GENERAL: THIS STANDARD DRAWING PROVIDES DESIGN AND GENERAL CONSTRUCTION DETAILS FOR PRESTRESSED CONCRETE I-BEAM BRIDGES. THE DETAILS FOR EACH STRUCTURE SHALL INCLUDE THE FOLLOWING DETAILS:

1. A TRANSVERSE CROSS-SECTION THROUGH THE DECK, DETAILING AT NOT LESS THAN THE I-BEAM SPACING, DECK THICKNESS, HATCH DIMENSIONS, DECK REINFORCING AND COVER.
2. FRAME PLAN SHOWING AT A MINIMUM SPAN LENGTH, BEAM SPACING, SKIN ANGLE AND DIAPHRAGM LOCATIONS, CENTERLINE OF BEAM AND LOCATION OF CURVATURE THROUGH CYLINDRICAL CURVE, CROSS SECTION OF I-BEAM TODAYS SHOWING NUMBER AND LOCATION OF BENT-UP ANCHOR STRANDS, REINFORCING STEEL, INSERT LOCATIONS AND EMBEDDED STEEL PLATES (IF ANY).
3. BUMPER RESTRAINTS TO BE DESIGNED TO MEET THE REQUIREMENTS FOR DESIGN CRITERIA ZONE "A" AS DEFINED IN AASHTO SPECIFICATIONS.
4. ELASTIC LIMITING BEARING DEVICES, INCLUDING DIMENSIONS, DENSITY AND WEIGHT LOAD (IF ANY).
5. DETAILS OF ENDS, Pier, AND INTERMEDIATE DIAPHRAGMS, INCLUDING DIMENSIONS, REINFORCING STEEL SIZE AND SPACING.
6. EXPANSION JOINT DETAILS.
7. DETAILS OF INSERTS AND PIER, INCLUDING DOWEL ROD LOCATIONS, CENTERLINE OF BEAM BEARINGS, ORIENTATION OF BEAM, DOWEL DIMENSIONAL REQUIREMENTS.
8. ALL PIER DISTANCE TO BE PROPERLY COVERED BY THE COST OF FABRICATION, ERECTION AND CONSTRUCTION OF THE BEAMS.
9. PIER NOTES, INCLUDING BUT NOT LIMITED TO, CONCRETE PLACEMENT SEQUENCE.
10. ALL OTHER DETAILS AND INFORMATION NECESSARY TO COMPLETE THE PLANS.

DESIGN CRITERIA:


LOADING: 50PS AND THE ALTERNATE MILITARY LOAD.

DESIGN STRESSES:

PRESTRESSED CONCRETE - 1' + 30 MPA (28-DAY)
1' + 25 MPA (RELEASE)
DIAPHRAGM CONCRETE - CLEAT 5 CONCRETE (SUPERSTRUCTURE) 1' + 31 MPA
REINFORCING STEEL M25 a 050 MPA OR M240 GRADE 40 AND WITH A MINIMUM YIELD STRENGTH OF 400 MPA, AND SHALL BE EPOXY-COATED PRESTRESSING STRAND - Astra 1400 GRADE 170, 17.2 mm DIAMETER SEVEN-WIRE, UNCOATED, LOW-RELATION STANDARDS NORMAL STRAND AREA = 99 mm
ANCHORAGE ZONE REINFORCEMENT, VERTICAL STIRRUPS ACTING AT A UNIT STRESS OF 135 MPA SHALL RESIST AT LEAST 4 PERCENT OF THE TOTAL PRESTRESSING FORCE AND SHALL BE PLACED WITHIN A DISTANCE OF 0.25 TIMES THE BEAM WIDTH FROM THE END OF THE BEAM. THESE STIRRUPS SHALL BE PLACED IN ADDITION TO THOSE REQUIRED FOR SCON REINFORCEMENT.

DECK REINFORCING, DECK REINFORCING OVER PIER SHALL BE DESIGNED TO RESIST THE NEGATIVE MOMENTS INDUCED BY ANY SUPERIMPOSED DEAD LOADS AND LIVE LOADS.

DIAPHRAGMS SHALL BE CAST IN PLACE, DIAPHRAGMS SHALL BE REQUIRED AT BEAM END, INTERMEDIATE DIAPHRAGMS ARE NOT REQUIRED IN SPANS OF 12 M OR LESS, DIAPHRAGMS ARE REQUIRED, AT MIDSPAN FOR SPANS GREATER THAN 12 M AT QUARTER POINTS FOR SPANS GREATER THAN 24 M AT 48 M.

LAP SPACES FOR REINFORCING STEEL IN I-BEAMS AND DIAPHRAGMS SHALL BE:

- 400 mm IN LENGTH FOR 50 MPA BARS
- 900 mm IN LENGTH FOR 50 MPA BARS

SEISMIC RESTRAINTS SHALL BE DESIGNED TO MEET THE REQUIREMENTS FOR ZONE "A" AS DEFINED IN AASHTO SPECIFICATIONS.

SEISMIC LIMITATION: I-BEAMS MAXIMUM ALLOWABLE SKIN ANGLE AND DIAPHRAGMS SHALL BE:

- SPAN LIMITS: THE SPAN LENGTH LIMITS SHOWN ARE APPROXIMATE, THE SPAN LENGTHS ARE BASED ON SIMPLE SPAN DESIGN.
- DIAPHRAGM DESIGN CRITERIA ZONE "A" AS DEFINED IN AASHTO SPECIFICATIONS.

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