TO:

SUPERSEDED BY EB 98-014 EFFECTIVE 4/24/98

ENGINEERING INSTRUCTION

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

SUBJECT: BRIDGE DESIGN MANUAL, DESIGN CRITERIA FOR BRIDGES, CHECKLIST FOR NEW HIGHWAY BRIDGES

Subject Code: 7.35-4

Distribution: [31] Main Office [33] Regions [34] Special

APPROVED: J. H. Granville

Asst Deputy Chief Engineer (Structures)

Code: EI 85-32

Date: 6/1/85

Supersedes: EI 74-5

Attached to this EI is an updated Structure Check List. It supersedes the one issued previously with EI 74-5 dated January 7, 1974.

The most notable revisions are the addition of a sequence of drawings for the Contract Plans and a separate page for the transverse section for the superstructure of prestressed concrete beams. These are shown on Pages 1 and 18, respectively.

STRUCTURE CHECK LIST FOR NEW HIGHWAY BRIDGES

GENERAL

If a curved highway is involved, a schematic layout should be shown somewhere on the plans and should include the following:

- ℄ Bearings of abutments and piers with stations and azimuths.
- Station line with azimuths of tangents
- ℄ shown and labeled.

See GLD-MB1 for additional information and an example.

An Estimate of quantities table should be shown. See Appendix "A" of the "Standard Details for Highway Bridges" (Brown Book).

A breakdown of neat quantities for the different types of structural steels that the lump sum price is based on should be shown, usually on same sheet as the Estimate of Quantities Table. This information is required for the purpose of partial payments.

A location may (usually 1"=2000') should be shown. This is almost always shown on the plan layout sheet.

An Index of Drawings should be shown. This is usually shown on the Layout Sheet.

The Index of Drawings should be in the following sequence:

- Layout Sheet
- Estimate of Quantities and Note Sheet
- Subsurface Profile Sheet
- Excavation and Backfill Sheet
- Abutment Details Sheets
- Pier Details Sheet
- Superstructure Sheets
- Miscellaneous Details Sheets
- Bar Lists Sheets

Show load ratings table

Show table of hydraulic data if stream bridge.

LAYOUT SHEET

PLAN

Scale: 1"=20'-0"

Show bridge begins and ends stations. ☐

Reinforced concrete approach slab shown and labeled. ☐

Show highway pavement ends and begins stations at ends of reinforced concrete approach slab. ☐

Label station line and TGL. ☐

Skew angle structure makes with road, stream or tracks below. ☐

Baseline shown. ☐

Borings plotted and number indicated. ☐

North Arrow. ☐

Equality stations for intersection of road above and road, stream or tracks below. ☐

No contour lines on final plans. ☐

Show limits of all slopes. ☐

Show location of point at which minimum vertical clearance occurs. ☐

Show horizontal clearances. ☐

Show by stations and item numbers limits of stone filling parallel to stream and roadway. ☐

Show spur dikes if applicable. ☐

Show lane, shoulder and mall widths for approaches. ☐

Show location of lighting posts. ☐

Show sign location if supported on structure. ☐

Approach drainage shown correctly. ☐

Plot existing substructure and superstructure from existing plans or field survey and show item Nos. for their removal. ☐

Show guide rail location. ☐

Show utilities on the structure. ☐

Show scupper location (Type and Item No.) ☐

Existing topography should be shown. ☐

Indicate traffic direction on track or highway (→ to Syracuse). ☐

Show direction of stream flow. ☐

Show span lengths. ☐

Show hydraulic data. ☐

Show 3'-0" minimum berm. ☐

Show centerline pier stations. ☐

Show curve data. ☐

Show limits of slope protection. ☐

LAYOUT SHEET

ELEVATION
Scale: 1"=10'-0"

Show section of under roadway. ☐

Label TGL and station line of under roadway. ☐

Show cross slopes of under roadway. ☐

Show actual minimum horizontal clearances ☐

Label expansion and fixed bearings at piers and abutments ☐

Indicate actual minimum vertical clearance over travel lane or useable shoulder. ☐

Show all water elevations for canal structures. ☐

Show navigation lights where required. ☐

Show railing and label. ☐

Show slopes of embankments. ☐

Show track dimensions if railroad is involved. ☐

Show stream section if stream is involved. ☐

Show bottom of footing elevations on earth or piles. ☐

Show piles, type and item. ☐

Show approximate existing ground line. ☐

Show finished ground line. ☐

Show top of footing elevations of pier and abutments on rock and minimum depth of footing. ☐

Locate and indicate actual freeboard above design water elevation if a stream is involved. ☐

Show datum elevation line. ☐

For stream structures, other than canal structures, show design high water elevation only. ☐

LAYOUT SHEET

BRIDGE SECTION
Scale: 1"=10'-0"

Show railing or barrier and pay item.

Show curb type and pay item.

Show slab depth and pay item.

Show studs (steel).

If prestress, show beams and item.

If steel, show stringers and spacing.

Show median width and railing or barrier.

Show widths of pavement and fascia and show cross slopes.

