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CITY OF BALTIMORE

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Mayor

DEPARTMENT OF TRANSPORTATION

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Director



JANUARY 2011

**CITY OF BALTIMORE
BRIDGE ENGINEERING PLAN REVIEW CHECKLIST**

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

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T.S.&L. Review

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 Designation of Structural Elements in accordance with PPM P-93-38 (4).
- 4 All views in accordance with PPM P-75-7 (4).
- 5 All lettering in accordance with PPM P-76-9 (G).
- 6 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A - REINFORCING DETAILS".
- 7 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.

TITLE SHEET

General

- 8 All projects shall have a Title Sheet in accordance with PPM P-76-10 (G).

STRUCTURES LOCATION MAP

General

- 9 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).

GENERAL PLAN AND ELEVATION

General

- 10 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 11 Show a diagram of the proposed vertical curve and list the associated vertical curve data.

Plan View

- 12 Show Base Line of Construction (Line with Stationing) for roadway over and if applicable under the bridge. Orient with stations increasing from left to right. When it occurs that the orientation of the bridge does not match the orientation of the highway plans, then a bold note shall be placed on the plans calling the contractors attention to it. In all cases the labeling (Base Line of Construction and P.G.L. MD 00) of this line on the structure plans must match the highway plans.
- 13 Show working line for curved alignments in accordance with PPM P-85-25(G).
- 14 Show all PC and PT points on the Base Line and list the associated horizontal curve data.
- 15 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 16 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction) if applicable, show location of test pits. Reference location of test pit data in contract documents.
- 17 Show existing right-of-way lines and existing easement areas.

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PLAN CHECKLIST: CONCRETE SLAB BRIDGE

T.S.&L. Review

- 18 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 19 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 20 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 21 Show station equality and an angle at all intersecting Base Lines and working lines.
- 22 Show all center lines of bearing for each substructure unit. Show the intersecting station on the Base Line of Construction or the working point on the Working Line with its angle of intersection.
- 23 Show existing and proposed out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.
- 24 Show span numbers and span length dimensions.
- 25 Show a total length of bridge dimension, Out to Out of Backwalls.
- 26 Show a destination arrow and label for each direction of travel (To Baltimore).
- 27 Show a lane arrow in every lane over and if applicable under the bridge.
- 28 Show the point of minimum vertical underclearance for highway over highway and highway over railroad bridges. For bridges over dual highways show this point over both roadways.
- 29 Show width of lane, shoulder, sidewalk and grading limits under the bridge (If applicable).
- 30 Show waterway name and direction of flow arrow for hydraulic structures.
- 31 Show horizontal, hydraulic, navigational, and railroad clearances.
- 32 Show all traffic barrier attachments at end posts / head walls.
- 33 Show existing structures in long dashed lines.
- 34 Show a North Arrow and destination arrow

Elevation View

- 35 Show the elevation view of the structure as a projection of the General Plan.
- 36 Show a datum line and datum elevation.
- 37 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 38 Show minimum vertical underclearance for highway over highway, railroad or navigable water bridges. For bridges over dual highways show this dimension for both roadways.
- 39 Show any fencing or railing along the parapet.
- 40 Show all bearing designations (Fix or Exp.).

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

T.S.&L. Review

- 41 Show the following for all structures over water:
 - Design storm with elevation (10 year design storm - elevation 100.00)
 - 100 year storm with elevation (100 year storm - elevation 105.00)
 - Normal Water Surface elevation (NWS - elevation 98.00)
 - Waterway Invert elevation (Invert - elevation 95.00)
 - Bottom of superstructure elevation at its lowest point
 - the lowest top of crown roadway elevation on the bridge

- 42 Show grading details (2:1 slope, 4:1 slope) under the bridge.
- 43 Show existing and proposed ground lines.

SEDIMENT AND EROSION CONTROL

General

- 44 The terminology (Stage II, Phase 2, etc.) must be consistent for all sheets (Highway and Structure).
- 45 Show maintenance of stream flow details (sand bags, dikes, de-watering basins etc.) and sediment and erosion control details for all stages (phases) of construction.
- 46 Include a detailed sequence of construction showing the work to be completed for each stage/phase.
- 47 Include a list of any Wetland /Buffer restrictions.
- 48 Show Limit of Disturbance for each stage
- 49 Draw subsequent elevation views of the existing structure indicating how the stream is to be maintained during the various stages (phases) of construction / removal. Show temporary diversion devices, normal water surface elevation, which portions of the existing structure are to be removed and the proposed construction in the area that the stream is diverted away from.

SEQUENCE OF CONSTRUCTION

General

- 50 When showing the sequence of construction/maintenance of traffic, only the word "Stage" shall be used. Do not use "Phase." The terminology (Stage 1, Stage 2, etc.) must be consistent for all sheets (Highway and Structure). List your Stages as 1, 2, 3 etc, no Roman Numerals or A, B, C. If there are some preliminary road stages that must take place prior to beginning the bridge construction, then the bridge work may start in Stage 3. Add a note to the bridge Sequence of Construction sheets that states "No Bridge Work in Stage 1 or Stage 2".
- 51 Sequence of Construction sheets are required for the superstructure and substructure portions of the bridge if work is being proposed for these elements.

Substructure

- 52 Show existing elevation view of substructure units with columns, pile and stringer spacing (if applicable) tied to the Base Line of Construction or Working Line.
- 53 Draw subsequent stage construction typical directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typical).
- 54 Show proposed column and stringer spacings.
- 55 Show location of temporary pier cap supports.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

T.S.&L. Review

- 56 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 57 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 58 Show completed typical with column and stringer spacings.
- 59 Show the location of any sheeting necessary to maintain the existing or construct the new substructure. Show the location of each construction joint necessary for stage construction tied to the Base Line of Construction or Working Line.

Superstructure

- 60 Show existing bridge typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.
- 61 Draw subsequent stage construction typical directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typical) which indicate the location of traffic for each stage.
- 62 Show proposed lane, shoulder and sidewalk widths tied to the Base Line of Construction or Working Line.
- 63 Show location of temporary barrier. Show the proper anchorage configuration for existing and proposed concrete decks. See applicable standards.
- 64 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 65 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 66 Show completed typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

ABUTMENT GP&E

Plan View

- 67 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 68 Show the location of any construction joints for staged construction.
- 69 Show a North Arrow and destination arrow
- 70 Show the layout of the elastomeric bearing pads along center line of bearing. Add the following note: All elastomeric bearing pads shall be placed with an epoxy adhesive in accordance with 432.03.04. Adhesive shall be applied on the bottom and top of pad.
- 71 Show a typical section cut through the abutment and a typical section cut through the wing wall.

Elevation View

- 72 Show where the Typical Section is cut.
- 73 Show the location of any construction joints for staged construction.
- 74 Show existing and proposed ground lines.
- 75 Show the elevation of elastomeric bearing pad seats or, if there are no bearing pads, show the pertinent elevations of the bearing seat area.

Typical Section View

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T.S.&L. Review

- 76 Show Typical Section through abutment with dimensions locating the centerline of bearing, etc.

WING WALLS

Elevation View

- 77 Show an Elevation View of a typical wing wall with aesthetic treatment.

Typical Section View

- 78 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).
- 79 Show any fencing or railing on top of the wing wall/end post.
- 80 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).

PIERS

Plan View

- 81 Show Base Line of Construction with the station and angle at the intersection with the center line of bearing or show the Working Line with working point and angle at the intersection with the center line of bearing.
- 82 Indicate the length of cap tied to the Base Line of Construction or Working Line. Indicate the width of the cap and location of the center lines of bearing tied to the center line of pier.
- 83 Show all working points from the Geometric and Footing Layout.
- 84 Show the location of the construction joints for staged construction.
- 85 Show a North Arrow and destination arrow
- 86 Show the layout of the elastomeric bearing pads along the center lines of bearing. Indicate the slab unit anchor dowels and their spacing along the center line of bearing.
- 87 Show the slab units with their numbers.

Elevation View

- 88 Show existing and proposed ground lines and the normal water surface.
- 89 Show Elevation View of the type of pier proposed with any aesthetic treatments (if applicable).
- 90 Show the layout of the columns tied to the Base Line of Construction or Working Line.
- 91 Show the elevation of the bottom and top of footing.
- 92 Show where the Typical Section is cut.
- 93 Show the elastomeric bearing pads.
- 94 Show the embedment length of piles into the cap and the limits of the fiberglass protective wrap on the piles.
- 95 Show the location of the construction joints for staged construction

PILE BENT DETAILS

General

- 96 Show an elevation view of a typical pier with all pertinent dimensions.
- 97 Show the Typical Section through the pier cap with all pertinent dimensions.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

T.S.&L. Review

SUPERSTRUCTURE TYPICAL SECTION

General

- 98 The Typical Section shall be drawn looking stations ahead.
- 99 Show the Base Line of Construction or Working Line and the P.G.L.
- 100 Show the proposed out to out, lane, shoulder, clear roadway, sidewalk and parapet / curb widths tied to the Base Line of Construction or Working Line.
- 101 Show the P/GE, crown point and all cross slopes. Cross slope arrows should be drawn with the arrow pointing in the direction that water would flow across the deck surface. Refer to PPM P-74-2(4). Show superelevation transition if applicable.
- 102 Show the construction joints and reinforcing laps in the concrete overlay for staged construction.
- 103 Show all utilities located on the bridge.
- 104 Show any fencing or railing on top of the parapet.
- 105 Show note concerning whether slip forming will be allowed for parapets.
- 106 Show any conduit required in the parapets. Refer to PPM P-90-33(4).
- 107 Refer to the applicable parapet / sidewalk standard.
- 108 Show and label all precast slab units with their widths.
- 109 Show the mix no. 8 concrete overlay with #4's @ 6" c/c each way (epoxy coated) placed at mid-height in the overlay. The cost of all reinforcing and concrete in the overlay will be included in the lump sum price bid for the "Superstructure Concrete" item.
- 110 Include the note that the concrete overlay shall be placed in one continuous pour.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Foundation Review

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Plan View

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Foundation Review

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General

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- 45 Show maintenance of stream flow details (sand bags, dikes, de-watering basins etc.) and sediment and erosion control details for all stages (phases) of construction.
- 46 Include a detailed sequence of construction showing the work to be completed for each stage/phase.
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- 48 Show Limit of Disturbance for each stage
- 49 Draw subsequent elevation views of the existing structure indicating how the stream is to be maintained during the various stages (phases) of construction / removal. Show temporary diversion devices, normal water surface elevation, which portions of the existing structure are to be removed and the proposed construction in the area that the stream is diverted away from.

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Substructure

- 52 Show existing elevation view of substructure units with columns, pile and stringer spacing (if applicable) tied to the Base Line of Construction or Working Line.
- 53 Draw subsequent stage construction typical directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typical).
- 54 Show proposed column and stringer spacings.
- 55 Show location of temporary pier cap supports.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Foundation Review

- 56 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 57 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 58 Show completed typical with column and stringer spacings.
- 59 Show the location of any sheeting necessary to maintain the existing or construct the new substructure. Show the location of each construction joint necessary for stage construction tied to the Base Line of Construction or Working Line.

ABUTMENT GP&E

Plan View

- 60 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 61 Show the location of any construction joints for staged construction.
- 62 Show a North Arrow and destination arrow
- 63 Show the layout of the elastomeric bearing pads along center line of bearing. Add the following note: All elastomeric bearing pads shall be placed with an epoxy adhesive in accordance with 432.03.04. Adhesive shall be applied on the bottom and top of pad.
- 64 Show a typical section cut through the abutment and a typical section cut through the wing wall.

Elevation View

- 65 Show the elevation of the bottom and top of footing.
- 66 Show where the Typical Section is cut.
- 67 Show the location of any construction joints for staged construction.
- 68 Show existing and proposed ground lines.
- 69 Show the elevation of elastomeric bearing pad seats or, if there are no bearing pads, show the pertinent elevations of the bearing seat area.
- 70 If the abutment is on piles, show them and call out their size.

Typical Section View

- 71 Show Typical Section through abutment with dimensions locating the centerline of bearing, etc.
- 72 Show the type & size of any piles in the footing Show the embedment depth of piles into the abutment footing.

ABUTMENT&PIER PILE PLANS

Plan View

- 73 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 74 Show location of Test Pile(s).
- 75 Show arrow on battered piles and indicate batter ratio.
- 76 Show the rebar mat over piles (3 - #6 bars in each direction) and the rebar lap at construction joints.
- 77 Show construction joints for staged construction.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Foundation Review

- 78 Show pile driving data chart in accordance with PPM P-93-35 (4).
- 79 Show pile driving notes from PPM P-82-20 (G).
- 80 Show footing steps when necessary.
- 81 Show location of piles referenced to working points / working lines which can be tied to the intersection point established by the Base Line of Construction.
- 82 Show a North Arrow and destination arrow
- 83 Show a section through the support showing the full height from top of support to bottom of pile. Indicate the normal water surface, approximate existing and proposed ground line(s), the limits of fiberglass wrap pile protection (normally 4 feet below the proposed ground line to the top of pile), the area where no splices will be allowed in the pile, and that the entire pile will be filled with mix no. 3 concrete. Include the following pile placement notes:

Prior to placing the piles, the Contractor shall place a pile template to hold the piles true and accurate.

Indicate whether the piles are to be driven closed ended or open ended.

Steel plates (if applicable) for pile tips will not be measured for payment but will be incidental to the pertinent piling item.

Mix no. 3 concrete shall be placed in the pile for its full length as specified in section 410. A pour joint may be placed at elevation (?) to allow for the placement of the pile reinforcing cage. The remainder of the pile and pile cap shall be placed as one continuous pour.

All concrete and reinforcing steel within the piles from pile tip to top of pile will not be measured for payment but will be incidental to the pertinent piling item.

WING WALLS

Elevation View

- 84 Show an Elevation View of a typical wing wall with aesthetic treatment.

Typical Section View

- 85 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).
- 86 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).

PIERS

Plan View

- 87 Show Base Line of Construction with the station and angle at the intersection with the center line of bearing or show the Working Line with working point and angle at the intersection with the center line of bearing.
- 88 Indicate the length of cap tied to the Base Line of Construction or Working Line. Indicate the width of the cap and location of the center lines of bearing tied to the center line of pier.
- 89 Show all working points from the Geometric and Footing Layout.
- 90 Show the location of the construction joints for staged construction.
- 91 Show a North Arrow and destination arrow
- 92 Show the layout of the elastomeric bearing pads along the center lines of bearing. Indicate the slab unit anchor dowels and their spacing along the center line of bearing.
- 93 Show the slab units with their numbers.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Foundation Review

Elevation View

- 94 Show existing and proposed ground lines and the normal water surface.
- 95 Show Elevation View of the type of pier proposed with any aesthetic treatments (if applicable).
- 96 Show the layout of the columns tied to the Base Line of Construction or Working Line.
- 97 Show the elevation of the bottom and top of footing.
- 98 Show where the Typical Section is cut.
- 99 Show the elastomeric bearing pads.
- 100 Show the embedment length of piles into the cap and the limits of the fiberglass protective wrap on the piles.
- 101 Show the location of the construction joints for staged construction

PILE BENT DETAILS

General

- 102 Show an elevation view of a typical pier with all pertinent dimensions.
- 103 Show the Typical Section through the pier cap with all pertinent dimensions.

SUPERSTRUCTURE TYPICAL SECTION

General

- 104 The Typical Section shall be drawn looking stations ahead.
- 105 Show the Base Line of Construction or Working Line and the P.G.L.
- 106 Show the proposed out to out, lane, shoulder, clear roadway, sidewalk and parapet / curb widths tied to the Base Line of Construction or Working Line.
- 107 Show the P/GE, crown point and all cross slopes. Cross slope arrows should be drawn with the arrow pointing in the direction that water would flow across the deck surface. Refer to PPM P-74-2(4). Show superelevation transition if applicable.
- 108 Show the construction joints and reinforcing laps in the concrete overlay for staged construction.
- 109 Show all utilities located on the bridge.
- 110 Show any fencing or railing on top of the parapet.
- 111 Show note concerning whether slip forming will be allowed for parapets.
- 112 Show any conduit required in the parapets. Refer to PPM P-90-33(4).
- 113 Refer to the applicable parapet / sidewalk standard.
- 114 Show and label all precast slab units with their widths.
- 115 Show the mix no. 8 concrete overlay with #4's @ 6" c/c each way (epoxy coated) placed at mid-height in the overlay. The cost of all reinforcing and concrete in the overlay will be included in the lump sum price bid for the "Superstructure Concrete" item.
- 116 Include the note that the concrete overlay shall be placed in one continuous pour.

BORING AND DRIVE TESTS

General

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Foundation Review

117 Refer to PPM P-75-3 (4).

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PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 18 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 19 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 20 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 21 Show station equality and an angle at all intersecting Base Lines and working lines.
- 22 Show all center lines of bearing for each substructure unit. Show the intersecting station on the Base Line of Construction or the working point on the Working Line with its angle of intersection.
- 23 Show existing and proposed out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.
- 24 Show span numbers and span length dimensions.
- 25 Show a total length of bridge dimension, Out to Out of Backwalls.
- 26 Show a destination arrow and label for each direction of travel (To Baltimore).
- 27 Show a lane arrow in every lane over and if applicable under the bridge.
- 28 Show the point of minimum vertical underclearance for highway over highway and highway over railroad bridges. For bridges over dual highways show this point over both roadways.
- 29 Show limits and type of slope protection. Show limits of soil stabilization matting.
- 30 Show width of lane, shoulder, sidewalk and grading limits under the bridge (If applicable).
- 31 Show waterway name and direction of flow arrow for hydraulic structures.
- 32 Show horizontal, hydraulic, navigational, and railroad clearances.
- 33 Show all traffic barrier attachments at end posts / head walls.
- 34 Show existing structures in long dashed lines.
- 35 Show a North Arrow and destination arrow

Elevation View

- 36 Show the elevation view of the structure as a projection of the General Plan.
- 37 Show a datum line and datum elevation.
- 38 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 39 Show minimum vertical underclearance for highway over highway, railroad or navigable water bridges. For bridges over dual highways show this dimension for both roadways.
- 40 Show any fencing or railing along the parapet.
- 41 Show all bearing designations (Fix or Exp.).

- 42 Show the following for all structures over water:
 - Design storm with elevation (10 year design storm - elevation 100.00)
 - 100 year storm with elevation (100 year storm - elevation 105.00)
 - Normal Water Surface elevation (NWS – elevation 98.00)
 - Waterway Invert elevation (invert – elevation 95.00)
 - Bottom of superstructure elevation at its lowest point
 - the lowest top of crown roadway elevation on the bridge

43 Show grading details (2:1 slope, 4:1 slope) under the bridge.

44 Show existing and proposed ground lines.

HYDROLOGIC AND HYDRAULIC DATA SHEET

General

- 45 Include this sheet after the General Plan Sheet for all structures crossing waterways. Sheet to be prepared by Structures Hydraulics Division.

GEOMETRIC AND FOOTING LAYOUT

General

- 46 Prepare sheet in accordance with PPM P-86-28(G).
- 47 Show location of construction joints for staged construction Show location construction joints required for maintenance of traffic and maintenance of stream flow.
- 48 This layout should reference the working line only. A small exaggerated view may be included on this sheet to show the relationship between the baseline and working line. All piers and abutments shall be dimensioned to form a closed traverse around the footing. All working points shall be listed in a table with coordinate data provided.
- 49 Show all pertinent horizontal curve data.

SEDIMENT AND EROSION CONTROL

General

- 50 The terminology (Stage II, Phase 2, etc.) must be consistent for all sheets (Highway and Structure).
- 51 Show maintenance of stream flow details (sand bags, dikes, de-watering basins etc.) and sediment and erosion control details for all stages (phases) of construction.
- 52 Include a detailed sequence of construction showing the work to be completed for each stage/phase.
- 53 Include a list of any Wetland /Buffer restrictions.
- 54 Show Limit of Disturbance for each stage
- 55 Provide a boxed area that contains the following note – “At the Contractor’s option an alternate sequence of construction may be proposed. The Contractor shall be responsible for preparing the appropriate plans and request in writing for a change to these plans. All changes shall be submitted through the administration for review and approval by the applicable permitting agencies. No additional compensation will be allowed for delays caused by the review and approval process nor will additional compensation be allowed if any proposed change is rejected. The administration and permitting agencies shall determine whether any proposed alternate sequence is acceptable. If no alternate is found acceptable then the sequence shown on these plans shall be followed.”

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 56 Draw subsequent elevation views of the existing structure indicating how the stream is to be maintained during the various stages (phases) of construction / removal. Show temporary diversion devices, normal water surface elevation, which portions of the existing structure are to be removed and the proposed construction in the area that the stream is diverted away from.
- 57 Prepare a sheet indicating maintenance of stream flow details. Show the following diversion device alternatives:
 - Detail using sand bags
 - Detail using temporary sheeting
 - Detail using concrete barrier
- 58 Show a portable sediment tank and all the notes pertaining to it.
- 59 Include the following note:
 - The Contractor shall have the option of using any of the diversion device methods shown. Once the selected option is approved by MDE, it shall be the Contractor's responsibility to dewater the work area. No additional compensation will be allowed if the method of dewatering or diversion option is changed because of dewatering difficulties. The diversion shall be placed so that it is located within the existing SHA right-of-way and allows construction within the diversion area to be completed in the dry. The diversion is not intended to block highwater events from flooding the dewatered areas.

SEQUENCE OF CONSTRUCTION

General

- 60 When showing the sequence of construction/maintenance of traffic, only the word "Stage" shall be used. Do not use "Phase." The terminology (Stage 1, Stage 2, etc.) must be consistent for all sheets (Highway and Structure). List your Stages as 1, 2, 3 etc, no Roman Numerals or A, B, C. If there are some preliminary road stages that must take place prior to beginning the bridge construction, then the bridge work may start in Stage 3. Add a note to the bridge Sequence of Construction sheets that states "No Bridge Work in Stage 1 or Stage 2".
- 61 Sequence of Construction sheets are required for the superstructure and substructure portions of the bridge if work is being proposed for these elements.

Substructure

- 62 Show existing elevation view of substructure units with columns, pile and stringer spacing (if applicable) tied to the Base Line of Construction or Working Line.
- 63 Draw subsequent stage construction typical directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typical).
- 64 Show proposed column and stringer spacings.
- 65 Show location of temporary pier cap supports.
- 66 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 67 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 68 Show completed typical with column and stringer spacings.
- 69 Show the location of any sheeting necessary to maintain the existing or construct the new substructure. Show the location of each construction joint necessary for stage construction tied to the Base Line of Construction or Working Line.

Superstructure

- 70 Show existing bridge typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 71 Draw subsequent stage construction typical directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typicals) which indicate the location of traffic for each stage.
- 72 Show proposed lane, shoulder and sidewalk widths tied to the Base Line of Construction or Working Line.
- 73 Show location of temporary barrier. Show the proper anchorage configuration for existing and proposed concrete decks. See applicable standards.
- 74 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 75 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 76 Show completed typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

ABUTMENT GP&E

Plan View

- 77 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 78 Show all working points from the Geometric and Footing Layout sheet.
- 79 Show the drainage system behind abutment stem and wing walls.
- 80 Show footing steps when necessary.
- 81 Show the layout of the wing walls / end posts located off the Base Line of Construction or Working Line. Designate the wing walls in accordance with PPM P-93-36(4).
- 82 Show the location of any construction joints for staged construction.
- 83 Show the location of any expansion and contraction joints
- 84 Show a North Arrow and destination arrow
- 85 Show the layout of the elastomeric bearing pads along center line of bearing. Add the following note: All elastomeric bearing pads shall be placed with an epoxy adhesive in accordance with 432.03.04. Adhesive shall be applied on the bottom and top of pad.
- 86 Show a typical section cut through the abutment and a typical section cut through the wing wall.

