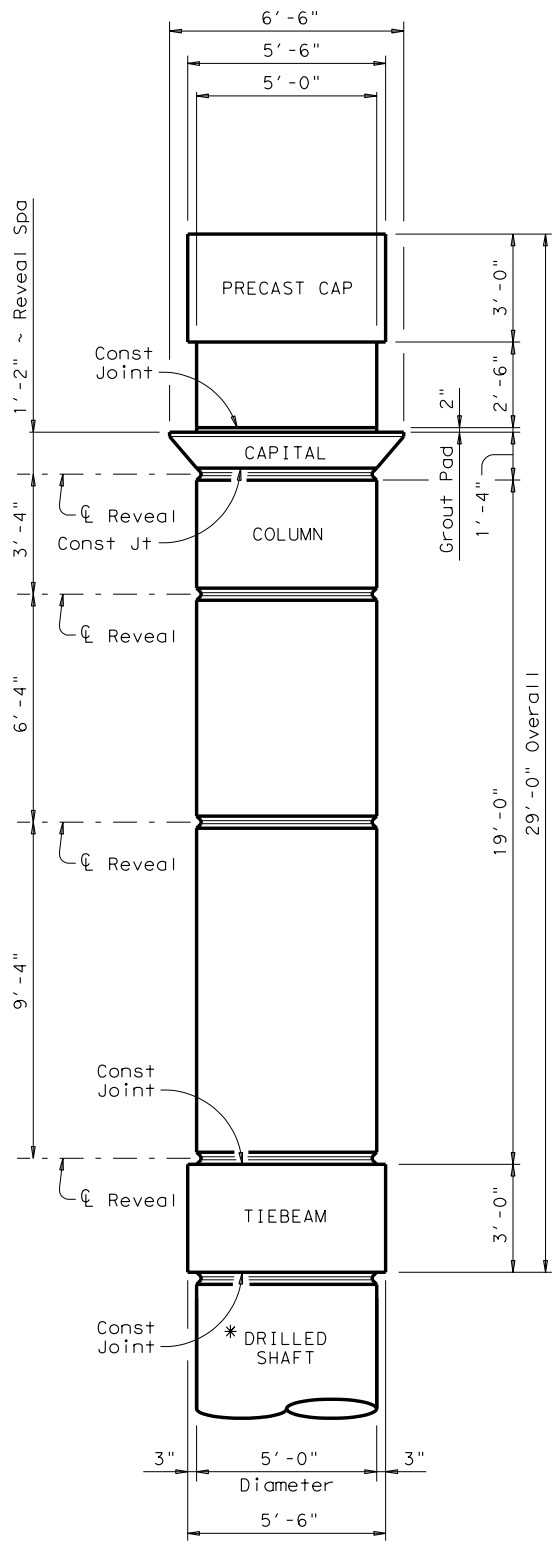
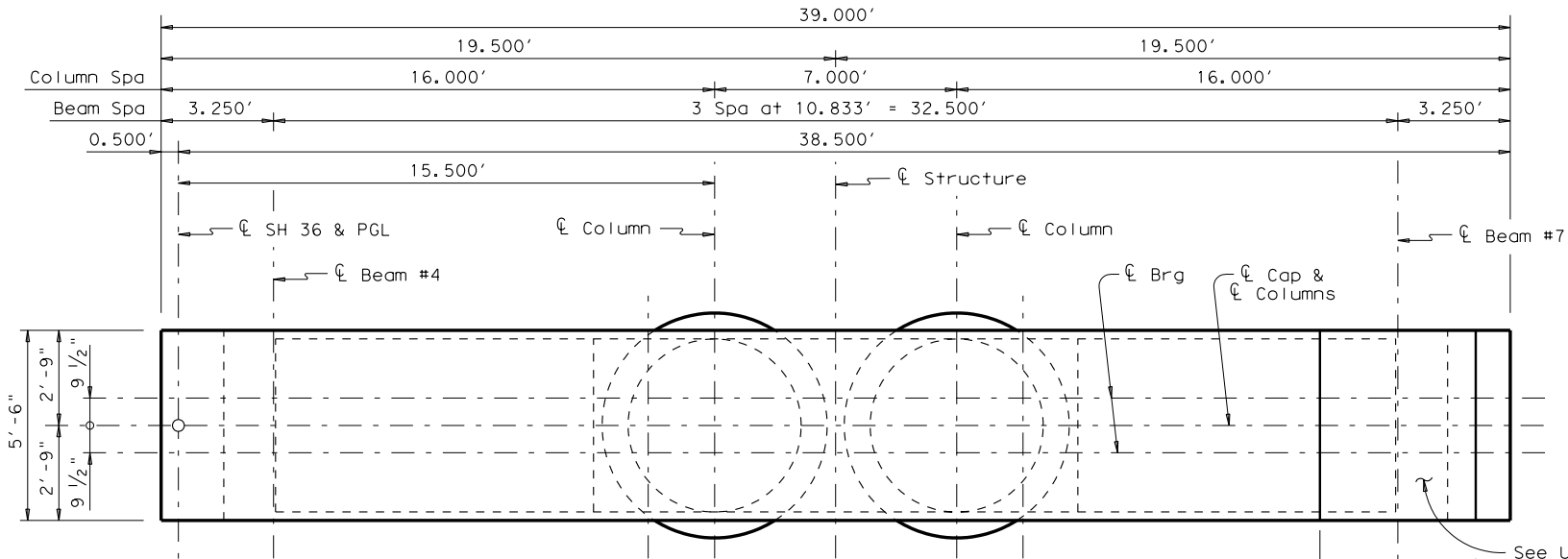


