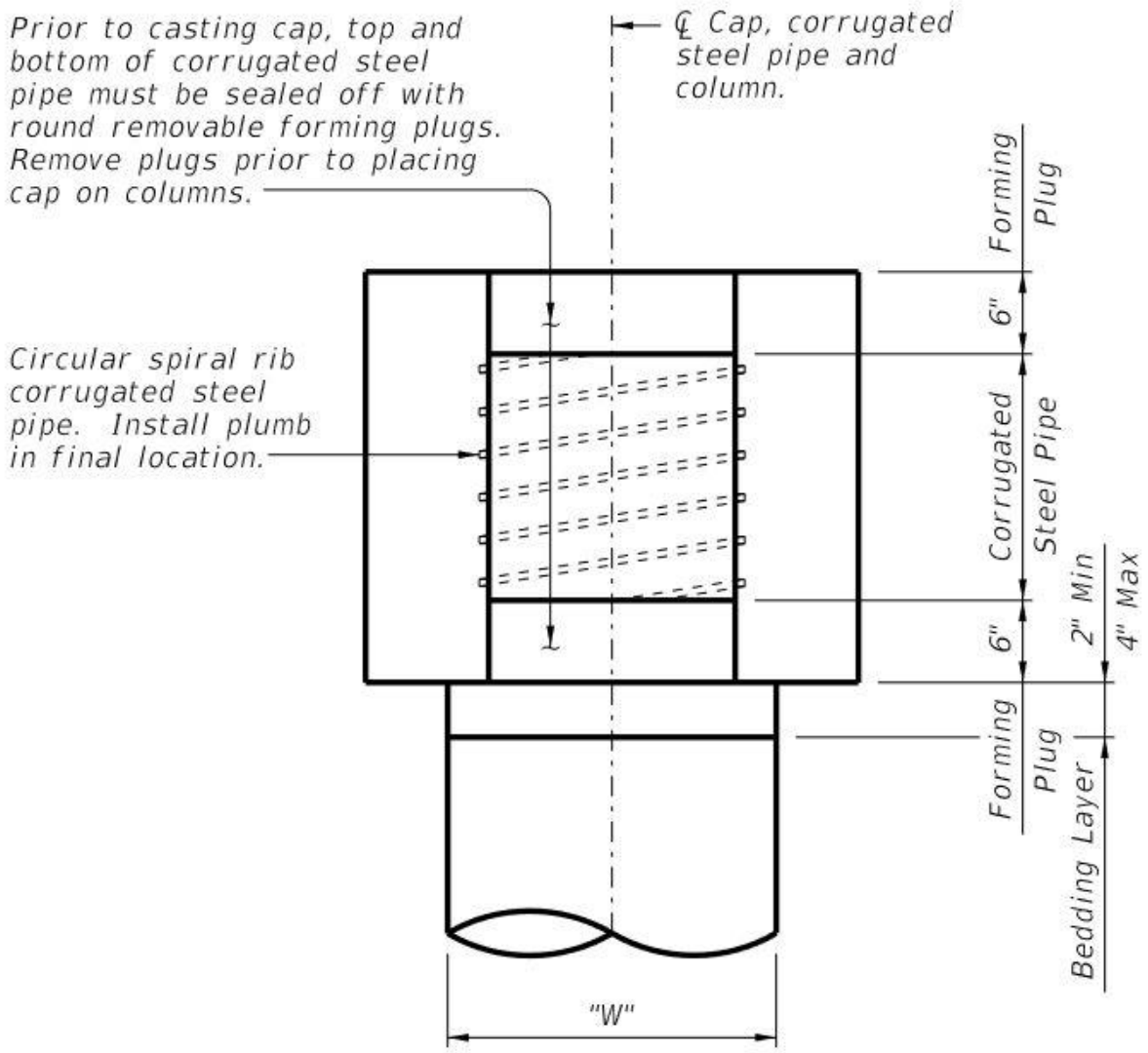
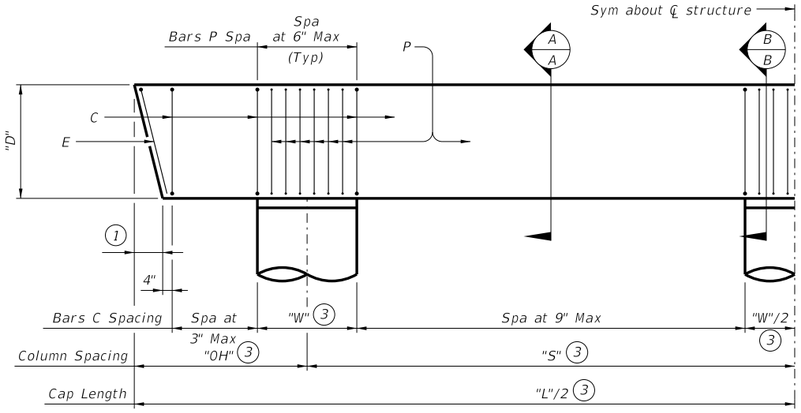