Elevation View

- 87 Show the P/GE and elevations along a dashed line indicating the finished bridge surface along the center line of bearing. Show the elevations at the gutter lines and at the crown break and any other grade break points.
- 88 Show the elevation of the bottom and top of footing.
- 89 Show where the Typical Section is cut.
- 90 Show the location of any construction joints for staged construction.
- 91 Show any footing steps when necessary.
- 92 Show the conduit(s) in the end posts / curb portion of the wing walls.
- 93 Show existing and proposed ground lines.
- 94 Show location of expansion and contraction joints.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 95 Show the elevation of elastomeric bearing pad seats or, if there are no bearing pads, show the pertinent elevations of the bearing seat area.
- 96 If the abutment is on piles, show them and call out their size.

Typical Section View

- 97 Show Typical Section through abutment with dimensions locating the centerline of bearing, etc.
- 98 Show the limits of Mix 3 and Mix 6 concrete.
- 99 Show the limits of payment for the Footing Concrete (if applicable) and the Substructure Concrete.
- 100 Label size and spacing of all rebar. Refer to PPM P-89-32 (4) for size of longitudinal rebar in abutment stem and vertical bars in the front face of abutments. Indicate which bars are epoxy coated.
- 101 Show lap lengths of all rebar splices. Show embedment and hook lengths for all rebar. Show clear cover to bars at face of concrete.
- 102 Show 2 ply waterproofing membrane on earth side of all construction joints with air on the other.
- 103 Show the type & size of any piles in the footing Show the embedment depth of piles into the abutment footing.
- 104 Show the abutment drainage system consisting of porous backfill (#57 stone) placed 1 foot under the abutment (if no footing), after the piles are driven, and a minimum of 1 foot behind the abutment. The #57 stone will be placed on class PE, type III geotextile and will be placed to drain under the abutment through the slope protection in front of the abutment. If the abutment has a footing the drainage will outlet through pipes in the abutment stem.
- 105 Show the size and spacing of all rebar. Indicate which bars are epoxy coated. For cast in place piles show the rebar cage and indicate the size, number and length of bars. Show the rebar mat 3" above piles (3 - #6 bars each way). Show the clear cover to the bars at the face of concrete.
- 106 Show the #8 anchor dowels and drilled hole at the center line of bearing to be grouted in place. The bars are for anchoring the slab units (2 per slab unit).
- 107 Show the limits of epoxy protective coating.
- 108 Add the following note: All elastomeric bearing pads shall be placed with an epoxy adhesive in accordance with 432.03.04. The adhesive shall be applied on the bottom and top of the pad. All elastomeric bearing pads shall be in place prior to the placement of the epoxy protective coating of the abutment.

ABUTMENT&PIER PILE PLANS

Plan View

- 109 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 110 Show location of Test Pile(s).
- 111 Show arrow on battered piles and indicate batter ratio.
- 112 Show the rebar mat over piles (3 - #6 bars in each direction) and the rebar lap at construction joints.
- 113 Show construction joints for staged construction.
- 114 Show pile driving data chart in accordance with PPM P-93-35 (4).
- 115 Show pile driving notes from PPM P-82-20 (G).
- 116 Show footing steps when necessary.
- 117 Show location of piles referenced to working points / working lines which can be tied to the intersection point established by the Base Line of Construction.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 118 Show a North Arrow and destination arrow
- 119 Show working points established on Geometric and Footing Layout.
- 120 Show a section through the support showing the full height from top of support to bottom of pile. Indicate the normal water surface, approximate existing and proposed ground line(s), the limits of fiberglass wrap pile protection (normally 4 feet below the proposed ground line to the top of pile), the area where no splices will be allowed in the pile, and that the entire pile will be filled with mix no. 3 concrete. Include the following pile placement notes:

Prior to placing the piles, the Contractor shall place a pile template to hold the piles true and accurate.

Indicate whether the piles are to be driven closed ended or open ended.

Steel plates (if applicable) for pile tips will not be measured for payment but will be incidental to the pertinent piling item.

Mix no. 3 concrete shall be placed in the pile for its full length as specified in section 410. A pour joint may be placed at elevation (?) to allow for the placement of the pile reinforcing cage. The remainder of the pile and pile cap shall be placed as one continuous pour.

All concrete and reinforcing steel within the piles from pile tip to top of pile will not be measured for payment but will be incidental to the pertinent piling item.

WING WALLS

Elevation View

- 121 Show an Elevation View of a typical wing wall with aesthetic treatment.
- 122 Show an elevation view of all wing walls including widths.
- 123 Show elevations along top of end post at the ends and at all breakpoints.
- 124 Show the elevation of the bottom and top of the footing.
- 125 Show where the Typical Section is cut.
- 126 Show any fencing or railing on top of the end post with post spacing.
- 127 Show the location of the expansion and construction joints.
- 128 Show the existing and proposed ground lines.
- 129 Show the slope protection in front of the abutment.
- 130 Show any footing steps (if applicable).

Typical Section View

- 131 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).
- 132 Show the limits of Mix 3 and Mix 6 concrete.
- 133 Show the limits of payment for Footing Concrete, Substructure Concrete and Parapet Concrete.
- 134 Show the conduit(s) in the wing wall / end post.
- 135 Show any fencing or railing on top of the wing wall/end post.
- 136 Show lap lengths of all rebar splices. Show embedment and hook lengths for all rebar. Show clear cover to bars at face of concrete.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 137 Show 2 ply waterproofing membrane on earth side of all construction joints with air on the other.
- 138 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).
- 139 Show the limits of Mix 3 and Mix 6 concrete.
- 140 Show the wing wall drainage system consisting of pourous backfill (#57 stone) placed 1 foot under the wing wall (for wing walls without footings) after the piles are driven and a minimum of 1 foot behind the abutment. The #57 stone will be placed on class PE, type III geotextile and will be placed to drain through the slope protection in front of the abutment.
- 141 Show the size and spacing of all rebar. Indicate which bars are epoxy coated. For cast in place piles show the rebar cage and indicate the size, number and length of bars. Show the rebar mat 3" above piles (3 - #6 bars each way). Show the clear cover to bars at the face of concrete.
- 142 Show the anchorage system for the fencing or railing to be placed on top of the wing wall/end post.
- 143 Show a plan view of the joint between the end of the superstructure and the wing wall / end post. Show the 1" cork type expansion material between the superstructure and substructure. The material is to be fastened to the abutment curb with copper nails. Include the note "Place wing wall curb to match superstructure curb". Show the roadway joint angle at the end of the superstructure.

PIERS

Plan View

- 144 Show Base Line of Construction with the station and angle at the intersection with the center line of bearing or show the Working Line with working point and angle at the intersection with the center line of bearing.
- 145 Indicate the length of cap tied to the Base Line of Construction or Working Line. Indicate the width of the cap and location of the center lines of bearing tied to the center line of pier.
- 146 Show all working points from the Geometric and Footing Layout.
- 147 Show the location of the construction joints for staged construction.
- 148 Show a North Arrow and destination arrow
- 149 Show the layout of the elastomeric bearing pads along the center lines of bearing. Indicate the slab unit anchor dowels and their spacing along the center line of bearing.
- 150 Show the slab units with their numbers.

Elevation View

- 151 Show existing and proposed ground lines and the normal water surface.
- 152 Show Elevation View of the type of pier proposed with any aesthetic treatments (if applicable).
- 153 Show the layout of the columns tied to the Base Line of Construction or Working Line.
- 154 Show the elevation of the bottom and top of footing.
- 155 Show where the Typical Section is cut.
- 156 Show the elastomeric bearing pads.
- 157 Show the embedment length of piles into the cap and the limits of the fiberglass protective wrap on the piles.
- 158 Show the location of the construction joints for staged construction

PILE BENT DETAILS

General

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 159 Show an elevation view of a typical pier with all pertinent dimensions.
- 160 In the elevation view show the size and spacing of the stirrups in the pier cap. Show the type and size of piles. If cast in place piles are used show the rebar cage calling out the size, number and length of bars. Show the embedment length of the piles into the cap. Show the rebars that run the length of the cap. Show rebar mat over piles (3 - #6 bars in each direction). Show construction joints necessary for staged construction and any associated rebar lap lengths. Show the pile batter rate.
- 161 Show the Typical Section through the pier cap with all pertinent dimensions.
- 162 In the Typical Section show the size and spacing of all rebar. Indicate which bars, if any, are epoxy coated. Show the lap lengths of all rebar splices. Show the clear cover to the bars at the face of concrete.
- 163 In the section through the pier cap at a pile show all rebar sizes, spacings and lengths. Show the embedment and hook lengths for all rebar. Show the lap lengths of all rebar splices. Show the clear cover to bars at the face of concrete. Show the rebar mat 3" above piles (3 - #6 bars each way).
- 164 Show a section through the cast in place pile. Indicate all pertinent dimensions, call out rebar sizes, the minimum thickness of the pile wall, the clear distance to the pile cage and the fiberglass wrap pile protection. Include the following notes for applying fiberglass pile wrapping prior to pile driving:

Abrasive blast clean the area of the pile that is to receive the fiberglass wrap to a near white condition to remove all rust, dirt, oil, etc.

Immediately coat the blast cleaned area of pile with a zinc rich primer.

Once the zinc rich primer has cured, the initial coat of low viscosity water insensitive epoxy shall be applied to the pile.

Apply the first layer of fiber reinforcement cloth to the initial coat of low viscosity water insensitive epoxy.

Once the initial coating of epoxy and fiber reinforcement has cured, apply the second coat of low viscosity water insensitive epoxy.

Apply the second layer of fiber reinforcement cloth to the second coat of low viscosity water insensitive epoxy.

Upon curing of the second epoxy layer, top dress the pile surface with the third coat of low viscosity water insensitive epoxy. Give particular attention to filling all voids and imperfections to create a smooth finished surface.

Upon completion of all pier construction, form removal, etc., the Contractor shall touch up any damaged areas in the pile wrapping with low viscosity water insensitive epoxy.

The wrapping of piles will not be measured for payment but will be paid for under the lump sum price bid for the "Pile Protective System" item.

SLOPE PROTECTION DETAILS

Plan View

- 165 Show where sections are cut for the toe wall and the side cutoff wall.
- 166 Show the Base Line of Construction (Line with Stationing) for the roadway over a waterway. Orient the plan view to match the bridge general plan.
- 167 Show the working line for curved alignments in accordance with PPM P-85-25(G).
- 168 Show each substructure unit with its center line or center line of bearing. Show the intersecting station on the Base Line of Construction or the working point on the Working Line with its angle of intersection.
- 169 Show the topography of the area with all pertinent utilities, contour lines etc. Show the proposed slope protection with the limits clearly defined. Show the type A soil stabilization matting with its limits clearly defined.
- 170 Show a North Arrow and destination arrow

Toe Wall Details

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 171 Show a section through the slope protection toe wall. Indicate the type of slope protection and the limits and type of geotextile.
- 172 Show the limits of measurement for slope protection to be paid for on a square yard basis.
- 173 Show the channel bottom and normal water surface.
- 174 Indicate the limits of measurement for bottom cutoff wall to be paid for on a linear foot basis.
- 175 Add notes referring to the appropriate area of the specifications for the type slope protection to be used.

Side Cutoff Wall Details

- 176 Show a section through the slope protection side cutoff wall. Indicate the type of slope protection and the limits and type of geotextile.
- 177 Show the limits of measurement for slope protection to be paid for on a square yard basis.
- 178 Show the finished ground line.
- 179 Indicate the limits of measurement for the side cutoff wall to be paid for on a linear foot basis.
- 180 Add notes referring to the appropriate area of the specifications for the type slope protection to be used.

SUPERSTRUCTURE TYPICAL SECTION

General

- 181 The Typical Section shall be drawn looking stations ahead.
- 182 Show the Base Line of Construction or Working Line and the P.G.L.
- 183 Show the proposed out to out, lane, shoulder, clear roadway, sidewalk and parapet / curb widths tied to the Base Line of Construction or Working Line.
- 184 Show the P/GE, crown point and all cross slopes. Cross slope arrows should be drawn with the arrow pointing in the direction that water would flow across the deck surface. Refer to PPM P-74-2(4). Show superelevation transition if applicable.
- 185 Show the construction joints and reinforcing laps in the concrete overlay for staged construction.
- 186 Show all utilities located on the bridge.
- 187 Show any fencing or railing on top of the parapet.
- 188 Show note concerning whether slip forming will be allowed for parapets.
- 189 Show any conduit required in the parapets. Refer to PPM P-90-33(4).
- 190 Refer to the applicable parapet / sidewalk standard.
- 191 Show and label all precast slab units with their widths.
- 192 Show the mix no. 8 concrete overlay with #4's @ 6" c/c each way (epoxy coated) placed at mid-height in the overlay. The cost of all reinforcing and concrete in the overlay will be included in the lump sum price bid for the "Superstructure Concrete" item.
- 193 Include the note that the concrete overlay shall be placed in one continuous pour.
- 194 Refer to the applicable parapet / curb standard.

SLAB/GIRDER LAYOUT

General

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 195 Show a plan view of the slab unit layout for the bridge. Show the center line of each substructure unit and the center line(s) of bearing of each substructure unit with the intersecting station at the Base Line of Construction or the working point on the Working Line with its angle of intersection.
- 196 Show North arrow and arrows of destination.
- 197 Show the span numbers and span length dimension(s) measured along the Base Line of Construction or Working Line. Show the width of bridge and slab units and tie them to the Base Line of Construction or Working Line.
- 198 Show all fixed and expansion bearing designations.
- 199 Show the tie rods located at the approximate third points of the span(s). For bridges being constructed in two stages, place a tie rod at the approximate center line of span for the first stage of construction. When stage two is constructed, place tie rods at the approximate third points of the span(s) for the full width of the bridge.
- 200 Include the following note: The Contractor will be allowed to place equipment on the slab units prior to placing the concrete overlay provided that all slab units for a stage of construction are in place and the tie rods tensioned and the joints have been grouted for a minimum period of two days.

INTERIOR SLAB UNIT DETAILS

General

- 201 Show the slab unit elevation with stirrup size and spacing measured along the center line of slab, and the location(s) of the 2 1/2" diameter hole(s) for the tie rods. Include a note to space the stirrups to avoid the tie rod holes. Show the slab depth and the depth of the step at each end of the slab unit. Include details of the top of slab longitudinal reinforcing and how it is to extend beyond the ends of the slab unit. Add a note that the bars are to be bent at the casting plant after the form work has been removed.

Include the following notes):

- 1) Extreme care shall be used in locating the tie rod holes during the casting operation. The Contractor shall assemble the slab units for each span for each stage of construction and then for the entire bridge width at the casting plant to ensure that there is no misalignment of the tie rod hole(s) prior to shipping the slab units. Any misalignment of the tie rod hole(s) will be cause for rejection of the slab unit(s). No drilling or coring of the slab unit(s) will be permitted.
- 2) Slab unit lengths in the casting bed shall be determined and depicted in the shop drawings to compensate for grade shortening due to the prestress effect.
- 3) The top surface of all slab units shall be rough finished to a full amplitude of 1/4" and scrubbed transversely with a coarse wire brush to remove all laitance and to produce a roughened surface for bonding with the concrete overlay.
- 4) No clear cover less than that shown on these Plans will be accepted

- 202 For bridges on a skew, show a plan view detail of how the stirrups are to be splayed at the ends of the slab unit and that the stirrups in the stepped area are increased in size to #8 bars. Show the size and location of the holes for the anchor dowels.

- 203 Include the following camber notes:

- 1) Camber values shown are in inches
- 2) Camber due to prestress plus deflection due to the slab dead load are to be checked in the field.
- 3) The thickness of the concrete overlay shall be varied to compensate for any inaccuracies in the camber in the slabs and for the vertical curve.
- 4) The prestress camber and dead load deflection data shown is theoretical and may vary with concrete strength, variable prestressing conditions and prestress losses.
- 5) Camber in slab units will increase due to concrete creep during storage. Precautions shall be taken, by loading or other means, to prevent additional camber from developing during storage of the slab units.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 204 Show the typical section of the slab unit at mid-span with all mild reinforcing steel details, slab dimensions, clear cover, size and location of tie rod hole(s) and the location, size and spacing of all prestressing strands. Indicate that all mild reinforcing steel bars are to be epoxy coated.
- 205 Show the typical section of the slab unit at the stepped end with all mild reinforcing steel details, slab dimensions, clear cover, indicate the size and location of the holes for the anchor dowels, and the location, size and spacing of all prestressing strands. Indicate that all mild reinforcing steel bars are to be epoxy coated. Show that the double stirrups in the stepped area are increased to #6 bars.
- 206 Show the plan view of an interior slab unit with the span number and span length dimension measured along the center line of slab. Show the 2 1/2" diameter tie rod holes and locate them off the center line of bearing. Show the angle between the center line of bearing and the center line of slab unit. Show the slab unit width and locate the 2" diameter holes for the anchor dowels. Indicate the length of the step in the top of the slab unit at each end.

EXTERIOR SLAB UNIT DETAILS

General

- 207 Prepare a sheet for the Exterior Slab Units with all the information called for above under Interior Slab Unit Details section.
- 208 In the Plan view show the construction joint key between the slab and the curb / parapet.
- 209 In the Elevation view show the curb / parapet rebar spacing. Show the tie rod recess hole on the exterior side only of the slab unit.
- 210 In the detail at the end of a skewed slab include the curb / parapet rebar and how it is to be splayed.
- 211 In the Slab Detail at Midspan show the curb / parapet rebar. On the underside of the slab unit show a drip groove 6" from the exterior face of the bridge. Add a note directing someone where to find the details of the railing / fencing anchor bolts and plates to be cast in the curb / parapet. Show and locate the construction joint key between the slab and the curb / parapet.

SUPERSTRUCTURE DETAILS

General

- 212 Show a typical section through the abutment looking down the center line of bearing. Show the slab unit resting on the elastomeric bearing pad and the end of the concrete overlay with a 6" x 4" x 1/2" roadway angle. This detail should also show:
 - 1) #8 anchor dowels (epoxy coated) to be drilled and grouted in place in 1 1/2" diameter hole 1'-0" deep. Show that the hole in the slab unit is to be filled with an elastomeric or rubberized joint material around the anchor dowel at the expansion end and epoxy grout at the fixed end.
 - 2) Styrofoam filler behind and around the elastomeric bearing.
 - 3) Epoxy coated rebar in the end of the slab unit to be included in the overlay.
 - 4) The #4's @ 6" c/c (epoxy coated) each way in the concrete overlay at mid-depth.
 - 5) A note stating that the overlay and end portion of the bridge shall be placed as one continuous pour.
 - 6) A three ply roofing paper bond breaker between the top of abutment and the pour at the end of the bridge.
 - 7) 2 ply membrane waterproofing, 16" minimum width, centered on the joint between the top of abutment and the end of bridge pour. The approach roadway coming up to the bridge and the porous backfill.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 213 For bridges with more than one span show a slab detail at a pier looking down the center line of pier. Show the slab units resting on the elastomeric bearing pads and the concrete overlay closure pour. This detail should also show:

1) #8 anchor dowels (epoxy coated) to be drilled and grouted in place in 1½" diameter hole 1'-0" deep. Show that the hole in the slab unit is to be filled with an elastomeric or rubberized joint material around the anchor dowel for expansion piers and epoxy grout for fixed piers.

2) Styrofoam filler between the bearings and under the pour between spans.

3) Epoxy coated rebar in the end of the slab units to be included in the concrete overlay.

4) The #4's @ 6" c/c (epoxy coated) each way in the concrete overlay at mid-depth.

5) A note stating that the overlay and the pour between spans shall be placed as one continuous pour.

6) The size and length of additional reinforcing steel to be placed in the concrete overlay centered over the pier. This steel is to be designed using the live load negative moment for continuity over the pier.

- 214 Show a detail of the shear key between slab units. No shear key is to be placed on the exposed face of the exterior slab units. Include the note that after the tie rods are tensioned, shear keys shall be filled with an approved high strength non-shrinking grout conforming to 902.11 (C).

- 215 Show a detail of the exterior slab unit with the pertinent dimensions of the curb / parapet. Show the epoxy coated rebar to be placed in the curb / parapet. Show the anchorage system for the railing / fencing. Indicate that the curb / parapet is to be mix no.6 concrete. Include the note that the cost of the curb / parapet concrete is to be paid for under the "Superstructure Concrete" item. The cost of the anchor bolts and anchor plate will be paid for under the "Metal Railing / Fencing" item.

- 216 Show a Plan View of a slab unit and indicate the location of the slab lifting device(s) with the minimum working load for each device

- 217 Show a Tie Rod Recess Detail on the exposed surface of the exterior slab units. Give all pertinent dimensions of the recess.

Show the Lateral Tie Rod Detail with the 2 ½" hole for the tie rod. Include the following data:

1) 1 ½" diameter tie rod with 9 UNC-2A thread for 4" on each end.

2) Length of tie rod.

3) Heavy hex nut with 5" x 5" x 1" plate with 1 5/8" hole centered in the plate (one on each end of tie rod).

4) Tie rods are to be tensioned to 30,000 lb. prior to filling the shear keys, placing the concrete overlay and pouring the curb / parapet on the exterior slab units.

5) All material for the tie rods, plates and nuts is to be 709 grade 36 galvanized steel.

6) As an option to the tie rod, the Contractor may use a 1" diameter Dywidag rod with 5" x 5" x 1 ¼" anchor plate. The Dywidag rod shall be ASTM A 722 galvanized steel. Once in place the rod shall be tensioned to 35,000 lb.

7) After tensioning of the tie rod is complete, fill the recess hole with a high strength non-shrinking grout. The grout shall conform to 902.11 (C).

- 218 Show a detail of the roadway angles at the ends of the bridge. The angle is to be 6" x 4" x 1/2" and run from face of curb / parapet to face of curb / parapet. The 6" leg is to be vertical. There will be 15/16" diameter air holes in the 4" leg at 1'-0" c/c placed as close as possible to the vertical leg. Place ¾" diameter anchor studs normal to the ends of each leg of the angle at 1'-0" c/c. The studs are to stagger at 6" c/c.

- 219 Show an elevation view of the joint between the curb / parapet on the end post and the superstructure. The joint is to be filled with 1" cork type expansion material held in place with copper nails into the end post.

- 220 Show a plan view and a section view of each type of elastomeric bearing pad to be used at the pier(s) and abutments. List all pertinent dimensions. For testing purposes the design load for each type bearing is to be given in kips. Show the 1 ½" diameter holes for the #8 anchor dowels.

PLAN CHECKLIST: CONCRETE SLAB BRIDGE

Structural Review

- 221 Show a bearing orientation plan view at the abutments and pier(s). On the expansion end of a span the bearings are to be placed normal to the center line of slab unit. On the fixed end of a span the bearings are to be placed parallel to the center line of bearing.

FINISHED ROADWAY ELEVATIONS

General

- 222 Refer to PPM P-75-8 (4).
- 223 Show Finished Roadway Elevations along overlay construction joint(s) between stages.

BORING AND DRIVE TESTS

General

- 224 Refer to PPM P-75-3 (4).

STANDARDS

General

- 225 Refer to PPM P-75-5 (4).
- 226 With the standards for the railing or fencing, show a plan view or elevation view of the parapets and indicate the rail post spacing.

PLAN CHECKLIST: BOX CULVERT

PLAN CHECKLIST: BOX CULVERT

T.S.&L. Review

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 Designation of Structural Elements in accordance with PPM P-93-36 (4).
- 4 All views in accordance with PPM P-75-7 (4).
- 5 All lettering in accordance with PPM P-76-9 (G).
- 6 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A - REINFORCING DETAILS".
- 7 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.