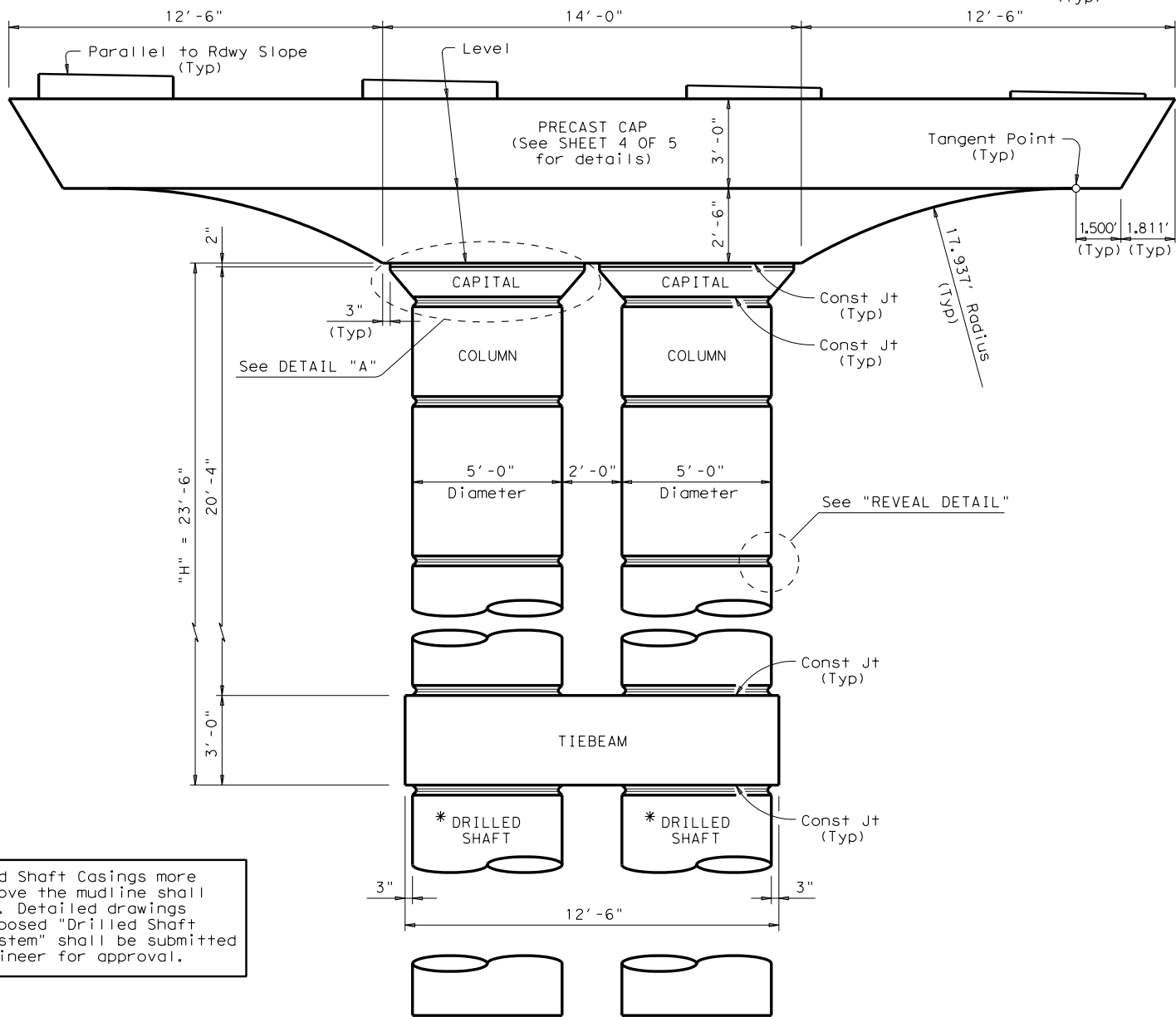
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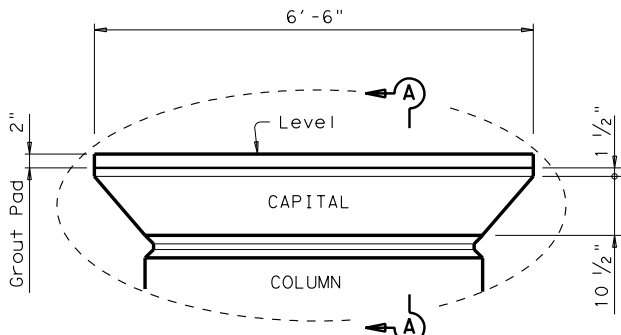
SIDE ELEVATION



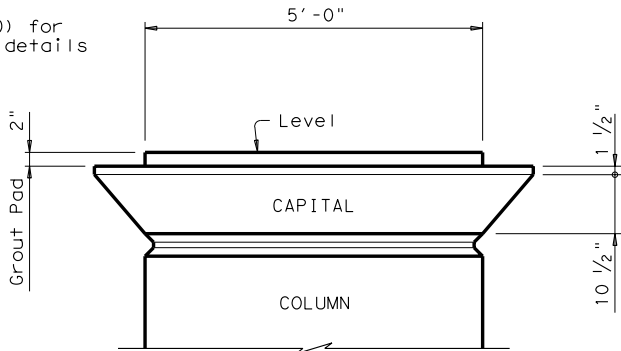
PLAN



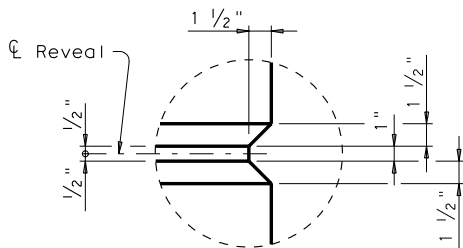
ELEVATION



DETAIL "A"



