bent the other bents parallel)
- ☐ ANGLES ARE MEASURED TO THE TANGENT OF THE CONST. CL AT THE INTERSECTION OF B.F.P.R. OR CL BENT. (If any angles are measured off of a curve)
- ☐ END BENT PILES NOT SHOWN
- ☐ * SLOPE NORMAL TO END BENT
- ☐ ** STATIONS AND ELEVATIONS ARE ALONG PROFILE GRADE LINE AT THE INTERSECTION OF PROFILE GRADE LINE AND B.F.P.R. OR CL BENTS
- ☐ (T.O.C.) = TANGENT OF CURVE (as applicable)
- ☐ R DENOTES A RADIAL DIMENSION (as applicable)
- ☐ (ARC) DIMENSIONS ARE MEASURED ALONG [stationing line]. (as applicable)

40.4.2 Details

- ☐ Vertical Curve Data/Grade Data
- ☐ Horizontal Curve Data
- ☐ North arrow
- ☐ Superelevation transition data (for superelevation transitions on the bridge)
- ☐ Existing Bridge Serial No., Existing bridge ID No., Project PI No.
- ☐ 1 inch scale bar

Grade Separation – Roadway

- ☐ Slope paving Detail
- ☐ Section X-X (Slope paving weep hole detail)
- ☐ Slope Paving Detail at Wings

Grade Separation – Railroad

- ☐ RR Crossing ID
- ☐ Slope Paving Detail
- ☐ Section X-X (Slope paving weep hole detail)
- ☐ Slope Paving Detail at Wings
- ☐ Endfill control diagram with end roll and side ditch detail (control diagram)
- ☐ Construction Clearance Diagram
- ☐ Track Curve Data
- ☐ Track Profile Data

Stream Crossing

- ☐ Rip rap detail

40.4.3 Plan View

LINEWORK

Transverse Lines

- ☐ Paving Rest
- ☐ B.F.P.R.
- ☐ Centerline Intermediate Bent(s)
- ☐ Front Face of Wall (if applicable)
- ☐ Joints in barrier

Longitudinal Lines

- ☐ Reference line(s) (includes Construction Centerline, PGL, Construction Baseline, Bridge Centerline)
- ☐ Outside edges of bridge
- ☐ All visible edges of barrier and parapet
- ☐ Edges of sidewalk and raised median
- ☐ Construction Joints
- ☐ Temporary Shoring (if applicable)
- ☐ Utilities (if applicable)

Outlines

- ☐ Wingwalls
- ☐ Pile boxes
- ☐ End posts
- ☐ Existing bridge including centerline of bents

LABELS

- ☐ Begin and end bridge stations
- ☐ Angles of intersection at reference line and B.F.P.R. and CL Bents
- ☐ Bent numbers
- ☐ APPROXIMATE LIMITS OF EXISTING BRIDGE TO BE REMOVED
- ☐ Roadway destinations with arrows
- ☐ Profile Grade Line = Construction CL = CL Bridge, etc.
- ☐ Bearing
- ☐ PC Station and/or PT Station
- ☐ Existing and proposed utilities
- ☐ TEMPORARY SHORING (AS NECESSARY)
- ☐ Culverts or utilities not on the bridge but that would have an effect on the method of construction

DIMENSIONS

- ☐ Gutter to Gutter
- ☐ Inside face of barrier/parapet to edge of deck
- ☐ Gutter to reference line
- ☐ Sidewalk

- ☐ Raised median
- ☐ Edge of raised median to reference line
- ☐ Stage Construction widths

CASE-SPECIFIC ITEMS

Grade Separation – Roadway

Intersecting Roadway

- ☐ Width of existing and proposed travel lanes, medians, shoulders, barriers, and face of barrier/edge of travel way
- ☐ Ahead arrow
- ☐ Roadway destinations with arrows
- ☐ Profile Grade Line
- ☐ Bearing
- ☐ PC Station and/or PT Station
- ☐ Station and angle at the intersection of the bridge reference line

Bridge Plan View

- ☐ Minimum horizontal clearance from edges of roadway to the face of the bents
- ☐ Point of minimum vertical clearance (show for each intersecting roadway)
- ☐ Limits of slope paving

Grade Separation – Railroad

Intersecting Railroad

- ☐ Railroad centerline and rails
- ☐ Ahead arrow
- ☐ Label existing and future tracks
- ☐ Dimension distance between track centerlines
- ☐ Railroad Right of Way
- ☐ Bearing
- ☐ PC Station and/or PT Station
- ☐ Station and angle at the intersection of the bridge reference line and each track centerline.
- ☐ Distance to nearest Milepost (with Milepost No.) at the intersection of the bridge centerline and track centerline
- ☐ Minimum horizontal clearance from CL tracks to the face of the bents

Bridge Plan View

- ☐ Point of minimum vertical clearance
- ☐ Limits of slope paving

Stream Crossing

- ☐ Flow direction, ebb, or flood tide directions
- ☐ Show and label approximate edge of bank lines at normal flow
- ☐ Dimension LIMITS OF RIP RAP, TYP. on one corner

40.4.4 Elevation View

LINEWORK

Vertical Lines
- ☐ Front face of walls (if applicable)
- ☐ Joints in barrier
- ☐ Expansion joints at intermediate bents

Horizontal Lines
- ☐ Top of barrier or parapet
- ☐ Top of deck
- ☐ Bottom of deck
- ☐ Bottom of beam
- ☐ Original/proposed groundlines
- ☐ PGL extending past the bridge

Outlines
- ☐ Fence, hatched (can be partial length)
- ☐ Wingwalls
- ☐ Pile boxes
- ☐ End posts
- ☐ Architectural rail details (Texas; may be detailed partially)
- ☐ Cap, column, footing, and piles for intermediate bents
- ☐ Intermediate pile bents cut off below groundline
- ☐ Caissons to bottom of caisson
- ☐ Seal Concrete