Show dimension from centerline fascia stringer to edge of slab. (STEEL OR PRESTRESSED CONCRETE I SECTION).

Label TGL and station line.

Show utilities.

Indicate configuration of top of pier.

Show dimension from edge of fascia beam to edge of wearing surface. (PRESTRESSED CONCRETE BOX SECTION).

LAYOUT SHEET

APPROACH SECTION
Scale: 1"=10'-0"

HIGHWAY SECTION
Scale: 1'=10'-0"

Show pavement, curb and shoulder widths. ☐

Show cross-slopes. ☐

Show median widths and railing or barrier ☐

Show guide rail and dimensions thereto. ☐

Label TGL and Station line. ☐

Show appropriate ditch details. ☐

Show embankment and cut slopes. ☐

LAYOUT SHEET

PROFILES
Scale: Horiz. 1"=20'-0"
Scale: Vert. 1"=10'-0"

Show station ordinate line.

Length of vertical curves.

PVI station, elevation, middle ordinate and sight distance.

Show ordinate for ℄ of improvement and intersecting station.

Show grade lines and percentage of grades.

NOTE SHEET

Refer to "Standard Details for Highway Bridges" Manual. (Brown Book).

Show general notes.

Substructure notes.

Superstructure notes.

Prestressed Concrete notes.

Conservation notes.

Foundation notes.

Notes for special requirements.

Railroad maintenance note.

Construction procedure for unusual conditions.

Notes for removing existing substructure and superstructure and item No. for their removal.

Maintenance table or description of maintenance responsibility (Important on EGC and RR Law projects.)

EXCAVATION AND EMBANKMENT SHEET

For details refer to BDD 83-1,2,3,4 and 5. ☐

Show excavation and embankment details and payment lines. ☐

On plan view show stations of centerline bearings of abutments and centerline of piers. ☐

Embankment notes. ☐

Show limits of the sheeting and cofferdam items. ☐

ABUTMENT SHEET

GENERAL

Refer to GLD-A1, A2, A3, A4, A5, A6, A7, A7a, A8, A9, A10, A11, A12, A13, A14 and A15.

Also refer to BDD 83-72 and 73.

Concrete pour and reinforcement breakdown table showing item Nos. and quantities.

Show abutment plan, elevation and cross section views.

Joint and keyway details if not shown elsewhere.

Show plan and reinforcement of corners of abutments.

Show backwall reinforcement plan.

Show pedestal reinforcement plan.

Label curb type and item.

Label pours.

ABUTMENT SHEET

PLAN AND ELEVATION

North Arrow.

Station line and station of ℄ bearings.

Abutment properly dimensioned and tied down to ℄ bearings and station line.

Expansion, Construction or contraction joints labeled and tied down to working line.

Azimuth of ℄ bearings and station line (Azimuth of local tangent if on curve).

Skew angle denoted.

Azimuths of stringers or angle stringers make with ℄ bearings.

If expansion joint in wall, there should be one in footing.

Anchor bolt location, description, dimensions, size and length of embedment and item.

Show stringer spacing and tie one down to working line.

Label waterstops

Label pours.

Show weep holes in abutments and walls.

Show footing, pedestal, bridge seat, U-wall and backwall elevations.

Show sleeve openions for utilities and label.

Elevation of high point on backwall or header and tied down to working line.

No. 8 bars @ 6" ctrs. in bridge seat of high Abutments.

Note concerning allowable bearing pressure on earth or rock.

Show footing reinforcement plan.

ABUTMENT SHEET

PILE LAYOUT

North Arrow.

Tie down to ℄ bearings and station line.

Show batter on piles.

Show location of test piles.

Item number.

Splice detail and item No.

Detail of reinforced tip for steel piles.

Reinforcement detail for concrete piles.

Allowable load on piles and ordered length.

Item No. and estimated length of test piles.

PIER SHEET

GENERAL

Refer to GLD-P1, P2,P3,P4 and P5. ☐

Show reinforcement of pedestals in plan and elevation (elevation should show depth of embedment of vertical bars). ☐

Show wash on end elevation of pier cap. ☐

Concrete pour and reinforcement breakdown table showing item Nos. and quantities. ☐

Show pier plan, elevation and cross section views. ☐

Footing bar reinforcement plan. ☐

Keyway details. ☐

All ties should be continuous. ☐

Show pier cap reinforcement details. ☐

Show column reinforcement details. ☐

Pier nosing. ☐

#8 bars @ 6" ctrs. in top of solid piers. ☐

Note concerning allowable bearing pressure on earth or rock. ☐

PIER SHEET

PLAN AND ELEVATION

North Arrow

Station line and station of ℄ of Pier and bearings.

Pier properly dimensioned and tied down to ℄ bearings and station line.

Azimuth of ℄ Pier and Station line (Azimuth of local tangent if on curve).

Show skew angle.

Azimuth of stringer or angle stringers make with ℄ bearings.

Offset from local tangent to stringer:

Show stringer spacing along ℄ bearings.

Anchor bolt location, description, size, length and embedment and item No.

℄ line of bearings to ℄ pier.

Show dimensions and elevations of cap, columns and footings.

