

BILL OF MATERIAL ONE 54" MODIFIED BULB TEE						
MARK	NO REQ'D	DIMENSION				LENGTH
		"a"	"b"	"c"	"d"	
A0401	X	3'-3"				3'-3"
A0402	X	X'-X"				X'-X"
A0501	32	10'-0"				10'-0"
N0501	X	10"	X'-X"	10"		X'-X"
N0601	X	1'-0"	X'-X"	1'-0"		X'-X"
R0301	X	1'-6"	4"	1'-0"	11"	2'-10"
U0501	X	3'-10"	4"			7'-10"

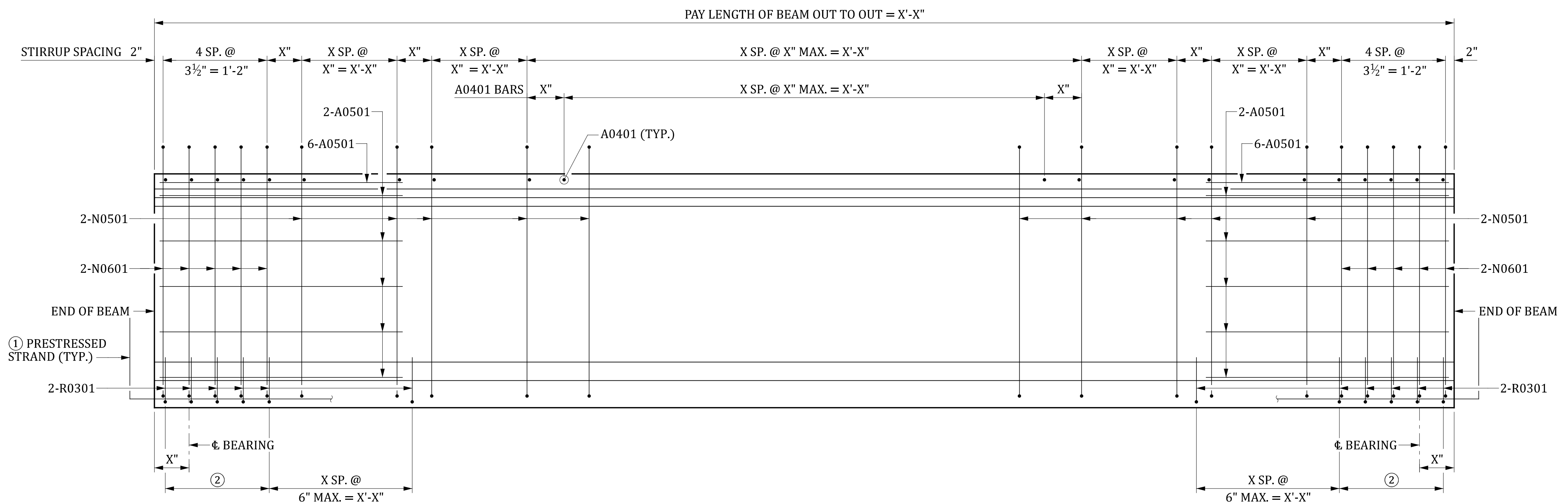
  

QUANTITIES		
ITEM	UNIT	ONE BEAM
CONCRETE, f'c X,XXX	CY	XXXX.X
REINFORCING STEEL	LB	XXXX
0.6" Ø L.R. STRANDS	LF	XXXX
STRUCTURAL STEEL	NEC	AS NECESSARY