LABELS
- ☐ Vertical line above B.F.P.R. and CL Bents with station above line and elevation below with ** between the top of the vertical line and the dimension leader line
- ☐ CL EXP. JOINT (placed on the dimension leader line at CL Bent)
- ☐ PGL (past end of the bridge)
- ☐ [type of fence] FENCE, TYP.
- ☐ EXP or FIX labels at ends of beams
- ☐ Bent numbers in circle below each bent
- ☐ Approximate original groundline (the natural groundline) and proposed groundline
- ☐ Hatch and shade existing fill to be removed and note – EXISTING FILL TO BE REMOVED. SEE ROADWAY PLANS FOR DETAILS AND PAYMENT.
- ☐ FRONT FACE MSE WALL X

☐ 2:1 end slope with *
☐ Bottom of footing elevations for spread footings (e.g. 209.0±) and pile footings (e.g. 209.00±)
☐ Bottom of seal concrete elevation (e.g. 201.0±)
☐ Caisson tip elevation (e.g. 212.0±)

DIMENSIONS:

☐ Total length of bridge measured along reference line
☐ Length of each span measured along reference line
☐ Length of each continuous unit

CASE-SPECIFIC ITEMS

Grade Separation – Roadway
☐ Paved limits of intersecting roadway
☐ Minimum and provided vertical clearances
☐ Label roadside barriers and guardrails

Grade Separation – Railroad
☐ Railroad rails and tie (exaggerated to show detail)
☐ Minimum and provided vertical clearance
☐ Centerline of track (labeled)

Stream Crossing
☐ Flood stage elevations at design flood, 100, and 500 years
☐ Abnormal flood elevations
☐ High and low tide elevations
☐ Horizontal and vertical clearances for navigable waterways

40.5 Special Design Parapet Details Checklist

See Chapter 11.

NOTES:

LABELS:

DIMENSIONS:

DETAILS:

REINFORCEMENT:

40.6 Deck Drainage System Details Checklist

See Chapter 12.

NOTES:

LABELS:

DIMENSIONS:

DETAILS:

REINFORCEMENT:

40.7 Concrete Superstructure: Deck Plan Checklist

See Chapter 14.

LINE WORK:
Outlines
☐ Wingwalls
☐ Pile boxes
☐ End posts
☐ Top flange of beams (bulb-tees are also shaded)

LABELS:
☐ Reference Line ID
☐ Span ID
☐ Beam ID
☐ CL Bent ID
☐ B.F.P.R. ID
☐ Expansion Joints in Barrier/Parapet

DIMENSIONS:
☐ Paving rest width
☐ Endwall interior
☐ Endwall exterior
☐ Diaphragm
☐ Edge beam
☐ Barrier, parapet, sidewalk and raised median
☐ Joint spacing in barrier or parapet (no joints in sidewalk or median unless there is a joint in deck)
☐ Length of endpost
☐ Fence post spacing
☐ Gutter to gutter
☐ Location of longitudinal construction joints (staged construction)
☐ Backwall
☐ Light post spacing

NOTES:
☐ MINIMUM LENGTH OF LAP SPLICES

DETAILS:
☐ Joint details
☐ Chart of T1 & T2 for T beam spans
☐ Barrier/Parapet details
☐ Barrier Transition Details
☐ Expansion Joint in Barrier Detail
☐ Median details
☐ Deck Drain details

☐ Skewed Corner Detail (if skew of 75 degrees or less)
☐ Bar Bending detail at Skewed Joint (if applicable)
☐ Superstructure Quantities Table

- ☐ END POST CONCRETE AND BAR REINFORCING STEEL INCLUDED IN END SPAN QUANTITIES.
- ☐ 600 BARS QUANTITY INCLUDED IN SPAN(S) X.

REINFORCEMENT:
Longitudinal Reinforcement
☐ Deck (sample showing laps, 400)
☐ 600 bars with length
☐ Barrier or parapet (call out bar number only, do not show bar, 502X)
☐ Raised Median (call out only if different from longitudinal deck reinforcement, 400x)

Transverse bars
☐ Varying Bars in Sidewalk or median (or in separate detail) if not constant width

40.8 Concrete Superstructure: Deck Sections Checklist

See Chapter 15.

Misc deck section DETAILS:

- ☐ Crown detail
- ☐ Joint details
- ☐ Sections through sidewalk and median

40.8.1 Partial Section thru Slab

Section shall be located in the top left corner of the drawing.

NOTES:

- ☐ DIMENSION “D” IS MEASURED FROM TOP OF SLAB TO TOP OF BEAMS AT CENTERLINE BEARING. VARY “D” BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTION AND VERTICAL CURVE (if any). MAINTAIN A CONSTANT SLAB THICKNESS OF X”. (slab thickness must match what is shown in drawing)
- ☐ Minimum length of lap splices
- ☐ Placement of 400 and 500 bars in curved bridges

LABELS:

- ☐ Beam ID
- ☐ Reference line ID
- ☐ Cross slope
- ☐ Sidewalk Slope
- ☐ Utilities
- ☐ PGL (can be shown in crown detail)
- ☐ Sidewalk and raised median cross slope

DIMENSIONS:

- ☐ Slab thickness
- ☐ Overhang thickness
- ☐ Slab Cover (Top & Bottom)
- ☐ Overhang width
- ☐ Beam spacing
- ☐ “D” dimension
- ☐ Gutter to Gutter
- ☐ Width to Stages (Staged Construction)
- ☐ Gutter line to reference line
- ☐ Reference line to cut line, construction joint, pour strip
- ☐ Widths of Barrier, parapet, sidewalk, raised median, pour strips
- ☐ Outside edge of slab to outside face of barrier and parapet
- ☐ Parapet height above sidewalk
- ☐ Sidewalk thickness (at face of parapet and at curb face)
- ☐ Lap splices
- ☐ From edge of slab to first longitudinal bar in the bottom mat

REINFORCEMENT:
Transverse slab reinforcement bars:
☐ Slab top bar – Bar number and Spacing (500)
☐ Slab bottom bar – Bar number “UNDER EVERY” Bar number for top transverse bar (501)
☐ Additional Overhang reinforcement bar (if required)

Longitudinal slab reinforcement bars:
☐ top temperature – filled circle (400)
☐ top continuity – open circle (600)

Bottom Distribution Steel:
☐ Number of bottom distribution slab reinforcement bars (400)
☐ Spacing to first bar from beam centerline
☐ Location and number of bars shown in overhangs (500x)

40.8.2 Partial Section thru Diaphragm - PSC Beams

Partial Section thru Diaphragm shall be attached to the right side of Partial Section thru Slab.