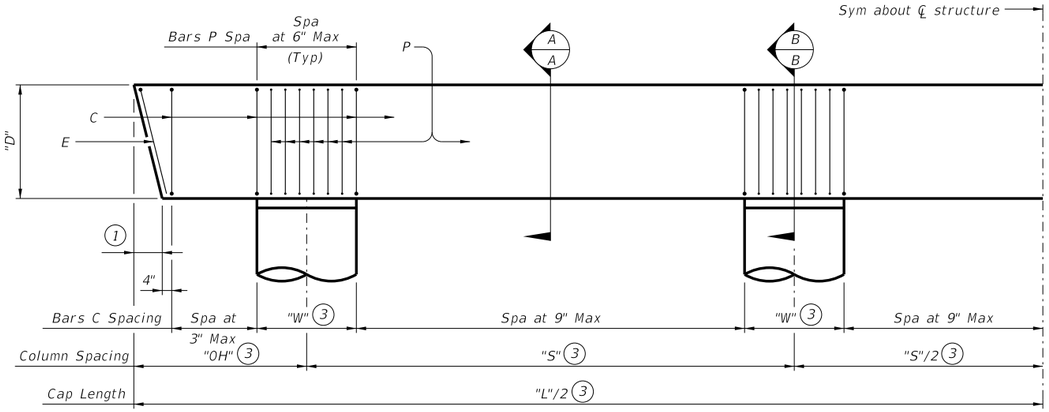

