TypeII.dgn

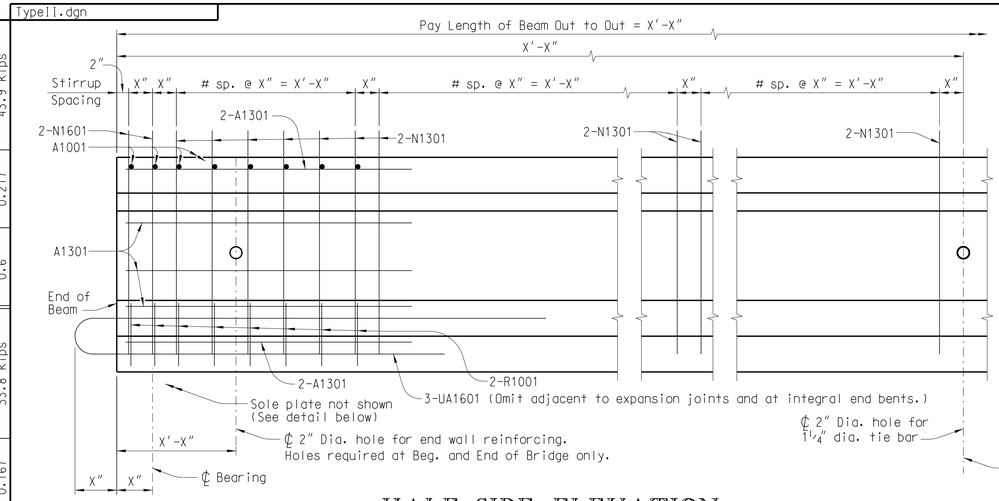
BRIDGE PLANS ID	SHEET NO.
XXXXXXX-BXX	XX

Design Beams using strands in the table below.

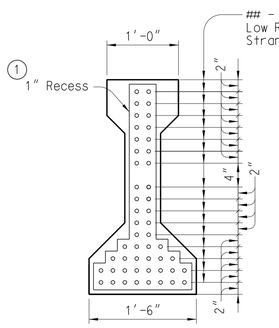
STRAND DATA

DIAMETER	AREA (in²)	TENSIONING LOAD	DIAMETER	AREA (in²)	TENSIONING LOAD
1/2"	0.153	31.0 kips	3/16"	0.192	38.9 kips
1/2" Special	0.167	33.8 kips	0.6"	0.217	43.9 kips

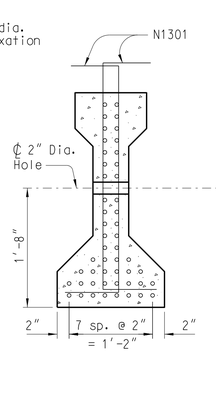
Note to Designer:
Investigate "UA" bar embedment lengths with respect to termination of debonded strands.



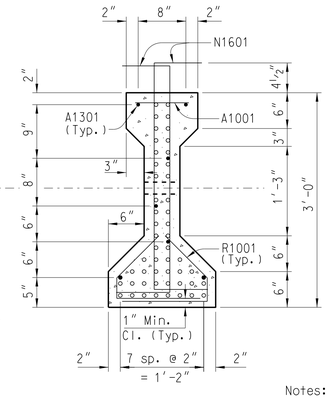
HALF SIDE ELEVATION



END ELEV.

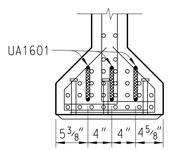


AT CENTER OF BEAM

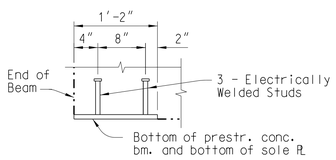


AT END OF BEAM

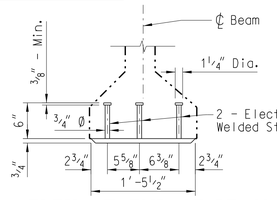
SECTIONS THRU BEAM



END VIEW
Showing UA1601 bars



ELEV. AT SIDE OF BEAM



ELEV. AT END OF BEAM

SOLE PLATE DETAIL

Note to Designer:

This drawing is furnished for information only. All dimensions shown are sheet specific. Any use of this design and drawing, including dimensions, must be checked by the User's Engineer to ensure design is adequate for the intended use. All drawings must be signed and sealed by a South Carolina Registered Professional Engineer when used.