LABELS:
☐ Reference Line ID
☐ Cross Slope
☐ Slope on Sidewalks & Raised Medians
☐ Utilities
☐ REQUIRED CONSTRUCTION JOINT PARALLEL WITH DECK under barrier
☐ Omit Diaphragm (if applicable)
☐ Beam ID
☐ CL ¾” TRIANGULAR DRIP BEAD FULL LENGTH OF BRIDGE
☐ PGL

DIMENSIONS:
☐ Beam spacing
☐ Overhang
☐ Edge of deck to CL drip bead (3”)
☐ Parapet
☐ Front of barrier to edge of deck

DETAILS:
☐ Show Opening size and location of utilities

REINFORCEMENT:
☐ Show reinforcement around utility openings. Bars are in each face.
☐ Bars in top of diaphragm
☐ Bars in middle of diaphragm
☐ Bars in bottom of diaphragm
☐ Stirrups with location and number

☐ Edge of top flange to first stirrup
☐ Stirrups under flange of bulb tees
☐ Plain bar (overlapping in web if diaphragms staggered)

40.8.3 Partial Section thru Endwall

If possible, Partial Section thru Endwall shall be aligned directly below Partial Section thru Slab.

NOTES:
☐ BARS 4xx, 5xx, NOT SHOWN (endwall stirrups, fillet bars, paving rest stirrup, back face bar and paving rest bar)

LABELS:
☐ Reference line ID
☐ Cross slope
☐ Slope on Sidewalk & Median
☐ Construction Joints
☐ Utilities
☐ ½“ PREFORMED JOINT FILLER between wingwall and endwall
☐ ½” PREFORMED JOINT FILLER between bottom of endwall and end bent cap
☐ 1” PREFORMED FOAM JOINT FILLER AROUND PAD, TYP.
☐ ¾” CHAMFER in bottom corner, two sides

DIMENSIONS:
☐ End post height
☐ End post width
☐ inside face of wingwall to outside face of end post
☐ inside face of end post to reference line

DETAILS:
☐ Opening size and Location of Utilities

REINFORCEMENT:
☐ 900 bars
☐ Bars around utility openings

40.8.4 Partial Section thru Edge Beam

Partial Section thru Edge Beam shall be attached to the right side of Partial Section thru Endwall.

NOTES:
☐ BEARING PADS NOT SHOWN

LABELS:
☐ Reference Line ID
☐ Cross Slope
☐ Slope on Sidewalks & Raised Medians

☐ Utilities
☐ POUR EDGE BEAM FLUSH WITH OUTSIDE OF BEAM

DIMENSIONS:
None

REINFORCEMENT:
☐ Bars in top of edge beam
☐ Continuous bar in bottom of edge beam
☐ Bar in bottom of edge beam
☐ Continuous bars in middle of edge beam
☐ Bars in middle of edge beam
☐ Edge beam stirrups and dimensions for placement
☐ Edge beam stirrups under flange of bulb tee
☐ Additional bars in front of exterior beam for wide-flanged beams

40.9 Concrete Superstructure: Framing Plan Checklist

See Chapter 17.

LINE WORK:

Longitudinal lines:
- ☐ Centerline Beam
- ☐ Reference Line

Transverse lines:
- ☐ B.F.P.R.
- ☐ CL Bent
- ☐ Diaphragms

NOTES:
- ☐ Description of the beam layout

LABELS:
- ☐ B.F.P.R.
- ☐ Centerline Beam
- ☐ Reference Line
- ☐ Centerline Bent
- ☐ Centerline Diaphragm or cross frame

Angles of intersection between:
- ☐ B.F.P.R. and Centerline Beam
- ☐ Centerline Bent and Centerline Beam
- ☐ Centerline Beam and Diaphragm

DIMENSIONS (shown in feet to two decimal places):

Along B.F.P.R. and Centerline of bents:
- ☐ Between beams
- ☐ Between beams and Reference Line

Along centerline of beams:
- ☐ Between B.F.P.R. and Diaphragm
- ☐ Between Diaphragm and centerline of bent
- ☐ Between centerline of bent and Diaphragm
- ☐ Between Diaphragm and B.F.P.R.

40.10 Concrete Superstructure: PSC Beam Details Checklist

See Chapter 18.