TITLE SHEET

General

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JUL 23 2010

DEPARTMENT OF TRANSPORTATION
MARYLAND

STRUCTURES LOCATION MAP

General

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GENERAL PLAN AND ELEVATION

General

- 10 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 11 Show a diagram of the proposed vertical curve and list the associated vertical curve data.

Plan View

- 12 Show Base Line of Construction (Line with Stationing) for roadway over and if applicable under the bridge. Orient with stations increasing from left to right. When it occurs that the orientation of the bridge does not match the orientation of the highway plans, then a bold note shall be placed on the plans calling the contractors attention to it. In all cases the labeling (Base Line of Construction and P.G.L. MD 00) of this line on the structure plans must match the highway plans.
- 13 Show working line for curved alignments in accordance with PPM P-85-25(G).
- 14 Show all PC and PT points on the Base Line and list the associated horizontal curve data.
- 15 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 16 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction) If applicable, show location of test pits. Reference location of test pit data in contract documents.
- 17 Show existing right-of-way lines and existing easement areas.

PLAN CHECKLIST: BOX CULVERT

T.S.&L. Review

- 18 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 19 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 20 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 21 Show station equality and an angle at all intersecting Base Lines and working lines.
- 22 Show existing and proposed out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.
- 23 Show a destination arrow and label for each direction of travel (To Baltimore).
- 24 Show waterway name and direction of flow arrow for hydraulic structures.
- 25 Show all traffic barrier attachments at end posts / head walls.
- 26 Show existing structures in long dashed lines.
- 27 Show a North Arrow and destination arrow
- 28 Show centerline of culvert intersecting the baseline. Include station and skew angle (to local tangent for curved baselines).
- 29 Show length of culvert (out to out of head walls) measured along the centerline of culvert with dimensions tying to the Base Line / working line.
- 30 Show the angle each head wall makes with the centerline of culvert.
- 31 Label Roadway (MD 147) and stream (Deep Run)
- 32 Label wing walls and show angle each makes with the culvert.
- 33 Show limits and type of inlet and outlet riprap protection.
- 34 Show where Typical Longitudinal Section View is cut.
- 35 Show where Typical Section Culvert Barrel is cut.
- 36 Show Base Line of Construction (Line with Stationing) for roadway over the culvert. Orient with stations increasing from bottom to top of sheet. In all cases the structure plans must match the highway plans with respect to labeling (Base Line of Construction and P.G.L.) of this line.

Elevation View

- 37 Show the elevation view of the structure as a projection of the General Plan.
- 38 Show a datum line and datum elevation.
- 39 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 40 Show any fencing or railing along the parapet.

PLAN CHECKLIST: BOX CULVERT

T.S.&L. Review

- 41 Show the following for all structures over water:

Design storm with elevation (10 year design storm - elevation 100.00)

100 year storm with elevation (100 year storm - elevation 105.00)

Normal Water Surface elevation (NWS - elevation 98.00)

Waterway Invert elevation (invert - elevation 95.00)

Bottom of superstructure elevation at its lowest point

the lowest top of crown roadway elevation on the bridge

- 42 Show existing and proposed ground lines.

Longitudinal Section

- 43 Show a section view of the structure as a projection of the General Plan showing invert elevations (top of bottom slab and ultimate invert after siltation) and slope of culvert.

- 44 Show location of expansion and contraction joints in culvert barrel.

- 45 Show any fencing or railing along the headwalls and wing walls.

- 46 Show location of traffic barrier.

- 47 Show existing and proposed ground lines including proposed slope / channel protection.

- 48 Show a datum line.

- 49 Show all applicable water surface elevations (design storm, normal water surface).

- 50 Show all underground utilities.

- 51 Show minimum / maximum depth of fill and grading details over top of the culvert.

SEDIMENT AND EROSION CONTROL

General

- 52 The terminology (Stage II, Phase 2, etc.) must be consistent for all sheets (Highway and Structure).

- 53 Show maintenance of stream flow details (sand bags, dikes, de-watering basins etc.) and sediment and erosion control details for all stages (phases) of construction.

- 54 Include a detailed sequence of construction showing the work to be completed for each stage/phase.

- 55 Include a list of any Wetland /Buffer restrictions.

- 56 Show Limit of Disturbance for each stage

- 57 Draw subsequent elevation views of the existing structure indicating how the stream is to be maintained during the various stages (phases) of construction / removal. Show temporary diversion devices, normal water surface elevation, which portions of the existing structure are to be removed and the proposed construction in the area that the stream is diverted away from.

TYPICAL SECTION CULVERT BARREL

Typical Section View

- 58 Refer to Standard BC(6.07)-76-38 and BC(6.08)-76-39.

- 59 Show size of all cell openings and slab/cell wall thickness/widths.

PLAN CHECKLIST: BOX CULVERT

T.S.&L. Review

- 60 Show construction joints for staged construction.
- 61 Show normal water surface elevation. Show ultimate invert after siltation.
- 62 Show approximate existing ground line.

SEQUENCE OF CONSTRUCTION

General

- 63 When showing the sequence of construction/maintenance of traffic, only the word "Stage" shall be used. Do not use "Phase." The terminology (Stage 1, Stage 2, etc.) must be consistent for all sheets (Highway and Structure). List your Stages as 1, 2, 3 etc, no Roman Numerals or A, B, C. If there are some preliminary road stages that must take place prior to beginning the bridge construction, then the bridge work may start in Stage 3. Add a note to the bridge Sequence of Construction sheets that states "No Bridge Work in Stage 1 or Stage 2".
- 64 Show existing structure typical with out to out, lane, shoulder, offset from shoulder to slope, sidewalk and parapet / head wall widths tied to the Base Line of Construction or Working Line.

Substructure

- 65 Show the location of any sheeting necessary to maintain the existing or construct the new substructure. Show the location of each construction joint necessary for stage construction tied to the Base Line of Construction or Working Line.

Superstructure

- 66 Draw subsequent stage construction typicals directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typicals) which indicate the location of traffic for each stage.
- 67 Show proposed lane, shoulder and sidewalk widths tied to the Base Line of Construction or Working Line.
- 68 Show location of temporary barrier. Show the proper anchorage configuration for existing and proposed concrete decks. See applicable standards.
- 69 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 70 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 71 Show completed typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

HEADWALLS AND WING WALLS

Plan View

- 72 Show a plan view of the headwall / wing wall configuration for both the inlet and outlet end of the culvert.
- 73 Show all working points from Geometric and Footing Layout.
- 74 Show relation of walls to working line.
- 75 Show angles between wing wall stems and headwall.
- 76 Show a North Arrow and destination arrow

Elevation View

- 77 Show wing walls and headwall with any aesthetic treatment.

Typical Section View

PLAN CHECKLIST: BOX CULVERT

T.S.&L. Review

- 78 Show Typical Wing Wall Section with size of footing and stem shown.

GENERAL

General

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RECEIVED

JUL 23 2010

DEPARTMENT OF TRANSPORTATION
REG DIVISION

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General

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STRUCTURES LOCATION MAP

General

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General

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- 17 Show existing right-of-way lines and existing easement areas.

PLAN CHECKLIST: BOX CULVERT

Foundation Review

- 18 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 19 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
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- 40 Show any fencing or railing along the parapet.

- 41 Show the following for all structures over water:
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 - Waterway Invert elevation (invert – elevation 95.00)
 - Bottom of superstructure elevation at its lowest point
 - the lowest top of crown roadway elevation on the bridge

- 42 Show existing and proposed ground lines.

Longitudinal Section

- 43 Show a section view of the structure as a projection of the General Plan showing invert elevations (top of bottom slab and ultimate invert after siltation) and slope of culvert.
- 44 Show location of expansion and contraction joints in culvert barrel.
- 45 Show any fencing or railing along the headwalls and wing walls.
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- 54 Include a detailed sequence of construction showing the work to be completed for each stage/phase.
- 55 Include a list of any Wetland /Buffer restrictions.
- 56 Show Limit of Disturbance for each stage
- 57 Draw subsequent elevation views of the existing structure indicating how the stream is to be maintained during the various stages (phases) of construction / removal. Show temporary diversion devices, normal water surface elevation, which portions of the existing structure are to be removed and the proposed construction in the area that the stream is diverted away from.

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Typical Section View

- 58 Refer to Standard BC(6.07)-76-38 and BC(6.08)-76-39.
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PLAN CHECKLIST: BOX CULVERT

Foundation Review

- 60 Show construction joints for staged construction.
- 61 Show normal water surface elevation. Show ultimate invert after siltation.
- 62 Show approximate existing ground line.
- 63 Show any stone required to replace unsuitable material beneath culvert barrel.

SEQUENCE OF CONSTRUCTION

General

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- 67 Show proposed lane, shoulder and sidewalk widths tied to the Base Line of Construction or Working Line.
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- 70 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 71 Show completed typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

ABUTMENT&PIER PILE PLANS

Plan View

- 72 Show location of Test Pile(s).
- 73 Show arrow on battered piles and indicate batter ratio.
- 74 Show the rebar mat over piles (3 - #6 bars in each direction) and the rebar lap at construction joints.
- 75 Show construction joints for staged construction.
- 76 Show pile driving data chart in accordance with PPM P-93-35 (4).
- 77 Show pile driving notes from PPM P-82-20 (G).
- 78 Show footing steps when necessary.
- 79 Show location of piles referenced to working points / working lines which can be tied to the intersection point established by the Base Line of Construction.

PLAN CHECKLIST: BOX CULVERT

Foundation Review

- 80 Show a North Arrow and destination arrow

HEADWALLS AND WING WALLS

Plan View

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Elevation View

- 86 Show wing walls and headwall with any aesthetic treatment.

Typical Section View

- 87 Show Typical Wing Wall Section with size of footing and stem shown.

BORING AND DRIVE TESTS

General

- 88 Refer to PPM P-75-3 (4).

PLAN CHECKLIST: BOX CULVERT

Structural Review

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PLAN CHECKLIST: BOX CULVERT

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- 47 Show location of traffic barrier.
- 48 Show existing and proposed ground lines including proposed slope / channel protection.
- 49 Show a datum line.
- 50 Show all applicable water surface elevations (design storm, normal water surface).
- 51 Show all underground utilities.
- 52 Show minimum / maximum depth of fill and grading details over top of the culvert.
- 53 Address limits where precast sections will be acceptable.

HYDROLOGIC AND HYDRAULIC DATA SHEET

General

- 54 Include this sheet after the General Plan Sheet for all structures crossing waterways. Sheet to be prepared by Structures Hydraulics Division.

GEOMETRIC AND FOOTING LAYOUT

General

- 55 Prepare sheet in accordance with PPM P-86-28(G).
- 56 Show location of construction joints for staged construction Show location construction joints required for maintenance of traffic and maintenance of stream flow.
- 57 This layout should reference the working line only. A small exaggerated view may be included on this sheet to show the relationship between the baseline and working line. All piers and abutments shall be dimensioned to form a closed traverse around the footing. All working points shall be listed in a table with coordinate data provided.
- 58 Show all pertinent horizontal curve data.

SEDIMENT AND EROSION CONTROL

General

PLAN CHECKLIST: BOX CULVERT

Structural Review

- 59 The terminology (Stage II, Phase 2, etc.) must be consistent for all sheets (Highway and Structure).
- 60 Show maintenance of stream flow details (sand bags, dikes, de-watering basins etc.) and sediment and erosion control details for all stages (phases) of construction.
- 61 Include a detailed sequence of construction showing the work to be completed for each stage/phase.
- 62 Include a list of any Wetland /Buffer restrictions.
- 63 Show Limit of Disturbance for each stage
- 64 Provide a boxed area that contains the following note – "At the Contractor's option an alternate sequence of construction may be proposed. The Contractor shall be responsible for preparing the appropriate plans and request in writing for a change to these plans. All changes shall be submitted through the administration for review and approval by the applicable permitting agencies. No additional compensation will be allowed for delays caused by the review and approval process nor will additional compensation be allowed if any proposed change is rejected. The administration and permitting agencies shall determine whether any proposed alternate sequence is acceptable. If no alternate is found acceptable then the sequence shown on these plans shall be followed."
- 65 Draw subsequent elevation views of the existing structure indicating how the stream is to be maintained during the various stages (phases) of construction / removal. Show temporary diversion devices, normal water surface elevation, which portions of the existing structure are to be removed and the proposed construction in the area that the stream is diverted away from.
- 66 Prepare a sheet indicating maintenance of stream flow details. Show the following diversion device alternatives:
 - Detail using sand bags
 - Detail using temporary sheeting
 - Detail using concrete barrier
- 67 Show a portable sediment tank and all the notes pertaining to it.
- 68 Include the following note:
 - The Contractor shall have the option of using any of the diversion device methods shown. Once the selected option is approved by MDE, it shall be the Contractor's responsibility to dewater the work area. No additional compensation will be allowed if the method of dewatering or diversion option is changed because of dewatering difficulties. The diversion shall be placed so that it is located within the existing SHA right-of-way and allows construction within the diversion area to be completed in the dry. The diversion is not intended to block highwater events from flooding the dewatered areas.

TYPICAL SECTION CULVERT BARREL

Typical Section View

- 69 Refer to Standard BC(6.07)-76-38 and BC(6.08)-76-39.
- 70 Show size of all cell openings and slab/cell wall thickness/widths.
- 71 Show construction joints for staged construction.
- 72 Show normal water surface elevation. Show ultimate invert after siltation.
- 73 Label size and spacing of all rebar. Indicate which bars are epoxy coated.
- 74 Show any piles in bottom slab. Show rebar mat 3" above piles (3 - #8 bars).
- 75 Show approximate existing ground line.
- 76 Show applicable notes for precast alternative.

PLAN CHECKLIST: BOX CULVERT

Structural Review

- 77 Show any stone required to replace unsuitable material beneath culvert barrel.
- 78 Show lap lengths of all rebar splices. Show embedment and hook lengths for all rebar. Show clear cover to bars at face of concrete.
- 79 Show 2 ply waterproofing membrane on earth side of all construction joints with air on the other.

SEQUENCE OF CONSTRUCTION

General

- 80 When showing the sequence of construction/maintenance of traffic, only the word "Stage" shall be used. Do not use "Phase." The terminology (Stage 1, Stage 2, etc.) must be consistent for all sheets (Highway and Structure). List your Stages as 1, 2, 3 etc, no Roman Numerals or A, B, C. If there are some preliminary road stages that must take place prior to beginning the bridge construction, then the bridge work may start in Stage 3. Add a note to the bridge Sequence of Construction sheets that states "No Bridge Work in Stage 1 or Stage 2".
- 81 Show existing structure typical with out to out, lane, shoulder, offset from shoulder to slope, sidewalk and parapet / head wall widths tied to the Base Line of Construction or Working Line.

Substructure

- 82 Show the location of any sheeting necessary to maintain the existing or construct the new substructure. Show the location of each construction joint necessary for stage construction tied to the Base Line of Construction or Working Line.

Superstructure

- 83 Draw subsequent stage construction typicals directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typicals) which indicate the location of traffic for each stage.
- 84 Show proposed lane, shoulder and sidewalk widths tied to the Base Line of Construction or Working Line.
- 85 Show location of temporary barrier. Show the proper anchorage configuration for existing and proposed concrete decks. See applicable standards.
- 86 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 87 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 88 Show completed typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

ABUTMENT&PIER PILE PLANS

Plan View

- 89 Show location of Test Pile(s).
- 90 Show arrow on battered piles and indicate batter ratio.
- 91 Show the rebar mat over piles (3 - #6 bars in each direction) and the rebar lap at construction joints.
- 92 Show construction joints for staged construction.
- 93 Show pile driving data chart in accordance with PPM P-93-35 (4).
- 94 Show pile driving notes from PPM P-82-20 (G).
- 95 Show footing steps when necessary.

PLAN CHECKLIST: BOX CULVERT

Structural Review

- 96 Show location of piles referenced to working points / working lines which can be tied to the intersection point established by the Base Line of Construction.
- 97 Show a North Arrow and destination arrow

HEADWALLS AND WING WALLS

Plan View

- 98 Show a plan view of the headwall / wing wall configuration for both the inlet and outlet end of the culvert.
- 99 Show all working points from Geometric and Footing Layout.
- 100 Show relation of walls to working line.
- 101 Show angles between wing wall stems and headwall.
- 102 Show location of expansion / contraction joints (Refer to Standard BC (6.04) 75-10 and BC (6.06) 76-37).
- 103 If proposed work is an extension to an existing culvert then show all pertinent connection details to the existing culvert including removal of portions of the culvert.
- 104 Show layout of footing reinforcing steel in wing wall and how it ties into toe wall of the box culvert barrel. Refer to Standard BC (6.09) 89-200. Label size and spacing of all rebar.
- 105 Show a North Arrow and destination arrow

Elevation View

- 106 Show an elevation view of the headwall / wing wall configuration for both the inlet and outlet end of the culvert. This view should show how details from the two wings tie into the headwall (e.g. footings, fencing, etc.).
- 107 Show wing walls and headwall with any aesthetic treatment.
- 108 Show elevation of bottom and top of footing (bottom of wing wall footing should match bottom of toe wall elevation at inlet / outlet end).
- 109 Show elevation of ends and break points along top of wing wall stem and along top of culvert headwall.
- 110 Show where Typical Section is cut.
- 111 Show drainage system behind wing wall stem.
- 112 If proposed work is an extension to an existing culvert then show all pertinent connection details to the existing culvert including removal of portions of the culvert.
- 113 Show any fencing or railing on top of the headwall / wing wall.
- 114 Show location of expansion and contraction joints.
- 115 Show limits of slope and channel protection
- 116 Show existing and proposed ground lines.

Typical Section View

- 117 Show Typical Wing Wall Section with size of footing and stem shown.
- 118 Refer to PPM P-77-13(3) and BR-SB (0.01)-80-101
- 119 Label size and spacing of all rebar. Refer to PPM P-89-32 (4) for size of longitudinal rebar in wing wall stem and vertical bars in the front face of wing wall. Indicate which bars are to be epoxy coated.
- 120 Show any piles in footing. Show rebar mat 3" above piles (3 - #6 bars).

PLAN CHECKLIST: BOX CULVERT

Structural Review

- 121 Show any fencing or railing on top of the Headwall / wing wall.
- 122 Provide a stepped key at the stem to footing connection. Key shall be 6" high by $\frac{1}{2}$ the width of the stem.
- 123 Show any subfoundation concrete required to replace unsuitable material beneath culvert wing walls.
- 124 Show lap lengths of all rebar splices. Show embedment and hook lengths for all rebar. Show clear cover to bars at face of concrete.
- 125 Show 2 ply waterproofing membrane on earth side of all construction joints with air on the other.

Details

- 126 Show orientation of main rebar in box culvert slab (is it parallel to headwall or normal to culvert side walls). If normal to culvert side walls and the headwall is acting as an edge beam to carry the load from partial rebars, then show details of headwall reinforcing.

BORING AND DRIVE TESTS

General

- 127 Refer to PPM P-75-3 (4).

STANDARDS

General

- 128 Refer to PPM P-75-5 (4).

PLAN CHECKLIST: STEEL GIRDER BRIDGE

PLAN CHECKLIST: STEEL GIRDER BRIDGE

T.S.&L. Review

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 Designation of Structural Elements in accordance with PPM P-93-36 (4).
- 4 All views in accordance with PPM P-75-7 (4).
- 5 All lettering in accordance with PPM P-76-9 (G).
- 6 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A - REINFORCING DETAILS".
- 7 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.

TITLE SHEET

General

- 8 All projects shall have a Title Sheet in accordance with PPM P-76-10 (G).

STRUCTURES LOCATION MAP

General

- 9 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).

GENERAL PLAN AND ELEVATION

General

- 10 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 11 Show a diagram of the proposed vertical curve and list the associated vertical curve data.

Plan View

- 12 Show Base Line of Construction (Line with Stationing) for roadway over and if applicable under the bridge. Orient with stations increasing from left to right. When it occurs that the orientation of the bridge does not match the orientation of the highway plans, then a bold note shall be placed on the plans calling the contractors attention to it. In all cases the labeling (Base Line of Construction and P.G.L. MD 00) of this line on the structure plans must match the highway plans.
- 13 Show working line for curved alignments in accordance with PPM P-85-25(G).
- 14 Show all PC and PT points on the Base Line and list the associated horizontal curve data.
- 15 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 16 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction) if applicable, show location of test pits. Reference location of test pit data in contract documents.
- 17 Show existing right-of-way lines and existing easement areas.

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PLAN CHECKLIST: STEEL GIRDER BRIDGE

T.S.&L. Review

- 18 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 19 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 20 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 21 Show station equality and an angle at all intersecting Base Lines and working lines.
- 22 Show all center lines of bearing for each substructure unit. Show the intersecting station on the Base Line of Construction or the working point on the Working Line with its angle of intersection.
- 23 Show existing and proposed out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.
- 24 Show span numbers and span length dimensions.
- 25 Show a total length of bridge dimension, Out to Out of Backwalls.
- 26 Show a destination arrow and label for each direction of travel (To Baltimore).
- 27 Show a lane arrow in every lane over and if applicable under the bridge.
- 28 Show the point of minimum vertical underclearance for highway over highway and highway over railroad bridges. For bridges over dual highways show this point over both roadways.
- 29 Show width of lane, shoulder, sidewalk and grading limits under the bridge (If applicable).
- 30 Show waterway name and direction of flow arrow for hydraulic structures.
- 31 Show horizontal, hydraulic, navigational, and railroad clearances.
- 32 Show all traffic barrier attachments at end posts / head walls.
- 33 Show existing structures in long dashed lines.
- 34 Show a North Arrow and destination arrow

Elevation View

- 35 Show the elevation view of the structure as a projection of the General Plan.
- 36 Show a datum line and datum elevation.
- 37 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 38 Show minimum vertical underclearance for highway over highway, railroad or navigable water bridges. For bridges over dual highways show this dimension for both roadways.
- 39 Show any fencing or railing along the parapet.
- 40 Show all bearing designations (Fix or Exp.).

PLAN CHECKLIST: STEEL GIRDER BRIDGE

T.S.&L. Review

- 41 Show the following for all structures over water:
- Design storm with elevation (10 year design storm - elevation 100.00)
 - 100 year storm with elevation (100 year storm - elevation 105.00)
 - Normal Water Surface elevation (NWS -- elevation 98.00)
 - Waterway Invert elevation (invert -- elevation 95.00)
 - Bottom of superstructure elevation at its lowest point
 - the lowest top of crown roadway elevation on the bridge
- 42 Show grading details (2:1 slope, 4:1 slope) under the bridge.
- 43 Show existing and proposed ground lines.

SEDIMENT AND EROSION CONTROL

General

- 44 The terminology (Stage II, Phase 2, etc.) must be consistent for all sheets (Highway and Structure).
- 45 Show maintenance of stream flow details (sand bags, dikes, de-watering basins etc.) and sediment and erosion control details for all stages (phases) of construction.
- 46 Include a detailed sequence of construction showing the work to be completed for each stage/phase.
- 47 Include a list of any Wetland /Buffer restrictions.
- 48 Show Limit of Disturbance for each stage
- 49 Draw subsequent elevation views of the existing structure indicating how the stream is to be maintained during the various stages (phases) of construction / removal. Show temporary diversion devices, normal water surface elevation, which portions of the existing structure are to be removed and the proposed construction in the area that the stream is diverted away from.