If plans are detailed with Steel Intermediate Diaphragms, revise beam details for consistency.

DESIGN DATA

Low Relaxation Strands

Tensile Strength (fpu) = 270 ksi
Initial Prestress (0.75 fpu) = 202.5 ksi

Class XXXX Concrete

f'c = X ksi
f'ci = X ksi

REINF. STEEL SCHED.

MARK	NO. REQ'D	DIMENSION "a"	"b"	"c"	"d"	LENGTH
A1001	X	9"	——	——	——	9"
A1301	14	4'-6"	——	——	——	4'-6"
N1301	X	8"	3'-2"	9"	——	4'-7"
N1601	X	10"	3'-2"	9"	——	4'-9"
R1001	X	1'-2"	4 1/2"	10"	7"	2'-5"
UA1601	6	7'-0"	5"	5'-9"	——	12'-11"

QUANTITIES

ITEM	UNIT	ONE BEAM
Concrete, Class XXXX	CY	XXXX
Reinforcing Steel	LB	XXXX
Prestressing Strands	LF	XXXX
Structural Steel	LB	As Necessary

For Information Only - Paid for as Prestressed Beam

Notes:

See Section 704 of the Standard Specifications for additional requirements and information regarding prestressed concrete beams. Shop drawings must be submitted in accordance with the Standard Specifications.
All overhang brackets in the top flange of exterior beams shall be galvanized in accordance with AASHTO M 111, AASHTO M 232, or ASTM F 2329 as appropriate and shall be detailed accordingly in the shop plans.

Use prestressing strands that conform to the latest AASHTO M 203 for grade 270 (low relaxation).

The tensioning load in all X" Dia. low relaxation strands is XX.X kips. Do not release the strands until the compressive strength of the concrete has reached the value shown for f'ci.

On the top surface of beams where cast-in-place concrete will be placed, provide a finish that is clean, free of laitance, and intentionally roughened to a full amplitude of approximately 1/4". Finish top of beam level.

Always maintain prestressed concrete beams in an upright position. Use lifting devices provided at each end of the beam to lift or handle beams. Do not permit beams to be placed or stored on interior supports causing negative moments.

Locate holes for tie bars as shown on this drawing. Form holes with 2" inside dia. pipe and prevent movement during casting by securely fastening the pipe.

(1) Provide a 1" recess in the end of the beam, only at beam ends that are adjacent to expansion joints. Cut all strands 1/2" back into recess and fill the recess with an epoxy mortar especially formulated for applications on vertical surfaces.

Debonding:

1) For all debonding material, use tubular conduit capable of resisting the pressure exerted by the concrete. When using slit conduit, use two conduits with the slits located on opposite sides of the strand. Use conduit made of high density polyethylene or polyprophylene with a minimum thickness of 0.025". Use conduit with an inside diameter that will permit free movement of the encased strand, but no larger than the diameter of the strand plus 1/8". Place conduit on the strand at the location(s) shown on the plans (+/- 1") to prevent bonding of the concrete. Secure conduit to prevent any longitudinal movement along the strand. Prevent concrete from entering the conduit by sealing with tape. Use tape manufactured from a non-corrosive material that is compatible with the concrete, conduit, and steel.

2) Release strands in accordance with Section 704 of the Standard Specifications

3) Within 48 hours of detensioning, seal the openings between the strands and the sheathing . Use an approved sealant that is made of either epoxy or silicone. If silicone sealant is provided, use a low modulus silicone sealant that is white in color.

