TO:

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ENGINEERING INSTRUCTION

NEW YORK STATE DEPARTMENT OF TRANSPORTATION

SUBJECT: STANDARD DETAILS FOR HIGHWAY BRIDGES, REVISION TO

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APPROVED: F. V. Flanagan
Deputy Chief Engineer (Structures)

The attached pages are revisions to Standard Details for Highway Bridges and should be immediately inserted in the Manual.

Page

I - V	Table of Contents - Revised
3	Art. 21.3 - 8th line changed BR to GLD
4	No change
19	Art. 2.5.2 - Item "Cement Concrete Approach Slab" changed 1973 Item No. from 601.01 to 601.0303
20	No change
23	No change
24	Art. 21.8.4 - 2nd line - changed 4 to 3 inches
33	Art. 21.17.2 - Deleted word "Stub" from heading and in 2nd line
34	No change
49	No change
50	G7 - Added note
51	SUP 3 - Deleted
52	SUP 4 - Deleted SUP 5 - Deleted
53	Blank page
54	SUP 6 - Deleted SUP 8 - Deleted SUP 9 - Deleted
55	SUP 11 - Deleted
56	Blank page due to deletion
57	Blank page due to deletion
58	Revised due to deletion
63	No change
64	SUB 5 - Deleted SUB 6 - Deleted
65	SUB 7 - Deleted
66	No change
67	SUB 12 - Deleted
68	No change
79	Art. 23.1.2(a) - Added

Page	
80	No change
81	Art. 23.1.3 - Added paragraph 4
82	No change
88A	Art. 24.12 - paragraphs 2 and 3 - revised
89	No change
94	Art. 25.1 - paragraph 1 - deleted paragraph 2 - revised paragraph 3 - revised "HOOPS" to "HOOKS"
94-1	No change
94-2	No change
94-3	Item "Top of Slab with Integral Wearing Surface" - added (*) and footnote.

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body of another special specification. The only references made should be to Standard Departmental Specifications.

21.3 - STANDARD SHEETS

It is the policy of this office to show all details of structures on the Contract Plans. Any references to a standard sheet would, therefore, have to apply to a detail commonly used on the highway portion of the Contract and is applicable to a structure in the Contract. When such a reference to a standard sheet is made on the Contract Plans, be specific as to which details the note has reference. Reference should never be made to BDD or GLD sheets. All standard sheets referred to on the plans shall be listed on the first sheet of the Engineer's Estimate.

21.4 - AESTHETICS

In preparing plans, the appearance of each structure should be considered. Some aesthetic treatments will result in a cost increase. However, when aesthetic considerations are tempered with sound judgment, bridges having a pleasing appearance can often be obtained at a moderate or possibly no increase in cost.

The following pages, 4 through 16, are to be used as a guide only in the consideration of the aesthetic aspects of a new structure.

AESTHETICS

It is not the details of a structure the public is aware of but rather the feeling that these details relate. By taking each part of a structure, properly proportioning it and eliminating all unsightly appurtenances, we create a total effect that pleases, rather than annoys the motorist.

Just as eliminating unsafe obstructions on any road is important to the motorist's physical well being, so eliminating disproportionate or unsightly structures is important to the motorist's mental well being.

FIRST: Accept the fact that appearance is important on all structures. People will notice an isolated structure, good-looking or ugly, on a short stretch of road. This structure is an uncommon part of the landscape and, therefore, care should be exercised with its appearance.

In contrast to the isolated structure, people tend to take for granted multiple structures on or near an expressway. However, these are the structures that create a mood or feeling, good or bad. Care should be taken not to offend the eye or cause the structures to stand out like the proverbial "sore thumb." Naturally, in some instances, a little "window dressing" may be necessary to offset or complement the area in which the structures are located.