FOR INFORMATION ONLY -  
PAID FOR AS PRESTRESSED BEAM

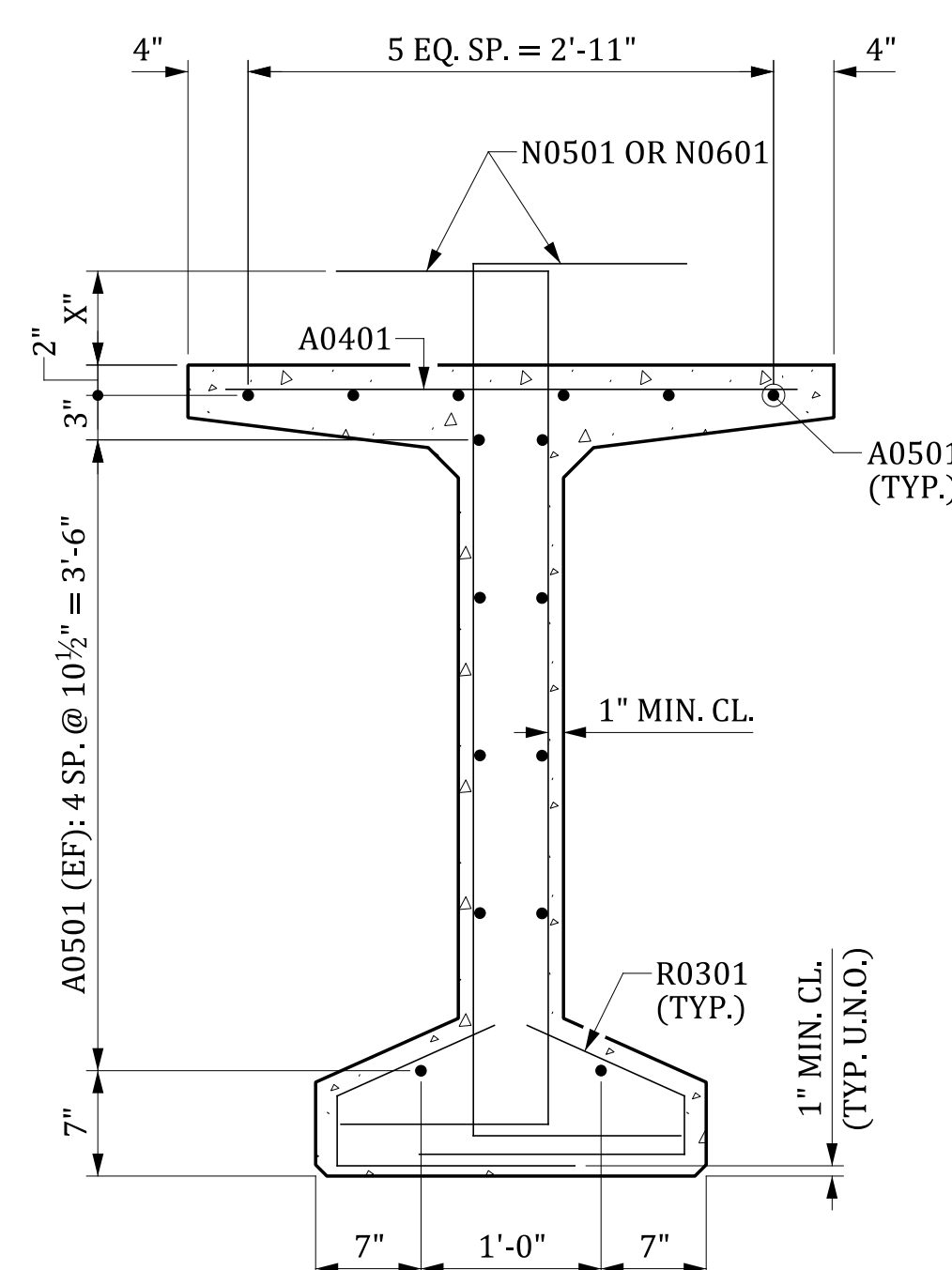
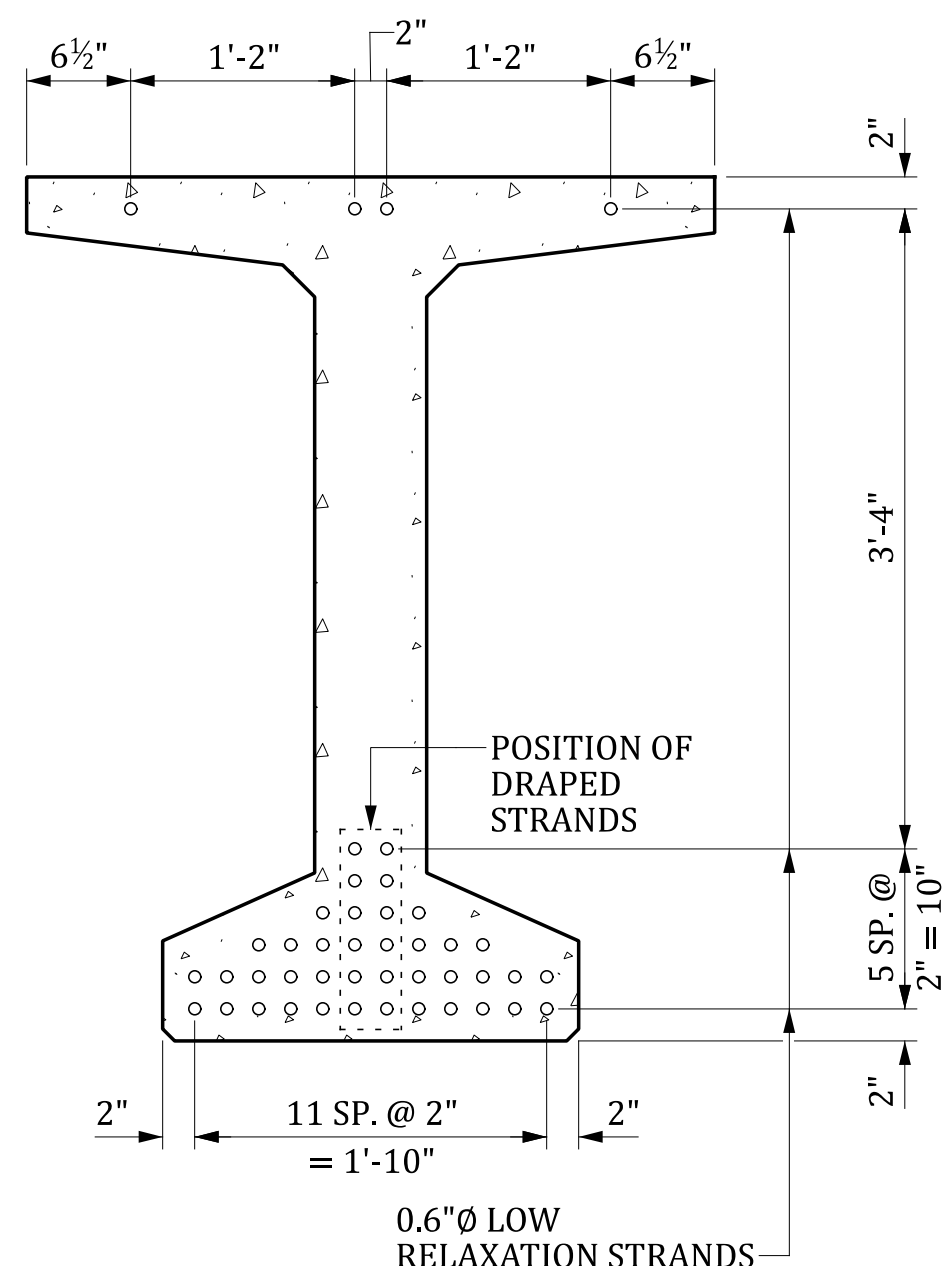
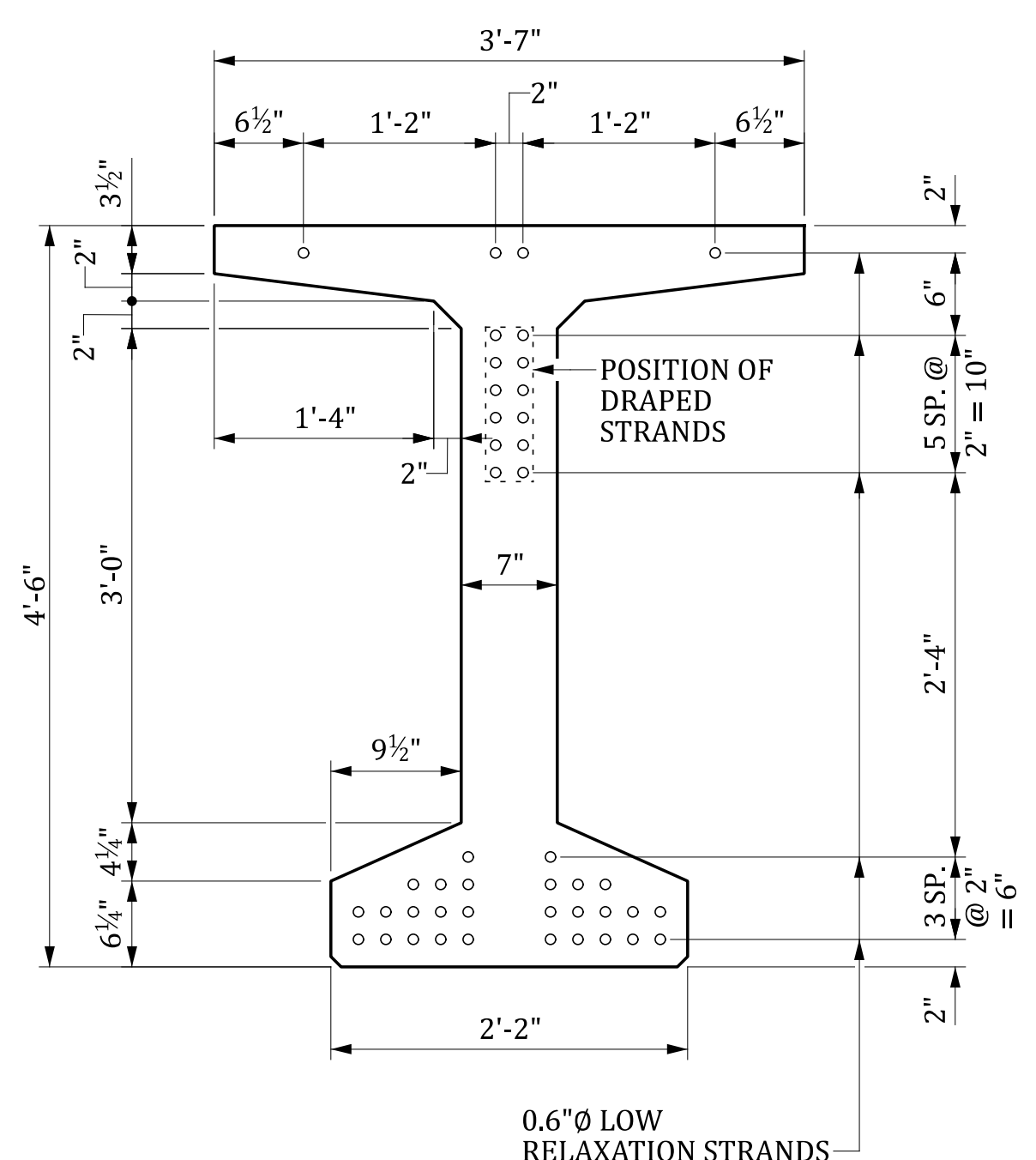
DESIGN DATA	
STRANDS:	0.6" Ø LOW RELAXATION GRADE 270 AREA=0.217 SQ. IN. TENSIONING LOAD = 43.9 KIPS
CONCRETE:	f'c = X.X KSI f'ci = X.X KSI