Show column, cap and footing reinforcement.

Show batter.

PIER SHEET

PILE LAYOUT

See abutment pile layout.

SUPERSTRUCTURE SHEET

GENERAL

Refer to BDD 79-30,31,32,82-95A,B,C,D and E. and GLD-G1,G2,G3,G4,G5,G6,G6a,G7,MC1, MC2, MC3,PC2,PC3,PC4,PC5,PC6,PC7,PC8,PC9,PC10,S1 S2,53 and 54. BDD79-90.

Show fascia detail.

Table for bottom of slab elevations.

Haunch detail.

Details showing how stiffener and connection plate are attached to girder.

Camber table.

Bearing details.

Railing layout.

Slab layout.

Show size and type of welds.

Table of moments and shears.

Cross section of slab at pier and abutment.

Approach slab layout and details.

Structural slab reinforcement plan.

SUPERSTRUCTURE SHEET

TRANSVERSE SECTION
(STEEL)

Show dimensions of widths of pavement, fascia, etc.

Show dimension from face of railing to edge of fascia.

Show stringers and stringer spacing.

Show dimension from Centerline fascia stringer to edge of slab.

Show diaphragms, crossframes, bottom laterals and label.

Top of end diaphragm should follow slope of pavement.

Top of solid intermediate diaphragms should be level.

Label type and item of curb.

Show slopes of pavements.

Show utilities.

Label TGL and station line.

Show and label shear connectors.

Show and label reinforcement.

Label thickness and item number for slab.

Show cover to reinforcement.

Top reinforcement should be epoxy coated.

Show detail of SIP forms. (Dulseal)

SUPERSTRUCTURE SHEET

TRANSVERSE SECTION
(PRESTRESSED)

Show dimensions of widths of pavement, fascia, etc. ☐

Show dimension from face of railing to edge of fascia. ☐

Show beams and spacing. ☐

Show dimension from edge of beam to edge of fascia. ☐

If open superstructure, show diaphragms. ☐

Label type and item of curb. ☐

Show cross slope of pavement. ☐

Show utilities. ☐

Show and label reinforcement. ☐

Label thickness and item number of wearing surface. ☐

SUPERSTRUCTURE SHEET

STEEL LAYOUT

Plan tied down to ℄ bearings of abutments and piers and station line.

Show skew angles at abutments and piers.

Station line shown.

Spacing of stringers along ℄ bearings of abutments and piers.

Stations of ℄ bearings of abutments and ℄ of piers.

Diaphragms labelled and spacing shown.

Check to see if diaphragms are placed correctly. (Skewed or perpendicular).

Azimuths of girders.

Azimuths of piers and abutments.

Spacing of stiffeners. (1/2 spaced at ℄ bearings.)

Check to see if bottom laterals required.

Label fixed and expansion bearings.

1/2" minimum thickness of bent connection plates.

SUPERSTRUCTURE SHEET

GIRDER ELEVATION

Thicknesses, lengths and widths of flanges with type of steel.

Size of web and type of steel.

Spacing of shear connectors.

Groove weld for spliced flanges.

With simple spans bottom of bearing stiffeners to be groove welded or milled to bear:

On curved girders bottom of bearing stiffeners to be groove welded.

Ratio of flange thicknesses at splices shall not exceed 2 to 1.

Show termination of weld detail on rolled beam with coverplate.

Show limits of flanges in tension under dead load on continuous girders.

Show size of fillet welds.

MISCELLANEOUS SHEETS

Scupper details. ☐

Bearing details. ☐

Joint details. ☐

Stone fill details. (Layout Sheet) ☐

Stud shear connector details. ☐

Conduit expansion joint details. ☐

Waterstop details. ☐

Utilities details. ☐

Curb details. ☐

Navigation light details. ☐

Railing details. ☐

Approach drainage details. ☐

Approach slab details. ☐

PS & E SUBMISSION

See memorandum dated August 3, 1984 from J. M. Robb to Project Engineers and Squad Leaders. (See Attachment No. 1).

4 sets of the price analysis of lump sum items should also be included as a PS & E submission.

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

ATTACHMENT NO. 1

DATE: August 3, 1984

SUBJECT: PS&E SUBMISSIONS

FROM: J. M. Robb, Structures Division, 6th Fl., Bldg. 5

TO: PROJECT ENGINEERS AND SQUAD LEADERS

cc J. Massimilian, Final Plan Rev. Bur., Rm. 414, Bldg. 5
J. DeMasi, office

We have been verbally informed by J. Massimilian that the number of plan sets, etc. required by Final Plan Review shall be:

One Final Set of Prints of Bridge Plans plus
Four Copies of Notes, Specifications etc.

One set of Prints for Railroad plus
One copy of Notes, Specifications etc.

One set of prints NCA (Interstate) plus
One copy of Notes, Specifications etc.

One set of prints if Final Plan Review
has to send a set to Thruway plus
One copy of Notes, Specifications, etc.

Revised tracings and one marked up print of Highway Plans and marked up copy of Proposal must be forwarded to FPRB by the date requested on their forwarding memo.

JMR:JFG:ds