SEQUENCE OF CONSTRUCTION

General

- 50 When showing the sequence of construction/maintenance of traffic, only the word "Stage" shall be used. Do not use "Phase." The terminology (Stage 1, Stage 2, etc.) must be consistent for all sheets (Highway and Structure). List your Stages as 1, 2, 3 etc, no Roman Numerals or A, B, C. If there are some preliminary road stages that must take place prior to beginning the bridge construction, then the bridge work may start in Stage 3. Add a note to the bridge Sequence of Construction sheets that states "No Bridge Work in Stage 1 or Stage 2".
- 51 Sequence of Construction sheets are required for the superstructure and substructure portions of the bridge if work is being proposed for these elements.

Substructure

- 52 Show existing elevation view of substructure units with columns, pile and stringer spacing (if applicable) tied to the Base Line of Construction or Working Line.
- 53 Draw subsequent stage construction typical directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typical).
- 54 Show proposed column and stringer spacings.
- 55 Show location of temporary pier cap supports.

PLAN CHECKLIST: STEEL GIRDER BRIDGE

T.S.&L. Review

- 56 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 57 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 58 Show completed typical with column and stringer spacings.
- 59 Show the location of any sheeting necessary to maintain the existing or construct the new substructure. Show the location of each construction joint necessary for stage construction tied to the Base Line of Construction or Working Line.

Superstructure

- 60 Show existing bridge typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.
- 61 Draw subsequent stage construction typicals directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typicals) which indicate the location of traffic for each stage.
- 62 Show proposed lane, shoulder and sidewalk widths tied to the Base Line of Construction or Working Line.
- 63 Show location of temporary barrier. Show the proper anchorage configuration for existing and proposed concrete decks. See applicable standards.
- 64 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 65 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 66 Show completed typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

ABUTMENT GP&E

Plan View

- 67 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 68 Show the location of any construction joints for staged construction.
- 69 Show layout of beam seats along center line of bearing.
- 70 Show location of utility opening(s) in back wall. Include proposed utilities and sleeve for future use.
- 71 Show a North Arrow and destination arrow

Elevation View

- 72 Show where the Typical Section is cut.
- 73 Show the location of any construction joints for staged construction.
- 74 Show existing and proposed ground lines.

Typical Section View

- 75 Show Typical Section through abutment with dimensions locating the centerline of bearing, etc.

WING WALLS

Plan View

PLAN CHECKLIST: STEEL GIRDER BRIDGE

T.S.&L. Review

- 76 Show an Elevation View of a typical wing wall with aesthetic treatment.

Typical Section View

- 77 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).
- 78 Show any fencing or railing on top of the wing wall/end post.

PIERS

Plan View

- 79 Show Base Line of Construction with the station and angle at the intersection with the center line of bearing or show the Working Line with working point and angle at the intersection with the center line of bearing.
- 80 Indicate the length of cap tied to the Base Line of Construction or Working Line. Indicate the width of the cap and location of the center lines of bearing tied to the center line of pier.
- 81 Show all working points from the Geometric and Footing Layout.
- 82 Show the location of the construction joints for staged construction.
- 83 Show a North Arrow and destination arrow

Elevation View

- 84 Show existing and proposed ground lines and the normal water surface.
- 85 Show Elevation View of the type of pier proposed with any aesthetic treatments (if applicable).
- 86 Show the layout of the columns tied to the Base Line of Construction or Working Line.
- 87 Show the elevation of the bottom and top of footing.
- 88 Show where the Typical Section is cut.

Typical Section View

- 89 Show Typical Section through the pier with all pertinent dimensions.

SUPERSTRUCTURE TYPICAL SECTION

General

- 90 The Typical Section shall be drawn looking stations ahead.
- 91 Show the Base Line of Construction or Working Line and the P.G.L.
- 92 Show the proposed out to out, lane, shoulder, clear roadway, sidewalk and parapet / curb widths tied to the Base Line of Construction or Working Line.
- 93 Show the P/GE, crown point and all cross slopes. Cross slope arrows should be drawn with the arrow pointing in the direction that water would flow across the deck surface. Refer to PPM P-74-2(4). Show superelevation transition if applicable.
- 94 Show the construction joints and reinforcing laps in the concrete overlay for staged construction.
- 95 Show all utilities located on the bridge.
- 96 Show any fencing or railing on top of the parapet.
- 97 Show note concerning whether slip forming will be allowed for parapets.
- 98 Show any conduit required in the parapets. Refer to PPM P-90-33(4).

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PLAN CHECKLIST: STEEL GIRDER BRIDGE

T.S.&L. Review

- 99 Refer to the applicable deck slab standard.
- 100 Refer to the applicable parapet / sidewalk standard.
- 101 Refer to the applicable fencing / railing standard.
- 102 Show and label all girders and diaphragms.
- 103 Show girder spacing and overhang widths. For bridges on curved alignments note how these dimensions are measured (normal to the Base Line etc.).
- 104 Show and label all stringers and cross frames / diaphragms.
- 105 Show the slab and D dimension in accordance with the deck slab standards.

Typical Section View

- 106 For bridges with haunched girders show the minimum and maximum depth of web.

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Foundation Review

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 Designation of Structural Elements in accordance with PPM P-93-36 (4).
- 4 All views in accordance with PPM P-75-7 (4).
- 5 All lettering in accordance with PPM P-76-9 (G).
- 6 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A – REINFORCING DETAILS".
- 7 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.

TITLE SHEET

General

- 8 All projects shall have a Title Sheet in accordance with PPM P-76-10 (G).

STRUCTURES LOCATION MAP

General

- 9 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).

GENERAL PLAN AND ELEVATION

General

- 10 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 11 Show a diagram of the proposed vertical curve and list the associated vertical curve data.

Plan View

- 12 Show Base Line of Construction (Line with Stationing) for roadway over and if applicable under the bridge. Orient with stations increasing from left to right. When it occurs that the orientation of the bridge does not match the orientation of the highway plans, then a bold note shall be placed on the plans calling the contractors attention to it. In all cases the labeling (Base Line of Construction and P.G.L. MD 00) of this line on the structure plans must match the highway plans.
- 13 Show working line for curved alignments in accordance with PPM P-85-25(G).
- 14 Show all PC and PT points on the Base Line and list the associated horizontal curve data.
- 15 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 16 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction)If applicable, show location of test pits. Reference location of test pit data in contract documents.
- 17 Show existing right-of-way lines and existing easement areas.

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Foundation Review

- 18 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 19 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 20 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 21 Show station equality and an angle at all intersecting Base Lines and working lines.
- 22 Show all center lines of bearing for each substructure unit. Show the intersecting station on the Base Line of Construction or the working point on the Working Line with its angle of intersection.
- 23 Show existing and proposed out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.
- 24 Show span numbers and span length dimensions.
- 25 Show a total length of bridge dimension, Out to Out of Backwalls.
- 26 Show a destination arrow and label for each direction of travel (To Baltimore).
- 27 Show a lane arrow in every lane over and if applicable under the bridge.
- 28 Show the point of minimum vertical underclearance for highway over highway and highway over railroad bridges. For bridges over dual highways show this point over both roadways.
- 29 Show width of lane, shoulder, sidewalk and grading limits under the bridge (If applicable).
- 30 Show waterway name and direction of flow arrow for hydraulic structures.
- 31 Show horizontal, hydraulic, navigational, and railroad clearances.
- 32 Show all traffic barrier attachments at end posts / head walls.
- 33 Show existing structures in long dashed lines.
- 34 Show a North Arrow and destination arrow

Elevation View

- 35 Show the elevation view of the structure as a projection of the General Plan.
- 36 Show a datum line and datum elevation.
- 37 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 38 Show minimum vertical underclearance for highway over highway, railroad or navigable water bridges. For bridges over dual highways show this dimension for both roadways.
- 39 Show any fencing or railing along the parapet.
- 40 Show all bearing designations (Fix or Exp.).

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Foundation Review

- 41 Show the following for all structures over water:
- Design storm with elevation (10 year design storm - elevation 100.00)
 - 100 year storm with elevation (100 year storm - elevation 105.00)
 - Normal Water Surface elevation (NWS – elevation 98.00)
 - Waterway Invert elevation (invert – elevation 95.00)
 - Bottom of superstructure elevation at its lowest point
 - the lowest top of crown roadway elevation on the bridge

42 Show grading details (2:1 slope, 4:1 slope) under the bridge.

43 Show existing and proposed ground lines.

SEDIMENT AND EROSION CONTROL

General

- 44 The terminology (Stage II, Phase 2, etc.) must be consistent for all sheets (Highway and Structure).
- 45 Show maintenance of stream flow details (sand bags, dikes, de-watering basins etc.) and sediment and erosion control details for all stages (phases) of construction.
- 46 Include a detailed sequence of construction showing the work to be completed for each stage/phase.
- 47 Include a list of any Wetland /Buffer restrictions.
- 48 Show Limit of Disturbance for each stage
- 49 Draw subsequent elevation views of the existing structure indicating how the stream is to be maintained during the various stages (phases) of construction / removal. Show temporary diversion devices, normal water surface elevation, which portions of the existing structure are to be removed and the proposed construction in the area that the stream is diverted away from.

SEQUENCE OF CONSTRUCTION

General

- 50 When showing the sequence of construction/maintenance of traffic, only the word "Stage" shall be used. Do not use "Phase." The terminology (Stage I, Stage 2, etc.) must be consistent for all sheets (Highway and Structure). List your Stages as 1, 2, 3 etc, no Roman Numerals or A, B, C. If there are some preliminary road stages that must take place prior to beginning the bridge construction, then the bridge work may start in Stage 3. Add a note to the bridge Sequence of Construction sheets that states "No Bridge Work in Stage 1 or Stage 2".
- 51 Sequence of Construction sheets are required for the superstructure and substructure portions of the bridge if work is being proposed for these elements.

Substructure

- 52 Show existing elevation view of substructure units with columns, pile and stringer spacing (if applicable) tied to the Base Line of Construction or Working Line.
- 53 Draw subsequent stage construction typical directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typical).
- 54 Show proposed column and stringer spacings.
- 55 Show location of temporary pier cap supports.

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Foundation Review

- 56 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 57 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 58 Show completed typical with column and stringer spacings.
- 59 Show the location of any sheeting necessary to maintain the existing or construct the new substructure. Show the location of each construction joint necessary for stage construction tied to the Base Line of Construction or Working Line.

Superstructure

- 60 Include the following note:

During the deck removal operation, the contractor shall place a vertical saw cut at the limits of removal in a manner as to maintain a vertical surface along the limits of removal as shown. Any removal operations that causes the deck to spall at an angle or go under the barrier is prohibited. Any operations not conforming to these requirements will be terminated immediately by the inspector and work on the removal stopped until an alternative method is used. Any delay caused by this stoppage of work will not be the basis for any claim.

ABUTMENT GP&E

Plan View

- 61 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 62 Show the location of any construction joints for staged construction.
- 63 Show a North Arrow and destination arrow

Elevation View

- 64 Show the elevation of the bottom and top of footing.
- 65 Show where the Typical Section is cut.
- 66 Show the location of any construction joints for staged construction.
- 67 Show existing and proposed ground lines.

Typical Section View

- 68 Show Typical Section through abutment with dimensions locating the centerline of bearing, etc.

ABUTMENT&PIER PILE PLANS

Plan View

- 69 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 70 Show location of Test Pile(s).
- 71 Show arrow on battered piles and indicate batter ratio.
- 72 Show the rebar mat over piles (3 - #6 bars in each direction) and the rebar lap at construction joints.
- 73 Show construction joints for staged construction.
- 74 Show pile driving data chart in accordance with PPM P-93-35 (4).
- 75 Show pile driving notes from PPM P-82-20 (G).

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Foundation Review

- 76 Show footing steps when necessary.
- 77 Show location of piles referenced to working points / working lines which can be tied to the intersection point established by the Base Line of Construction.
- 78 Show a North Arrow and destination arrow

WING WALLS

Elevation View

- 79 Show an Elevation View of a typical wing wall with aesthetic treatment.

Typical Section View

- 80 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).

PIERS

Plan View

- 81 Show Base Line of Construction with the station and angle at the intersection with the center line of bearing or show the Working Line with working point and angle at the intersection with the center line of bearing.
- 82 Indicate the length of cap tied to the Base Line of Construction or Working Line. Indicate the width of the cap and location of the center lines of bearing tied to the center line of pier.
- 83 Show all working points from the Geometric and Footing Layout.
- 84 Show the location of the construction joints for staged construction.
- 85 Show a North Arrow and destination arrow

Elevation View

- 86 Show existing and proposed ground lines and the normal water surface.
- 87 Show Elevation View of the type of pier proposed with any aesthetic treatments (if applicable).
- 88 Show the layout of the columns tied to the Base Line of Construction or Working Line.
- 89 Show the elevation of the bottom and top of footing.
- 90 Show where the Typical Section is cut.

Typical Section View

- 91 Show Typical Section through the pier with all pertinent dimensions.

SUPERSTRUCTURE TYPICAL SECTION

General

- 92 The Typical Section shall be drawn looking stations ahead.
- 93 Show the Base Line of Construction or Working Line and the P.G.L.
- 94 Show the proposed out to out, lane, shoulder, clear roadway, sidewalk and parapet / curb widths tied to the Base Line of Construction or Working Line.
- 95 Show the P/GE, crown point and all cross slopes. Cross slope arrows should be drawn with the arrow pointing in the direction that water would flow across the deck surface. Refer to PPM P-74-2(4). Show superelevation transition if applicable.
- 96 Show the construction joints and reinforcing laps in the concrete overlay for staged construction.

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Foundation Review

- 97 Show all utilities located on the bridge.
- 98 Show any fencing or railing on top of the parapet.
- 99 Show note concerning whether slip forming will be allowed for parapets.
- 100 Show any conduit required in the parapets. Refer to PPM P-90-33(4).
- 101 Refer to the applicable deck slab standard.
- 102 Refer to the applicable parapet / sidewalk standard.
- 103 Refer to the applicable fencing / railing standard.
- 104 Show and label all girders and diaphragms.
- 105 Show girder spacing and overhang widths. For bridges on curved alignments note how these dimensions are measured (normal to the Base Line etc.).
- 106 Show and label all stringers and cross frames / diaphragms.
- 107 Show the slab and D dimension in accordance with the deck slab standards.

BORING AND DRIVE TESTS

General

- 108 Refer to PPM P-75-3 (4).

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Structural Review

BEARING STIFFNER DETAILS

General

- 1 Refer to Standard BR-SS (8.07)-78-73.

GENERAL

General

- 2 Title Block information in accordance with PPM P-79-16(G)
- 3 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 4 Designation of Structural Elements in accordance with PPM P-93-36 (4).
- 5 All views in accordance with PPM P-75-7 (4).
- 6 All lettering in accordance with PPM P-76-9 (G).
- 7 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A – REINFORCING DETAILS".
- 8 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.

TITLE SHEET

General

- 9 All projects shall have a Title Sheet in accordance with PPM P-76-10 (G).

STRUCTURES LOCATION MAP

General

- 10 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).

GENERAL PLAN AND ELEVATION

General

- 11 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 12 Show a diagram of the proposed vertical curve and list the associated vertical curve data.

Plan View

- 13 Show Base Line of Construction (Line with Stationing) for roadway over and if applicable under the bridge. Orient with stations increasing from left to right. When it occurs that the orientation of the bridge does not match the orientation of the highway plans, then a bold note shall be placed on the plans calling the contractors attention to it. In all cases the labeling (Base Line of Construction and P.G.L. MD 00) of this line on the structure plans must match the highway plans.
- 14 Show working line for curved alignments in accordance with PPM P-85-25(G).
- 15 Show all PC and PT points on the Base Line and list the associated horizontal curve data.
- 16 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Structural Review

- 17 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction) if applicable, show location of test pits. Reference location of test pit data in contract documents.
- 18 Show existing right-of-way lines and existing easement areas.
- 19 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 20 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 21 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 22 Show station equality and an angle at all intersecting Base Lines and working lines.
- 23 Show all center lines of bearing for each substructure unit. Show the intersecting station on the Base Line of Construction or the working point on the Working Line with its angle of intersection.
- 24 Show existing and proposed out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.
- 25 Show span numbers and span length dimensions.
- 26 Show a total length of bridge dimension, Out to Out of Backwalls.
- 27 Show a destination arrow and label for each direction of travel (To Baltimore).
- 28 Show a lane arrow in every lane over and if applicable under the bridge.
- 29 Show the point of minimum vertical underclearance for highway over highway and highway over railroad bridges. For bridges over dual highways show this point over both roadways.
- 30 Show limits and type of slope protection. Show limits of soil stabilization matting.
- 31 Show width of lane, shoulder, sidewalk and grading limits under the bridge (If applicable).
- 32 Show waterway name and direction of flow arrow for hydraulic structures.
- 33 Show horizontal, hydraulic, navigational, and railroad clearances.
- 34 Show all traffic barrier attachments at end posts / head walls.
- 35 Show existing structures in long dashed lines.
- 36 Show a North Arrow and destination arrow

Elevation View

- 37 Show the elevation view of the structure as a projection of the General Plan.
- 38 Show a datum line and datum elevation.
- 39 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 40 Show minimum vertical underclearance for highway over highway, railroad or navigable water bridges. For bridges over dual highways show this dimension for both roadways.
- 41 Show any fencing or railing along the parapet.
- 42 Show all bearing designations (Fix or Exp.).

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Structural Review

- 43 Show the following for all structures over water:
- Design storm with elevation (10 year design storm - elevation 100.00)
 - 100 year storm with elevation (100 year storm - elevation 105.00)
 - Normal Water Surface elevation (NWS – elevation 98.00)
 - Waterway Invert elevation (invert – elevation 95.00)
 - Bottom of superstructure elevation at its lowest point
 - the lowest top of crown roadway elevation on the bridge

44 Show grading details (2:1 slope, 4:1 slope) under the bridge.

45 Show existing and proposed ground lines.

HYDROLOGIC AND HYDRAULIC DATA SHEET

General

- 46 Include this sheet after the General Plan Sheet for all structures crossing waterways. Sheet to be prepared by Structures Hydraulics Division.

GEOMETRIC AND FOOTING LAYOUT

General

- 47 Prepare sheet in accordance with PPM P-86-28(G).
- 48 Show location of construction joints for staged construction Show location construction joints required for maintenance of traffic and maintenance of stream flow.
- 49 This layout should reference the working line only. A small exaggerated view may be included on this sheet to show the relationship between the baseline and working line. All piers and abutments shall be dimensioned to form a closed traverse around the footing. All working points shall be listed in a table with coordinate data provided.
- 50 Show all pertinent horizontal curve data.

SEDIMENT AND EROSION CONTROL

General

- 51 The terminology (Stage II, Phase 2, etc.) must be consistent for all sheets (Highway and Structure).
- 52 Show maintenance of stream flow details (sand bags, dikes, de-watering basins etc.) and sediment and erosion control details for all stages (phases) of construction.
- 53 Include a detailed sequence of construction showing the work to be completed for each stage/phase.
- 54 Include a list of any Wetland /Buffer restrictions.
- 55 Show Limit of Disturbance for each stage
- 56 Provide a boxed area that contains the following note – "At the Contractor's option an alternate sequence of construction may be proposed. The Contractor shall be responsible for preparing the appropriate plans and request in writing for a change to these plans. All changes shall be submitted through the administration for review and approval by the applicable permitting agencies. No additional compensation will be allowed for delays caused by the review and approval process nor will additional compensation be allowed if any proposed change is rejected. The administration and permitting agencies shall determine whether any proposed alternate sequence is acceptable. If no alternate is found acceptable then the sequence shown on these plans shall be followed."

- 57 Draw subsequent elevation views of the existing structure indicating how the stream is to be maintained during the various stages (phases) of construction / removal. Show temporary diversion devices, normal water surface elevation, which portions of the existing structure are to be removed and the proposed construction in the area that the stream is diverted away from.
- 58 Prepare a sheet indicating maintenance of stream flow details. Show the following diversion device alternatives:
 - Detail using sand bags
 - Detail using temporary sheeting
 - Detail using concrete barrier
- 59 Show a portable sediment tank and all the notes pertaining to it.
- 60 Include the following note:
 - The Contractor shall have the option of using any of the diversion device methods shown. Once the selected option is approved by MDE, it shall be the Contractor's responsibility to dewater the work area. No additional compensation will be allowed if the method of dewatering or diversion option is changed because of dewatering difficulties. The diversion shall be placed so that it is located within the existing SHA right-of-way and allows construction within the diversion area to be completed in the dry. The diversion is not intended to block highwater events from flooding the dewatered areas.

SEQUENCE OF CONSTRUCTION

General

- 61 When showing the sequence of construction/maintenance of traffic, only the word "Stage" shall be used. Do not use "Phase." The terminology (Stage 1, Stage 2, etc.) must be consistent for all sheets (Highway and Structure). List your Stages as 1, 2, 3 etc, no Roman Numerals or A, B, C. If there are some preliminary road stages that must take place prior to beginning the bridge construction, then the bridge work may start in Stage 3. Add a note to the bridge Sequence of Construction sheets that states "No Bridge Work in Stage 1 or Stage 2".
- 62 Sequence of Construction sheets are required for the superstructure and substructure portions of the bridge if work is being proposed for these elements.

Substructure

- 63 Show existing elevation view of substructure units with columns, pile and stringer spacing (if applicable) tied to the Base Line of Construction or Working Line.
- 64 Draw subsequent stage construction typicals directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typicals).
- 65 Show proposed column and stringer spacings.
- 66 Show location of temporary pier cap supports.
- 67 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 68 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 69 Show completed typical with column and stringer spacings.
- 70 Show the location of any sheeting necessary to maintain the existing or construct the new substructure. Show the location of each construction joint necessary for stage construction tied to the Base Line of Construction or Working Line.

Superstructure

- 71 Show existing bridge typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Structural Review

- 72 Draw subsequent stage construction typicals directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typicals) which indicate the location of traffic for each stage.
- 73 Show proposed lane, shoulder and sidewalk widths tied to the Base Line of Construction or Working Line.
- 74 Show location of temporary barrier. Show the proper anchorage configuration for existing and proposed concrete decks. See applicable standards.
- 75 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 76 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 77 Show completed typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

ABUTMENT GP&E

Plan View

- 78 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 79 Show all working points from the Geometric and Footing Layout sheet.
- 80 Show the drainage system behind abutment stem and wing walls.
- 81 Show footing steps when necessary.
- 82 Show the layout of the wing walls / end posts located off the Base Line of Construction or Working Line. Designate the wing walls in accordance with PPM P-93-36(4).
- 83 Show the location of any construction joints for staged construction.
- 84 Show the location of any expansion and contraction joints
- 85 Show layout of beam seats along center line of bearing.
- 86 Show location of utility opening(s) in back wall. Include proposed utilities and sleeve for future use.
- 87 Show a North Arrow and destination arrow

Elevation View

- 88 Show the P/GE and elevations along a dashed line indicating the finished bridge surface along the center line of bearing. Show the elevations at the gutter lines and at the crown break and any other grade break points.
- 89 Show the elevation of the bottom and top of footing.
- 90 Show where the Typical Section is cut.
- 91 Show the location of any construction joints for staged construction.
- 92 Show any footing steps when necessary.
- 93 Show the conduit(s) in the end posts / curb portion of the wing walls.
- 94 Show existing and proposed ground lines.
- 95 Show elevation of beam seats and bridge seat.

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Structural Review

- 96 Show location of utility opening(s) in back wall. Include proposed utilities and sleeve for future use. See standard.
- 97 Show drainage system behind abutment stem.
- 98 Show location of expansion and contraction joints.
- 99 Show drainage trough layout.