- REINFORCEMENT STEEL
- FULLY BONDED STRANDS
- ① △ FULLY BONDED STRANDS TO BE EXTENDED
- ⊕ DEBONDED STRANDS FOR X'-X" FROM END OF BEAM
- ⊙ DEBONDED STRANDS FOR X'-X" FROM END OF BEAM



- ① SEE "MODIFIED BULB TEE GENERAL DETAILS" SHEET FOR PRESTRESSING STRAND BENDING DETAIL.
- ② SPACE WITH N0601.

**SIDE ELEVATION**  
 SHOWING REINFORCING STEEL, SOLE PLATE & DIAPHRAGM HOLES NOT SHOWN FOR CLARITY.



**SECTION THRU BEAM**  
 STRANDS NOT SHOWN FOR CLARITY.

X - STRAIGHT STRANDS  
 X - DEBONDED STRANDS  
 X - DRAPED STRANDS

**AT END OF BEAM**

**AT CENTER OF BEAM**

**STRAND LAYOUT**

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.

CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
PRESTRESSED CONCRETE BEAM 54" MODIFIED BULB TEE SPAN X	
COUNTY: #####	ROUTE: #####

REVIEWED	QUAN.	DR.	DES.	BY	CHK.	DATE

REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

Dylan.Danks 6/18/2024 9:18:14 AM 704\_MBT.dgn

BILL OF MATERIAL ONE 63" MODIFIED BULB TEE						
MARK	NO REQ'D	DIMENSION				LENGTH
		"a"	"b"	"c"	"d"	
A0401	X	3'-3"				3'-3"
A0402	X	X'-X"				X'-X"
A0501	36	10'-0"				10'-0"
N0501	X	10"	X'-X"	10"		X'-X"
N0601	X	1'-0"	X'-X"	1'-0"		X'-X"
R0301	X	1'-6"	4"	1'-0"	11"	2'-10"
U0501	X	4'-7"	4"			9'-4"