Modify the basic drawings as follows:

NOTES:

- ☐ Number and size of strands (e.g. “34 - 1/2” DIAMETER SPECIAL LOW-RELAXATION STRANDS”)
- ☐ Strand diameter given in notes matches strand diameter given under beam sections
- ☐ Number of strands given in notes matches number in beam sections
- ☐ Pretension force per strand (Ultimate Strength x Area of Strand x Multiplier for allowable jacking force, value to nearest pound) (½” special area = 0.167, 33,818 lbs; 0.6” area = 0.217, 43,943 lbs)
- ☐ Total jacking force for the beam (Force per stand to nearest pound x Number of Strands)
- ☐ Prestressing force for the beam after losses (From the design calculations, value to nearest pound)
- ☐ Concrete release strength
- ☐ Nominal (28 day) concrete strength
- ☐ Allowable tension in concrete

LABELS:

- ☐ Modify labels as appropriate in elevation view for “B.F.P.R. OR CL BENT”, “B.F.P.R.”, or “CL BENT”
- ☐ Deflection Data non-composite (ΔNC) and composite (ΔC) in inches.
- ☐ Draped strands
- ☐ CL low friction type hold down (omit if no drape)

DIMENSIONS:

Detail or tabulate:

- ☐ Span length
- ☐ Beam length
- ☐ Centerline bearing to centerline bearing
- ☐ Centerline bent or B.F.P.R. to end of beam
- ☐ End beam to centerline bearing
- ☐ Centerline bent to centerline bearing
- ☐ Dimension to diaphragm bar holes (from beam midpoint and from top of beam)
- ☐ Dimension to draped strand hold down point (if hold down is not at midpoint of beam)
- ☐ Dimension to top of drape in section view at beam end

DETAILS:

- ☐ Add recess Detail for Diaphragm End Bars
- ☐ Add Bevel Detail (top flange beveling) (if applicable) w/ appropriate skew
- ☐ Show strand locations – Sections at Midpoint and End
- ☐ If strands are not draped, ensure that strands do not conflict with bearing chase

REINFORCEMENT:

Possible modifications include:

- ☐ Shear reinforcement – detail spacing and location
- ☐ Update shear reinforcement bar size near end of beam if needed (4 locations: Elevation, Section at End, Reinforcement details, Reinforcement notes)
- ☐ Check that strands in elevation view (draped and straight) match what is shown at end of beam
- ☐ Callout for number of raised strands in elevation matches number shown for end of beam

40.11 Concrete Superstructure: Neoprene Pad Details

See Chapter 19.

Modify basic drawing, starting with appropriate sheet for

- pad without beveled shim plates,
- pad with beveled shim plates, or
- pad under T-beam (no sealing rib)

DETAILS

☐ Choose correct direction of skew for Plan at end bent
☐ Section at endwall should show beveled shim plate as necessary
☐ Do not modify number of internal plates shown in section view
☐ Delete beveled shim plate sections that do not apply
☐ Add unreinforced pad if needed
☐ Design Shear Deflection to nearest 1/16”
☐ Bearing pad thickness to eighth of inch
☐ Shim plate thicknesses to nearest eighth of inch
☐ Design loads to nearest kip
☐ If length of pad > 10” make sure XDIST on PSC beam sheet is > 7”

NOTES

Modify BEARING PADS HAVE BEEN DESIGNED note to call out only the pads with plates if using unreinforced pads

40.12 Steel Superstructure: Deck Plan Checklist

See Chapter 21.

LINE WORK:

Transverse Lines

- ☐ Front Face of backwall
- ☐ B.F.P.R.
- ☐ Fillet at endwall
- ☐ Edge beam
- ☐ Centerline Bent
- ☐ Centerline Expansion and Dummy joints in deck, barrier, parapet, sidewalk and raised median
- ☐ Backwall

Longitudinal Lines

- ☐ Reference Line
- ☐ Outside edges of bridge
- ☐ Longitudinal construction joints (Staged Construction)
- ☐ Inside and outside edges of barrier, parapet, sidewalk and raised median
- ☐ Centerline Beams
- ☐ Top flange of beams
- ☐ Outlines
- ☐ Wingwalls
- ☐ Pile boxes
- ☐ End posts

LABELS:

- ☐ Reference Line ID
- ☐ Span ID
- ☐ Beam ID
- ☐ CL Bent ID
- ☐ B.F.P.R. ID
- ☐ Begin Bridge, STA. XX+XX.XX
- ☐ End Bridge, STA XX+XX.XX
- ☐ Angles of Intersection (Bents, Reference Line)
- ☐ Longitudinal bar labels

DIMENSIONS:

- ☐ Paving rest
- ☐ Endwall
  - ☐ Interior
  - ☐ Exterior
- ☐ Backwall
- ☐ Fillet
- ☐ Edge beam
- ☐ barrier, parapet, sidewalk and raised median

- ☐ joint spacing in barrier, parapet, sidewalk, raised median, and light post
- ☐ Length of end post
- ☐ Fence post spacing
- ☐ Gutter to gutter
- ☐ Location of Longitudinal Construction Joints (Staged Construction)
- ☐ Out to Out
- ☐ Location of Diaphragms
- ☐ Length of 600 bar (Typically a dimension to one end of the bar from a CL bent)
- ☐ Length of lap splices

NOTES:

- ☐ END POST CONCRETE AND BAR REINFORCEMENT STEEL INCLUDED IN END SPANS.
- ☐ 600 BARS INCLUDED IN SPAN X
- ☐ MINIMUM LENGTH OF LAP SPLICES

DETAILS:

- ☐ Superstructure Quantities Table
- ☐ Sections thru endwall and edge beam (if scale permits)
- ☐ Joint details
- ☐ Barrier/Parapet details
- ☐ Barrier Transition Details
- ☐ Expansion Joint in Barrier Detail
- ☐ Median details
- ☐ Deck Drain details
- ☐ Skewed Corner Detail (if applicable)
- ☐ Bar Bending detail at Skewed Joint (if applicable)

REINFORCEMENT

- ☐ Longitudinal Reinforcement
  - ☐ Deck
  - ☐ Sidewalk
  - ☐ Raised Median
  - ☐ 600 bars
- ☐ Transverse bars
  - ☐ Varying Bars in Sidewalk or median
- ☐ Skewed Corner Detail (if applicable)
- ☐ Bar Bending detail at Skewed Joint (if applicable)

40.13 Steel Superstructure: Deck Sections Checklist

See Chapter 23.

40.13.1 Partial Section thru Slab

Section shall be located in the top left corner of the drawing.