21.5.2 BREAKDOWN OF CONCRETE ITEMS ON CONTRACT PLANS

The following items will be used for various components of the structure and will be so indicated on the Contract Plans:

Description	1962 Item No.	1973 Item No.
Mass. Concrete - Abutments, Solid Piers and Retaining Walls	'20	601.02
Pier Footings	20	601.02
Pier Columns, Caps and Beams	18	601.01
Structural Slabs	18	601.01
Concrete Deck Slabs	18MB	601.0301
Concrete Slab For Box Beams	18MB	601.0302
All Pedestals	18	601.01
Sidewalks (superstructure and sub-structure)	18	601.01
Walls and Abutment Headers	18	601.01
Cement Concrete Pavement.....	47B	502.02
Cement Concrete Approach Slab	18	601.0303
Cast-in-Place Concrete Piles	85C	629.07
Heavily Reinforced Section (Steel Spacing Less Than 6 Inches)	18	601.01

In order to facilitate the preparation of field estimates for the various portions of the subject items as they are constructed, the Contract Plans shall clearly state the volume of structural Class A and B concrete to the nearest hundredth of a cubic yard. The area of surface of the structural slab shall be indicated to the nearest square foot. The weight of reinforcement in each pour shall be indicated to the nearest pound, either on the appropriate plan sheet or as a part of the bar list.

The estimate for each unit, such as an abutment, pier, slab, parapet, curb and sidewalk per span shall be broken down by pours.

For simple spans, each span shall be considered as a unit and the quantities for the concrete and bar reinforcement items indicated for that unit. For continuous beams, each separate pour as indicated in the pouring sequence shall be considered as a unit.

The quantities in the pedestals in any one substructure unit may be listed in the table as the total for all the pedestals instead of listing the quantities in each pedestal.

21.6 BRIDGE OVER NAVIGABLE WATERWAYS

Navigation maintenance notes shall be included in the Contract Proposal.

Navigation lights are to be provided if required.

The Plans Review Unit is responsible for seeing that Coast Guard and/or Corps of Engineers' permits are included in the proposal.

21.7 PROVISION FOR FUTURE LANES IN BRIDGE DESIGN

If it is decided to provide for additional highway lanes as a result of conference or Department decisions based on anticipated future traffic, structures shall be designed to accommodate the future section.

It shall be the responsibility of the Preliminary Plans Unit to bring to the Designer's attention the requirement of providing for future widening.

21.8 MEDIANS ON STRUCTURES

In general, conditions on the highway approaches should be duplicated as nearly as possible on the structure.

21.8.1 CLOSED MEDIANS

When the distance between the inside edges of approach pavements is less than 24 feet, the median on the structure shall be closed in. Exceptions will be necessary if a differential elevation in the two roadways does not make paving of the mall feasible. Separate structures will be used for medians of greater width.

21.8.2 MEDIAN BARRIER

Median barriers on the highway approach shall be continued across the structures. (The usual practice is to employ a median barrier in medians of less than 36 feet in width.) A median barrier will not be introduced on the structure if it is not used on the approaches.

21.8.3 RAISED MEDIANS

Raised approach medians shall be continued across the structure without break in alignment. The curb on the structure shall be of the same height as that on the approaches.

21.8.4 FLUSH MEDIANS

A flush median on the approaches shall be continued across the structure except that a raised median 3 inches high shall be introduced on the structure if the pavement drains toward or across median or if a longitudinal expansion joint is used.

21.9 GENERAL DRAWINGS

21.9.1 LAYOUT DRAWINGS

Show plan, elevation, profiles and transverse sections of both superstructure and pier, if used, and approach. The elevation view shall show the proposed elevations of bottoms of footings. The actual minimum horizontal and vertical clearances provided at Highway and Railroad Grade Separations,

joints at thirty-foot intervals (maximum). These construction joints shall not extend through the footing.

The construction joints, if required, should be placed preferably midway between the pedestals and spaced at fairly uniform intervals. Construction joints, if required, should be placed at the beginning and end of the abutment backwall (and stem, if highwall abutment) at the juncture with the wingwall (except in the case of flared wingwalls where a contraction joint is required).

Example of a long abutment at a location where leakage stains might be deemed objectionable - a highwall abutment in an urban area.

Examples of long abutments at locations where leakage stains might not be thought objectionable: Stream crossings, bridges over railroads, abutments set back more than thirty feet from a travel lane.

ABUTMENT PEDESTALS

Vertical construction joints will be provided in all abutments to separate the pedestals from the backwall; however, no shear key is required.

CONTRACTION JOINTS IN WALLS

Vertical contraction joints will be required at thirty-foot intervals in all retaining walls, and

wingwalls more than sixty feet long. These contraction joints shall not extend through the footing.