BEAM CAMBER AND DEFLECTION

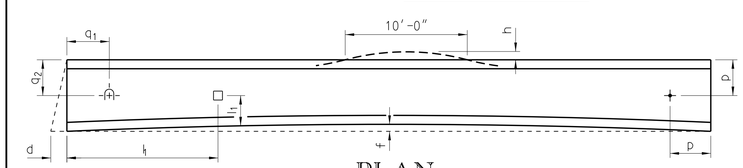
BEAM CAMBER		DEFLECTION DUE TO			
AT RELEASE	*AT ERECTION	INTERIOR DIAPHRAGM	STAY-IN-PLACE FORMS**	SLAB	BARRIER PARAPET
X"	X"	X"	X"	X"	X"

* Based on a beam age of 60 days at the time of erection

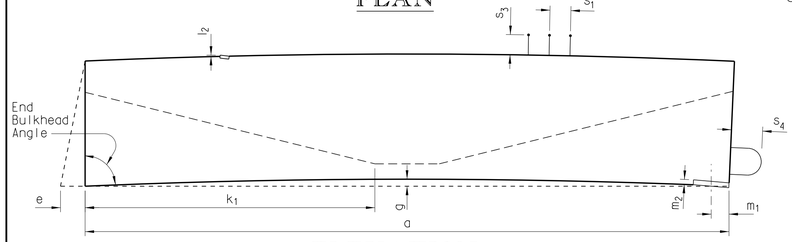
** Deflection due to the weight of the metal forms and the weight of the concrete in the valleys of the forms.

"+" indicates upward movement
"-" indicates downward movement

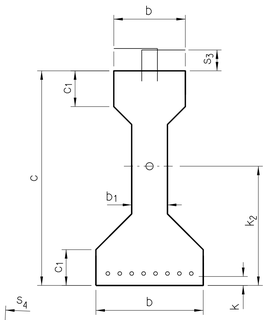
TOLERANCES



PLAN



ELEVATION



CROSS SECTION

a	Length	± 1/4" per 25' length, ± 1" max.
b	Width (overall)	+ 3/8", - 1/4"
b_1	Web Width	+ 3/8", - 1/4"
c	Depth (overall)	+ 1/2", - 1/4"
c_1	Flange Depth	± 1/4"
d	Variation from Specified Plan End Squareness or Skew	± 1/8" per 12" width, ± 1/2" max.
e	Variation from Specified Elevation End Squareness or Skew	± 3/16" per 12" depth, ± 1" max.
f	Sweep	1/8" per 10' length
g	Camber Variation from Design Camber (measurement of camber for comparison to predicted design values should be completed within 72 hrs. of transfer of prestr. force)	± 1/8" per 10' ± 1/2" max. up to 80' length ± 1" max. for length greater than 80'
h	Local Smoothness of Any Surface	1/4" in 10'
k	Location of Strand (Individual) Location of Strand (Bundled)	± 1/4" ± 1/2"
k_1	Location of Harp Points for Harped Strands from Design Location	± 20"
k_2	Location of Post-Tensioning Duct	± 1/4"
l_1	Location of Embedment	± 1"
l_2	Tipping and Flushness of Embedment	± 1/4"
m_1	Location of Bearing Assembly	± 5/8"
m_2	Tipping and Flushness of Bearing Assembly	± 1/8"
p	Location of Inserts, Sleeves, or Holes for Structural Connections	± 1/2"
q_1	Location of Handling Device Parallel to Length of Member	± 6"
q_2	Location of Handling Device Transverse to Length of Member	± 1"
s_1	Longitudinal Spacing of Stirrups	± 2"
s_2	Longitudinal Spacing of Stirrups within Distance "c" from Member Ends	± 1"
s_3	Stirrup Projection from Beam Surface	+ 1/4", - 1/2"
s_4	Reinforcing Bar Projection from Beam End	± 1/2"

REV.			
REV.	PCW	HL	4-19
	Debonding Note		
REV.	PCW	HL	4-19
	Sole PL Detail		
REVIEWED			
QUAN.			
DR.	GFD	SAN	3-08
DES.			
	BY	CHK.	DATE

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PRESTR. CONC. BEAM DETAILS AASHTO TYPE II

COUNTY	ROUTE
XXXXXXXX	XXXXXX

DRAWING NO. 704-08

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