NOTES:

☐ “D” Dimension Note
☐ Note regarding any required temporary bracing.
☐ Minimum length of lap splices

LABELS:

☐ CL 3/4” TRIANGULAR DRIP BEAD FULL LENGTH OF BRIDGE
☐ Beam ID
☐ Reference line ID
☐ Cross slope
☐ Sidewalk slope

DIMENSIONS:

☐ Slab thickness
☐ Overhang thickness
☐ Slab Cover (Top & Bottom)
☐ Overhang width
☐ Beam spacing
☐ “D” dimension
☐ Gutter to Gutter
☐ Width to Stages (Staged Construction)
☐ Gutter line to reference line
☐ Reference line to cut line, construction joint, pour strip
☐ Widths of Barrier, parapet, sidewalk, raised median, pour strips
☐ Outside edge of slab to outside face of barrier and parapet
☐ Outside edge of slab to drip bead
☐ Parapet above sidewalk
☐ Sidewalk thickness

DETAILS:

☐ Barriers/Parapets
☐ Sidewalks
☐ Medians
☐ Joints
☐ Fences
☐ Utilities/Hangers
☐ Crown Detail

REINFORCEMENT:
- ☐ Transverse slab reinforcement bars (Top & Bottom)
  - ☐ top bar – Bar number and Spacing
  - ☐ bottom bar – Bar number “UNDER EACH” Bar number for top transverse bar
- ☐ Additional Overhang reinforcement bar (if required)
- ☐ Longitudinal slab reinforcement bars
  - ☐ top temperature – filled circle
  - ☐ top continuity – open circle
  - ☐ bottom distribution – filled circle
- ☐ Bottom Distribution Steel
  - ☐ Number of bottom distribution slab reinforcement bars (in mid-half and outer quarters)
  - ☐ Spacing to first bar in outer quarter

40.13.2 Partial Section thru Cross Frames Partial Section thru Cross Frames shall be attached to the Right Side of Partial Section thru Slab.

- ☐ Provide notes, labels etc. as for the Section through the slab.
- ☐ Show and dimension all utility conduits

40.13.2.1 Partial Section thru Edge Beam

Partial Section thru Edge Beam shall be attached to the right side of Partial Section thru Endwall.

NOTES:
☐ BEARING ASSEMBLES NOT SHOWN

LABELS:
☐ SWEDGED BOLTS FOR EDGE BEAM REINFORCEMENT AT OUTSIDE BEAMS

DIMENSIONS:
☐ Edge of beam to first stirrup
☐ Stirrup spacing

DETAILS:

REINFORCEMENT:
- ☐ Main transverse steel in edge beam
- ☐ Stirrup steel

40.13.3 Partial Section thru End Wall

Make a copy of 40.13.3 and change all “edge beams” to “endwall”

40.14 Steel Superstructure: Miscellaneous Superstructure Details Checklist

See Chapter 24.

The appropriate Superstructure details should be placed on drawings as follows:

- ☐ Deck Plan Drawings
- ☐ Expansion joint
- ☐ Construction joint
- ☐ Expansion joint in barrier, parapet, sidewalk, parapet and/or median
- ☐ Barrier transition
- ☐ Barrier reinforcement
- ☐ Sidewalk and parapet
- ☐ Raised median
- ☐ Curb face
- ☐ Deck drain
- ☐ Bar bending at skewed joints
- ☐ Bars in acute-angled corners of deck at intermediate bents
- ☐ Fence Elevation
- ☐ Fence Post Detail
- ☐ Deck Sections Drawing
- ☐ Utility hanger
- ☐ Sections through:
- ☐ Edgebeam
- ☐ Diaphragm
- ☐ Crown detail
- ☐ Light standard: Plan, elevation, and details

40.15 Concrete Parapet Details Checklist

Same as for concrete superstructure. See checklist in Section 40.5.

40.16 Steel Superstructure: Beam Layout (Framing Plan) Checklist

See Chapter 28.

LINE WORK:
- ☐ Longitudinal lines
- ☐ Centerline Beam
- ☐ Reference Line
- ☐ Transverse lines

NOTES:
- ☐ Description of the beam layout

LABELS:
- ☐ B.F.P.R.
- ☐ Centerline Bent
- ☐ Centerline Diaphragm or cross frame
- ☐ Angles of intersection between:
  - ☐ B.F.P.R. and Centerline Beam
  - ☐ Centerline Bent and Centerline Beam
  - ☐ Centerline Beam and Diaphragm or Cross Frame
- ☐ Span ID
- ☐ Reference line ID
- ☐ CL Bearing
- ☐ Transverse stiffeners

DIMENSIONS:
- ☐ Along B.F.P.R. and Centerline of bents
- ☐ Between beams
- ☐ Between beams and Reference Line
- ☐ Along centerline of beams
- ☐ Between B.F.P.R. and Diaphragm or Cross Frame
- ☐ Between Diaphragm or Cross Frame and centerline of bent
- ☐ Between centerline of bent and Diaphragm or Cross Frame
- ☐ Between Diaphragm or Cross Frame and B.F.P.R.
- ☐ Transverse Stiffeners

DETAILS:

REINFORCEMENT:

40.17 Steel Superstructure: Steel Beam Details Checklist

See Chapter 27.

LINEWORK:
- ☐ Top flange
- ☐ Web
- ☐ Bottom flange
- ☐ Stiffeners

NOTES:
- ☐ Camber compensates for total dead load deflection and effects of vertical curve, e.g.: CAMBER ORDINATE SHOWN INCLUDES DEAD LOAD DEFLECTION DUE TO THE BEAM, SLAB, COPING, PARAPET, SIDEWALK AND CROSS FRAMES AND INCLUDES THE VERTICAL CURVE ORDINATE.
- ☐ Charpy V-notch (CVN) note for main tension members: [CVN] INDICATES COMPONENT IS A MAIN LOAD CARRYING MEMBER SUBJECT TO TENSILE STRESS AND SHALL MEET THE CHARPY V-NOTCH TEST REQUIREMENTS AS SPECIFIED IN SECTION 851 OF THE GEORGIA DOT SPECIFICATIONS.
- ☐ Note for Structural Steel Type(s) e.g.: STRUCTURAL STEEL FOR ALL TOP AND BOTTOM FLANGES AND WEBS SHALL CONFORM TO ASTM A709 GRADE 50. ALL OTHER STRUCTURAL STEEL SHALL CONFORM TO ASTM A709 GRADE 36.