CONTRACTION JOINTS AT JUNCTURE OF FLARED WALL AND ABUTMENT

A contraction joint will be required at locations where a wingwall joins an abutment or box culvert. This contraction joint shall extend through the footing.

EXPANSION JOINTS

Expansion joints will be required at ninety-foot (90') intervals in all retaining walls and wingwalls more than one hundred and eighty feet (180') long. These expansion joints shall extend through the footing.

JOINTS IN FOOTINGS ON PILES

At contraction joints or expansion joints in footings supported on piles, the joint should be treated like the end of the footing when laying out the piles. One pile should be placed in each row 1'-6" from the joint.

WALL LAYOUT TO ACCOMMODATE WATERSTOPS

At locations where a waterstop is to be installed, the walls should be laid out so that the rear faces of the two adjoining walls are flush at the joint in order to accommodate the waterstop.

21.21.2 - GENERAL NOTES: (To be placed on Plans.)

G1 Design Specifications: Current New York State Department of Transportation Standard Specifications for Highway Bridges.

Live Load: HS20-44 or two 24,000-lb. axles spaced 4' - 0" on centers.

Note: The latter loading is to be noted only for the bridges carrying either the main line of Interstate highways or the Southern Tier Expressway.

G2 Material and Construction Specifications: Specifications of New York State Department of Transportation dated January 2, 1973, with current additions and modifications.

G3 **The cost of furnishing and placing water used for Select Structural Fill, Item 203.21, will be paid for under Item 203.15 and 203.16 of the highway portion of the Contract.**

G4 The cost of furnishing and placing water used for sod gutters will be paid for under Item 615.03 included in the bridge estimate.

NOTE: The quantity of sodding of 500 square yards given on page 355 of the Standard Specifications is based on an aggregate amount, which includes both the Highway and Bridge shares. The quantity of sodding in the Highway share should be checked with the Regional Office and if the aggregate amount of the Bridge share and the Highway share does not

exceed 500 square yards, the cost of watering the sod should be included in the sodding item which is 612.01. The sodded areas shall be watered at a rate of 5 gallons per square yard.

G5 The cost of all joint material will be included in the price bid for the various items of the Contract, except as otherwise specified.

G6 Stress graded lumber and timber has been designed for the following allowable stresses and the type used must meet these minimum requirements:

Extreme fiber in bending and tension parallel to grain . . . . . .

Compression perpendicular to grain . . . . . .

Modulus of elasticity . . . . . .

G7 All concrete anchor studs which are attached to the various steel details shall meet the requirements listed in Subsection 709-05, Stud Shear Connectors. Payment for furnishing and placing the concrete anchors will be included in the unit price bid for the item to which the anchors are attached.

NOTE: G7 should be used in rare instances since it originated with the use of armored joints. It is now included in Appenda No. 3, page 51, Art. A-3. The above note can be used for Pier Nose details, etc.

21.21.3 SUPERSTRUCTURE NOTES: (To be placed on plans.)

SUP 1 With slab haunches, use the following note:

After all superstructure beams have been erected, elevations shall be taken on the top of the beam at the centerline of web at each centerline of bearing, center of the span and at other locations where theoretical bottom of the slab elevations are indicated on the plans.

The depth of haunch required to position the slab forms is obtained as follows: From the measured top of beam elevations subtract the deflections due to slab and superimposed dead load. Subtract this result from the listed bottom of slab elevation.

SUP 2 The structural slab on this structure shall be formed with _____.
(Here indicate either permanent corrugated metal forms for concrete decks or removable forms.)

SUP 3 - Deleted

Refer to Steel Construction Manual

Revised April 1976

SUP 4 - Deleted

See Steel Construction Manual

SUP 5 - Deleted

See Steel Construction Manual

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Revised April 1976

SUP 6 - Deleted

See Steel Construction Manual

SUP 7 All anchor bolts, nuts and washers shall be galvanized in accordance with the requirements of 1973 Material Specification 719-01.

SUP 8 - Deleted

See Steel Construction Manual

SUP 9 - Deleted

See Steel Construction Manual

SUP 10 All stainless steel shall be passivated. (This note is only to be used on projects in which stainless steel is called for.)