Prior to casting cap, top and bottom of corrugated steel pipe must be sealed off with round removable forming plugs. Remove plugs prior to placing cap on columns.
℄ Cap, corrugated steel pipe and column.
Circular spiral rib corrugated steel pipe. Install plumb in final location.
Forming Plug
6"
Corrugated Steel Pipe
6"
2" Min
4" Max
Forming Plug
Bedding Layer
"W"

DATE:
FILE:



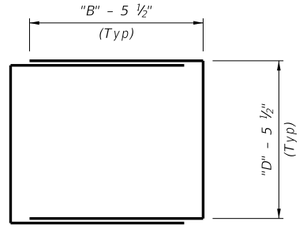
SHOWING 3 COLUMN BENT



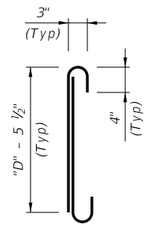
SHOWING 4 COLUMN BENT

DESIGNED CAPS

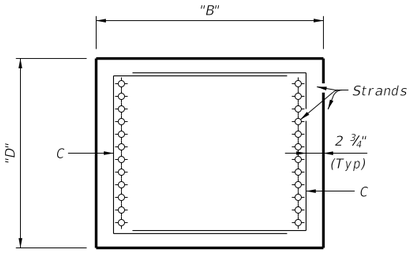
SUPERSTRUCTURE TYPE	CAP DIMENSIONS			CONCRETE		PRESTRESSING STRANDS				OPTIONAL DESIGN
	CAP WIDTH "B" (ft-in)	CAP DEPTH "D" (ft-in)	CORRUGATED PIPE INSIDE DIAMETER (ft-in)	RELEASE STRENGTH f'_{ci} (ksi)	MINIMUM 28 DAY COMP STRENGTH f'_c (ksi)	LAYERS OF PS STRANDS	TOTAL NO. PS STRANDS	SIZE (in)	STRENGTH (ksi)	REQUIRED MINIMUM ULTIMATE MOMENT CAPACITY (STRENGTH I) (ft-kips)
Slab Beams	3'-0"	2'-6"	1'-6"	4.0	5.0	12	24	0.6	270	1,201
Decked Slab Beams	3'-6"	3'-0"	2'-0"	4.0	5.0	15	30	0.6	270	1,886
Box Beams	3'-6"	3'-0"	2'-0"	4.0	5.0	15	30	0.6	270	1,886
X-Beams	4'-0"	3'-6"	2'-6"	5.2	6.5	16	32	0.6	270	2,671
I-Girders (Tx28-Tx54)	4'-0"	3'-6"	2'-6"	4.0	5.0	16	32	0.6	270	2,484
I-Girders (Tx62)	4'-6"	4'-0"	3'-0"	4.0	5.0	20	40	0.6	270	3,634



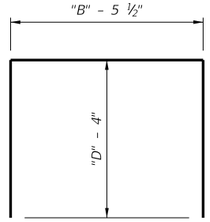
BARS C(#5)
Showing one complete bar.



BARS P(#3)
Showing one complete bar.

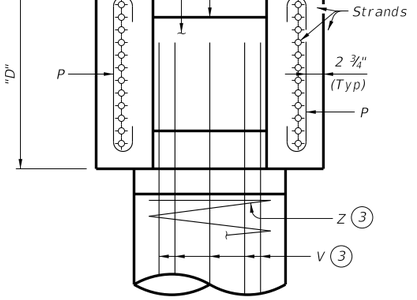


SECTION A-A



BARS E(#5)

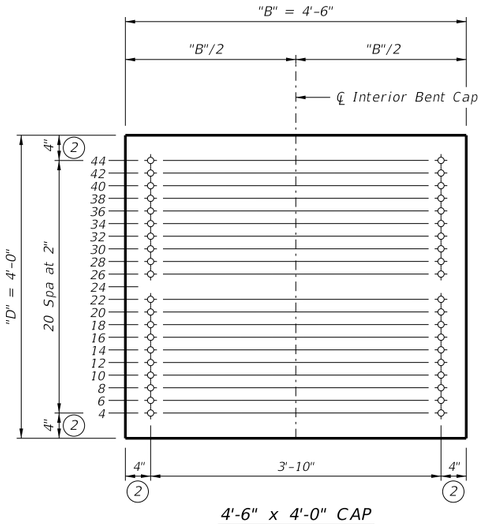
1. Variable. See Interior Bents sheet for dimension. When dimension is 0", omit bars E and reduce end cover to bars C to 3". Measured parallel to top of cap cross-slope.
2. Dimensioned to center of strand.
3. See Interior Bents sheet.