SECTION A-A



REVEAL DETAIL

HS20 LOADING SHEET 1 OF 5

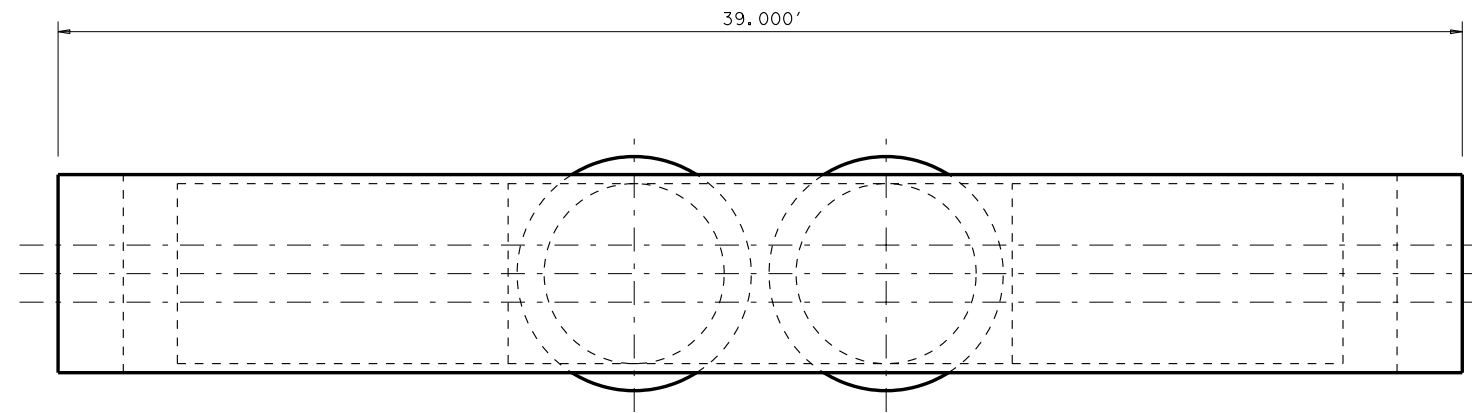
Texas Department of Transportation
Bridge Division

INTERIOR BENT
NOS. 2-30

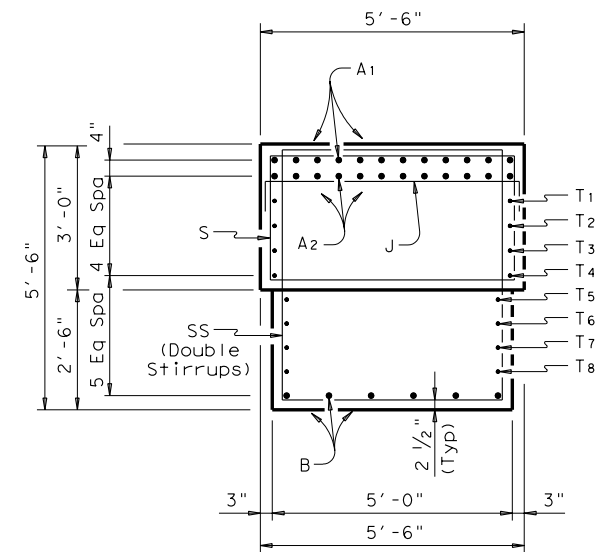
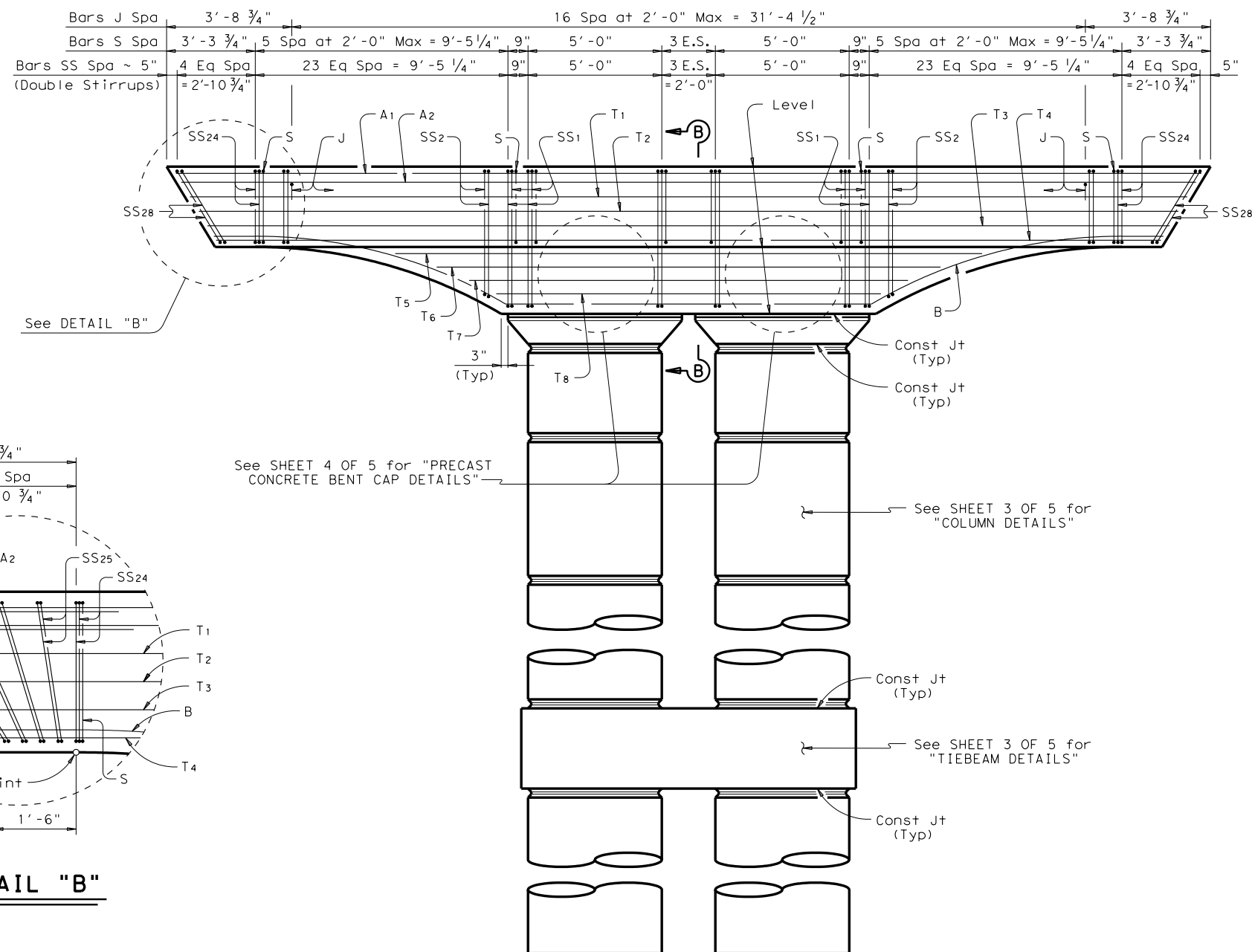
(PHASE 1)