LABELS:
- ☐ Centerline beam
- ☐ Bent ID
- ☐ Skew angles (beam relative to bents)
- ☐ Field splice locations
- ☐ Plate sizes
- ☐ CVN label ID
- ☐ Weld labels
- ☐ CL Bearing
- ☐ Shop splice locations

DIMENSIONS:

- ☐ W shape – length and designation
- ☐ Plates – length and width or thickness for top flange, web and bottom flange
- ☐ Shear connectors
- ☐ End of beam to first row of shear connectors
- ☐ Shear connector spacing
- ☐ Last row of shear connectors to end of beam
- ☐ Splices
- ☐ End of beam to centerline of splice
- ☐ Centerline of splice to centerline of bent
- ☐ End of beam to centerline of bearing

☐ Centerline of bearing to centerline of bearing
☐ Total beam length
☐ End of beam to centerline of web stiffeners

DETAILS:
☐ Beam grade and camber ordinate diagram
☐ Table of dead load deflections by pour
☐ Beam Dead Load Deflection Diagram
☐ Diaphragm or Cross Frame details
☐ Stiffener details
☐ Shear Connector details
☐ Shop weld preparation and procedures

REINFORCEMENT:
Not Applicable

40.18 Steel Superstructure: Steel Plate Bearing Details Checklist

See Chapter 30.

40.18.1 Bearing Assembly Plan View

LINE WORK:
- ☐ B.F.P.R. and / or edge of cap
- ☐ Centerline beam
- ☐ Centerline bearing
- ☐ Outline of beam bottom flange
- ☐ Outline of endwall at end bents
- ☐ Hole or slot outlines
- ☐ Outline of plates
- ☐ Outline of backwall at end bents

NOTES:
Not applicable

LABELS:
- ☐ B.F.P.R.
- ☐ Centerline bearing
- ☐ Centerline beam
- ☐ Endwall thickness
- ☐ Fixed or expansion (exp) type
- ☐ Angle between centerline beam and centerline bearing or B.F.P.R.
- ☐ Backwall thickness

DIMENSIONS:
- ☐ Between Centerline bent or B.F.P.R. and Centerline bearing

DETAILS:
- ☐ Anchor bolt

REINFORCEMENT:
Not applicable

40.18.2 Bearing Assembly Elevation View

LINE WORK:
- ☐ Partial view of beam showing end of beam and bottom flange
- ☐ Partial view of endwall or backwall at end bents
- ☐ Cap
- ☐ Centerline bearing
- ☐ Outlines of neoprene pad (if included), bearing plate, self-lubricating plate (if included), and sole plate

NOTES:
☐ Notes on 1/8” Neoprene pad

LABELS:
☐ Centerline bearing
☐ Centerline bent
☐ Fixed or expansion (exp) type
☐ Weld between sole plate and beam bottom flange
☐ Hole or slot size in beam bottom flange
☐ Plate or neoprene pad type (number)

DIMENSIONS:
☐ Bearing table with design loads

DETAILS:
Not applicable

REINFORCEMENT:
Not applicable

40.18.3 Neoprene Pad and Plate Details

LINE WORK:

☐ Outline of plates or neoprene pad in plan and elevation
☐ Outline of holes or slots
☐ Centerlines of neoprene pads or plates
☐ Centerline of holes or slots

NOTES:
Not applicable

LABELS:
☐ Plate or neoprene pad number
☐ Centerline bearing
☐ Centerline beam
☐ Hole or slot sizes

DIMENSIONS:
☐ Plate or neoprene pad plan out-to-out dimensions
☐ Plate or neoprene pad thickness
☐ Location of holes or slots from edge and centerlines
☐ Radius of curved surfaces for sole plates or self-lubricating bronze plates.

DETAILS:
Not applicable

REINFORCEMENT:
Not applicable

40.18.4 Notes

- ☐ Material requirements for bearing, shim, and sole plates
- ☐ Material requirements for self-lubricating plates
- ☐ Anchor bolt size and embedment into concrete cap
- ☐ Anchor bolt washer size and nut type
- ☐ Material requirements for anchor bolts, including minimum projection above top of beam flange.
- ☐ Material requirements for neoprene pads.

40.19 End Bent Checklist

See Chapter 32.

NOTES:
- ☐ POUR WINGWALLS MONOLITHICALLY WITH CAP
- ☐ SEE GEORGIA STANDARD 9037 FOR DRAINAGE DETAILS AT END BENT.

DETAILS
- ☐ Section through cap at pile
- ☐ Section through cap between piles
- ☐ Substructure quantities
- ☐ Anchor Bolt layout (if needed)

Plan Driving Objective:
- ☐ ALL PILES SHALL BE (PSC, 18 IN SQ) (STEEL H, HP 14 X 73) (METAL SHELL, 18 IN OD)
- ☐ DRIVE ALL PILES TO A DRIVING RESISTANCE OF XX TONS AFTER A MINIMUM TIP ELEVATION OF XXX IS ACHIEVED.