Typical Section View

- 100 Show Typical Section through abutment with dimensions locating the centerline of bearing, etc.
- 101 Show the limits of Mix 3 and Mix 6 concrete.
- 102 Show the limits of payment for the Footing Concrete (if applicable) and the Substructure Concrete.
- 103 Show abutment drainage system (perforated pipe, concrete base, pipe through stem and aggregate backfill). Refer to PPM P-77-13(3) and BR-SB (0.01)-80-101.
- 104 Label size and spacing of all rebar. Refer to PPM P-89-32 (4) for size of longitudinal rebar in abutment stem and vertical bars in the front face of abutments. Indicate which bars are epoxy coated.
- 105 Show any piles (type & size) in footing. Show rebar mat 3" above piles (3 - #6 bars).
- 106 Show location of bridge seat elevation at face of back wall.
- 107 Show bridge seat area sloped to drain at 1/4" per foot from back wall to abutment face.
- 108 Show configuration on rebar in top portion of back wall. Show joint angle configuration on top of back wall. Include this note:
Top portion of back wall shall not be placed until entire bridge deck slab is complete in place.
- 109 Show this note:
At the Contractor's option the dowel and stem bar may be placed as a continuous bar. No additional compensation will be allowed for this option.
- 110 Show drainage trough.
- 111 Show center line of bearing and dimension back wall, stem and footing widths off of it.
- 112 Show lap lengths of all rebar splices. Show embedment and hook lengths for all rebar. Show clear cover to bars at face of concrete.
- 113 Show 2 ply waterproofing membrane on earth side of all construction joints with air on the other.

ABUTMENT&PIER PILE PLANS

Plan View

- 114 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 115 Show location of Test Pile(s).
- 116 Show arrow on battered piles and indicate batter ratio.
- 117 Show the rebar mat over piles (3 - #6 bars in each direction) and the rebar lap at construction joints.
- 118 Show construction joints for staged construction.
- 119 Show pile driving data chart in accordance with PPM P-93-35 (4).
- 120 Show pile driving notes from PPM P-82-20 (G).

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Structural Review

- 121 Show footing steps when necessary.
- 122 Show location of piles referenced to working points / working lines which can be tied to the intersection point established by the Base Line of Construction.
- 123 Show a North Arrow and destination arrow

ABUTMENT DETAILS

Plan View

- 124 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 125 Show all working points from Geometric and Footing Layout.
- 126 Show layout of top mat of footing reinforcing steel for abutment proper and wing wall. Pay particular attention to the overlap area with respect to extension of wing wall bars into abutment section and extension of abutment bars into wing wall section. Label size and spacing of all rebar.
- 127 Show layout of bottom mat of footing reinforcing steel for abutment proper and wing wall. Pay particular attention to the overlap area with respect to extension of wing wall bars into abutment section and extension of abutment bars into wing wall section. Show layout of this rebar to miss any piles in footing. Label size and spacing of all rebar.
- 128 Show location of and lapping of bars at construction joints for staged construction.
- 129 Show a North Arrow and destination arrow if applicable

Details

- 130 Show sections of abutment at intersection of abutment proper with wing walls. One section should be shown for the area below the bridge seat and another for the area above the bridge seat.
- 131 Label size and spacing of all rebar including embedment lengths and splice laps. Refer to PPM P-89-32 (4) for size of longitudinal rebar in wing wall stem and vertical bars in the front face of wing wall. Indicate which bars are to be epoxy coated.
- 132 Show the lapping of longitudinal (horizontal) rebar from the wing wall to the abutment proper with loose corner bars. Show this Note: At the Contractor's option the loose corner bars may be eliminated provided the longitudinal reinforcing is extended to lap 2'-0" min. on one face. No additional compensation will be allowed for this option.
- 133 Show 2 ply waterproofing membrane on earth side of all construction joints with earth on one side and air on the other.

WING WALLS

Elevation View

- 134 Show an Elevation View of a typical wing wall with aesthetic treatment.
- 135 Show an elevation view of all wing walls including widths.
- 136 Show elevations along top of end post at the ends and at all breakpoints.
- 137 Show the elevation of the bottom and top of the footing.
- 138 Show where the Typical Section is cut.
- 139 Show any fencing or railing on top of the end post with post spacing.
- 140 Show the location of the expansion and construction joints.
- 141 Show the existing and proposed ground lines.

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Structural Review

- 142 Show elevation on top of cheek wall at face of back wall and at end of cheek wall. Include the following note :
1" clear from underside of superstructure to top of cheek wall.

- 143 Show drainage system behind wing wall stem.

Typical Section View

- 144 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).
- 145 Show the limits of Mix 3 and Mix 6 concrete.
- 146 Show the limits of payment for Footing Concrete, Substructure Concrete and Parapet Concrete.
- 147 Show the conduit(s) in the wing wall / end post.
- 148 Show abutment drainage system (perforated pipe, concrete base, pipe through stem and aggregate backfill). Refer to PPM P-77-13(3) and BR-SB (0.01)-80-101.
- 149 Label size and spacing of all rebar. Refer to PPM P-89-32 (4) for size of longitudinal rebar in wing wall stem and vertical bars in the front face of wing wall. Indicate which bars are to be epoxy coated.
- 150 Show any piles (type & size) in footing. Show rebar mat 3" above piles (3 - #6 bars).
- 151 Show any fencing or railing on top of the wing wall/end post.
- 152 Show this Note:
At the Contractor's option the dowel and stem bar may be placed as a continuous bar. No additional compensation will be allowed for this option.
- 153 Provide a stepped key at the stem to footing connection. Key shall be 6" high by $\frac{1}{2}$ the width of the stem.
- 154 Show lap lengths of all rebar splices. Show embedment and hook lengths for all rebar. Show clear cover to bars at face of concrete.
- 155 Show 2 ply waterproofing membrane on earth side of all construction joints with air on the other.

PIERS

Plan View

- 156 Show Base Line of Construction with the station and angle at the intersection with the center line of bearing or show the Working Line with working point and angle at the intersection with the center line of bearing.
- 157 Indicate the length of cap tied to the Base Line of Construction or Working Line. Indicate the width of the cap and location of the center lines of bearing tied to the center line of pier.
- 158 Show all working points from the Geometric and Footing Layout.
- 159 Show the location of the construction joints for staged construction.
- 160 Show layout of beam seats along center line of bearing.
- 161 Show a North Arrow and destination arrow

Elevation View

- 162 Show existing and proposed ground lines and the normal water surface.
- 163 Show Elevation View of the type of pier proposed with any aesthetic treatments (if applicable).
- 164 Show the layout of the columns tied to the Base Line of Construction or Working Line.
- 165 Show the elevation of the bottom and top of footing.

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Structural Review

- 166 Show where the Typical Section is cut.
- 167 Show elevation of beam seats and bridge seat.
- 168 Show construction joints at the top and bottom of all columns with key size.
- 169 Show layout of stirrup and tie reinforcement.
- 170 Show layout of any reinforcing that can not be clearly shown in sections (e.g. layout of rebar in the ends of a pier cap).

Typical Section View

- 171 Show Typical Section through the pier with all pertinent dimensions.
- 172 Show limits of payment for Footing Concrete and Substructure Concrete.
- 173 Label size and spacing of all rebar. Indicate which bars are epoxy coated.
- 174 Show any piles (type & size) in footing. Show rebar mat 3" above piles (3 - #6 bars).
- 175 Show this Note:
At the Contractor's option the dowel and stem bar may be placed as a continuous bar. No additional compensation will be allowed for this option.
- 176 Show sections through caps and columns with all dimensions and rebar size and spacing.
- 177 Show lap lengths of all rebar splices. Show embedment and hook lengths for all rebar. Show clear cover to bars at face of concrete.
- 178 Show 2 ply waterproofing membrane on earth side of all construction joints with air on the other.

SUPERSTRUCTURE TYPICAL SECTION

General

- 179 The Typical Section shall be drawn looking stations ahead.
- 180 Show the Base Line of Construction or Working Line and the P.G.L.
- 181 Show the proposed out to out, lane, shoulder, clear roadway, sidewalk and parapet / curb widths tied to the Base Line of Construction or Working Line.
- 182 Show the P/GE, crown point and all cross slopes. Cross slope arrows should be drawn with the arrow pointing in the direction that water would flow across the deck surface. Refer to PPM P-74-2(4). Show superelevation transition if applicable.
- 183 Show the construction joints and reinforcing laps in the concrete overlay for staged construction.
- 184 Show all utilities located on the bridge.
- 185 Show any fencing or railing on top of the parapet.
- 186 Show note concerning whether slip forming will be allowed for parapets.
- 187 Show any conduit required in the parapets. Refer to PPM P-90-33(4).
- 188 Refer to the applicable deck slab standard.
- 189 Refer to the applicable parapet / sidewalk standard.
- 190 Refer to the applicable fencing / railing standard.
- 191 Show and label all girders and diaphragms.

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Structural Review

- 192 Show girder spacing and overhang widths. For bridges on curved alignments note how these dimensions are measured (normal to the Base Line etc.).
- 193 Show and label all stringers and cross frames / diaphragms.
- 194 Show the slab and D dimension in accordance with the deck slab standards.
- 195 Show number of shear developers per row on top of the stringers.

Typical Section View

- 196 For bridges with haunched girders show the minimum and maximum depth of web.

DECK POURING SEQUENCE

General

- 197 Show North Arrow. Show North Arrow.
- 198 Refer to PPM P-76-11 (4).

FRAMING PLAN

General

- 199 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 200 Show North Arrow.
- 201 Show span numbers and span length dimensions.
- 202 Show all center lines of bearing of substructure units.
- 203 Show all utilities and utility supports / cross frames.
- 204 Show, label and dimension all stringers, all diaphragm / cross frame locations (Abutment, Pier, Intermediate, etc.).
- 205 Show bolted field splice locations in accordance PPM D-83-26 (4).
- 206 Show all fixed and expansion bearing designations.

GIRDER ELEVATION AND DETAILS

General

- 207 Have deflections been calculated to reflect no future wearing surface and staged construction?
- 208 Show span numbers and span length dimensions.
- 209 Show spacing of shear stud developers and number per row.

Show this note:

The estimated number of steel stud shear connectors is ?

- 210 Show stress areas along top flange (tension, compression and stress reversal).

Show this note:

There shall be no field welding to the top flange, except for shear studs, in the tension and stress reversal areas. Show stress areas along top flange (tension, compression and stress reversal). Show this note :

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Structural Review

- 211 Show size of all flange and web plates (girders), rolled sections, bearing stiffeners, and seat angles/plates.

Include this note:

Extend fascia girder exterior bearing stiffener to top flange.

- 212 Show location of bolted field splices. Show this note – Space studs to miss splice bolts.

- 213 Show size of web to flange weld (girders).

CROSS FRAME DETAILS

General

- 214 Show details of cross frames at abutments, piers and intermediate locations.
- 215 Show special cross frames required for utilities.
- 216 Show weld size connecting cross frame members to gusset plates.
- 217 Show bolt pattern connecting gusset plates to bearing stiffeners and connection plates. Indicate notes for bolt type, bolt size, hole size, etc.
- 218 Show size of cross frame members.
- 219 Show connection details for attachment to girder web at abutments, piers and intermediate locations.
- 220 Show location of all bent gusset plates.

CAMBER AND DEFLECTION DETAILS

General

- 221 Refer to PPM P-74-1 (4).

SPLICE DETAILS

General

- 222 Refer to Standard BR-SS (8.09)-81-124.
- 223 Show a plan and elevation view of the splice with member sizes.
- 224 Show all splice and fill plates with size.
- 225 Show bolt spacing in flange and web splice.
- 226 Show these notes :

1)Field splices shall be completely shop assembled and match marked after all shop welding has been completed. Contact surfaces shall be free of all oil and dirt.

2)Holes to be 15/16" diameter for 7/8" diameter high strength bolts (A 325). On fascia girders the bolts shall be placed so that the bolt head is visible on the outside face of web.

3)All bolts on flange splices shall have bolt heads on the bottom. At the contractor's option, lock-pin and collar fasteners may be used in lieu of bolts. No additional compensation will be allowed for either option.

FINISHED ROADWAY ELEVATIONS

General

- 227 Refer to PPM P-75-8 (4).

DRIVING AND DRIVE TESTS

PLAN CHECKLIST: STEEL GIRDER BRIDGE

Structural Review

General

228 Refer to PPM P-75-3 (4).

STANDARDS

General

229 Refer to PPM P-75-5 (4).

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

T.S.&L. Review

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 Designation of Structural Elements in accordance with PPM P-93-36 (4).
- 4 All views in accordance with PPM P-75-7 (4).
- 5 All lettering in accordance with PPM P-76-9 (G).
- 6 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A - REINFORCING DETAILS".
- 7 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.

TITLE SHEET

General

- 8 All projects shall have a Title Sheet in accordance with PPM P-76-10 (G).

STRUCTURES LOCATION MAP

General

- 9 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).

GENERAL PLAN AND ELEVATION

General

- 10 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 11 Show a diagram of the proposed vertical curve and list the associated vertical curve data.

Plan View

- 12 Show Base Line of Construction (Line with Stationing) for roadway over and if applicable under the bridge. Orient with stations increasing from left to right. When it occurs that the orientation of the bridge does not match the orientation of the highway plans, then a bold note shall be placed on the plans calling the contractors attention to it. In all cases the labeling (Base Line of Construction and P.G.L. MD 00) of this line on the structure plans must match the highway plans.
- 13 Show working line for curved alignments in accordance with PPM P-85-25(G).
- 14 Show all PC and PT points on the Base Line and list the associated horizontal curve data.
- 15 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 16 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction)If applicable, show location of test pits. Reference location of test pit data in contract documents.
- 17 Show existing right-of-way lines and existing easement areas.

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

T.S.&L. Review

- 18 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 19 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 20 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 21 Show station equality and an angle at all intersecting Base Lines and working lines.
- 22 Show all center lines of bearing for each substructure unit. Show the intersecting station on the Base Line of Construction or the working point on the Working Line with its angle of intersection.
- 23 Show existing and proposed out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.
- 24 Show span numbers and span length dimensions.
- 25 Show a total length of bridge dimension, Out to Out of Backwalls.
- 26 Show a destination arrow and label for each direction of travel (To Baltimore).
- 27 Show a lane arrow in every lane over and if applicable under the bridge.
- 28 Show the point of minimum vertical underclearance for highway over highway and highway over railroad bridges. For bridges over dual highways show this point over both roadways.
- 29 Show width of lane, shoulder, sidewalk and grading limits under the bridge (If applicable).
- 30 Show waterway name and direction of flow arrow for hydraulic structures.
- 31 Show horizontal, hydraulic, navigational, and railroad clearances.
- 32 Show all traffic barrier attachments at end posts / head walls.
- 33 Show existing structures in long dashed lines.
- 34 Show a North Arrow and destination arrow

Elevation View

- 35 Show the elevation view of the structure as a projection of the General Plan.
- 36 Show a datum line and datum elevation.
- 37 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 38 Show minimum vertical underclearance for highway over highway, railroad or navigable water bridges. For bridges over dual highways show this dimension for both roadways.
- 39 Show any fencing or railing along the parapet.
- 40 Show all bearing designations (Fix or Exp.).

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

T.S.&L. Review

- 41 Show the following for all structures over water:
- Design storm with elevation (10 year design storm - elevation 100.00)
 - 100 year storm with elevation (100 year storm - elevation 105.00)
 - Normal Water Surface elevation (NWS – elevation 98.00)
 - Waterway Invert elevation (invert – elevation 95.00)
 - Bottom of superstructure elevation at its lowest point
 - the lowest top of crown roadway elevation on the bridge

- 42 Show grading details (2:1 slope, 4:1 slope) under the bridge.

- 43 Show existing and proposed ground lines.

SEDIMENT AND EROSION CONTROL

General

- 44 The terminology (Stage II, Phase 2, etc.) must be consistent for all sheets (Highway and Structure).
- 45 Show maintenance of stream flow details (sand bags, dikes, de-watering basins etc.) and sediment and erosion control details for all stages (phases) of construction.
- 46 Include a detailed sequence of construction showing the work to be completed for each stage/phase.
- 47 Include a list of any Wetland /Buffer restrictions.
- 48 Show Limit of Disturbance for each stage
- 49 Draw subsequent elevation views of the existing structure indicating how the stream is to be maintained during the various stages (phases) of construction / removal. Show temporary diversion devices, normal water surface elevation, which portions of the existing structure are to be removed and the proposed construction in the area that the stream is diverted away from.

SEQUENCE OF CONSTRUCTION

General

- 50 When showing the sequence of construction/maintenance of traffic, only the word "Stage" shall be used. Do not use "Phase." The terminology (Stage I, Stage 2, etc.) must be consistent for all sheets (Highway and Structure). List your Stages as 1, 2, 3 etc, no Roman Numerals or A, B, C. If there are some preliminary road stages that must take place prior to beginning the bridge construction, then the bridge work may start in Stage 3. Add a note to the bridge Sequence of Construction sheets that states "No Bridge Work in Stage 1 or Stage 2".
- 51 Sequence of Construction sheets are required for the superstructure and substructure portions of the bridge if work is being proposed for these elements.

Substructure

- 52 Show existing elevation view of substructure units with columns, pile and stringer spacing (if applicable) tied to the Base Line of Construction or Working Line.
- 53 Draw subsequent stage construction typicals directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typicals).
- 54 Show proposed column and stringer spacings.
- 55 Show location of temporary pier cap supports.

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

T.S.&L. Review

- 56 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 57 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 58 Show completed typical with column and stringer spacings.
- 59 Show the location of any sheeting necessary to maintain the existing or construct the new substructure. Show the location of each construction joint necessary for stage construction tied to the Base Line of Construction or Working Line.

Superstructure

- 60 Show existing bridge typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.
- 61 Draw subsequent stage construction typicals directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typicals) which indicate the location of traffic for each stage.
- 62 Show proposed lane, shoulder and sidewalk widths tied to the Base Line of Construction or Working Line.
- 63 Show location of temporary barrier. Show the proper anchorage configuration for existing and proposed concrete decks. See applicable standards.
- 64 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 65 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 66 Show completed typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

ABUTMENT GP&E

Plan View

- 67 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 68 Show the location of any construction joints for staged construction.
- 69 Show layout of beam seats along center line of bearing.
- 70 Show location of utility opening(s) in back wall. Include proposed utilities and sleeve for future use.
- 71 Show a North Arrow and destination arrow

Elevation View

- 72 Show where the Typical Section is cut.
- 73 Show the location of any construction joints for staged construction.
- 74 Show existing and proposed ground lines.

Typical Section View

- 75 Show Typical Section through abutment with dimensions locating the centerline of bearing, etc.

WING WALLS

Elevation View

Tuesday, July 20, 2010

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

T.S.&L. Review

- 76 Show an Elevation View of a typical wing wall with aesthetic treatment.

Typical Section View

- 77 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).
- 78 Show any fencing or railing on top of the wing wall/end post.

PIERS

Plan View

- 79 Show Base Line of Construction with the station and angle at the intersection with the center line of bearing or show the Working Line with working point and angle at the intersection with the center line of bearing.
- 80 Indicate the length of cap tied to the Base Line of Construction or Working Line. Indicate the width of the cap and location of the center lines of bearing tied to the center line of pier.
- 81 Show all working points from the Geometric and Footing Layout.
- 82 Show the location of the construction joints for staged construction.
- 83 Show a North Arrow and destination arrow

Elevation View

- 84 Show existing and proposed ground lines and the normal water surface.
- 85 Show Elevation View of the type of pier proposed with any aesthetic treatments (if applicable).
- 86 Show the layout of the columns tied to the Base Line of Construction or Working Line.
- 87 Show the elevation of the bottom and top of footing.
- 88 Show where the Typical Section is cut.

Typical Section View

- 89 Show Typical Section through the pier with all pertinent dimensions.

SUPERSTRUCTURE TYPICAL SECTION

General

- 90 The Typical Section shall be drawn looking stations ahead.
- 91 Show the Base Line of Construction or Working Line and the P.G.L.
- 92 Show the proposed out to out, lane, shoulder, clear roadway, sidewalk and parapet / curb widths tied to the Base Line of Construction or Working Line.
- 93 Show the P/GE, crown point and all cross slopes. Cross slope arrows should be drawn with the arrow pointing in the direction that water would flow across the deck surface. Refer to PPM P-74-2(4). Show superelevation transition if applicable.
- 94 Show the construction joints and reinforcing laps in the concrete overlay for staged construction.
- 95 Show all utilities located on the bridge.
- 96 Show any fencing or railing on top of the parapet.
- 97 Show note concerning whether slip forming will be allowed for parapets.
- 98 Show any conduit required in the parapets. Refer to PPM P-90-33(4).

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

T.S.&L. Review

- 99 Refer to the applicable deck slab standard.
- 100 Refer to the applicable parapet / sidewalk standard.
- 101 Refer to the applicable fencing / railing standard.
- 102 Show and label all girders and diaphragms.
- 103 Show and label all stringers and cross frames / diaphragms.
- 104 Show the slab and D dimension in accordance with the deck slab standards.

Typical Section View

- 105 Show and label all girders and diaphragms.
- 106 Show girder spacing and overhang widths. For bridges on curved alignments note how these dimensions are measured (normal to the Base Line etc.).
- 107 Call out the AASHTO Girder Type and the depth.
- 108 Show and label all girders and diaphragms.
- 109 Show stringer spacing and overhang widths. For bridges on curved alignments note how these dimensions are measured (normal to the Base Line etc.).
- 110 Show the slab and D dimension in accordance with the deck slab standards.

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Foundation Review

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 Designation of Structural Elements in accordance with PPM P-93-36 (4).
- 4 All views in accordance with PPM P-75-7 (4).
- 5 All lettering in accordance with PPM P-76-9 (G).
- 6 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A – REINFORCING DETAILS".
- 7 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.

TITLE SHEET

General

- 8 All projects shall have a Title Sheet in accordance with PPM P-76-10 (G).

STRUCTURES LOCATION MAP

General

- 9 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).

GENERAL PLAN AND ELEVATION

General

- 10 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 11 Show a diagram of the proposed vertical curve and list the associated vertical curve data.

Plan View

- 12 Show Base Line of Construction (Line with Stationing) for roadway over and if applicable under the bridge. Orient with stations increasing from left to right. When it occurs that the orientation of the bridge does not match the orientation of the highway plans, then a bold note shall be placed on the plans calling the contractors attention to it. In all cases the labeling (Base Line of Construction and P.G.L. MD 00) of this line on the structure plans must match the highway plans.
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PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Foundation Review

- 18 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
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- 31 Show horizontal, hydraulic, navigational, and railroad clearances.
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Elevation View

- 35 Show the elevation view of the structure as a projection of the General Plan.
- 36 Show a datum line and datum elevation.
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Foundation Review

- 41 Show the following for all structures over water:
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- 44 The terminology (Stage II, Phase 2, etc.) must be consistent for all sheets (Highway and Structure).
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- 51 Sequence of Construction sheets are required for the superstructure and substructure portions of the bridge if work is being proposed for these elements.

Substructure

- 52 Show existing elevation view of substructure units with columns, pile and stringer spacing (if applicable) tied to the Base Line of Construction or Working Line.
- 53 Draw subsequent stage construction typical directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typical).
- 54 Show proposed column and stringer spacings.
- 55 Show location of temporary pier cap supports.

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Foundation Review

- 56 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 57 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 58 Show completed typical with column and stringer spacings.
- 59 Show the location of any sheeting necessary to maintain the existing or construct the new substructure. Show the location of each construction joint necessary for stage construction tied to the Base Line of Construction or Working Line.

ABUTMENT GP&E

Plan View

- 60 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 61 Show the location of any construction joints for staged construction.
- 62 Show a North Arrow and destination arrow

Elevation View

- 63 Show the elevation of the bottom and top of footing.
- 64 Show where the Typical Section is cut.
- 65 Show the location of any construction joints for staged construction.
- 66 Show existing and proposed ground lines.