SUP 11 - Deleted

See Steel Construction Manual

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SUP 12 The following note is to be used when anchor bolts, base plates or miscellaneous metals are paid for under the bar reinforcement item:

Anchor bolts, base plates, etc. (list as necessary) will be accepted upon manufacturer's certification.

SUP 13 When bolted connections are shown, bolts shall be 7/8 inches diameter high strength bolts unless otherwise specified.

For timber or steel bearing piles when test piles are indicated:

Ordered length of test pile -

Abutment No. _____ = _____ ft

Pier No. _____ = _____ ft

Estimated length of piles -

Abutment No. _____ = _____ ft

Pier No. _____ = _____ ft

For timber or steel bearing piles when test piles are not used:

Estimated lengths of piles to be ordered -

Abutment No. _____ = _____ ft

Pier No. _____ = _____ ft

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SUB 5 - Deleted

See 1973 Standard Specification

SUB 6 - Deleted

See 1973 Standard Specification

SUB 7 - Deleted

See 1973 Standard Specification

SUB 8 Existing substructures shall be removed to within the limits shown on the plans under Item _____ in the _____ quantities. (Insert either HIGHWAY or BRIDGE in last blank space.)

SUB 9 Top of backwalls on which asbestos sheet packing Subsection (728-06) is to be placed shall be steel-trowel finished.

SUB 10 Bituminous material, Item 622.01 shall be applied to the backs of all abutments and wingwalls above top of footings where fill is in contact with the walls.

SUB 11 Epoxy protective coating for concrete, Item 621.01, shall be applied to the following surfaces:

ABUTMENTS All exposed pedestal surfaces, bridge seats, including the area under the bearings, exposed vertical surfaces of backwall and curtain walls facing the superstructure.

SOLID PIERS All pedestal surfaces including the area under the bearings, and the top surface of pier between pedestals including the edge chamfer at top edge of pier.

PIERS WITH COLUMNS

1. Piers with deck joints

   Top, sides and ends of pier beams and pedestals including the surfaces under the bearings.

2. Piers without deck joints

   All pedestal surfaces including the area under the bearings and the top surface of pier between pedestals including the edge chamfer at top edge of pier.

SUB 12 - Deleted

See 1973 Standard Specification

SUB 13 The Contractor, with the permission of the Deputy Chief Engineer (Structures), may elect to introduce construction joints in the abutments at locations not shown on the plans. These construction joints shall be provided with shear keys and waterstops. Vertical construction joints introduced in the backwall should preferably be placed midway between the pedestals.

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SECTION 23 - DECK SYSTEMS

23.1 - CONCRETE DECK SLABS

23.1.1 - SIMPLE SPAN BRIDGES

Structural concrete deck slabs shall have a thickness of 9-1/4 inches, including a monolithic wearing surface. The top 2-1/4 inches of the concrete shall be neglected in the design. The cover on the top steel shall be 3-1/4 inches, and on the bottom steel, one inch.

The structural deck slab shall be placed under the monolithic slab, Item 601.0301.

23.1.2 - CONTINUOUS SPAN BRIDGES

Structural concrete deck slabs shall have a thickness of 8-1/4 inches, including a monolithic wearing surface. The top 1-1/4 inches of concrete shall be neglected in the design. The cover on the top steel shall be 2-1/4 inches and on the bottom steel, one inch. Epoxy-coated reinforcing bars shall be used in the top mat. In special cases, galvanized reinforcing bars for all reinforcement may be specified with the approval of the Deputy Chief Engineer (Structures).