SH 36 AT LAKE BELTON

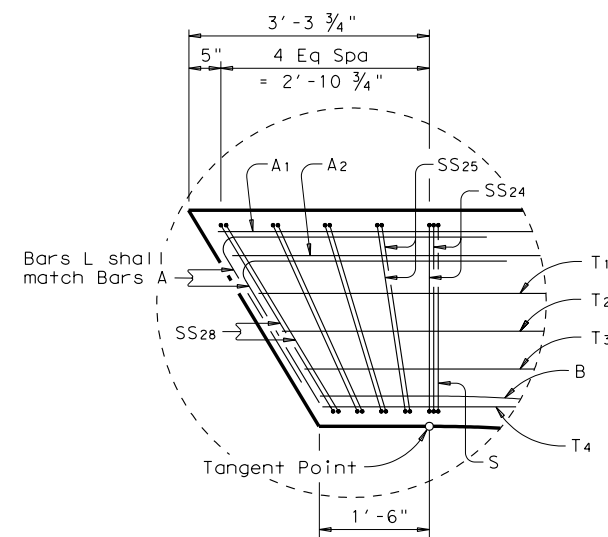
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© TxDOT MAY 2001	DISTRICT 9	FEDERAL AID PROJECT BR 2001 (746)	SHEET 157	
REVISIONS	COUNTY	CONTROL	SECT	JOB
	BELL	0184	02	042
				SH36



PLAN



SECTION B-B



DETAIL "B"

ELEVATION

HS20 LOADING

SHEET 2 OF 5



INTERIOR BENT
NOS. 2-30

(PHASE 1)