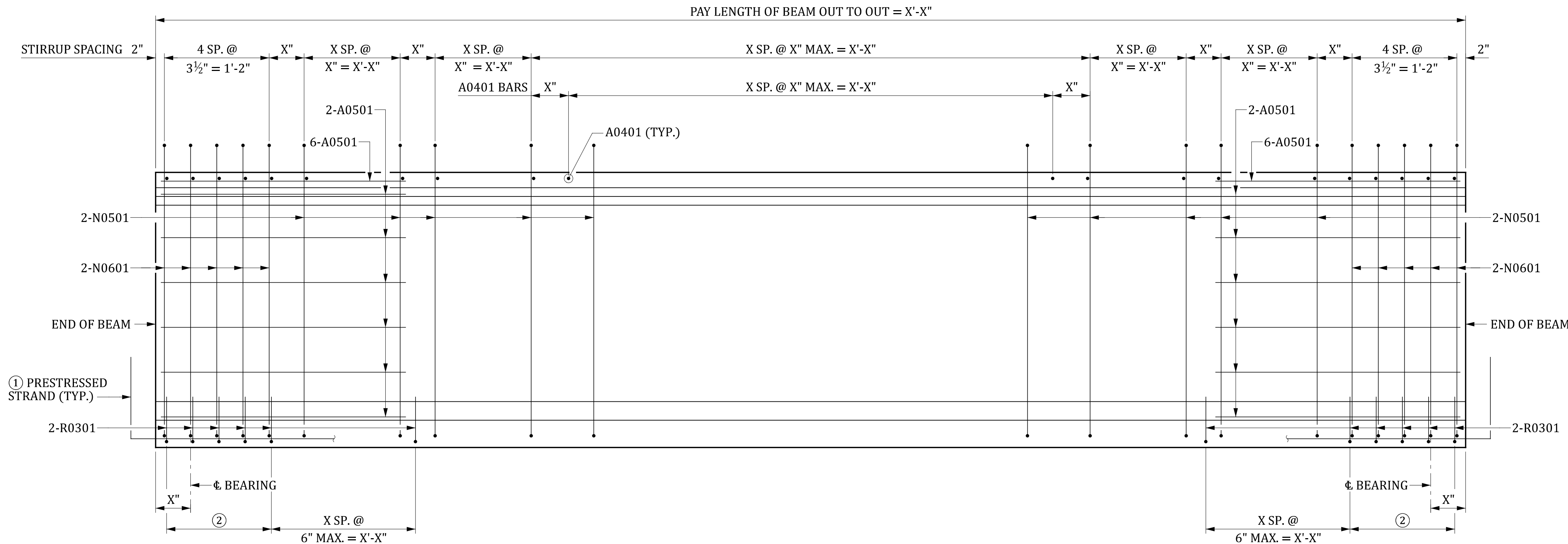
  

QUANTITIES		
ITEM	UNIT	ONE BEAM
CONCRETE, f'c X,XXX	CY	XXXX.X
REINFORCING STEEL	LB	XXXX
0.6"Ø L.R. STRANDS	LF	XXXX
STRUCTURAL STEEL	NEC	AS NECESSARY