23.1.2(a) - BRIDGE CONSISTING OF SIMPLE AND CONTINUOUS SPANS

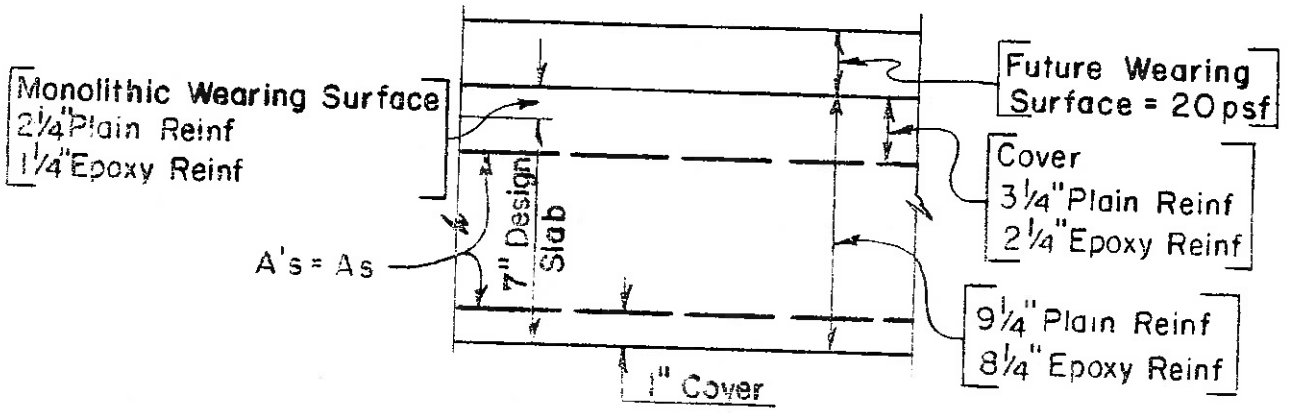
The procedure as set forth in Art. 23.1.2 - Continuous Span Bridges, shall be followed for all spans.

REVISED JANUARY 1976

SLAB DESIGN TABLE

CONCRETE REINFORCEMENT ASTM A615 GRADE 60

$f_s = 24{,}000$ psi $f_c = 1{,}200$ psi $n = 10$



BAR SIZE AND SPACING	MAXIMUM DESIGN SPAN		MAXIMUM OVERHANG	
	BARS ⊥ TRAFFIC	BARS ∥ TRAFFIC	TYPES I, II, III, VII SECTIONS	TYPES IV & VI SECTIONS
#6 @ 5"	10'-3"	7'-7"	4'-0"	3'-9"
#6 @ 5¼"	10'-1"	7'-5"	3'-11"	3'-8"
#6 @ 5½"	9'-10"	7'-3"	3'-11"	3'-8"
#6 @ 5¾"	9'-8"	7'-2"	3'-10"	3'-7"
#6 @ 6"	9'-6"	7'-0"	3'-10"	3'-7"
#6 @ 6¼"	9'-4"	6'-10"	3'-9"	3'-6"
#6 @ 6½"	9'-2"	6'-9"	3'-9"	3'-6"
#6 @ 6¾"	9'-1"	6'-8"	3'-9"	3'-6"
#6 @ 7"	8'-10"	6'-6"	3'-8"	3'-5"
#5 @ 5"	8'-8"	6'-5"	3'-8"	3'-5"
#5 @ 5¼"	8'-5"	6'-3"	3'-7"	3'-4"
#5 @ 5½"	8'-3"	6'-2"	3'-6"	3'-4"
#5 @ 5¾"	8'-1"	6'-0"	3'-6"	3'-3"
#5 @ 6"	7'-9"	5'-9"	3'-6"	3'-3"
#5 @ 6¼"	7'-6"	5'-6"	3'-5"	3'-3"
#5 @ 6½"	7'-2"	5'-4"	3'-4"	3'-2"
#5 @ 6¾"	6'-11"	5'-2"	3'-4"	3'-2"
#5 @ 7"	6'-9"	5'-0"	3'-4"	3'-1"
#5 @ 7¼"	6'-6"	4'-10"	3'-3"	3'-1"
#4 @ 5"	6'-3"	4'-9"	3'-3"	3'-1"

TYPES I, II, III, IV, VI & VII SECTIONS ARE SHOWN ON BDD 73-70.

MAXIMUM OVERHANG SHALL BE MEASURED FROM CENTER LINE OF WEB OF FASCIA STRINGER.

REINFORCEMENT PLACED ON A SKEW SHALL HAVE ITS ⊥ SPACING REDUCED BY THE COSINE SQUARED OF THE SKEW ANGLE.

23.1.3 - REINFORCEMENT IN DECK SLABS

For skews up to and including 30-deg, the reinforcement shall be placed parallel to the skew. For skews over 30-deg, the reinforcement shall be placed normal to the beams or girders.

