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EXAMPLES OF BRIDGE SEAT AND STEP CALCULATIONS:

THE DESIGNER SHALL SHOW ON THE PLANS THE 4 ELEVATIONS AND THE 3 STEP DIMENSIONS REQUIRED FOR THE ABUTMENT BRIDGE SEATS.

THE BOXED IN DETAILS IN THE FOLLOWING EXAMPLES SHOW HOW THE INFORMATION SHOULD BE INDICATED ON THE PLANS.

EXAMPLE NO. 1

A STRAIGHT GRADE OF -3.25% WITH THE P.I. STATION OF 103+75.00 AND ELEVATION OF 653.29. THE BRIDGE LENGTH IS 80'-0 ℄ TO ℄ OF ABUTMENT BEARINGS WITH 30° SKEW RIGHT AHEAD.

STATIONS

℄ BRIDGE STA.	=	105+85.00	
℄ ½ OF SPAN LENGTH	±	40.00	
℄ ABUT. BRGS.	=	106+25.00	105+45.00

ELEVATIONS ALONG PROFILE GRADE LINE (P.G.L. ELEV.)

℄ ABUT. BRG. = 653.29-[(105+45.00)-(103+75.00)](0.0325) = 647.77

℄ ABUT. BRG. = 653.29-[(106+25.00)-(103+75.00)](0.0325) = 645.17

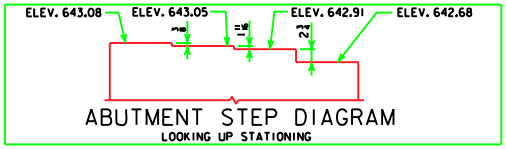
ELEVATIONS TOP OF SLAB FACING ALONG THE STATIONING

(BEAM SPACING)(TAN. SK. Δ X GRADE) = (3.5)TAN 30°(0.0325) = 0.07'

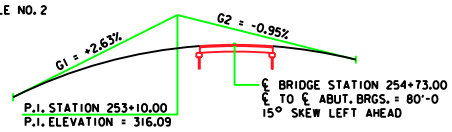
(BEAM SPACING)(TAN. SK. Δ X GRADE) = (7.0)TAN 30°(0.0325) = 0.13'

ABUTMENT NO. 1

BEAMS	EXTERIOR	INTERIOR	INTERIOR	EXTERIOR
PGL ELEV.	647.77	647.77	647.77	647.77
SK. ΔCORRECT	+ 0.20	+ 0.07	- 0.07	- 0.20
SLAB CROWN	- 0.13	- 0.03	- 0.03	- 0.13
TOP SLAB ELEV.	647.84	647.81	647.67	647.44
-"U" (4'-9⅛)	- 4.76	- 4.76	- 4.76	- 4.76
BR. SEAT ELEV.	643.08	643.05	642.91	642.68



EXAMPLE NO. 2



FROM SHEET H24SI-02 { LENGTH OF VERTICAL CURVE = (20000)(0.0358) = 716 FEET
M.O. = (0.0358)(716)(⅛) = 3.204 FEET

STATIONS

℄ BRIDGE STA.	=	254+73.00		P.I. STA.	253+10.00
℄ ½ OF SPAN LENGTH	±	40.00		±(½)(LENGTH V.C.)	3+58.00
℄ ABUT. BRGS.	=	255+13.00	254+33.00	P.C. STA.	249+52.00
				P.T. STA.	256+68.00

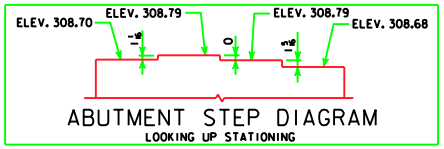
ELEVATIONS TOP OF SLAB FACING ALONG THE STATIONING

(BEAM SPACING)(TAN. SK. Δ) = (3.5)TAN 15° = 0.94'