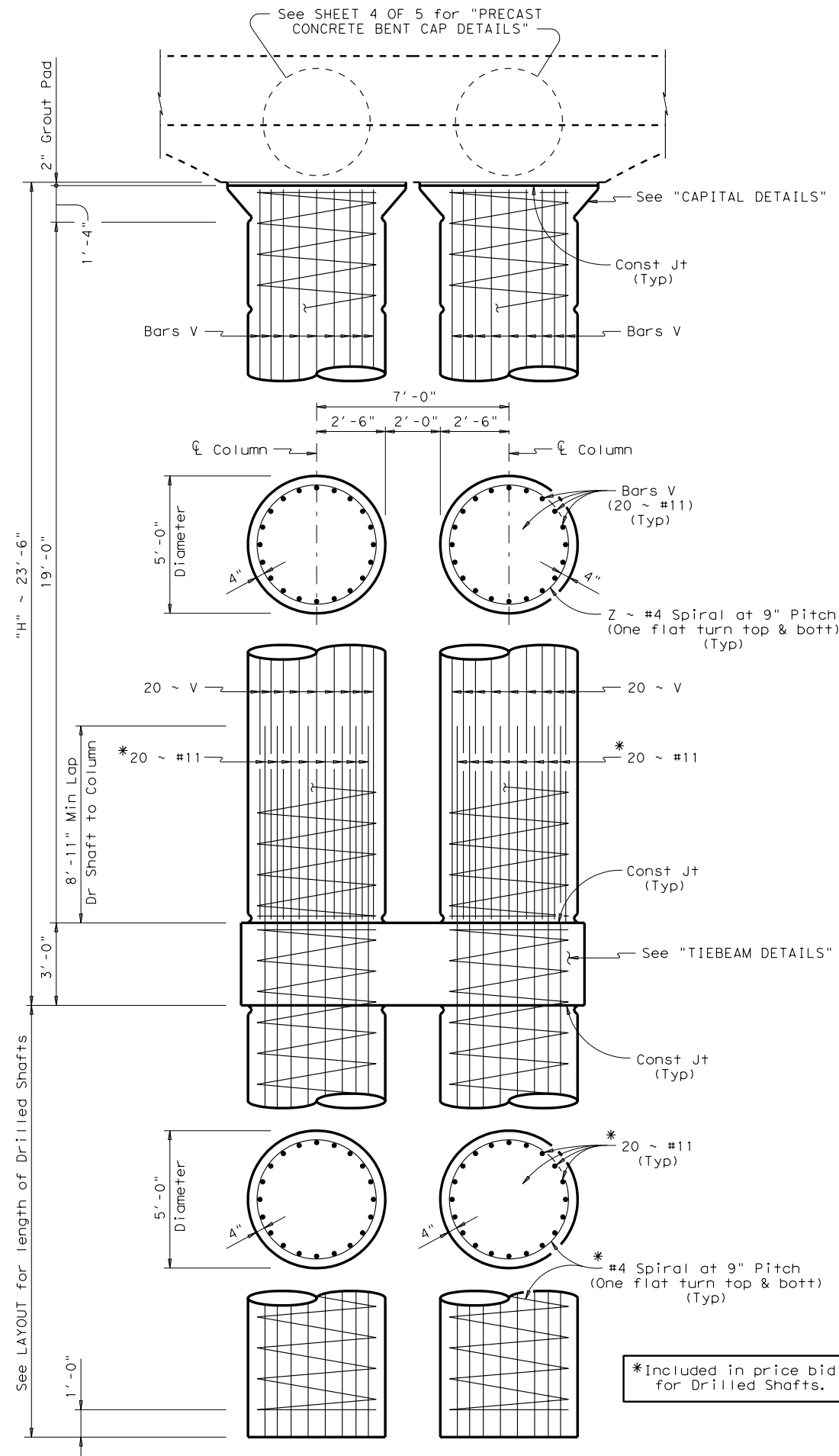
SH 36 AT LAKE BELTON

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REVISIONS	9	BR 2001 (746)		
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	COUNTY	CONTROL	SECT	JOB
	BELL	0184	02	042
		SH36		

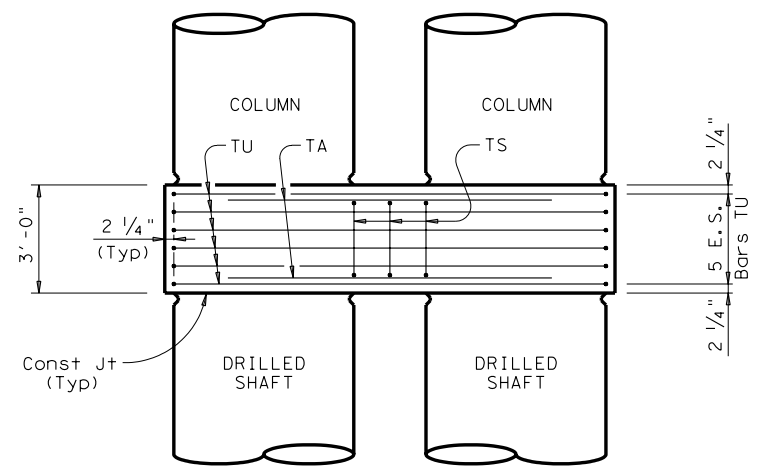
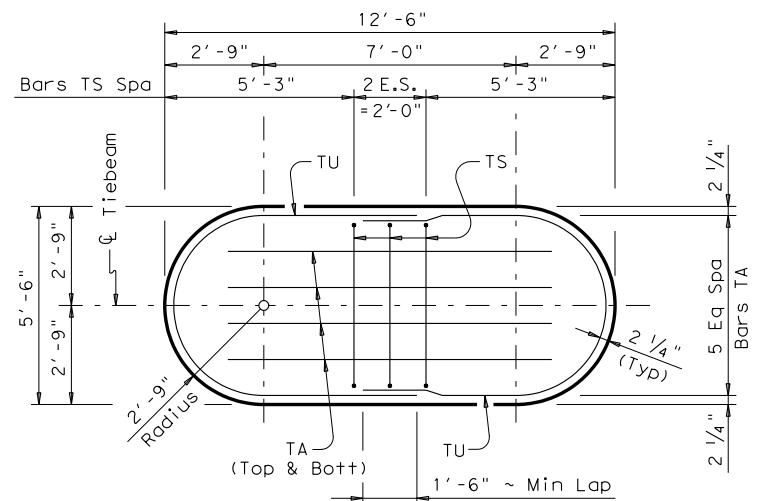
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LEVELS DISPLAYED
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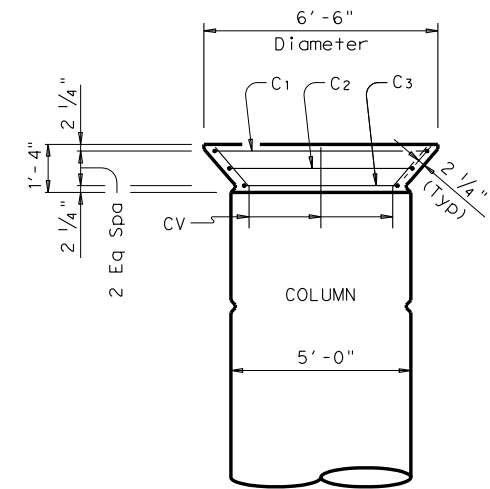
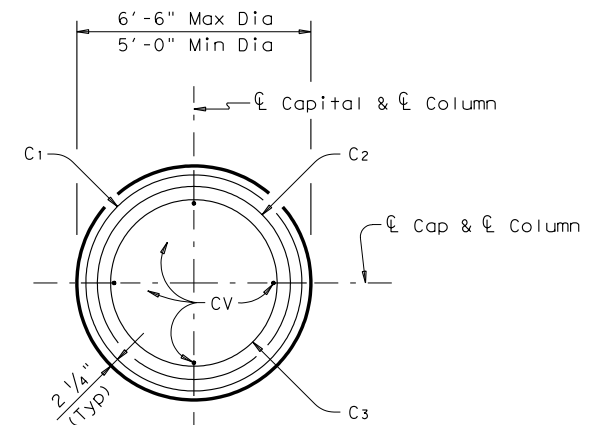


COLUMN ELEVATION



TIEBEAM DETAILS
(DRILLED SHAFT REINFORCING OMITTED FOR CLARITY)

NOTE: An optional Construction Joint may be provided in each Drilled Shaft as approved by the Engineer. Lap Drilled Shaft vertical bars 8'-11" Minimum.