Design span is defined as the distance between stringers less one-half the width of the top flange, these distances being measured along the longitudinal axis of the bar.

Longitudinal reinforcement on top of slab and bottom of slab outside the middle half of the bay shall be No. 5 bars at 1'-6" centers, except that no steel need be placed in the bottom of the slab over supporting members.

When No. 4 Main Steel is required, use No. 4 Distribution Steel.

23.1.4 - HAUNCHES

All steel stringer bridges with monolithic deck slabs shall be provided with a haunch over each stringer, poured monolithically with the slab. The minimum depth of haunch shall be two inches as measured at the centerline of web from the top of steel to the theoretical bottom of slab. A deeper minimum haunch may be required when the top flange exceeds 16 inches in width to allow for pavement slope.

For simple span bridges, the depth of the haunch at the centerline of bearings shall be the minimum depth, plus the difference in thickness between the maximum and minimum top flange plates, plus the correct allowance for horizontal curvature.

Haunches on fascia beams of multispan bridges shall be set so that the top of the webs of fascia beams in adjacent spans line up.

The depth of the haunches shall be labeled on the plans only at the centerline of bearings. This is necessary to enable the Contractor to verify the pedestal elevations. The depth of the haunch at other locations along the span shall be computed by the Contractor after the superstructure steel has been erected, as per Superstructure Note SUP-1.

Haunches in excess of four inches in depth shall be reinforced with No. 5 stirrups at 1'-6" centers.

23.1.5 - FORMING

The type of form system to be used in the construction of a concrete deck slab shall be indicated on the Contract Drawings.

The selection of the type of form system, whether removable or metal stay-in-place, shall be made by the Project Engineer. This selection shall be based on an evaluation of the project conditions and probable costs. Some of the guideline criteria which should be considered in determining the type of deck forms to be used are as follows:

A. Accessibility of stringers for forming purposes.

B. Ease in placing or removing forms.

C. Difficulties inherent in erection and stripping of removable forms over waterways and railroads.

D. Risks and safeguards involved in inspection.

E. When the height of the superstructure is 25 feet or more above ground or water surface, corrugated metal forms shall be used to avoid use of construction nets.

24.10 - PIER NOSE:

If an ice breaker is required, the pier nose shall be protected with a steel angle or other metal nosing, effectively secured to the masonry by means of suitable anchors.

24.11 - REINFORCEMENT FOR TEMPERATURE:

All faces of abutments, walls and piers, not otherwise reinforced, shall be reinforced with No. 5 bars placed horizontally at one foot centers and No. 5 bars placed vertically at 2 feet centers to resist the formation of temperature and shrinkage cracks. Temperature steel need not be doweled into the footing unless required due to wind forces against the unbackfilled section.

24.12 - DRAINAGE OF STRUCTURE BACKFILL:

Porous drainage aggregate shall be placed against the back of all abutments, walls, arches and rigid frames.

Metal pipe under-drains shall be used to provide drainage of the porous drainage aggregate.

In addition, outlets through the structure should be provided at approximately 30 feet on centers. These outlets shall be outletted through

the berm in front of the structure, except in the case of stream bridges, where they will be outletted 6 inches above low water. Outlets will not be provided in cases of wingwalls when the finished grade in front of the wall is less than 5 feet below the top of wall.

24.13 - LOCATION OF PEDESTALS ON ABUTMENTS:

On all abutments with pedestals on a bridge seat, the front face of the pedestal shall be flush with the front face of the abutment at the bridge seat, except for those special cases as noted in the aesthetic section.

24.14 - CANTILEVERED ENDS OF WALLS:

Cantilevered ends of walls shall not be used.

24.15 - STEPPED FOOTINGS:

Refer to "Design Criteria for Bridges," 75-1, Stepped Footings issued by EI 75-5, dated February 5, 1975.

24.16 - STUB ABUTMENTS-DELETED

Except when piles are used, transverse reinforcement in footings will be provided only where required by design (generally bottom of tow and top of heel).

Hooks are required only where embedment length to develop bars beyond point of maximum moment is not adequate.

Vertical dowels No. 6 or smaller may be straight if depth of footing permits sufficient embedment, i.e., minimum embedment of dowels used to develop tension bars, as shown in the table on pages 93, 93-1, 93-2, and 93-3. Otherwise, dowels may be hooked and/or bent into toe of footing to provide tow reinforcement or a portion thereof.