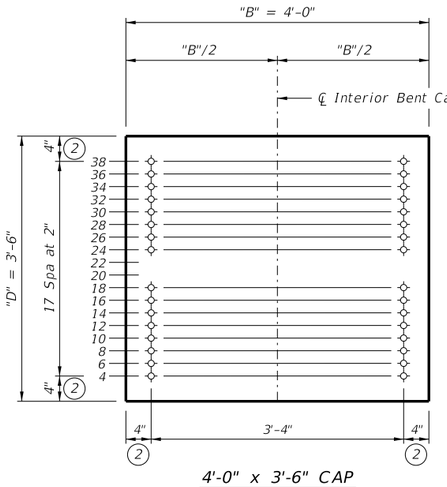
SECTION B-B

INTERIOR BENT HALF ELEVATION

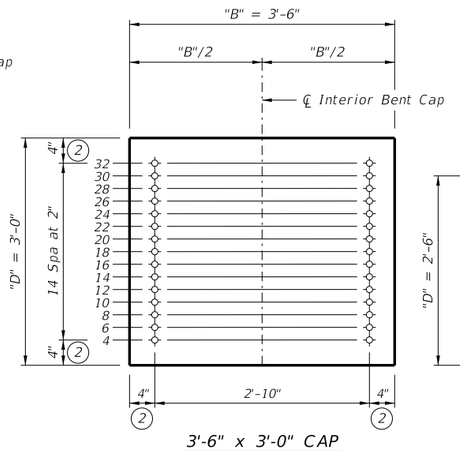
Strands not shown for clarity.



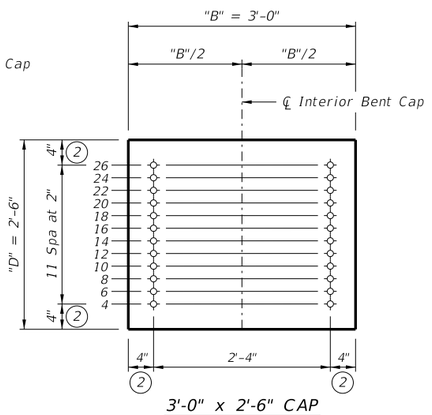
4'-6" x 4'-0" CAP
Used with I-Girders (Tx62)



4'-0" x 3'-6" CAP
Used with I-Girders (Tx28-Tx54) and X-Beams



3'-6" x 3'-0" CAP
Used with Decked Slab Beams and Box Beams



3'-0" x 2'-6" CAP
Used with Slab Beams

INTERIOR BENT SECTIONS

(Showing strands only)

HL93 LOADING

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED, PRECAST BENT CAP OPTION FOR ROUND COLUMNS

PPBC-RC

FILE: ppbcstd1-17.dgn	DN: CPM	CK: AJF	DW: JTR	CK: CPM
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REVISIONS	DIST	COUNTY		SHEET NO.

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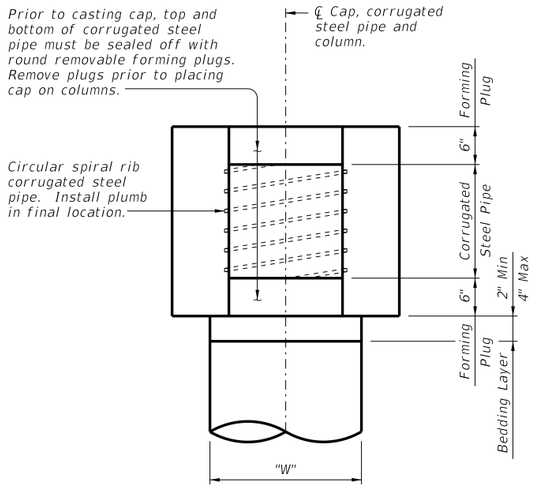


TYPICAL CAP SECTION AT COLUMN

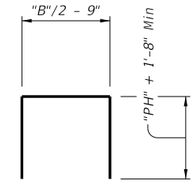
Showing example of cap and corrugated steel pipe at column. Cap and column reinforcing not shown for clarity.

(4) *Omit bars SB for pedestal heights ("PH") under 1'-0".*

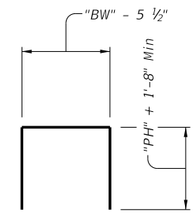
(5) *Shown for structures without skew. Details are for "PH" heights greater than 3" and less than 18". Details are shown for standard X-Beams and I-Girders. Submit details for skewed structures and for pedestals greater than 18" in height.*

(6) *See Interior Bents sheet for placement of dowels. Place dowels plumb.*

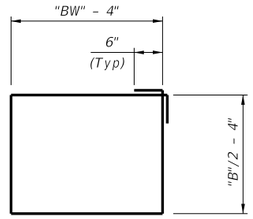
(7) *See Interior Bents sheet, Bearing Seat Detail for slope.*