Typical Section View

- 67 Show Typical Section through abutment with dimensions locating the centerline of bearing, etc.

ABUTMENT&PIER PILE PLANS

Plan View

- 68 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 69 Show location of Test Pile(s).
- 70 Show arrow on battered piles and indicate batter ratio.
- 71 Show the rebar mat over piles (3 - #6 bars in each direction) and the rebar lap at construction joints.
- 72 Show construction joints for staged construction.
- 73 Show pile driving data chart in accordance with PPM P-93-35 (4).
- 74 Show pile driving notes from PPM P-82-20 (G).
- 75 Show footing steps when necessary.
- 76 Show location of piles referenced to working points / working lines which can be tied to the intersection point established by the Base Line of Construction.
- 77 Show a North Arrow and destination arrow

RETAINING WALLS

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Foundation Review

Elevation View

- 78 Show an Elevation View of a typical wing wall with aesthetic treatment.

Typical Section View

- 79 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).

PIERS

Plan View

- 80 Show Base Line of Construction with the station and angle at the intersection with the center line of bearing or show the Working Line with working point and angle at the intersection with the center line of bearing.
- 81 Indicate the length of cap tied to the Base Line of Construction or Working Line. Indicate the width of the cap and location of the center lines of bearing tied to the center line of pier.
- 82 Show all working points from the Geometric and Footing Layout.
- 83 Show the location of the construction joints for staged construction.
- 84 Show a North Arrow and destination arrow

Elevation View

- 85 Show existing and proposed ground lines and the normal water surface.
- 86 Show Elevation View of the type of pier proposed with any aesthetic treatments (if applicable).
- 87 Show the layout of the columns tied to the Base Line of Construction or Working Line.
- 88 Show the elevation of the bottom and top of footing.
- 89 Show where the Typical Section is cut.

Typical Section View

- 90 Show Typical Section through the pier with all pertinent dimensions.

SUPERSTRUCTURE TYPICAL SECTION

General

- 91 The Typical Section shall be drawn looking stations ahead.
- 92 Show the Base Line of Construction or Working Line and the P.G.L.
- 93 Show the proposed out to out, lane, shoulder, clear roadway, sidewalk and parapet / curb widths tied to the Base Line of Construction or Working Line.
- 94 Show the P/GE, crown point and all cross slopes. Cross slope arrows should be drawn with the arrow pointing in the direction that water would flow across the deck surface. Refer to PPM P-74-2(4). Show superelevation transition if applicable.
- 95 Show the construction joints and reinforcing laps in the concrete overlay for staged construction.
- 96 Show all utilities located on the bridge.
- 97 Show any fencing or railing on top of the parapet.
- 98 Show note concerning whether slip forming will be allowed for parapets.
- 99 Show any conduit required in the parapets. Refer to PPM P-90-33(4).

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Foundation Review

- 100 Refer to the applicable deck slab standard.
- 101 Refer to the applicable parapet / sidewalk standard.
- 102 Refer to the applicable fencing / railing standard.
- 103 Show and label all girders and diaphragms.
- 104 Show and label all stringers and cross frames / diaphragms.
- 105 Show the slab and D dimension in accordance with the deck slab standards.

Typical Section View

- 106 Show and label all girders and diaphragms.
- 107 Show girder spacing and overhang widths. For bridges on curved alignments note how these dimensions are measured (normal to the Base Line etc.).
- 108 Call out the AASHTO Girder Type and the depth.
- 109 Show and label all girders and diaphragms.
- 110 Show stringer spacing and overhang widths. For bridges on curved alignments note how these dimensions are measured (normal to the Base Line etc.).
- 111 Show the slab and D dimension in accordance with the deck slab standards.

BORING AND DRIVE TESTS

General

- 112 Refer to PPM P-75-3 (4).

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
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- 4 All views in accordance with PPM P-75-7 (4).
- 5 All lettering in accordance with PPM P-76-9 (G).
- 6 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A – REINFORCING DETAILS".
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GENERAL PLAN AND ELEVATION

General

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Plan View

- 12 Show Base Line of Construction (Line with Stationing) for roadway over and if applicable under the bridge. Orient with stations increasing from left to right. When it occurs that the orientation of the bridge does not match the orientation of the highway plans, then a bold note shall be placed on the plans calling the contractors attention to it. In all cases the labeling (Base Line of Construction and P.G.L. MD 00) of this line on the structure plans must match the highway plans.
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- 17 Show existing right-of-way lines and existing easement areas.

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Structural Review

- 18 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 19 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 20 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 21 Show station equality and an angle at all intersecting Base Lines and working lines.
- 22 Show all center lines of bearing for each substructure unit. Show the intersecting station on the Base Line of Construction or the working point on the Working Line with its angle of intersection.
- 23 Show existing and proposed out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.
- 24 Show span numbers and span length dimensions.
- 25 Show a total length of bridge dimension, Out to Out of Backwalls.
- 26 Show a destination arrow and label for each direction of travel (To Baltimore).
- 27 Show a lane arrow in every lane over and if applicable under the bridge.
- 28 Show the point of minimum vertical underclearance for highway over highway and highway over railroad bridges. For bridges over dual highways show this point over both roadways.
- 29 Show limits and type of slope protection. Show limits of soil stabilization matting.
- 30 Show width of lane, shoulder, sidewalk and grading limits under the bridge (If applicable).
- 31 Show waterway name and direction of flow arrow for hydraulic structures.
- 32 Show horizontal, hydraulic, navigational, and railroad clearances.
- 33 Show all traffic barrier attachments at end posts / head walls.
- 34 Show existing structures in long dashed lines.
- 35 Show a North Arrow and destination arrow

Elevation View

- 36 Show the elevation view of the structure as a projection of the General Plan.
- 37 Show a datum line and datum elevation.
- 38 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 39 Show minimum vertical underclearance for highway over highway, railroad or navigable water bridges. For bridges over dual highways show this dimension for both roadways.
- 40 Show any fencing or railing along the parapet.
- 41 Show all bearing designations (Fix or Exp.).

- 42 Show the following for all structures over water:
 - Design storm with elevation (10 year design storm - elevation 100.00)
 - 100 year storm with elevation (100 year storm - elevation 105.00)
 - Normal Water Surface elevation (NWS -- elevation 98.00)
 - Waterway Invert elevation (invert -- elevation 95.00)
 - Bottom of superstructure elevation at its lowest point
 - the lowest top of crown roadway elevation on the bridge

43 Show grading details (2:1 slope, 4:1 slope) under the bridge.

44 Show existing and proposed ground lines.

HYDROLOGIC AND HYDRAULIC DATA SHEET

General

- 45 Include this sheet after the General Plan Sheet for all structures crossing waterways. Sheet to be prepared by Structures Hydraulics Division.

GEOMETRIC AND FOOTING LAYOUT

General

- 46 Prepare sheet in accordance with PPM P-86-28(G).
- 47 Show location of construction joints for staged construction Show location construction joints required for maintenance of traffic and maintenance of stream flow.
- 48 This layout should reference the working line only. A small exaggerated view may be included on this sheet to show the relationship between the baseline and working line. All piers and abutments shall be dimensioned to form a closed traverse around the footing. All working points shall be listed in a table with coordinate data provided.
- 49 Show all pertinent horizontal curve data.

SEDIMENT AND EROSION CONTROL

General

- 50 The terminology (Stage II, Phase 2, etc.) must be consistent for all sheets (Highway and Structure).
- 51 Show maintenance of stream flow details (sand bags, dikes, de-watering basins etc.) and sediment and erosion control details for all stages (phases) of construction.
- 52 Include a detailed sequence of construction showing the work to be completed for each stage/phase.
- 53 Include a list of any Wetland /Buffer restrictions.
- 54 Show Limit of Disturbance for each stage
- 55 Provide a boxed area that contains the following note -- "At the Contractor's option an alternate sequence of construction may be proposed. The Contractor shall be responsible for preparing the appropriate plans and request in writing for a change to these plans. All changes shall be submitted through the administration for review and approval by the applicable permitting agencies. No additional compensation will be allowed for delays caused by the review and approval process nor will additional compensation be allowed if any proposed change is rejected. The administration and permitting agencies shall determine whether any proposed alternate sequence is acceptable. If no alternate is found acceptable then the sequence shown on these plans shall be followed."

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Structural Review

- 56 Draw subsequent elevation views of the existing structure indicating how the stream is to be maintained during the various stages (phases) of construction / removal. Show temporary diversion devices, normal water surface elevation, which portions of the existing structure are to be removed and the proposed construction in the area that the stream is diverted away from.
- 57 Prepare a sheet indicating maintenance of stream flow details. Show the following diversion device alternatives:
 - Detail using sand bags
 - Detail using temporary sheeting
 - Detail using concrete barrier
- 58 Show a portable sediment tank and all the notes pertaining to it.
- 59 Include the following note:
 - The Contractor shall have the option of using any of the diversion device methods shown. Once the selected option is approved by MDE, it shall be the Contractor's responsibility to dewater the work area. No additional compensation will be allowed if the method of dewatering or diversion option is changed because of dewatering difficulties. The diversion shall be placed so that it is located within the existing SHA right-of-way and allows construction within the diversion area to be completed in the dry. The diversion is not intended to block highwater events from flooding the dewatered areas.

SEQUENCE OF CONSTRUCTION

General

- 60 When showing the sequence of construction/maintenance of traffic, only the word "Stage" shall be used. Do not use "Phase." The terminology (Stage 1, Stage 2, etc.) must be consistent for all sheets (Highway and Structure). List your Stages as 1, 2, 3 etc, no Roman Numerals or A, B, C. If there are some preliminary road stages that must take place prior to beginning the bridge construction, then the bridge work may start in Stage 3. Add a note to the bridge Sequence of Construction sheets that states "No Bridge Work in Stage 1 or Stage 2".
- 61 Sequence of Construction sheets are required for the superstructure and substructure portions of the bridge if work is being proposed for these elements.

Substructure

- 62 Show existing elevation view of substructure units with columns, pile and stringer spacing (if applicable) tied to the Base Line of Construction or Working Line.
- 63 Draw subsequent stage construction typical directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typical).
- 64 Show proposed column and stringer spacings.
- 65 Show location of temporary pier cap supports.
- 66 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 67 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 68 Show completed typical with column and stringer spacings.
- 69 Show the location of any sheeting necessary to maintain the existing or construct the new substructure. Show the location of each construction joint necessary for stage construction tied to the Base Line of Construction or Working Line.

Superstructure

- 70 Show existing bridge typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Structural Review

- 71 Draw subsequent stage construction typicals directly beneath the existing typical (Base Line of Construction on the existing view lines up with the Base Line of Construction for stage construction typicals) which indicate the location of traffic for each stage.
- 72 Show proposed lane, shoulder and sidewalk widths tied to the Base Line of Construction or Working Line.
- 73 Show location of temporary barrier. Show the proper anchorage configuration for existing and proposed concrete decks. See applicable standards.
- 74 Show typical for stage I removal with removal limits tied to the Base Line of Construction or Working Line. Show separate typical for stage I construction with build limits tied to the Base Line of Construction or Working Line. Repeat for each subsequent stage.
- 75 Show gap between existing and proposed construction. Identify requirements for mechanical rebar couplers or lap splices.
- 76 Show completed typical with out to out, lane, shoulder, sidewalk and parapet widths tied to the Base Line of Construction or Working Line.

ABUTMENT GP&E

Plan View

- 77 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 78 Show all working points from the Geometric and Footing Layout sheet.
- 79 Show the drainage system behind abutment stem and wing walls.
- 80 Show footing steps when necessary.
- 81 Show the layout of the wing walls / end posts located off the Base Line of Construction or Working Line. Designate the wing walls in accordance with PPM P-93-36(4).
- 82 Show the location of any construction joints for staged construction.
- 83 Show the location of any expansion and contraction joints
- 84 Show layout of beam seats along center line of bearing.
- 85 Show location of utility opening(s) in back wall. Include proposed utilities and sleeve for future use.
- 86 Show a North Arrow and destination arrow

Elevation View

- 87 Show the P/GE and elevations along a dashed line indicating the finished bridge surface along the center line of bearing. Show the elevations at the gutter lines and at the crown break and any other grade break points.
- 88 Show the elevation of the bottom and top of footing.
- 89 Show where the Typical Section is cut.
- 90 Show the location of any construction joints for staged construction.
- 91 Show any footing steps when necessary.
- 92 Show the conduit(s) in the end posts / curb portion of the wing walls.
- 93 Show existing and proposed ground lines.
- 94 Show elevation of beam seats and bridge seat.

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Structural Review

- 95 Show location of utility opening(s) in back wall. Include proposed utilities and sleeve for future use. See standard.
- 96 Show drainage system behind abutment stem.
- 97 Show location of expansion and contraction joints.
- 98 Show drainage trough layout.

Typical Section View

- 99 Show Typical Section through abutment with dimensions locating the centerline of bearing, etc.
- 100 Show the limits of Mix 3 and Mix 6 concrete.
- 101 Show the limits of payment for the Footing Concrete (if applicable) and the Substructure Concrete.
- 102 Show abutment drainage system (perforated pipe, concrete base, pipe through stem and aggregate backfill). Refer to PPM P-77-13(3) and BR-SB (0.01)-80-101.
- 103 Label size and spacing of all rebar. Refer to PPM P-89-32 (4) for size of longitudinal rebar in abutment stem and vertical bars in the front face of abutments. Indicate which bars are epoxy coated.
- 104 Show any piles (type & size) in footing. Show rebar mat 3" above piles (3 - #6 bars).
- 105 Show location of bridge seat elevation at face of back wall.
- 106 Show bridge seat area sloped to drain at 1/4" per foot from back wall to abutment face.
- 107 Show configuration on rebar in top portion of back wall. Show joint angle configuration on top of back wall. Include this note :
Top portion of back wall shall not be placed until entire bridge deck slab is complete in place.
- 108 Show this note:
At the Contractor's option the dowel and stem bar may be placed as a continuous bar. No additional compensation will be allowed for this option.
- 109 Show drainage trough.
- 110 Show center line of bearing and dimension back wall, stem and footing widths off of it.
- 111 Show lap lengths of all rebar splices. Show embedment and hook lengths for all rebar. Show clear cover to bars at face of concrete.
- 112 Show 2 ply waterproofing membrane on earth side of all construction joints with air on the other.

ABUTMENT&PIER PILE PLANS

Plan View

- 113 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 114 Show location of Test Pile(s).
- 115 Show arrow on battered piles and indicate batter ratio.
- 116 Show the rebar mat over piles (3 - #6 bars in each direction) and the rebar lap at construction joints.
- 117 Show construction joints for staged construction.
- 118 Show pile driving data chart in accordance with PPM P-93-35 (4).
- 119 Show pile driving notes from PPM P-82-20 (G).

- 120 Show footing steps when necessary.
- 121 Show location of piles referenced to working points / working lines which can be tied to the intersection point established by the Base Line of Construction.
- 122 Show a North Arrow and destination arrow

ABUTMENT DETAILS

Plan View

- 123 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 124 Show all working points from Geometric and Footing Layout.
- 125 Show layout of top mat of footing reinforcing steel for abutment proper and wing wall. Pay particular attention to the overlap area with respect to extension of wing wall bars into abutment section and extension of abutment bars into wing wall section. Label size and spacing of all rebar.
- 126 Show layout of bottom mat of footing reinforcing steel for abutment proper and wing wall. Pay particular attention to the overlap area with respect to extension of wing wall bars into abutment section and extension of abutment bars into wing wall section. Show layout of this rebar to miss any piles in footing. Label size and spacing of all rebar.
- 127 Show location of and lapping of bars at construction joints for staged construction.
- 128 Show a North Arrow and destination arrow if applicable

Details

- 129 Show sections of abutment at intersection of abutment proper with wing walls. One section should be shown for the area below the bridge seat and another for the area above the bridge seat.
- 130 Label size and spacing of all rebar including embedment lengths and splice laps. Refer to PPM P-89-32 (4) for size of longitudinal rebar in wing wall stem and vertical bars in the front face of wing wall. Indicate which bars are to be epoxy coated.
- 131 Show the lapping of longitudinal (horizontal) rebar from the wing wall to the abutment proper with loose corner bars. Show this Note: At the Contractor's option the loose corner bars may be eliminated provided the longitudinal reinforcing is extended to lap 2'-0" min. on one face. No additional compensation will be allowed for this option.
- 132 Show 2 ply waterproofing membrane on earth side of all construction joints with earth on one side and air on the other.

WING WALLS

Elevation View

- 133 Show an Elevation View of a typical wing wall with aesthetic treatment.
- 134 Show an elevation view of all wing walls including widths.
- 135 Show elevations along top of end post at the ends and at all breakpoints.
- 136 Show the elevation of the bottom and top of the footing.
- 137 Show where the Typical Section is cut.
- 138 Show any fencing or railing on top of the end post with post spacing.
- 139 Show the location of the expansion and construction joints.
- 140 Show the existing and proposed ground lines.

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Structural Review

- 141 Show elevation on top of cheek wall at face of back wall and at end of cheek wall. Include the following note :
1" clear from underside of superstructure to top of cheek wall.

- 142 Show drainage system behind wing wall stem.

Typical Section View

- 143 Show Typical Section with footing, stem, parapets/curbs, railing/fencing/ and surface treatment / Groove detail (if applicable).
- 144 Show the limits of Mix 3 and Mix 6 concrete.
- 145 Show the limits of payment for Footing Concrete, Substructure Concrete and Parapet Concrete.
- 146 Show the conduit(s) in the wing wall / end post.
- 147 Show abutment drainage system (perforated pipe, concrete base, pipe through stem and aggregate backfill). Refer to PPM P-77-13(3) and BR-SB (0.01)-80-101.
- 148 Label size and spacing of all rebar. Refer to PPM P-89-32 (4) for size of longitudinal rebar in wing wall stem and vertical bars in the front face of wing wall. Indicate which bars are to be epoxy coated.
- 149 Show any piles (type & size) in footing. Show rebar mat 3" above piles (3 - #6 bars).
- 150 Show any fencing or railing on top of the wing wall/end post.
- 151 Show this Note:
At the Contractor's option the dowel and stem bar may be placed as a continuous bar. No additional compensation will be allowed for this option.
- 152 Provide a stepped key at the stem to footing connection. Key shall be 6" high by 1/2 the width of the stem.
- 153 Show lap lengths of all rebar splices. Show embedment and hook lengths for all rebar. Show clear cover to bars at face of concrete.
- 154 Show 2 ply waterproofing membrane on earth side of all construction joints with air on the other.

PIERS

Plan View

- 155 Show Base Line of Construction with the station and angle at the intersection with the center line of bearing or show the Working Line with working point and angle at the intersection with the center line of bearing.
- 156 Indicate the length of cap tied to the Base Line of Construction or Working Line. Indicate the width of the cap and location of the center lines of bearing tied to the center line of pier.
- 157 Show all working points from the Geometric and Footing Layout.
- 158 Show the location of the construction joints for staged construction.
- 159 Show layout of beam seats along center line of bearing.
- 160 Show a North Arrow and destination arrow

Elevation View

- 161 Show existing and proposed ground lines and the normal water surface.
- 162 Show Elevation View of the type of pier proposed with any aesthetic treatments (if applicable).
- 163 Show the layout of the columns tied to the Base Line of Construction or Working Line.
- 164 Show the elevation of the bottom and top of footing.

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Structural Review

- 165 Show where the Typical Section is cut.
- 166 Show elevation of beam seats and bridge seat.
- 167 Show construction joints at the top and bottom of all columns with key size.
- 168 Show layout of stirrup and tie reinforcement.
- 169 Show layout of any reinforcing that can not be clearly shown in sections (e.g. layout of rebar in the ends of a pier cap).

Typical Section View

- 170 Show Typical Section through the pier with all pertinent dimensions.
- 171 Show limits of payment for Footing Concrete and Substructure Concrete.
- 172 Label size and spacing of all rebar. Indicate which bars are epoxy coated.
- 173 Show any piles (type & size) in footing. Show rebar mat 3" above piles (3 - #6 bars).
- 174 Show this Note:
At the Contractor's option the dowel and stem bar may be placed as a continuous bar. No additional compensation will be allowed for this option.
- 175 Show sections through caps and columns with all dimensions and rebar size and spacing.
- 176 Show lap lengths of all rebar splices. Show embedment and hook lengths for all rebar. Show clear cover to bars at face of concrete.
- 177 Show 2 ply waterproofing membrane on earth side of all construction joints with air on the other.

SUPERSTRUCTURE TYPICAL SECTION

General

- 178 The Typical Section shall be drawn looking stations ahead.
- 179 Show the Base Line of Construction or Working Line and the P.G.L.
- 180 Show the proposed out to out, lane, shoulder, clear roadway, sidewalk and parapet / curb widths tied to the Base Line of Construction or Working Line.
- 181 Show the P/GE, crown point and all cross slopes. Cross slope arrows should be drawn with the arrow pointing in the direction that water would flow across the deck surface. Refer to PPM P-74-2(4). Show superelevation transition if applicable.
- 182 Show the construction joints and reinforcing laps in the concrete overlay for staged construction.
- 183 Show all utilities located on the bridge.
- 184 Show any fencing or railing on top of the parapet.
- 185 Show note concerning whether slip forming will be allowed for parapets.
- 186 Show any conduit required in the parapets. Refer to PPM P-90-33(4).
- 187 Refer to the applicable deck slab standard.
- 188 Refer to the applicable parapet / sidewalk standard.
- 189 Refer to the applicable fencing / railing standard.
- 190 Show and label all girders and diaphragms.

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Structural Review

- 191 Show and label all stringers and cross frames / diaphragms.
- 192 Show the slab and D dimension in accordance with the deck slab standards.

Typical Section View

- 193 Show and label all girders and diaphragms.
- 194 Show girder spacing and overhang widths. For bridges on curved alignments note how these dimensions are measured (normal to the Base Line etc.).
- 195 Call out the AASHTO Girder Type and the depth.
- 196 Show and label all girders and diaphragms.
- 197 Show stringer spacing and overhang widths. For bridges on curved alignments note how these dimensions are measured (normal to the Base Line etc.).
- 198 Show the slab and D dimension in accordance with the deck slab standards.
- 199 Show lap lengths of all rebar splices. Show embedment and hook lengths for all rebar. Show clear cover to bars at face of concrete.
- 200 Show 2 ply waterproofing membrane on earth side of all construction joints with air on the other.

SUPERSTRUCTURE DETAILS

General

- 201 Show Girder End Stirrup Reinforcing Details for both the Continuous End at a Pier and the Discontinuous End at an Abutment / Pier. Indicate the number, size and spacing of all reinforcing steel. Indicate size, number and location of all holes through the girder for diaphragm reinforcing steel to pass. Show threaded inserts at inside face of fascia girders for diaphragm reinforcing steel attachment.
- 202 Show a view of the bottom flange of the End of Girder Reinforcing Steel which shows the Bearing Plate Embedded in the Girder with its anchor studs, all reinforcing steel, all prestressing strands and the size and location of the holes for diaphragm reinforcing steel to pass through.
- 203 Standard under development Show a detail of the Girder Lifting Device with its type, size and location shown. Include the note: At the Contractor's option, alternate lifting details will be considered subject to the approval of the engineer.
- 204 Standard under development Show a detail of the top flange of girder and the area the stirrup reinforcing steel must extend into in the deck slab. Show the slab thickness and the note: Top surface of all girders shall be rough finished to a full amplitude of $\frac{1}{4}$ " and scrubbed transversely with a coarse wire brush to remove all laitance and to produce a roughened surface for bonding.
- 205 Standard under development Show the Form Anchor Detail. Indicate the support system as required by the manufacturer and the galvanized anchor insert the support system is to be welded to. The anchor insert is to be provided at each weld required along the deck form and shall not be continuous. Show the following notes:
 - 1) Permanent steel bridge deck forms and supports shall be fabricated from steel conforming to A446 (Grade A through E) and shall be zinc coated (Galvanized) in conformance with A 653, coating designation 690. These forms shall be the proper gauge to support, within specified deflections, the specified weights for the particular span involved. Note also, that no form less than 0.0359 in thickness will be accepted. The design span shall be the clear distance between girder flanges less 2".
 - 2) Any permanently exposed form metal where the galvanized coating has been damaged shall be thoroughly cleaned, wire brushed and painted with two coats of zinc dust - zinc oxide paint, no color added, to the satisfaction of the engineer. Minor heat discoloration in areas of welds need not be touched up.