CAPITAL DETAILS
(COLUMN REINFORCING OMITTED FOR CLARITY)

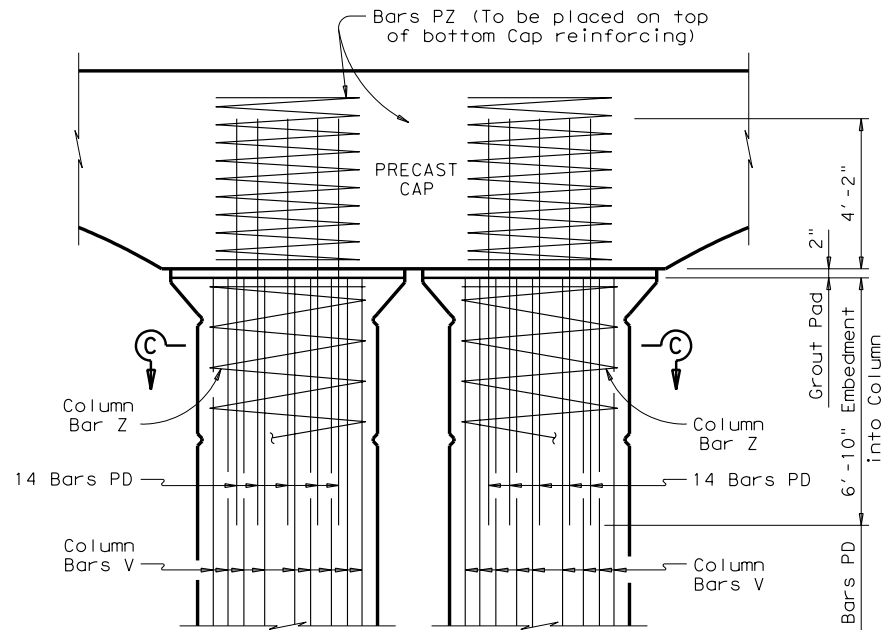
HS20 LOADING SHEET 3 OF 5

Texas Department of Transportation
Bridge Division

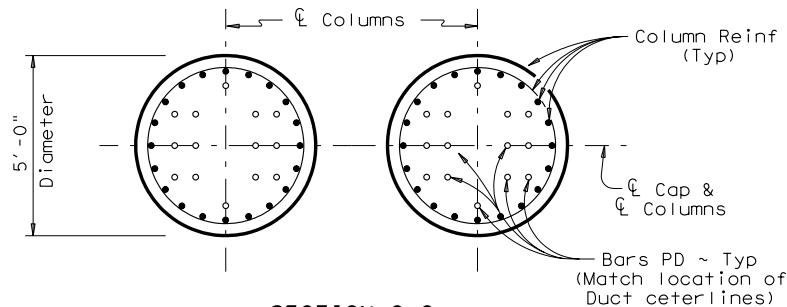
INTERIOR BENT
NOS. 2-30
(PHASE 1)
SH 36 AT LAKE BELTON

FILE: 6012SC01.DGN	DN: JA	CK: GAF	DW: MFG	CK: GAF
© TXDOT MAY 2001	DISTRICT 9	FEDERAL AID PROJECT BR 2001 (746)	SHEET 159	
REVISIONS	COUNTY	CONTROL	SECT	JOB
	BELL	0184	02	042
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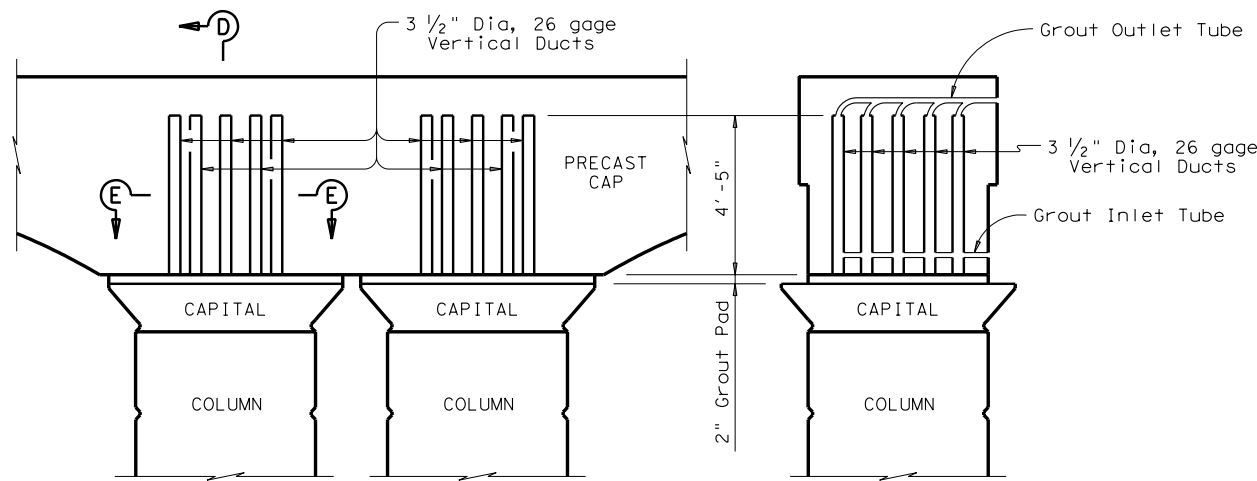
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SHOWING CONNECTION REINFORCING