Small P&E for other end bent (if it is not on a separate sheet) showing:
- ☐ Beam ID
- ☐ End Bridge Station
- ☐ Ahead arrow

  Elevations
  - ☐ Top of wings
  - ☐ Cap steps
  - ☐ Bottom of cap

40.19.1 Plan View

LINE WORK:
- ☐ Piles (solid in cutaway, otherwise dashed)

DIMENSIONS:
- ☐ Wingwall length and width
- ☐ Pile box length and width (usually 2’-6”)
- ☐ End of wing to center of end pile
- ☐ Edge of pile box to center of pile
- ☐ Face of wing to edge of pile box
- ☐ Width of cap
- ☐ Distance from B.F.P.R. to centerline bearing
- ☐ Distance from centerline bearing to front face of cap
- ☐ Dimensions of fillet (2’ x 2’)
- ☐ Paving rest, if backwall present
- ☐ Backwall
- ☐ Distance from referenced line to nearest beam centerline at B.F.P.R. (if different)

Dimensions along front face of cap:
- ☐ CL beam at CL bearing to CL beam at front face of cap (if bent is skewed)
- ☐ Inside face of wing to CL exterior beam
- ☐ Beam spacing
- ☐ Beam spacing in middle broken by reference line
- ☐ Inside face of wing to cap step
- ☐ Cap steps
- ☐ Length of cap from inside face of wing to inside face of wing

LABELS:
- ☐ Begin (or end) bridge station at B.F.P.R. and reference line
- ☐ Reference line
- ☐ B.F.P.R.
- ☐ CL Bearing
- ☐ Beam ID's
- ☐ Ahead arrow
- ☐ FORM 3" DIA. X 12" DEEP HOLE FOR DOWEL BAR, TYP.
- ☐ Paving rest, if backwall present
- ☐ Backwall

Angles of intersection between:
- ☐ B.F.P.R. and Reference line
- ☐ CL Bearing and Centerline of beams
- ☐ Front face of wingwall and cap

REINFORCEMENT:
- ☐ Pile box stirrups (412) and corner bars (413)
- ☐ Wingwall vertical (510) and horizontal (511) with total number, number each face equally spaced
- ☐ Fillet bars, 3, TMB (610)
- ☐ Main cap (1010)
- ☐ Cap stirrups (410 over caps; 411 between caps)

40.19.2 Elevation View (Below Plan View with Piles Aligned Vertically)

LINE WORK:
- ☐ Wingwalls (oblique for skews)
- ☐ Pile box
- ☐ Piles (solid in cutaway, otherwise dashed in cap)

NOTES:
- ☐ WINGWALL PILES NOT SHOWN

LABELS:
Elevations:
- ☐ Top of wingwalls

- ☐ Cap steps
- ☐ Bottom of cap (level, or at corner and construction joints)

DIMENSIONS:

- ☐ Inside face of wingwall to centerline pile
- ☐ Centerline pile to centerline pile
- ☐ Centerline pile to Inside face of wingwall
- ☐ Inside face of wingwall to Inside face of wingwall
- ☐ Height of pile box
- ☐ Utility block-outs (if backwall present)

REINFORCEMENT:

- ☐ Main cap reinforcement (4-1010)
- ☐ Stirrups in exterior (411) located from inside face of wing
- ☐ Stirrups between piles (411) located from centerline piles
- ☐ Stirrups over piles (410)
- ☐ Reinforcement around utility block-outs (backwalls)

40.20 Intermediate Bent Checklist

See Chapter 33.

NOTES:

☐ SPREAD FOOTINGS ARE DESIGNED FOR A BEARING PRESSURE OF * TONS PER SQUARE FOOT.
☐ BENT CAP IS SYMETRICAL ABOUT CL CAP

DETAILS:

☐ Quantities Table
☐ Sections thru cap showing max reinforcement in top (may also show double stirrup)
☐ Section thru cap showing max reinforcement in bottom
☐ Section thru column (clearance is 3 5/8" if column and cap are same width, otherwise 2") (column bar in corner)
☐ Footing – if the footing isn't symmetrical or for pile footings to show pile locations
☐ Bar bundling (if two layers of reinforcement in cap)
☐ Anchor bolt layout (if not shown on plan view)

☐ PLAN DRIVING OBJECTIVE
  ☐ ALL PILES SHALL BE (PSC, 18 IN SQ) (STEEL H, HP 14 X 73) (METAL SHELL, 18 IN OD)
  ☐ ALL PILES SHALL BE DRIVEN TO A DRIVING RESISTANCE OF * TONS AFTER A MINIMUM TIP ELEVATION OF * IS ACHIEVED.

40.20.1 Plan View – Top Left Corner of the Drawing

LABELS:

☐ CL Bearing
☐ CL Bent
☐ Ahead arrow (footing details only)
☐ FORM 3" DIAMETER X 12" DEEP HOLE FOR DOWEL BAR, TYP.
☐ Beam ID's
☐ Station at reference line and CL bent
☐ Angle of Centerline Bent and Reference line
☐ Angle of Centerline Bent and Centerline of beams

DIMENSIONS:

☐ Width of cap
☐ CL Bent to face of cap
☐ CL Bent to CL bearing
☐ End of cap to CL Bearing at CL Bent for exterior beams
☐ Beam spacing along CL Bent
☐ CL Beam at CL Bent to Reference line at CL Bent
☐ Cap steps
☐ Length of cap

REINFORCEMENT:

none

40.20.2 Elevation View – Centered Below the Plan View

LINE WORK:
- ☐ Top of cap
- ☐ Top of cap (ahead or back, if riser present)
- ☐ Bottom of cap
- ☐ Columns
- ☐ Footings
- ☐ Piles (solid in cutaway, dashed in footing otherwise)

DIMENSIONS:
- ☐ End of cap to CL column
- ☐ Column spacing
- ☐ Width of column
- ☐ CL column to face of column
- ☐ Face of column to edge of footing
- ☐ Depth of footing
- ☐ Width of footing
- ☐ Depth of pile in footing (1’-0”)
- ☐ Stirrup spacing