FOR INFORMATION ONLY -  
PAID FOR AS PRESTRESSED BEAM

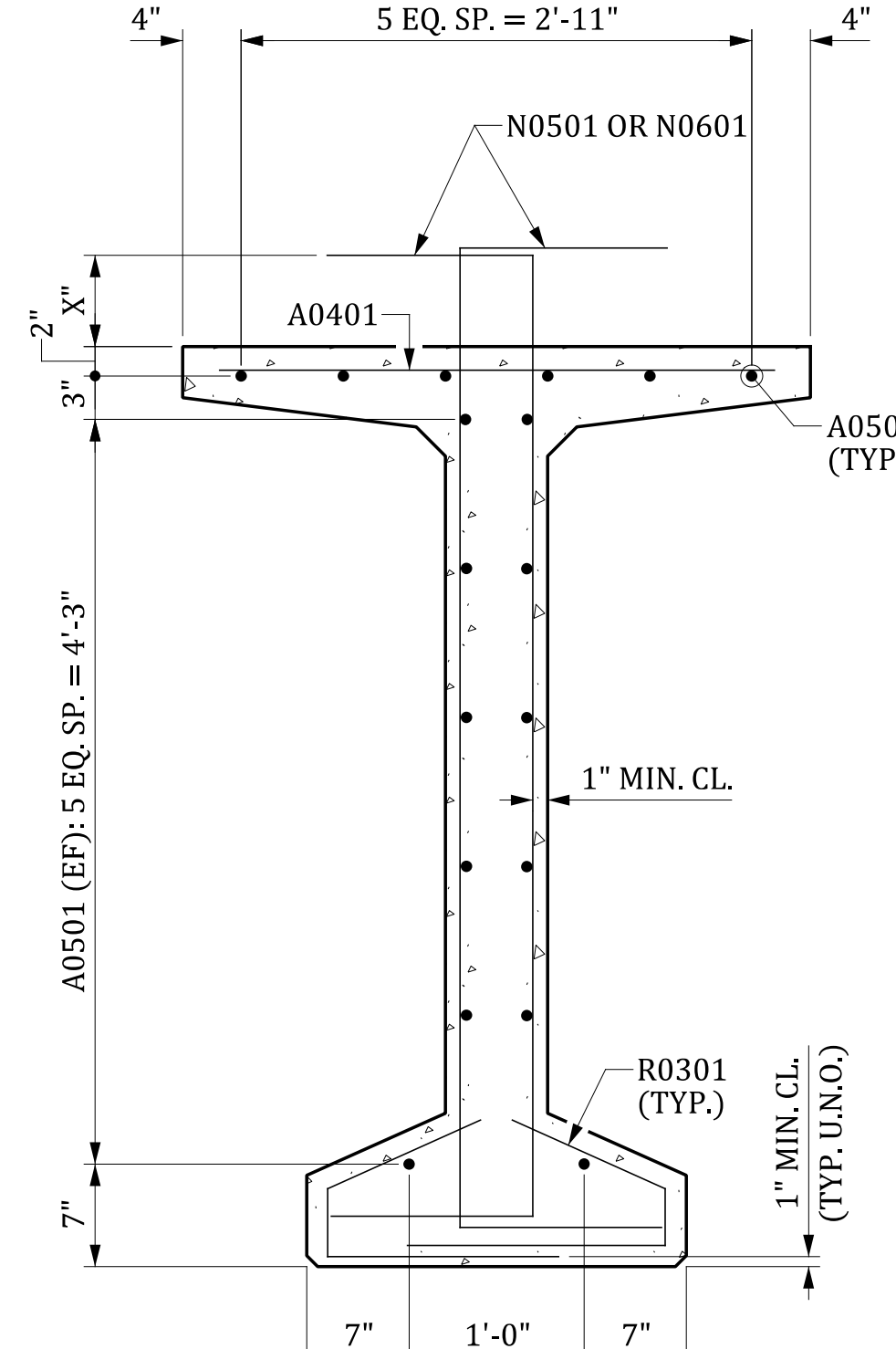
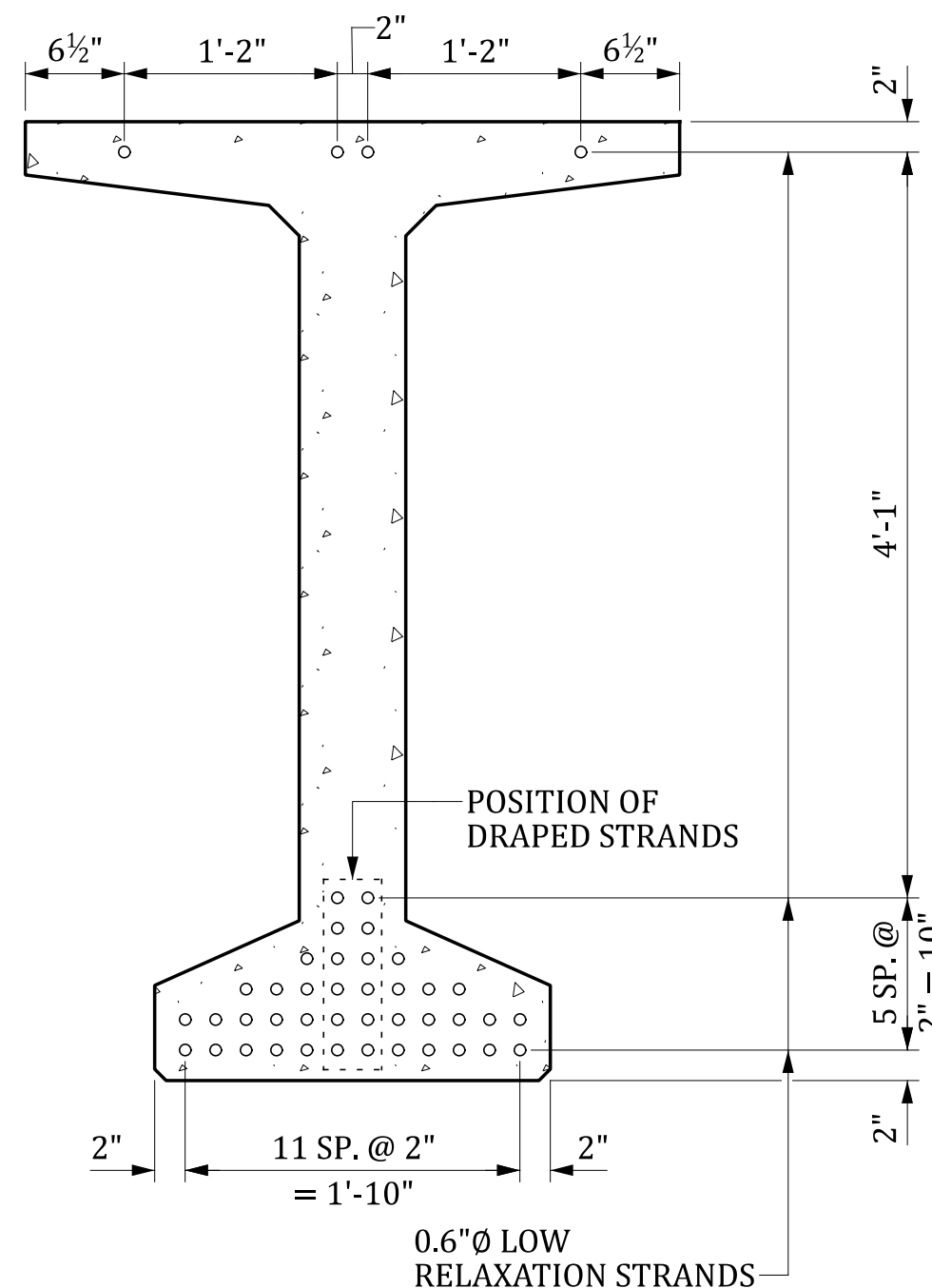
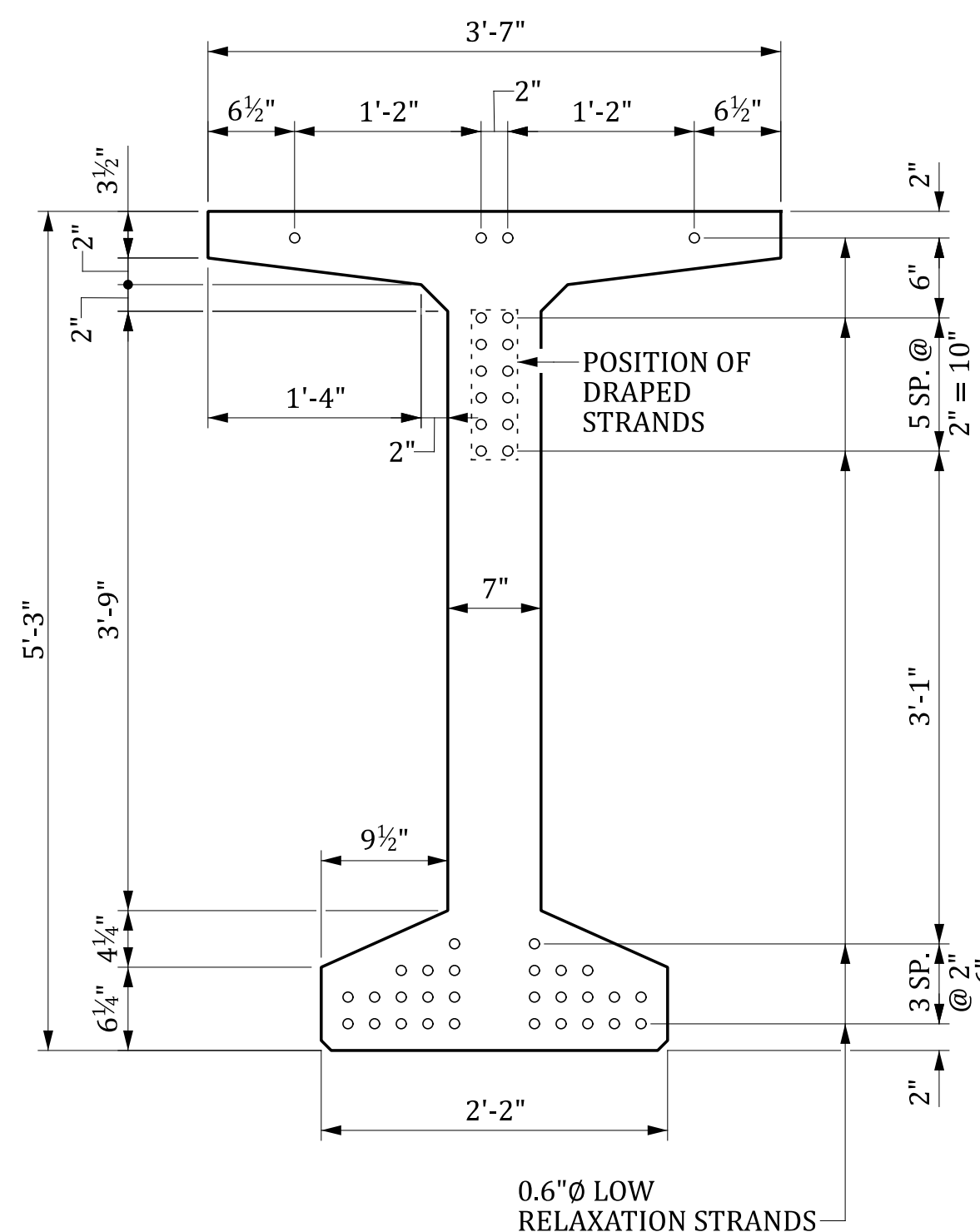
DESIGN DATA	
STRANDS: 0.6" Ø LOW RELAXATION GRADE 270 AREA=0.217 SQ. IN. TENSIONING LOAD = 43.9 KIPS	
CONCRETE: f'c =X.X KSI f'ci =X.X KSI	