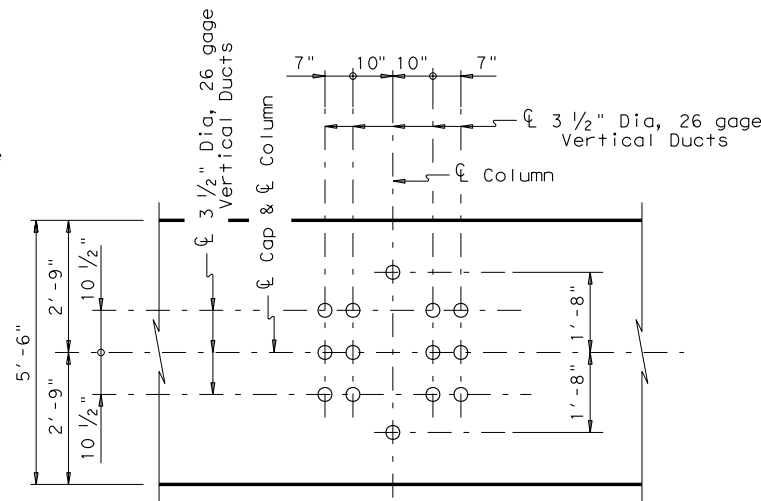


SECTION C-C



SHOWING DUCT PLACEMENT

SECTION D-D



SECTION E-E

PRECAST BENT CAP CONSTRUCTION NOTES

Construction shall be in accordance with the requirements of Item 420. Vertical Ducts shall be semi-rigid, spirally crimped, corrugated ducts of galvanized, cold rolled steel conforming to ASTM A527 and ASTM A619. Corrugations shall have an amplitude of 0.094 in. Ducts shall be placed in a manner to prevent intrusion of Bent concrete.

Precast Bent Caps shall be handled, moved, stored and placed in the structure in a manner to avoid chipping, cracking, fractures and excessive bending stresses or damage. Precast Caps shall not be stacked. They shall be supported on firm blocking until placed and shimmed into final position. Blocking shall be installed such that uneven settlement due to wet ground or inadequate material underneath the blocking will not occur.

The Contractor may alter mix design and/or move or place caps before completing the prescribed curing period in Item 420 provided all of the following conditions are met:

1. The concrete has reached a flexural strength of 425 psi or a compressive strength of 3000 psi.
2. The curing time is interrupted for no more than 2 hours.
3. The alternate plan meets the approval of the Engineer.

Place columns in accordance with Item 420. If the connection dowels (Bars PD) are inserted after the concrete has been placed, the concrete shall be re-vibrated. Dowel placement tolerance is $\pm 1/2$ " (plan and elevation).

Caps may be placed on columns, after the column concrete curing has been completed and after a flexural strength of 425 psi (or 3000 psi compressive strength) has been achieved. Use plastic shims to support the caps at the proper elevation prior to grouting. Total area of plastic shims used on top of each column may not exceed 6% of the column area.

Grout forms and tubes (input and vent tube type and location) shall be approved prior to grouting. Connection shall be grout tight such that fluid grout does not leak out before grout has achieved initial set.

All grout for precast connections shall consist of prepackaged, cementitious, non-shrink grout in accordance with ASTM C-1107 and the additional performance requirements listed in the Table of Grout Performance Specifications, including mechanical properties, compatibility, constructability and durability. Table requirements shall govern over ASTM C-1107 requirements. Grout using metallic formulations will not be allowed. Grout shall be free of chlorides. No additives shall be added to prepackaged grout. Fluid grout shall not exhibit frothing or foaming.

Two (2) 2" x 2" x 2" grout cube samples will be cast for each precast bent cap (one per precast cap-to-column connections) by the Contractor and given to TxDOT for testing to ensure that the grout meets the specified mechanical property criteria for compressive strength. Failure to meet strength criteria or evidence of frothing or foaming shall be cause for removal and recasting of the connection as deemed necessary by the Engineer. Grout selected shall meet the other criteria listed as well.

Prestressed beams may be placed on the caps after a grout compressive strength of 3000 psi has been achieved.

TABLE OF GROUT PERFORMANCE SPECIFICATIONS

PROPERTY	VALUES	
MECHANICAL	AGE	COMPRESSIVE STRENGTH (psi)
Compressive strength (ASTM C-109, 2" cubes)	1 day	2500
	3 days	4000
	7 days	5000
	28 days	5800
COMPATIBILITY	Grade B or C ~ expansion per ASTM C-1107	
Expansion Requirements (ASTM C-827 & ASTM C-1090)		
Modulus of elasticity (ASTM C-469)	2.8 - 5.0 x 10 ⁶ psi	
Coefficient of thermal expansion (ASTM C-531)	3.0 - 10.0 x 10 ⁶ /deg F	
CONSTRUCTABILITY	fluid consistency eflux time: 20-30 seconds	
Flowability (ASTM C-939; CRD-C 611 Flow Cone)		
Set Time (ASTM C-191)	2.5-5.0 hrs 4.0-8.0 hrs	
DURABILITY	300 cycles, RDF 90%	
Freeze Thaw (ASTM C-666)		

For Contractor's information, Grout quantity is 13 CF per bent and Duct quantity is 124 LF per bent.

HS20 LOADING SHEET 4 OF 5

Texas Department of Transportation
Bridge Division

INTERIOR BENT
NOS. 2-30

(PHASE 1)

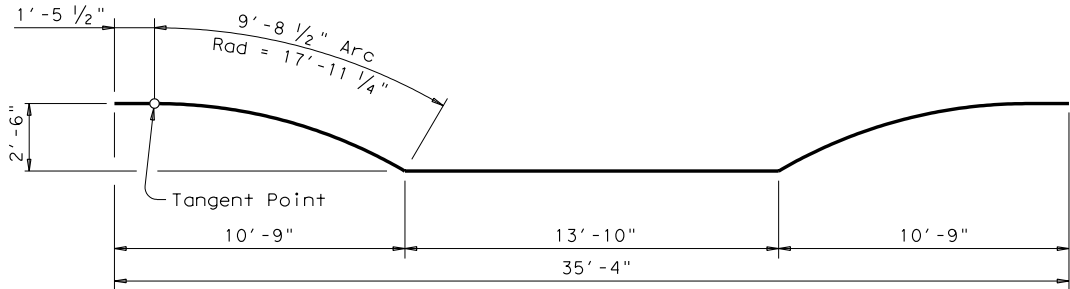
SH 36 AT LAKE BELTON

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© TxDOT MAY 2001	DISTRICT 9	FEDERAL AID PROJECT BR 2001 (746)	SHEET	
REVISIONS		COUNTY BELL	CONTROL 0184	SECT 02
		JOB 042	HIGHWAY SH36	