LABELS:
- ☐ Column numbers
- ☐ CL Cap
- ☐ REQUIRED CONSTRUCTION JOINT, TYP. At top of column
- ☐ *CONSTRUCTION JOINT, TYP. 4” above top of footing
- ☐ Caisson tip elevation
- ☐ Top of Caisson elevation (if column sits on caisson)

Elevations:
- ☐ Cap steps
- ☐ Bottom of cap (at ends and faces of columns)
- ☐ Bottom of footing

NOTES:

- ☐ *AT CONTRACTOR’S OPTION CONSTRUCTION JOINT MAY BE RELOCATED TO TOP OF FOOTING
- ☐ BARS 421 NOT SHOWN (bars in face of cap)

REINFORCEMENT:

Cap:
- ☐ Moment with cutoffs located (1122, 1123) in top
- ☐ Moment with cutoffs located in bottom

- ☐ Shear, all spacing located (520), show doubled stirrups as needed
- ☐ Nominal reinforcement in cap risers or steps

Column:

- ☐ Moment with lap lengths (1121)
- ☐ Shear (420) with number and spacing

Footing:

- ☐ J bars (1120) (9’-0” lap for No. 11’s)
- ☐ Moment (hooks in pile footings, no hooks in spread footings) with clearance above piles, clearance to edge

40.21 As-Built Foundation Information Checklist

See Chapter 35.

LINE WORK:

NOTES:
- ☐ Centerline footing = centerline column
- ☐ Instructions to field engineer
- ☐ PROJECT ENGINEER and DATE
- ☐ AREA CODE AND TELEPHONE NUMBER

LABELS:

DIMENSIONS:

DETAILS:

REINFORCEMENT:

Pile end bent table

- ☐ Bent number
- ☐ Left Wingwall
  - ☐ End
  - ☐ Middle
- ☐ Beam 1
- ☐ Battered pile
- ☐ Beam 2

Pile intermediate bent table

- ☐ Bent number
- ☐ Pile location by Beam number

Tower Pile Bent

- ☐ Pile Tip Elevations Table that has the following data
- ☐ Bent number
- ☐ Pile location
- ☐ Back and Ahead
- ☐ Beam number

Concrete bent with caisson table:

- ☐ Bent number
- ☐ Top and bottom of caisson

- ☐ Caisson number

Table for spread footings

- ☐ Bent number
- ☐ Column number
- ☐ Footing elevation
- ☐ Seal elevation (if present)

Concrete Bent with pile footings table:

- ☐ Bent number
- ☐ Column number
- ☐ Footing elevation
- ☐ Seal elevation
- ☐ Pile Number

Footing Elevation Detail

- ☐ Footing
- ☐ Column
- ☐ Seal (if present)

Footing plan view

- ☐ Outline of footing
- ☐ Ahead arrow
- ☐ Pile numbers
- ☐ Represent each pile pattern on bridge

40.22 Wall Plans for Contractor Designed Walls Checklist

See Chapter 37.

40.22.1 Plan View

LINE WORK:

- ☐ Reference line for wall construction
- ☐ Front face of wall
- ☐ Back face of wall panel
- ☐ Temporary shoring or walls as needed for construction
- ☐ Utility centerlines

FOR WALLS AT ENDS OF BRIDGES:

- ☐ Centerline of Bridge
- ☐ Outline of End bents of bridge

NOTES:

LABELS:

- ☐ Reference Line
- ☐ Front Face of Wall
- ☐ Begin Wall No. X
- ☐ End Wall No. X
- ☐ Breaks in wall alignment or changes in Reference line for wall construction
- ☐ North Arrow
- ☐ FOR WALLS AT ENDS OF BRIDGES
- ☐ Station Equalities for bridge centerline and wall reference lines

DIMENSIONS:

DETAILS:

REINFORCEMENT:

40.22.2 Elevation View

LINE WORK:

- ☐ Top of Coping
- ☐ Proposed Grade Lines (Top of Wall, Bottom of Wall)
- ☐ Existing Grade Line
- ☐ Top of Leveling Pad

- ☐ Breaks in Wall (Vertical Line)
- ☐ CL Utility crossings
- ☐ Drainage structures immediately behind wall
- ☐ Slip Joints

NOTES:

- ☐ "STATIONS ARE MEASURED ALONG ____"
- ☐ For Top Elevations "* ELEVATIONS SHOWN ARE AT THE TOP OF COPING AT THE FRONT FACE OF WALL" (OR SIMILAR NOTE)
- ☐ For Bottom Elevations "** ELEVATIONS SHOWN ARE THE MAXIMUM ELEVATION AT THE TOP OF LEVELING PAD" (OR SIMILAR NOTE)

LABELS:

- ☐ "Looking at ____ Face of Wall" (under Elevation Title)
- ☐ Proposed Grade
- ☐ Top of Coping, Sidewalk, etc.
- ☐ Top of Leveling Pad
- ☐ Begin and End Wall stations and elevations (check that stations match Plan View)
- ☐ 50 ft. Stations and Elevations, breaks in wall profile, staging locations
- ☐ Elevation Ladder Bars
- ☐ Delineation of Stages (Stage I, Stage II, etc.)
- ☐ Vertical Curve data/Grade data
- ☐ Horizontal Curve data
- ☐ Expansion and contraction joints
- ☐ Approximate original ground line
- ☐ Horizontal and Vertical scales

DIMENSIONS:

- ☐ Overall wall length
- ☐ Dimensions to bends in wall
- ☐ Dimensions to steps in footing / leveling pad
- ☐ Dimensions to vertical breaks, high points, and low points in coping or top of wall

DETAILS:

- ☐ Typical Section

REINFORCEMENT:

40.22.3 Details and Other Pertinent Information

LINE WORK:

NOTES:

LABELS:

DIMENSIONS:

DETAILS:

REINFORCEMENT:

Intentionally Left Blank