BARS EB1(#5) (5)

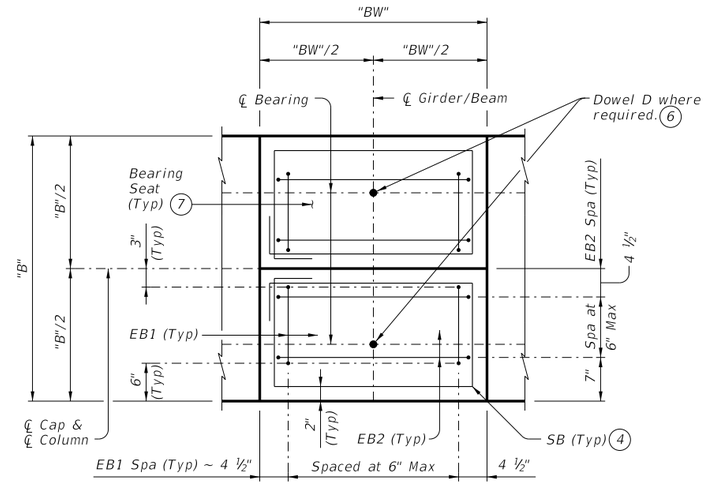


BARS EB2(#5) (5)

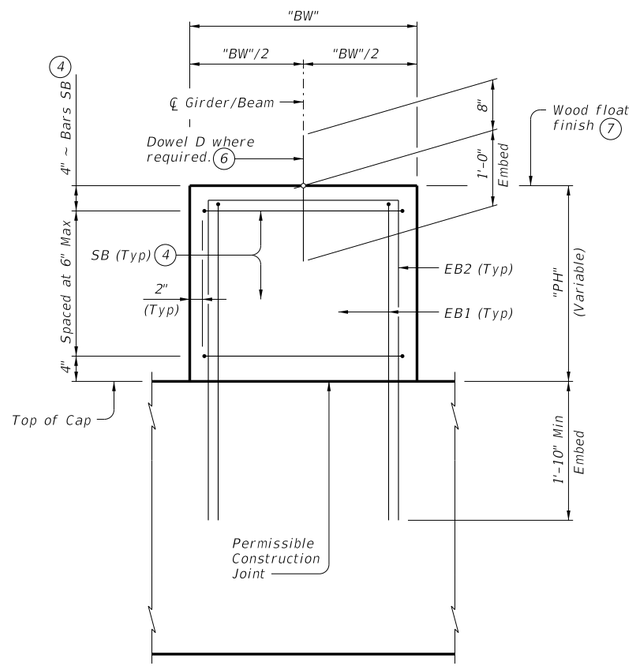


BARS SB(#5) (4)(5)

SUPERSTRUCTURE TYPE	BEARING DIMENSIONS "BW" (ft-in)
X-Beams	6'-0"
I-Girders (Tx28-Tx54)	3'-0"
I-Girders (Tx62)	3'-0"



PLAN



ELEVATION

PEDESTAL DETAILS (5)

Clean bearing surface and all loose material before placing bearing pad. Reinforce Bearing Seats/Pedestals over 3" in height as shown.

CONSTRUCTION NOTES:

Cap Fabrication:

Fabricate in accordance with Item 425, "Precast Prestressed Concrete Structural Members". Secure corrugated metal pipes to prevent their movement during concrete placement. Location tolerance of pipes is ¼" from plan location, transversely and longitudinally. Seal pipes to prevent intrusion of concrete.

Chamfer or round all exposed corners ¾".

Repair cracks exceeding 0.005 in. in width as directed. The fabricator must take approved corrective actions if cracks greater than 0.005 in. form. All work, material, and engineering related to these cracks will be at the Contractor's expense.