PRECAST CONCRETE BENT CAP DETAILS

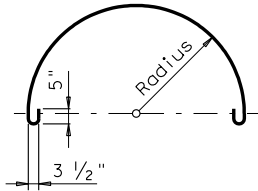
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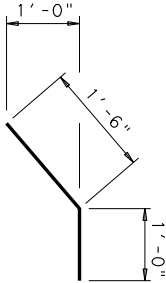


BARS B

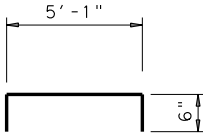
Radius: C₁ = 3'-0"
C₂ = 2'-6 1/2"
C₃ = 2'-1 1/2"



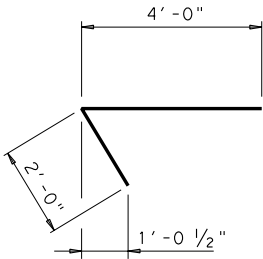
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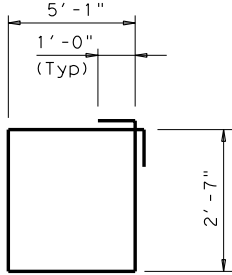
BARS CV



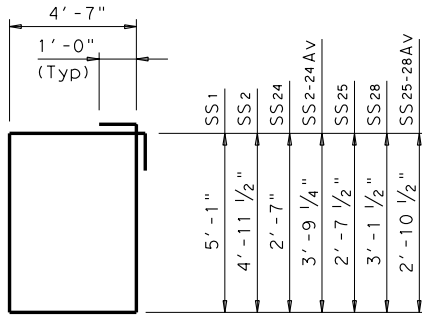
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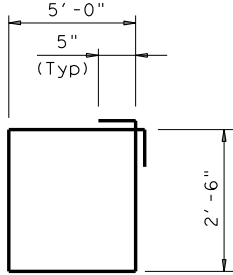
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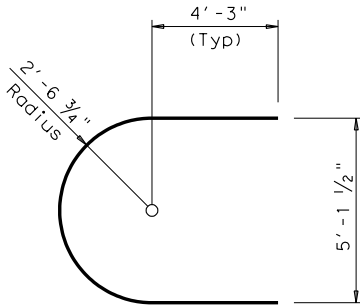
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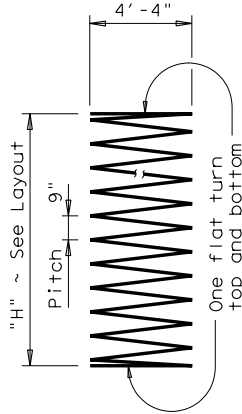
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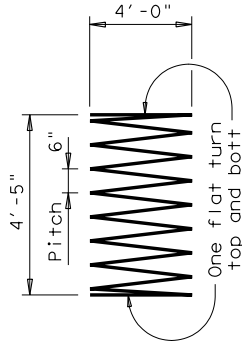
BARS TS



BARS TU



BARS Z



BARS PZ

① TABLE OF ESTIMATED QUANTITIES

Bar	No.	Size	Length	Weight
A ₁	12	#11	38' - 3"	2439
A ₂	12	#11	37' - 10"	2412
B	6	#11	36' - 2"	1153
C ₁	4	#4	11' - 2"	30
C ₂	4	#4	9' - 9"	26
C ₃	4	#4	8' - 5"	22
CV	8	#4	2' - 6"	13
J	17	#4	6' - 1"	69
L	48	#6	6' - 0"	433
PD	28	#11	11' - 2"	1662
PZ	2	#4	136' - 3"	182
S	18	#6	17' - 4"	469
SS ₁	16	#6	21' - 4"	513
SS ₂₋₂₄	92	#6	18' - 9"Av	2591
SS ₂₅₋₂₈	16	#6	16' - 11"Av	407
T ₁	2	#6	37' - 2"	112
T ₂	2	#6	36' - 7"	110
T ₃	2	#6	35' - 11"	108
T ₄	2	#6	35' - 4"	106
T ₅	2	#6	22' - 2"	67
T ₆	2	#6	19' - 2"	58
T ₇	2	#6	16' - 10"	51
T ₈	2	#6	14' - 10"	45
TA	8	#5	9' - 0"	75
TS	3	#4	15' - 10"	32
TU	12	#5	16' - 7"	208
V	40	#11	20' - 4"	4321
Z	2	#4	400' - 0"	534
Reinforcing Steel			Lb	18248
CI "C" Conc (Bent)			CY	② 71.7

- ① Quantities shown are for one Bent only.
② Quantity shown includes Shear Key, Bearing Seats, Cap, Grout Pads, Columns, Capitals and Tiebeam.

GENERAL NOTES:

Designed according to AASHTO 1996 Standard and current Interim Specifications.
Class "C" concrete strength f'_c = 3600 psi.
All Cap, Column and Drilled Shaft reinforcing shall be Grade 60.
Cost of furnishing Grout and Vertical Ducts shall be subsidiary to CI "C" Conc (Bent).
See UBB(MOD) for Shear Key details.
Calculated Foundation Load = 535 Tons/Dr Shaft

HS20 LOADING

SHEET 5 OF 5



INTERIOR BENT NOS. 2-30

(PHASE 1)

SH 36 AT LAKE BELTON

FILE: 6012SC01.DGN	DN: JA	CK: GAF	DW: MFG	CK: GAF
© TxDOT MAY 2001	DISTRICT 9	FEDERAL AID PROJECT BR 2001 (746)		SHEET
REVISIONS		COUNTY BELL	CONTROL 0184	SECT 02
		JOB 042	HIGHWAY SH36	