Longitudinal reinforcement in footings shall be No. 5 bars at 2' - 0" maximum spacing adjacent to all transverse reinforcement and dowels to form mats, unless a larger area of steel is required by design.

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ACI STANDARD HOOKS

Revised April 1975

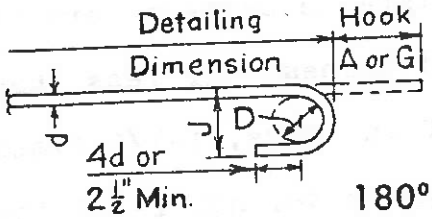
All specific sizes recommended by CRSI below meet requirements of ACI 318-71

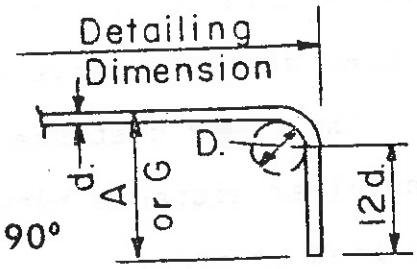
RECOMMENDED END HOOKS
All Grades

D = 6d for #3 through #8
D = 8d for #9, #10, and #11
D = 10d for #14 and #18

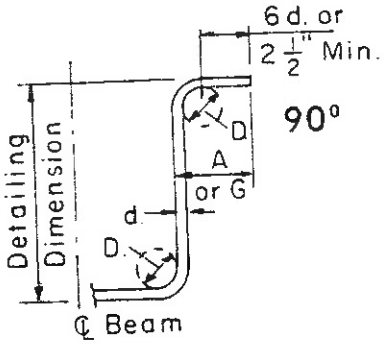
Bar Size	180° HOOKS*		90° HOOKS
	A or G	J	A or G
#3	5	3	6
#4	6	4	8
#5	7	5	10
#6	8	6	1-0
#7	10	7	1-2
#8	11	8	1-4
#9	1-3	11¼	1-7
#10	1-5	1-0¾	1-10
#11	1-7	1-2¼	2-0
#14	2-2	1-8½	2-7
#18	2-11	2-3	3-5

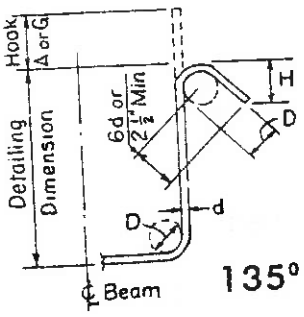
*With Grade 40 only, where available depth is limited, bars may be bent with D = 5d for #3 through #11.





STIRRUP AND TIE HOOKS





STIRRUPS
(TIES SIMILAR)

STIRRUP AND TIE HOOK DIMENSIONS
Grades 40-50-60 ksi

Bar Size	D (in.)	90° Hook	135° Hook	
		Hook A or G	Hook A or G	H Approx.
#3	1½	4	4	2½
#4	2	4½	4½	3
#5	2½	6	5½	3¾

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25.2 - SPACING

Except as noted in Sections 24.11 and 25.11, the clear distance between parallel bars shall not be more than 18 inches, nor less than 1-1/2 times the nominal diameter of the bars, 1-1/2 times the maximum size of the coarse aggregate, nor 1-1/2 inch.

The maximum spacing of design reinforcement in the back of walls and abutments shall be 2'-0".

Where reinforcement in beams or girders is placed in two or more layers, the bars in the upper layers shall be placed directly above those in the bottom layer.

The clear distance between bars shall also apply to the clear distance between the contact splice and adjacent splices or bars.

25.3 - COVERING

The following cover shall be used:

Structural Deck Slabs on Beams or Stringers

Top of slab with separate wearing surface ..... 1 in.

Top of slab with integral wearing surface .....3¼ in. *

Bottom of slab ..... 1 in.

Beams and columns ..... 2 in.

Walls and piers above footings (including those adjacent to water) ..... 2 in.

Footings (including unformed bottom) ..... 3 in.
This may be increased to accommodate piles when necessary.

*Cover reduced to 2 1/4" when Epoxy Coated rebars are placed in the top mat