DECK POURING SEQUENCE

General

- 206 Show North Arrow. Show North Arrow.

- 207 Refer to PPM P-76-11 (4).

FRAMING PLAN

General

- 208 Show Base Line of Construction with station and angle at intersection with center line of bearing or show Working Line with working point and angle at intersection with center line of bearing.
- 209 Show North Arrow.
- 210 Show span numbers and span length dimensions.
- 211 Show all center lines of bearing of substructure units.
- 212 Show all utilities and utility supports / cross frames.
- 213 Show all fixed and expansion bearing designations.
- 214 Show, label, specify the AASHTO Girder Type and dimension all girders and all diaphragm locations (Abutment, Pier, Intermediate, etc.).
- 215 Show all fixed and expansion bearing designations.

GIRDER ELEVATION AND DETAILS

General

- 216 Have deflections been calculated to reflect no future wearing surface and staged construction?
- 217 Show span numbers and span length dimensions.
- 218 Show girder elevation(s) with size, location and number of deflected and straight strands, stirrup size and spacing, and size and location(s) of holes or threaded inserts at diaphragms. Use threaded inserts for the inside face of fascia girders.
- 219 Show typical girder mild reinforcing details, girder dimensions, clear cover, rebar sizes and shapes for end block and continuity reinforcing for adjacent spans.
- 220 Show the following notes:
- 1) Girders are AASHTO Type ?
 - 2) All mild steel reinforcement in girders shall be epoxy coated.
 - 3) For permanent steel bridge deck form details, see Sheet No. ?
 - 4) Girder lengths in casting bed shall be determined and depicted in shop drawings to compensate for grade shortening due to prestress effect.
 - 5) Top surface of all girders shall be rough finished to a full amplitude of $\frac{1}{4}$ " and scrubbed transversely with a coarse wire brush to remove all laitance and to produce a roughened surface for bonding.
 - 6) No clear cover less than as shown on these Plans will be accepted.
 - 7) The girders have been designed using a draped strand pattern as shown on the plans. The Office of Bridge Development will not consider any proposals from the contractor which involve the use of straight strands in lieu of draped strands.
 - 8) Losses are estimated at 17.56% of the initial prestressed force for the interior girders resulting in a final effective prestress force per strand of 25,540 lbs
- 221 Show girder prestressing strand details, at midspan and at ends. Call out number and size of strands.

DIAPHRAGM DETAILS

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Structural Review

General

- 222 All Diaphragms for Concrete Girder Bridges shall be placed parallel to the centerline of bearing (not staggered). This will allow the horizontal rebar to be continuous through the webs of all interior girders.
- 223 Show details of Concrete Diaphragm at Abutments in both Elevation and Section views indicating all reinforcing steel for and the size of diaphragm. Indicate that all diaphragm reinforcing steel and threaded rods are to be epoxy coated. Show holes through girder web(s), threaded inserts and rods and continuous rebars through the web(s).
- 224 Show details of Intermediate Concrete Diaphragm(s) in both Elevation and Section views indicating all reinforcing steel for and the size of diaphragm. Indicate that all diaphragm reinforcing steel and threaded rods are to be epoxy coated. Show holes through girder web(s), threaded inserts and rods and continuous rebars through the web(s).
- 225 Show details of Concrete Diaphragm at Pier(s) in both Elevation and Section views indicating all reinforcing steel for and the size of diaphragm. Indicate that all diaphragm reinforcing steel and threaded rods are to be epoxy coated. Show holes through girder web(s), threaded inserts and rods and continuous rebars through the web(s).
- 226 Standard under development Show a detail of the galvanized A-36 steel Anchor Plate for attachment of the clip angle. Indicate the size of the plate, the size and location of the anchor studs and the size and location of the threaded studs for attachment of the clip angle. Allow the contractor the option of replacing the studs with bolts that are tack welded to the anchor plate.
- 227 Standard under development Show details of the galvanized A-36 steel Clip Angle indicating its size, location of the slotted holes for attaching to the anchor plate and the location and size of the slot for attaching the Roadway Joint Angle.

BEARING DETAILS

General

- 228 Show a Side View and an End View of the Fixed Bearing(s) indicating the size of all plates (sole and embedded) and elastomeric pads and, the size and location of the swedge anchor bolts.
- 229 Show a Side View and an End View of the Expansion Bearing(s) indicating the size of all plates (sole, masonry and embedded) and elastomeric pads and, the size and location of the swedge anchor bolts and angle washers.
- 230 Show the Embedded Plate Details for both the fixed and expansion bearings with all plate dimensions shown and the anchor studs located.
- 231 Show the Slotted Sole Plate Expansion Bearing Detail with all dimensions shown and the slotted holes located.
- 232 Show the Sole Plate Fixed Bearing Detail with all dimensions shown and the holes located.
- 233 Show the Expansion Bearing Angle Washer Detail with all pertinent dimensions shown.

- 234 Show the following notes:
- 1) Sole and masonry plates to be ASTM A 709 grade 36 steel painted to match the color of concrete.
 - 2) Fill slots and holes around anchor bolts with nonhardening caulking compound or elastic joint sealer.
 - 3) 1000 RMS (finish all over) except where otherwise noted on these plans or in the contract specifications.
 - 4) Top of sole plate must be beveled to fit grade of roadway.
 - 5) Bearings shall be placed normal to the center line of girder.
 - 6) All anchor bolts and washers shall be unpainted A 709 grade 36 galvanized steel. All nuts shall be unpainted A 307 galvanized steel.
 - 7) Elastomeric bearings shall be 60 durometer hardness.
 - 8) All center lines of bearing and center line of shoes are coincident.
 - 9) All bearing shoes are to be shipped assembled as units.
 - 10) All concrete bearing areas shall meet the surface requirements of subsection 414.03.07(C).
 - 11) The maximum design load for the fixed bearing(s) = ? kips.
 - 12) The maximum design load for the expansion bearing(s) = ? kips.
 - 13) Polytetrafluoroethylene (PTFE) self lubrication bearing elements shall be composed of 100% virgin (unfilled) polytetrafluoroethylene (PTFE) polymer.
 - 14) The surface of the stainless steel sheets in contact with the PTFE shall have a surface finish less than 20 micro inches root mean square (RMS). The minimum coefficient of friction for the PTFE and the bearing assembly shall be ≥ 0.08 .

CAMBER AND DEFLECTION DETAILS

General

- 235 In tabular form, list the following at the eighth points (must match the interval established for the finished roadway elevations) of the span:
- A) Camber due to girder prestress and girder dead load.
 - B) Deflection due to slab and diaphragms.
 - C) Deflection due to superimposed dead load.
 - D) Total deflection due to B & C.
 - E) Net camber due to $A - (B) - (C)$.
- 236 Show camber diagram for each span with lines depicting the top of slab, the bottom of slab, the top of girder before placing the slab and diaphragm(s) and the top of girder after placing the slab and diaphragm(s). Show the center lines of bearing at each end of the span and the haunch height at each center line of bearing.

PLAN CHECKLIST: CONCRETE GIRDER BRIDGE

Structural Review

237 Show the following notes:

1) Superimposed Dead Load (S.D.L.) includes the effects of the concrete curbs and railings. It does not include the effect of the future wearing surface.

2) Camber due to prestress force plus slab dead load is to be checked in the field prior to placement of deck forms. Finished grade elevations are to be obtained by adjusting the haunch depth of the slab to accommodate any difference between the proposed and actual camber and deflections.

3) Prestress camber and dead load deflection data shown is theoretical and will vary depending on concrete strength, storage time, variable prestressing conditions, etc.

4) Girder deflections shall be checked after deck slab pours and the screed settings for subsequent pours shall be modified as required subject to the approval of the engineer.

238 Vertical curve camber will be handled by varying the haunch depth.

FINISHED ROADWAY ELEVATIONS

General

239 Refer to PPM P-75-8 (4).

BORING AND DRIVE TESTS

General

240 Refer to PPM P-75-3 (4).

STANDARDS

General

241 Refer to PPM P-75-5 (4).

PLAN CHECKLIST: RETAINING WALLS

PLAN CHECKLIST: RETAINING WALLS

T.S.&L. Review

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 Designation of Structural Elements in accordance with PPM P-93-36 (4).
- 4 All views in accordance with PPM P-75-7 (4).
- 5 All lettering in accordance with PPM P-76-9 (G).
- 6 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A - REINFORCING DETAILS".
- 7 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.
- 8 Cross Sections at 50 foot intervals showing the Highway Typical Section, what is being retained and the Right of Way Line.
- 9 Investigate the possibility of eliminating the retaining wall by steepening the slope based on the labs recommendation (i.e. 1.5 to 1 or 1 to 1) utilizing a mechanically stabilized slope. If the wall can not be eliminated then provide a cost comparison between building a wall and buying additional Right of Way.

STRUCTURES LOCATION MAP

General

- 10 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).

GENERAL PLAN AND ELEVATION

General

- 11 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 12 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel). List the type of walls that are acceptable at this location.

Plan View

- 13 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 14 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction) If applicable, show location of test pits. Reference location of test pit data in contract documents.
- 15 Show existing right-of-way lines and existing easement areas.
- 16 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 17 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 18 Show all signs and light structures and indicate if these structures are designed as breakaway systems.

PLAN CHECKLIST: RETAINING WALLS

T.S.&L. Review

- 19 Show existing structures in long dashed lines.
- 20 Show a North Arrow and destination arrow
- 21 Show Base Line of Construction (Line with Stationing) for the Roadway / Ramp adjacent to the wall. Orient the wall so that the front face will show when the elevation view is developed. When it occurs that the orientation of the wall does not match the orientation of the highway plans, then a bold note shall be placed on the plans calling the contractors attention to it. In all cases the labeling (Base Line of Construction and P.G.L.) of this line on the structure plans must match the highway plans.
- 22 Show pertinent lane, shoulder and sidewalk widths.
- 23 Show the Station on the Base Line of Construction and the offset distance to the face of wall at the beginning and end of the wall and at all break points in the wall. Be sure to clearly show which face of wall the offset distance is measured to. Show the total length of wall.
- 24 For a top down soldier pile and lagging wall show the location and spacing of the soldier piles.
- 25 When the length of wall will not fit on one sheet, show a match line and station for the break in the length of wall and which sheet the wall continues on.
- 26 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 27 Show any traffic barriers (W beam, thrie beam, concrete Jersey barrier, etc.) and how they attach to the proposed wall.
- 28 If the wall typical section changes, specify the limits of the different wall types.

Elevation View

- 29 Show the elevation view of the structure as a projection of the General Plan.
- 30 Show a datum line and datum elevation.
- 31 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 32 Show the elevation (exposed face, actual length) view of the Wall as a developed view of the General Plan.
- 33 Show an elevation for the top of wall at the beginning and end of the wall, at each expansion and contraction joint at and all places where the top of wall changes grade. Where the top of retaining wall changes grade, provide a smooth transition by rounding the top of wall.
- 34 Show an elevation for the bottom of footing and the location of all steps in the bottom of footing.
- 35 Show the location of all expansion and contraction joints.
- 36 For a top down soldier pile and lagging wall show the bottom of leveling pad and how the expansion and contraction joints are located relative to the soldier piles. Also show the location of tie backs.
- 37 For a mechanically stabilized earth (MSE) wall show the bottom of leveling pad and the location of contraction and expansion joints in the coping/parapet.
- 38 For an MSE wall show the following notes:
 - 1) The Contractor has the option to select the type of proprietary wall from the approved list in the special provisions. However, once selected, this type of wall must be used throughout the project.
 - 2) The Contractor can adjust the steps in the leveling pad to accommodate the panel type selected.
 - 3) The expansion and contraction joints in the barrier/moment slab shown on the plans may need adjustment to accommodate the panel type used in the project.
 - 4) The fence posts are to be centered about the joints regardless of the panel type chosen.

PLAN CHECKLIST: RETAINING WALLS

T.S.&L. Review

- 39 If there are pedestrians in the area of the wall then it will be necessary to place a fence on top of the wall.
- 40 When the length of wall will not fit on one sheet, show a match line and station for the break in the length of wall and which sheet the wall continues on.
- 41 If the wall is in an area that is very visible, then any aesthetic finish must be shown.
- 42 Show the location of the PVC outlet drains.

TYPICAL WALL SECTIONS

Typical Section View

- 43 Show the typical section through the wall for each type of wall. Clearly indicate the size of the footing/leveling pad, stem and coping/parapet with all construction joint sizes and locations shown.
- 44 Show any aesthetic wall treatment, its thickness and any necessary details.
- 45 Show the proposed ground line in front of and behind the wall.

PLAN CHECKLIST: RETAINING WALLS

Foundation Review

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 Designation of Structural Elements in accordance with PPM P-93-36 (4).
- 4 All views in accordance with PPM P-75-7 (4).
- 5 All lettering in accordance with PPM P-76-9 (G).
- 6 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A – REINFORCING DETAILS".
- 7 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.
- 8 Cross Sections at 50 foot intervals showing the Highway Typical Section, what is being retained and the Right of Way Line.

STRUCTURES LOCATION MAP

General

- 9 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).

GENERAL PLAN AND ELEVATION

General

- 10 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 11 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel). List the type of walls that are acceptable at this location.

Plan View

- 12 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 13 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction) If applicable, show location of test pits. Reference location of test pit data in contract documents.
- 14 Show existing right-of-way lines and existing easement areas.
- 15 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 16 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 17 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 18 Show existing structures in long dashed lines.
- 19 Show a North Arrow and destination arrow

PLAN CHECKLIST: RETAINING WALLS

Foundation Review

- 20 Show Base Line of Construction (Line with Stationing) for the Roadway / Ramp adjacent to the wall. Orient the wall so that the front face will show when the elevation view is developed. When it occurs that the orientation of the wall does not match the orientation of the highway plans, then a bold note shall be placed on the plans calling the contractors attention to it. In all cases the labeling (Base Line of Construction and P.G.L.) of this line on the structure plans must match the highway plans.
- 21 Show pertinent lane, shoulder and sidewalk widths.
- 22 Show the Station on the Base Line of Construction and the offset distance to the face of wall at the beginning and end of the wall and at all break points in the wall. Be sure to clearly show which face of wall the offset distance is measured to. Show the total length of wall.
- 23 For a top down soldier pile and lagging wall show the location and spacing of the soldier piles.
- 24 When the length of wall will not fit on one sheet, show a match line and station for the break in the length of wall and which sheet the wall continues on.
- 25 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 26 Show any traffic barriers (W beam, thrie beam, concrete Jersey barrier, etc.) and how they attach to the proposed wall.
- 27 If the wall typical section changes, specify the limits of the different wall types.

Elevation View

- 28 Show the elevation view of the structure as a projection of the General Plan.
- 29 Show a datum line and datum elevation.
- 30 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 31 Show the elevation (exposed face, actual length) view of the Wall as a developed view of the General Plan.
- 32 Show an elevation for the top of wall at the beginning and end of the wall, at each expansion and contraction joint at and all places where the top of wall changes grade. Where the top of retaining wall changes grade, provide a smooth transition by rounding the top of wall.
- 33 Show an elevation for the bottom of footing and the location of all steps in the bottom of footing.
- 34 Show the location of all expansion and contraction joints.
- 35 For a top down soldier pile and lagging wall show the bottom of leveling pad and how the expansion and contraction joints are located relative to the soldier piles. Also show the location of tie backs.
- 36 For a mechanically stabilized earth (MSE) wall show the bottom of leveling pad and the location of contraction and expansion joints in the coping/parapet.
- 37 For an MSE wall show the following notes:
 - 1) The Contractor has the option to select the type of proprietary wall from the approved list in the special provisions. However, once selected, this type of wall must be used throughout the project.
 - 2) The Contractor can adjust the steps in the leveling pad to accommodate the panel type selected.
 - 3) The expansion and contraction joints in the barrier/moment slab shown on the plans may need adjustment to accommodate the panel type used in the project.
 - 4) The fence posts are to be centered about the joints regardless of the panel type chosen.
- 38 If there are pedestrians in the area of the wall then it will be necessary to place a fence on top of the wall.
- 39 When the length of wall will not fit on one sheet, show a match line and station for the break in the length of wall and which sheet the wall continues on.

PLAN CHECKLIST: RETAINING WALLS

Foundation Review

- 40 If the wall is in an area that is very visible, then any aesthetic finish must be shown.
- 41 Show the location of the PVC outlet drains.

FOUNDATION PILE PLAN

Plan View

- 42 Show the footing for the wall and how it is located with respect to the Base Line of Construction (Stations and offset distances and changes in footing width)
- 43 Show all existing utilities and their disposition
- 44 Show the spacing of all piles and the rebar mat of 3-#6's each way over the piles. Indicate test piles and which piles are battered and their direction of batter.
- 45 Show the Legend that indicates the size and type of pile, which piles are battered with their rate of batter and which piles are test piles.
- 46 Show utilities that may conflict with piles

TYPICAL WALL SECTIONS

Typical Section View

- 47 Show the typical section through the wall for each type of wall. Clearly indicate the size of the footing/leveling pad, stem and coping/parapet with all construction joint sizes and locations shown.
- 48 Show any aesthetic wall treatment, its thickness and any necessary details.
- 49 Show the proposed ground line in front of and behind the wall.
- 50 Show size and spacing of all piles, their batter rate and their embedment into the footing.
- 51 List maximum allowable bearing pressure for spread footings.

BORING AND DRIVE TESTS

General

- 52 Refer to PPM P-75-3 (4).

PLAN CHECKLIST: RETAINING WALLS

Structural Review

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 Designation of Structural Elements in accordance with PPM P-93-36 (4).
- 4 All views in accordance with PPM P-75-7 (4).
- 5 All lettering in accordance with PPM P-76-9 (G).
- 6 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A – REINFORCING DETAILS".
- 7 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.
- 8 Cross Sections at 50 foot intervals showing the Highway Typical Section, what is being retained and the Right of Way Line.

STRUCTURES LOCATION MAP

General

- 9 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).

GENERAL PLAN AND ELEVATION

General

- 10 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 11 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel). List the type of walls that are acceptable at this location.

Plan View

- 12 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 13 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction) If applicable, show location of test pits. Reference location of test pit data in contract documents.
- 14 Show existing right-of-way lines and existing easement areas.
- 15 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 16 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 17 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 18 Show existing structures in long dashed lines.
- 19 Show a North Arrow and destination arrow

PLAN CHECKLIST: RETAINING WALLS

Structural Review

- 20 Show Base Line of Construction (Line with Stationing) for the Roadway / Ramp adjacent to the wall. Orient the wall so that the front face will show when the elevation view is developed. When it occurs that the orientation of the wall does not match the orientation of the highway plans, then a bold note shall be placed on the plans calling the contractors attention to it. In all cases the labeling (Base Line of Construction and P.G.L.) of this line on the structure plans must match the highway plans.
- 21 Show pertinent lane, shoulder and sidewalk widths.
- 22 Show the Station on the Base Line of Construction and the offset distance to the face of wall at the beginning and end of the wall and at all break points in the wall. Be sure to clearly show which face of wall the offset distance is measured to. Show the total length of wall.
- 23 For a top down soldier pile and lagging wall show the location and spacing of the soldier piles.
- 24 When the length of wall will not fit on one sheet, show a match line and station for the break in the length of wall and which sheet the wall continues on.
- 25 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 26 Show any traffic barriers (W beam, thrie beam, concrete Jersey barrier, etc.) and how they attach to the proposed wall.
- 27 If the wall typical section changes, specify the limits of the different wall types.

Elevation View

- 28 Show the elevation view of the structure as a projection of the General Plan.
- 29 Show a datum line and datum elevation.
- 30 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 31 Show the elevation (exposed face, actual length) view of the Wall as a developed view of the General Plan.
- 32 Show an elevation for the top of wall at the beginning and end of the wall, at each expansion and contraction joint at and all places where the top of wall changes grade. Where the top of retaining wall changes grade, provide a smooth transition by rounding the top of wall.
- 33 Show an elevation for the bottom of footing and the location of all steps in the bottom of footing.
- 34 Show the location of all expansion and contraction joints.
- 35 For a top down soldier pile and lagging wall show the bottom of leveling pad and how the expansion and contraction joints are located relative to the soldier piles. Also show the location of tie backs.
- 36 For a mechanically stabilized earth (MSE) wall show the bottom of leveling pad and the location of contraction and expansion joints in the coping/parapet.
- 37 For an MSE wall show the following notes:
 - 1) The Contractor has the option to select the type of proprietary wall from the approved list in the special provisions. However, once selected, this type of wall must be used throughout the project.
 - 2) The Contractor can adjust the steps in the leveling pad to accommodate the panel type selected.
 - 3) The expansion and contraction joints in the barrier/moment slab shown on the plans may need adjustment to accommodate the panel type used in the project.
 - 4) The fence posts are to be centered about the joints regardless of the panel type chosen.
- 38 If there are pedestrians in the area of the wall then it will be necessary to place a fence on top of the wall.
- 39 When the length of wall will not fit on one sheet, show a match line and station for the break in the length of wall and which sheet the wall continues on.

PLAN CHECKLIST: RETAINING WALLS

Structural Review

- 40 If the wall is in an area that is very visible, then any aesthetic finish must be shown.
- 41 Show the location of the PVC outlet drains.

FOUNDATION PILE PLAN

Plan View

- 42 Show the footing for the wall and how it is located with respect to the Base Line of Construction (Stations and offset distances and changes in footing width)
- 43 Show all existing utilities and their disposition
- 44 Show the spacing of all piles and the rebar mat of 3-#6's each way over the piles. Indicate test piles and which piles are battered and their direction of batter.
- 45 Show the Legend that indicates the size and type of pile, which piles are battered with their rate of batter and which piles are test piles.
- 46 Indicate the rated energy for the hammer necessary to drive the selected pile type.
- 47 Show utilities that may conflict with piles

TYPICAL WALL SECTIONS

Typical Section View

- 48 Show the typical section through the wall for each type of wall. Clearly indicate the size of the footing/leveling pad, stem and coping/parapet with all construction joint sizes and locations shown.
- 49 Show the size and spacing of all reinforcing steel and the clearance to the bars.
- 50 Show any aesthetic wall treatment, its thickness and any necessary details.
- 51 Show the coping/parapet details.
- 52 Show the proposed ground line in front of and behind the wall.
- 53 Show the drainage system behind the wall and refer to Standard Number RW(0.01)-80-100 for its details.
- 54 Show size and spacing of all piles, their batter rate and their embedment into the footing.
- 55 For a top down soldier pile and lagging wall show the concrete lagging, the size of the soldier pile and the drilled shaft, the drain board, the leveling pad, and the cast in place concrete facing and its aesthetic treatment. Show all sequence of construction notes. Show a table indicating the location, length and number of rebars in the drilled shaft. Show the location of tiebacks if required and a table showing the tieback loads.
- 56 For a mechanically stabilized earth wall show all details necessary for the barrier/ moment slab.
- 57 List maximum allowable bearing pressure for spread footings.
- 58 If the wall has a fence / railing / noise barrier on it show its height and location and reference to its details and method of attachment.

