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DESIGNER NOTES AND DESIGN CONSIDERATIONS

THESE J40-06 BRIDGE DESIGN STANDARDS PROVIDE THE STRUCTURAL DETAILS TO ENABLE CONSTRUCTION OF A 40'-0 ROADWAY, 3 SPAN CONTINUOUS CONCRETE SLAB BRIDGE. DETAILS AND QUANTITIES ARE PROVIDED FOR:

1. NINE BRIDGE LENGTHS: 70' THRU 150' IN 10'-0" MULTIPLES.
2. FOUR SKEWS: 0°, 15°, 30° & 45°.
3. INTEGRAL TYPE ABUTMENTS.
4. TWO TYPES OF PIER CAPS.

SKEW DETAILS ARE DRAWN FOR RIGHT-AHEAD SKEWS, BUT ALL DETAILS AND DIMENSIONS ARE IDENTICAL FOR LIKE LEFT-AHEAD SKEWS. THESE BRIDGES MAY BE BUILT ON ANY PERMISSIBLE GRADE (FLAT, SLOPED OR VERTICAL CURVED).

THESE STANDARDS GIVE MOST OF THE INFORMATION NECESSARY TO BUILD THESE BRIDGES. HOWEVER, THE FOLLOWING ADDITIONAL INFORMATION IS REQUIRED FOR USE ON PRIMARY ROUTES. FOR SECONDARY ROUTES THE ENGINEER MAY NOT REQUIRE ALL SHEETS TO BE PROVIDED:

1. TITLE SHEET WITH ENGINEERS SEAL
2. ESTIMATED QUANTITIES TOTALS INCLUDING CLASS 20 EXCAVATION FOR BRIDGE
3. SITUATION PLAN LAYOUT OF BRIDGE
4. TOP OF SLAB ELEVATIONS LAYOUT
5. BOTTOM OF ABUTMENT FOOTING ELEVATIONS
6. BOTTOM OF PIER CAP ELEVATIONS
7. PILING DESIGN INFORMATION
8. SLOPE PROTECTION LAYOUT IF NEEDED
9. CONDUIT LAYOUT
10. LIGHTING LAYOUT IF NEEDED

ALL REINFORCING STEEL SHALL BE EPOXY COATED, EXCEPT AS NOTED.

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 J40-48-06 AND CROSS SECTION SHEETS.

THESE BRIDGES ARE DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATION SERIES OF 2004.

CONCRETE f'c = 3500 PSI.
REINFORCING STEEL fy = 60,000 PSI (GRADE 60)
n = 9 FOR TENSION STEEL
2n = 18 FOR COMPRESSION STEEL
HL-93 LIVE LOAD PLUS 20 LBS. PER SQ. FT. FOR FUTURE WEARING SURFACE.
END SPAN LENGTH IS USED TO CALCULATE EQUIVALENT WIDTH IN LIVE LOAD DISTRIBUTION.

CONTROL OF CRACKING BY DISTRIBUTION OF REINFORCEMENT FOR SLAB DESIGN BASED ON PRE 2005 LRFD INTERMS.

PILING HAVE BEEN DESIGNED IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGE SERIES OF 2002, USING SERVICE LOAD DESIGN METHOD (ALLOWABLE STRESS DESIGN).
HS25 LIVE LOAD PLUS 20 LBS PER SQ. FT. FOR FUTURE WEARING SURFACE.

PREBORE HOLES SHALL BE PROVIDED FOR ABUTMENT PILES FOR THE 140 FOOT AND 150 FOOT BRIDGES. THE PREBORED HOLES SHALL BE A MINIMUM OF 10 FEET BELOW THE BOTTOM OF THE FOOTING. THE PREBORED HOLES SHALL BE IN ACCORDANCE WITH SECTION 2501.19 OF THE STANDARD SPECIFICATIONS. THE ELEVATION OF THE BOTTOM OF THE PREBORED HOLES SHALL BE SHOWN ON THE PLANS.

THE TOP $\frac{1}{2}$ INCH OF THE SLAB IS CONSIDERED TO BE AN INTEGRAL WEARING SURFACE.

THE DEAD LOAD OF THE BARRIER RAIL IS SPREAD OVER ENTIRE SLAB EXCEPT IN THE DESIGN OF THE EDGE BEAM WHERE 50% OF THE RAIL WEIGHT IS ASSUMED TO BE CARRIED BY THE EDGE BEAM.

SLAB MOMENTS DUE TO PASSIVE EARTH PRESSURE ON THE ABUTMENTS ARE CONSIDERED.

IF ROCK IS ENCOUNTERED LESS THAN 12 FEET BELOW BOTTOM OF ABUTMENT FOOTING, SPECIAL ANALYSIS MAY BE REQUIRED.

THIS STANDARD IS NOT DESIGNED SO THAT ADDITIONAL INTERIOR SPANS MAY BE ADDED WITHOUT CAUSING SOME OVERSTRESSES.

CLASS 20 EXCAVATION WILL BE REQUIRED TO CONSTRUCT THE INTEGRAL ABUTMENTS. THE QUANTITIES FOR CLASS 20 ARE NOT INCLUDED ON THESE SHEETS, BUT SHALL BE CALCULATED AND INCLUDED IN THE FINAL PLANS.

FOR PIERS SUBJECT TO SCOUR THE DESIGN BEARING SHALL BE OBTAINED BELOW SCOUR ELEVATION. SCOUR ELEVATION SHALL BE SHOWN ON THE SITUATION PLAN.

3" WING PVC PIPE IS INCIDENTAL TO STRUCTURAL CONCRETE.

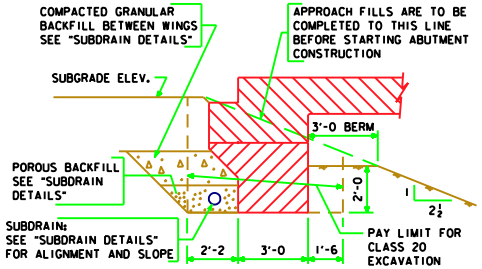
THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (SOI IS $\frac{1}{8}$ INCH DIAMETER BAR). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

ENGLISH SIZE	BAR DESIGNATION
3	10
4	13
5	16
6	19
7	22
8	25
9	29
10	32
11	36

SPECIFICATIONS

DESIGN:
SUBSTRUCTURE: AASHTO, SERIES OF 2002.
SUPERSTRUCTURE: AASHTO LRFD, SERIES OF 2004 WITH INTERIM 2005.

CONSTRUCTION:
IOWA DEPARTMENT OF TRANSPORTATION STANDARD 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.



ABUTMENT EXCAVATION DETAILS
SECTION NORMAL TO ℄ ABUT. BRG.

LATEST REVISION DATE

APPROVED BY BRIDGE ENGINEER

Iowa Department of Transportation
Highway Division

STANDARD DESIGN - 40' ROADWAY, 3 SPAN BRIDGES
CONTINUOUS CONCRETE SLAB BRIDGES
NOVEMBER, 2006

INDEX, GENERAL NOTES & GENERAL INFORMATION

J40-01-06