Caps can be set level or at grade. If required or needed, build bearing seats/pedestals to achieve final grade. Bearing seats/pedestals may be precast with the initial cast. Bearing seats/pedestals that conflict with column locations may not be precast with cap. Do not locate lift points at bearing seats/pedestals if bearing seats/pedestals are precast. If bearing seats/pedestals are not precast, cast in accordance with Item 420.4.9, "Treatment and Finishing of Horizontal Surfaces". Do not slope the top of caps between bearing areas from the center slightly towards the edge. If pedestals are not precast, drill and epoxy anchor bars EB1 and EB2 into top of cap in accordance with Item 420.7.10, "Installation of Dowels and Anchor Bolts".

If earwalls are required, see Interior Bents sheet for details.

If shear keys are required elsewhere in plans, submit details. Shear keys may not be precast. Drill and epoxy shear key anchor reinforcement into top of cap in accordance with Item 420.4.7.10 "Installation of Dowels and Anchor Bolts".

Limit flexural stress in cap to 250 psi during handling and storage. Store and handle caps in accordance with Item 425, "Precast Prestressed Concrete Structural Members". Do not stack caps.

Cap-to-Column Connection:

Construct a mock-up of the column-to-cap connection that must demonstrate the ability of the Contractor to provide a connection free of voids. In the presence of the Engineer use trial batch of concrete fill using the same material, equipment, and personnel to be used for actual concreting operations and fill the mock-up at least one week before concreting. Field test the trial batch of concrete fill to the same levels required for the actual concreting.

Caps may be placed on columns/drilled shafts after column/drilled shaft concrete has achieved a flexural strength of 355 psi (or 2,500 psi compressive strength). Use plastic shims or friction collars to support the cap at the proper elevation prior to concreting. Total area of plastic shims used on top of each column may not exceed 6 percent of the column area. Column/drilled shaft curing may be interrupted a maximum of 2 hours for placement of plastic shims or friction collars and cap placement.

Provide mortar tight forms. Ensure the top of the column is in a saturated surface dry (SSD) condition just before placing concrete fill. Deposit concrete such that all voids in the bedding layer and bent cap are completely filled. Deposit concrete through the top opening of the cap pocket in a manner that deposits concrete from the bedding layer on the bottom of the connection upward. Vibrate concrete in the pocket in accordance with Item 420.4.7.9, "Consolidation". Trowel finish top surface of cap pockets flush with top of cap. Wet mat cure these locations for at least 48 hours. When lifting loops are removed, recess loops ⅜" minimum and fill void with Type VIII epoxy mortar in accordance with Chapter 2, Section 7 of the Concrete Repair Manual. Subsequent loading can occur when the concrete fill reaches its required 28 day compressive strength.

MATERIAL NOTES:

Provide 12 gage, Type I, lock-seam, helical corrugated pipe conforming to Item 460, "Corrugated Metal Pipe".

Provide Grade 60 reinforcement. Do not epoxy coat reinforcement even if column reinforcement is epoxy coated.

Provide Class "H" (HPC) Concrete for Cap Concrete.

Provide Class "C" or "S" Concrete for Cap-to-Column Connection concrete fill.

Use low relaxation strands, each pretensioned to 75% of fpu.

GENERAL NOTES:

Designed in accordance with AASHTO LRFD Bridge Design Specifications.

Prestress loss calculated according to Research Report FHWA/TX-12/0-6374-2 Table 6.6 using a relative humidity of 60 percent.

The Contractor has the option to provide prestressed, precast bent caps in accordance with the details shown. No additional payment will be made if the Contractor uses prestressed, precast bent caps.

Submit shop drawings of prestressed, precast bent caps for approval prior to construction. Indicate lifting attachments and locations on the shop drawings.

Corrugated Pipe and Concrete Fill are subsidiary to Item 425, "Precast Prestressed Concrete Structural Members".

See standard Interior Bents sheet for details and notes not shown.

These details can only be used as an alternate to standard Interior Bents with round columns for Slab Beams, Decked Slab Beams, Box Beams, X-Beams, and I-Girder standard designed structures.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

PRESTRESSED, PRECAST BENT CAP OPTION FOR ROUND COLUMNS

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