(BEAM SPACING)(TAN. SK. Δ) = (7.0)TAN 15° = 1.88'

ABUTMENT NO. 1

BEAMS	EXTERIOR	INTERIOR	INTERIOR	EXTERIOR
STATION	254+35.81	254+33.94	254+32.06	254+30.19
PGL ELEV.	313.55	313.54	313.54	313.53
SLAB CROWN	- 0.13	- 0.03	-0.03	- 0.13
TOP SLAB ELEV.	313.42	313.51	313.51	313.40
-"U" (4'-8$\frac{11}{16}$)	- 4.72	- 4.72	- 4.72	- 4.72
BR. SEAT ELEV.	308.70	308.79	308.79	308.68



GENERAL CONSIDERATIONS:

THE H24SI-05 BRIDGE STANDARDS, IF PROPERLY USED, PROVIDE THE STRUCTURAL PLANS NECESSARY TO CONSTRUCT SINGLE SPAN 24' ROADWAY PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES WITH LENGTHS OF 46'-8, 55'-0, 67'-6, 80'-0 90'-0, 100'-0 AND 110'-0.

THESE BRIDGES MAY BE BUILT ON A 0°, 15° OR 30° SKEW. THESE PLANS SHOW THE BRIDGES SKEWED IN ONE DIRECTION, BUT ALL DIMENSIONS AND DETAILS WOULD BE THE SAME FOR THE OPPOSITE SKEW.

FOR CLARITY, MOST SECTIONS SHOWN ON THE FOLLOWING SHEETS ARE DRAWN WITH BARRIER RAIL ONLY. THESE SECTIONS WILL BE IDENTICAL FOR OPEN RAIL DESIGN WITH ANY MODIFICATIONS SHOWN ON SHEET H24SI-34 AND H24SI-35.

NOTE THAT WHEN APPROACH PAVEMENT IS TO BE PLACED, THE TEMPORARY PAVING BLOCKS SHALL BE REMOVED AND A PROPER JOINT FOR EXPANSION SHALL BE PROVIDED BETWEEN THE BRIDGE AND THE APPROACH PAVING.

THE ABUTMENTS FOR THESE STANDARDS HAVE BEEN DESIGNED FOR FRICTION OR POINT BEARING PILES. IT IS NECESSARY THAT THE LENGTH OF THE ABUTMENT PILES BE DESIGNATED ON THE FRONT SHEET OF THE PLANS.

THESE STANDARDS GIVE MOST OF THE INFORMATION NECESSARY TO BUILD THESE BRIDGES ON EITHER A CREST VERTICAL CURVE OR A STRAIGHT GRADE. BECAUSE OF THE INFINITE NUMBER OF GRADE POSSIBILITIES IT WILL BE NECESSARY TO SHOW ON THE PLANS THE ABUTMENT STEP DIMENSIONS. TO HELP IN OBTAINING THIS STEP INFORMATION SEE "EXAMPLES OF BRIDGE SEAT AND STEP CALCULATIONS" ON THIS SHEET.

PROVIDE TOP OF SLAB ELEVATIONS AND WING ELEVATIONS A, B AND C AS NOTED ON THE STANDARD SHEETS (LONGITUDINAL SECTION).

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2002.

REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.

CONCRETE IN ACCORDANCE WITH SECTION 8, f'c = 3500 PSI.

FOR 24' STANDARD PRESTRESSED CONCRETE BEAMS, SEE SHEET H24SI-21-05, H24SI-23-05, H24SI-25-05, H24SI-27-05.

SPECIFICATIONS:

DESIGN: AASHTO, SERIES OF 2002.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2001, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

LATEST REVISION DATE :

APPROVED BY

STANDARD DESIGN - 24' ROADWAY, SINGLE SPAN BRIDGE

PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

JANUARY, 2005 HS20-44 LOADING

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

INDEX, GENERAL NOTES & GENERAL INFORMATION

H24SI-01-05