BORING AND DRIVE TESTS

General

- 59 Refer to PPM P-75-3 (4).

STANDARDS

General

- 60 Refer to PPM P-75-5 (4).

PLAN CHECKLIST: NOISE WALLS

PLAN CHECKLIST: NOISE WALLS

T.S.&L. Review

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 All views in accordance with PPM P-75-7, (4).
- 4 All lettering in accordance with PPM P-76-9 (G).
- 5 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A – REINFORCING DETAILS".
- 6 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.
- 7 All wall heights greater than 34 feet high need written approval from the Director, Office of Environmental Design with concurrence from the Director, Office of Bridge Development prior to submittal of TS&L.

STRUCTURES LOCATION MAP

General

- 8 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).
- 9 Show pile driving notes from PPM P-82-20 (G).

TYPICAL BARRIER SECTIONS

General

- 10 Establish Typical Barrier Sections sheet for the entire length of the Noise Wall. A new section is required wherever the wall typical changes including at grade beams and offset brackets. These Sections should show the wall placement including the existing and proposed ground line, grading at the wall including cross-slopes, traffic barrier placement (w-beam or concrete), planting areas, station limits where this typical section applies, any special topographic features such as a retaining wall, the location of the caisson relative to the noise wall location, indicate highway side and residential side of the noise wall and flow lines of ditches.
- 11 The sections should indicate that all finished grading around existing breakaway sign and light supports must conform to Standard No. MD-818.05.
- 12 The sections should indicate that the finished grading around any existing non-breakaway sign and light supports must be at least 6 inches below the top of concrete surface.

GENERAL PLAN AND ELEVATION

General

- 13 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 14 Provide General Notes.
- 15 Indicate the panels that will require epoxy coated reinforcing steel.
- 16 All wall heights greater than 34 feet high need written approval from the Director, Office of Environmental Design with concurrence from the Director, Office of Structures prior to submittal of TS&L.

Plan View

PLAN CHECKLIST: NOISE WALLS

T.S.&L. Review

- 17 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 18 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction) If applicable, show location of test pits. Reference location of test pit data in contract documents.
- 19 Show existing right-of-way lines and existing easement areas.
- 20 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 21 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 22 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 23 Show existing structures in long dashed lines.
- 24 Show a North Arrow and destination arrow
- 25 Show Centerline of Noise Wall with stationing for the length of wall. In all cases the structure plans must match the highway plans with respect to labeling and orientation of this line.
- 26 Show angle at all turning points where the Centerline of Noise Wall turns
- 27 Establish a caisson and post numbering system for the entire length of wall based on 16' panels. In areas where a grade beam is used to eliminate a caisson, skip that caisson number so that in all cases the caisson number will match the number of the post above it. In subsequent charts, the skipped caisson number will be listed with the words "replaced by grade beam" as the data.
- 28 Show any caissons that require offset brackets to miss existing utilities, retaining walls, etc.
- 29 Show all boring target locations

Elevation View

- 30 Show the elevation view of the structure as a projection of the General Plan.
- 31 Show a datum line and datum elevation.
- 32 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 33 Show the acoustic profile established from noise studies.
- 34 Show an elevation for the top of all noise panels.
- 35 Show an elevation for the bottom of all noise panels (2 when sloped).
- 36 Show any grade beams required to span over features (such as utilities) that would conflict with caissons. Show clearance to feature.
- 37 Show any brackets required to offset caissons to miss features that would conflict with the caisson.
- 38 List the height of all noise panels including the individual stacked panels. For tapered panels, show the average height.
- 39 Show existing and proposed ground lines.

GEOMETRIC LAYOUT

General

PLAN CHECKLIST: NOISE WALLS

T.S.&L. Review

- 40 Establish a Centerline of Noise Wall with stationing independent of the Baseline of Survey. Orient with stations increasing from left to right unless the associated highway plans are different. The Centerline of Noise Wall will correspond to the center of the caissons.

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 All views in accordance with PPM P-75-7 (4).
- 4 All lettering in accordance with PPM P-76-9 (G).
- 5 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A – REINFORCING DETAILS".
- 6 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.

STRUCTURES LOCATION MAP

General

- 7 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).

GENERAL PLAN AND ELEVATION

General

- 8 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).

Plan View

- 9 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 10 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction)If applicable, show location of test pits. Reference location of test pit data in contract documents.
- 11 Show existing right-of-way lines and existing easement areas.
- 12 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 13 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 14 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 15 Show existing structures in long dashed lines.
- 16 Show a North Arrow and destination arrow

Elevation View

- 17 Show the elevation view of the structure as a projection of the General Plan.
- 18 Show a datum line and datum elevation.
- 19 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents

PLAN CHECKLIST: NOISE WALLS

Foundation Review

GEOMETRIC LAYOUT

General

- 20 Establish a Centerline of Noise Wall with stationing independent of the Baseline of Survey. Orient with stations increasing from left to right unless the associated highway plans are different. The Centerline of Noise Wall will correspond to the center of the caissons.

BORING AND DRIVE TESTS

General

- 21 Refer to PPM P-75-3 (4).

PLAN CHECKLIST: NOISE WALLS

Structural Review

GENERAL

General

- 1 Title Block information in accordance with PPM P-79-16(G)
- 2 All details are to be drawn to scale. For Office of Structure lead projects, this includes details on highway, maintenance of stream flow, erosion and sediment control, and maintenance of traffic sheets. Details labeled "Scale:None" will not be accepted.
- 3 All views in accordance with PPM P-75-7 (4).
- 4 All lettering in accordance with PPM P-76-9 (G).
- 5 Title all views, sections, details, etc. properly. If we are titling a plan view of Abutment B the title should read "PLAN ABUTMENT B". If we are titling a section cut through abutment B showing reinforcing details the title should read "SECTION A-A – REINFORCING DETAILS".
- 6 When cutting sections through a portion of a structure, it is not good drafting procedure to cut the section through another section. All sections should be cut through a plan view or elevation view of the area you wish to detail.
- 7 All wall heights greater than 34 feet high need written approval from the Director, Office of Environmental Design with concurrence from the Director, Office of Bridge Development prior to submittal of TS&L.

STRUCTURES LOCATION MAP

General

- 8 All projects with multiple structures shall have a Structures Location Map in accordance with PPM P-83-24 (G).
- 9 Show pile driving notes from PPM P-82-20 (G).

TYPICAL BARRIER SECTIONS

General

- 10 Establish Typical Barrier Sections sheet for the entire length of the Noise Wall. A new section is required wherever the wall typical changes including at grade beams and offset brackets. These Sections should show the wall placement including the existing and proposed ground line, grading at the wall including cross-slopes, traffic barrier placement (w-beam or concrete), planting areas, station limits where this typical section applies, any special topographic features such as a retaining wall, the location of the caisson relative to the noise wall location, indicate highway side and residential side of the noise wall and flow lines of ditches.
- 11 The sections should indicate that all finished grading around existing breakaway sign and light supports must conform to Standard No. MD-818.05.
- 12 The sections should indicate that the finished grading around any existing non-breakaway sign and light supports must be at least 6 inches below the top of concrete surface.

GENERAL PLAN AND ELEVATION

General

- 13 General Notes in accordance with PPM P-77-14 (4) and current Microstation CADD cell located on network (N:\OOS\std\CELL\GENERAL NOTES.cel).
- 14 Provide General Notes.
- 15 Indicate the panels that will require epoxy coated reinforcing steel.
- 16 All wall heights greater than 34 feet high need written approval from the Director, Office of Environmental Design with concurrence from the Director, Office of Structures prior to submittal of TS&L.

Plan View

PLAN CHECKLIST: NOISE WALLS

Structural Review

- 17 Show all existing utilities and their disposition (i.e. to be relocated under this contract, etc.). Utility designations and test pits to accurately locate them should be complete prior to submittal of TS&L.
- 18 Show all proposed utilities and disposition. Indicate if the utility is to remain in place or to be relocated. Indicate if the relocation will be done by others or the contractor and when the relocation needs to occur (i.e. 20" Gas main to be relocated others prior to start of construction) If applicable, show location of test pits. Reference location of test pit data in contract documents.
- 19 Show existing right-of-way lines and existing easement areas.
- 20 Show the proposed/actual right-of-way lines and easement areas. Note areas that will not be clear by NTP.
- 21 Show any pertinent topographic features such as noise barrier walls, mechanically stabilized slopes, box culverts, drainage pipes, etc., including location of footings.
- 22 Show all signs and light structures and indicate if these structures are designed as breakaway systems.
- 23 Show existing structures in long dashed lines.
- 24 Show a North Arrow and destination arrow
- 25 Show Centerline of Noise Wall with stationing for the length of wall. In all cases the structure plans must match the highway plans with respect to labeling and orientation of this line.
- 26 Show angle at all turning points where the Centerline of Noise Wall turns
- 27 Establish a caisson and post numbering system for the entire length of wall based on 16' panels. In areas where a grade beam is used to eliminate a caisson, skip that caisson number so that in all cases the caisson number will match the number of the post above it. In subsequent charts, the skipped caisson number will be listed with the words "replaced by grade beam" as the data.
- 28 Show any caissons that require offset brackets to miss existing utilities, retaining walls, etc.
- 29 Show all boring target locations

Elevation View

- 30 Show the elevation view of the structure as a projection of the General Plan.
- 31 Show a datum line and datum elevation.
- 32 Show all existing and proposed underground and overhead utilities within project limits and their disposition. Show location of test pit data or provide reference to location of data in Contract documents.
- 33 Show the acoustic profile established from noise studies.
- 34 Show an elevation for the top of all noise panels.
- 35 Show an elevation for the bottom of all noise panels (2 when sloped).
- 36 Show any grade beams required to span over features (such as utilities) that would conflict with caissons. Show clearance to feature.
- 37 Show any brackets required to offset caissons to miss features that would conflict with the caisson.
- 38 List the height of all noise panels including the individual stacked panels. For tapered panels, show the average height.
- 39 Show existing and proposed ground lines.
- 40 Show location of access doors and fire hydrants.

GEOMETRIC LAYOUT



PLAN CHECKLIST: NOISE WALLS

Structural Review

- 41 Show any relevant data that identifies the Baseline of Survey.
- 42 Establish a Centerline of Noise Wall with stationing independent of the Baseline of Survey. Orient with stations increasing from left to right unless the associated highway plans are different. The Centerline of Noise Wall will correspond to the center of the caissons.
- 43 Show reference points that tie the beginning and end points of the Centerline of Noise Wall to the Baseline of Survey.
- 44 The layout should include a table which lists the end points of the noise wall and all turning points (any point along the wall where the angle between adjacent panels is something other than 180°) identified by caisson number (based on 16' spacing). The table should also include the station along Centerline of Wall, coordinates, and deflection angle.

CAISSON SCHEDULE

General

- 45 List all of the caissons by number for the 16' spacing alternative
- 46 Show the station along the Centerline of Noise Wall for all caissons in item 1 above.
- 47 Show the proposed top of pad elevation for all caissons in item 1 above.
- 48 Show the proposed length of caisson for all caissons in item 1 above.
- 49 Show a column for remarks
- 50 Show two columns with proposed caisson lengths for the 12' and 20' spacing alternatives.
- 51 Provide a detail showing the data provided

ROCK SOCKET DETAILS

General

- 52 Provide an elevation view of the rock socket and caisson. Show normal caisson diameter and rock socket diameter. Show rock socket reinforcing steel. Show rock socket reinforcing steel cage including minimum embedment into the normal caisson. Show minimum and maximum limits of the rock socket.
- 53 Provide notes including a definition of acceptable rock and a definition of where a rock socket will be required and how the length is determined.

GRADE BEAM DETAILS

General

- 54 Show a plan view of the grade beam with the length and width. Identify caisson numbers and post numbers if for a specific location. Locate the feature that is being spanned
- 55 Show an elevation view of the grade beam with an elevation specified at the top of the grade beam and the depth of the grade beam. Identify caisson numbers and post numbers if for a specific location. Locate the feature that is being spanned. Take a section through the grade beam.
- 56 Detail section of grade beam with all required dimensions and anchorage system for noise wall posts. Show size and spacing of all reinforcing steel.
- 57 Show end detail of grade beam with reinforcing steel bends and embedment lengths. Show caisson reinforcing steel embedment lengths into grade beam.

CAISSON OFFSET BRACKET DETAILS

General

- 58 Show a plan view of the caisson offset bracket with the length and width. Identify caisson number and post number if for a specific location. Locate the feature that requires the caisson to be offset.

PLAN CHECKLIST: NOISE WALLS

Structural Review

- 59 Show an elevation view of the caisson offset bracket with an elevation specified at the top of the bracket and the depth of the offset bracket. Identify caisson number and post number if for a specific location. Locate the feature that requires the caisson to be offset. Take a section through the bracket.
- 60 Detailed section of offset bracket with all required dimensions and anchorage system for noise wall posts. Show size and spacing of all reinforcing steel.
- 61 Show end detail of offset bracket with reinforcing steel bends and embedment lengths. Show caisson reinforcing steel embedment lengths into offset bracket.

AESTHETIC DETAILS

General

- 62 Detail wall sections to show the special aesthetic treatment to the wall panels.
- 63 Provide an elevation view of the noise wall with sufficient posts and panels to show the aesthetic features of the wall and how the treatment aligns with adjacent panels. Show spacing of grooves, limits of untreated surfaces, etc. Take sections as required through the wall.

BORING AND DRIVE TESTS

General

- 64 Refer to PPM P-75-3 (4).

STANDARDS

General

- 65 Refer to PPM P-75-5 (4).

PS & E SUBMISSION CHECKLIST

PS&E SUBMISSION CHECKLIST

NOTE: Please refer questions about the PS&E submission to the Federal Aid Programming Section.

A. GENERAL-MANDATORY INFO

FAP numbers on the following:

- a. Title sheet of plans
- b. Cover of the proposal
- c. Flyers in the proposal that have a space designated for the FAP number
- d. Estimate and Schedule of Prices

B. CONSTRUCTION PLANS

1. Are satisfactory connections provided at ends of project and do they agree with the approved program description? Make sure roadway does not taper into hazardous conditions. Check 25C on reverse side (**meets SHA/AASHTO design standard).
2. Do plans provide details necessary for temporary and permanent erosion control bid items?
3. Check title sheet for:
 - a. Appropriate signatures-lower right hand corner, local projects require professional engineer and any other applicable official
 - b. Project limits-refer to 25C and location map to determine if all agree
 - c. Project numbers-shall agree with FHWA/SHA numbers on 25C
 - d. ADT-shall agree with 25C
 - e. Notes
4. Check plan sheets for:
 - a. ROW lines-is all work within existing ROW lines or easement areas? If not, are the affected properties in the process of being acquired? All projects shall have a clear ROW Certificate.
 - b. Safety features including traffic control plan- all projects shall include an approved TCP signed by the DE and DTE.
 - c. Agreement of quantities on plans and in the proposal book- (Quantity sheet in plans not required)
 - d. Apparent deviation from SHA approved standards-refer to 25C

- e. Deviation from approved 25C-have project file available for reference
 - f. Project length shall agree with the 25C
 - g. Have all items noted at the Structural Review/Final Review been resolved- all projects under exempt status shall have a Final Review and Final Review report
5. Abbreviated plans are governed by FAPG, Part 630, Subpart B

C. PROPOSAL FORM, SPECIAL PROVISIONS AND ADDITIONAL SPECIFICATIONS

1. Required items:

- a. Table of Contents
- b. Form PR-1273 and Addendum to Form PR-1273
- c. Affirmative Action requirements/Utilization of Disadvantaged Business Enterprises for Federal Aid Contracts-Blanks must be filled in.
- d. FAP Bidding Requirements Flyer
- e. Traffic Control Certification Flyer
- f. Contract Affidavit which now is part of the proposal packet
- g. Wage Rates-Must be the latest as issued by the U.S. Department of Labor-there are now published wage rates available at www.access.gpo.gov/davisbacon/ (click on "browse determinations by state"; then click on the county). There may be instances where wage rates may not be required. The FAPS will inform the Project Engineer if that is the case on his/her project.
- h. Notice of Actions Required for Affirmative Action to ensure Equal Employment Opportunity (EEO) flyer
- i. Training flyer. If there are no trainees on the project, fill in (0)-must fill in even if (0) All local bridge contracts with a total construction time of six (6) months or less will have zero (0) trainees.
- j. Federal Proposal Notice flyer
- k. Proposal Form Packet (Federal)-The Schedule of Prices must agree with plans and estimates. Check items for the prices that must be filled in, e.g. trainees. LG's may use their own proposal forms on projects they advertise and award as long as they meet the minimum State requirements. However, pages 3-24 of 24 of the federal form packet must be used.
- l. Working Days, Calendar Date or Calendar Days and a justification letter from the LG

- m. Employment Agency-The local source of labor is furnished for informational purposes only. Labor cannot be required to be obtained from a particular source-this is discriminatory
- n. Liquidated Damages-must be filled in (A justification letter is not needed; however, the LG should be ready to defend their figures.)
- o. Special Provisions Inserts (SPI's) that are applicable to the project
- p. Bid Opening Date-is it at least 3 weeks from the first day the ad appears?
- q. Permits-must have at least the status of permits (see SHA form 61.1-799.2) and copies of all required permits
- r. Other required flyers issued after the date of this revision.

2. Special Provisions and Additional Specifications:

- a. The special provisions must contain the following statements:
 - (1) The Specifications for this project will be those of the Maryland State Highway Administration titled "**Standard Specifications for Construction and Materials**" dated January, 2001 revisions thereof, or additions thereto, and the Special Provisions included in this Invitation for Bids.
 - (2) All work shall be in accordance with the latest issue of the Manual on Uniform Traffic Control Devices (MUTCD).
- b. Do specifications and special provisions conflict with plans, estimate or Final Form 25C?
- c. Any pay items not covered by an appropriate specification must be in the special provisions which agree with the plans and estimate as to basis of payment.
- d. If the right of way is not anticipated to be clear prior to authorization, do the special provisions contain:
 - (1) the restrictions on the contractor,
 - (2) an estimate of the time such interference can be expected, and
 - (3) a statement that a time extension may be granted if the property is not available as indicated? If all residents have not been relocated prior to advertisement, is there a statement that the contractor will not be allowed to proceed with the physical construction on any part of the project until the residentially improved properties have been vacated?
- e. The utility special provisions must specify each known utility with phone number contact located within the project and, if applicable, include information regarding the status of relocations. See ATTACHMENT M, Section 875, which is a sample utility statement. All Invitations for Bids must contain the following:
 "All notifications to "Miss Utility" must be given at least 48 hours (2 full working days) in advance of working in the area of the affected utility."

f. If all of the required utility/railroad adjustments have not been completed prior to authorization, do the special provisions contain a provision identifying the scope of work to be done concurrently with the contract? If utility/railroad adjustments or work by railroad forces are to be federally funded, has a PS&E been submitted or are the costs included in the project?

g. Are there any guaranty or warranty clauses? Only those guarantees or warranties given as customary trade practice for purchased materials are allowed. Plant establishment, electrical and mechanical equipment guarantees and warranties are permissible.

h. Are there any experimental features?

i. Are there any proprietary items? If so, has one of these four options been employed:
(1) Write a letter to the SHA Deputy Administrator/Chief Engineer for Planning and Engineering formally requesting his approval of the use of the proprietary item(s) on this project. This letter needs to justify your reasons for the use of each proprietary item; or,
(2) List a minimum of three [3] items and its manufacturer followed by "or as approved by the engineer"; or,
(3) Make the particular item as Federal Aid non-participating. This means that the LG will pay for that particular item without Federal funds; or
(4) Delete the reference to the proprietary item.
Please contact the FAPS with your decision.

j. Salvaged Material will be a payable item by FHWA provided that a reasonable distance is utilized by the contractor to haul such material to the Sponsor's facility.

k. Are any materials being supplied by SHA or local government? The FHWA will pay for the installation of the material but not for the purchase of said material.

l. Include all contract provisions that apply to this project. See Table of Contents of the Invitation for Bids.

D. ESTIMATE

1. Review unit prices and compare quantities and descriptions with plans and proposal. If estimate is not computer generated, check the arithmetic.
2. Are non-participating items listed separately, for example, Engineer's Office and Engineer's Vehicle?
3. Is there a pay item for all items of work? Are pay units correct?
4. If there are any lump sum structure items, is there a lump sum breakdown that supports the figures?
5. If there are trainees, has a separate pay item been established?

6. If there are force accounts (Utility, Railroad, State etc.), break these out as non-bid items:

E. MISCELLANEOUS

1. Program Documents: Do the plans reflect the same termini as indicated on the Form 25C?

2. Environmental Requirements:

NOTE: The FHWA will not approve an authorization request without approval of the appropriate environmental document. Please refer to the Environmental Documentation portion of these Guidelines. Noise Evaluation Certifications are handled by the FAPS in-house. This would include a situation where a project is within four (4) miles of an airport.

ALL PERMITS MUST BE APPLIED FOR PRIOR TO ADVERTISING THE PROJECT AND MUST BE RECEIVED PRIOR TO THE BID OPENING.

Please be advised that if the LG submits an incomplete Certification of Environmental Permits (ATTACHMENT L) at PS&E time, then it will be necessary to resubmit this form after all permits have been received. If all permits are not in the IFB at the time of the original advertisement, include a statement that the bids will not be opened until all permits have been received and inserted into the IFB by addendum.

3. Public Hearing Requirements:

Has a waiver of the requirements for public hearing(s) been approved by Form 25C or separate letter? If not, the following information is needed:

- a. date of public hearing(s)
- b. where held
- c. when the transcripts were forwarded to SHA/FHWA
- d. location approval
- e. design approval

Supporting documentation for the above must be in the project file. Based on the above, fill out and sign the appropriate Public Hearing Certification.

4. Third Party Agreements-if there is any party involved other than the SHA, the LG must have a written agreement with that party. Note: the FAPS will require a copy of all agreements. Ex. RR, Counties, Cities, Utility Companies, other states and government agencies and a copy of any agreement(s) between counties and/or cities with their third parties.

5. Public Interest Letter (addressed to the SHA Deputy Administrator/Chief Engineer for Planning and Engineering) required for force account projects. This letter needs to explain why it is in the public's best interest not to bid the particular item(s). Safety-type projects are exempt. See FAPG, Part 635, Subpart B.

6. Approval of the Final Review Report or waiver of the Final Review requirement is needed.

7. Have the necessary permits been obtained? Ex., WRA, 404, FAA, Coast Guard, DNR etc.

8. Right of Way Certification

- a. If no ROW is/was required, include statement in authorization request.
- b. If ROW is/was required, forward ROW status with LETTER OF AUTHORIZATION for review and approval. If the ROW status includes ROW work yet to be completed, attach the ROW special provisions.

9. The TCP must be approved by the DE and the DTE. Documentation of their approval must be in the project file. If their approval is contingent upon further revisions, the PS&E must include these revisions.

10. Is the project within 4 miles of an airport? The FAPS will handle the initial contact with the Office of Traffic and Safety. Should there be any conditions, the FAPS will contact the LG.

11. Is a state line involved? If so, has funding and/or maintenance of traffic been coordinated with the adjoining state? Do you have an approved agreement with the adjoining state?

12. Is there a consultant approved for Shop Drawings? If so, he must be identified!

13. Does the project reference standards and/or specifications other than those of the SHA? If so, approval of those standards and/or specifications is required. The options are to make the applicable items non-participating or develop special provisions and/or design detail drawings to cover the items, as long as the developed special provisions/drawings do not conflict with SHA standards and/or specifications. The special provisions/drawings will be included in the PS&E.
Note: the FHWA will only approve payment for work done by approved specifications.