- REINFORCEMENT STEEL
- FULLY BONDED STRANDS
- ① △ FULLY BONDED STRANDS TO BE EXTENDED
- ⊕ DEBONDED STRANDS FOR X'-X" FROM END OF BEAM
- ⊖ DEBONDED STRANDS FOR X'-X" FROM END OF BEAM



- ① SEE "MODIFIED BULB TEE GENERAL DETAILS" SHEET FOR PRESTRESSING STRAND BENDING DETAIL.
- ② SPACE WITH N0601.

**SIDE ELEVATION**  
 SHOWING REINFORCING STEEL, SOLE PLATE & DIAPHRAGM HOLES NOT SHOWN FOR CLARITY.



**SECTION THRU BEAM**  
 STRANDS NOT SHOWN FOR CLARITY.

REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DES.	DMD	AEL	DATE	BY	CHK.	DATE
						04-24			

X - STRAIGHT STRANDS  
 X - DEBONDED STRANDS  
 X - DRAPPED STRANDS

AT END OF BEAM

AT CENTER OF BEAM

**STRAND LAYOUT**

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CONSULTANT NAME/LOGO

SOUTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION

**PRESTRESSED CONCRETE BEAM  
 63" MODIFIED BULB TEE SPAN X**

COUNTY: #####

ROUTE: #####

DRAWING NUMBER: 704-MBT.63MOD.SPXXX

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BILL OF MATERIAL ONE 72" MODIFIED BULB TEE						
MARK	NO REQ'D	DIMENSION				LENGTH
		"a"	"b"	"c"	"d"	
A0401	X	3'-3"				3'-3"
A0402	X	X'-X"				X'-X"
A0501	40	10'-0"				10'-0"
N0501	X	10"	X'-X"	10"		X'-X"
N0601	X	1'-0"	X'-X"	1'-0"		X'-X"
R0301	X	1'-6"	4"	1'-0"	11"	2'-10"
U0501	X	5'-4"	4"			10'-10"

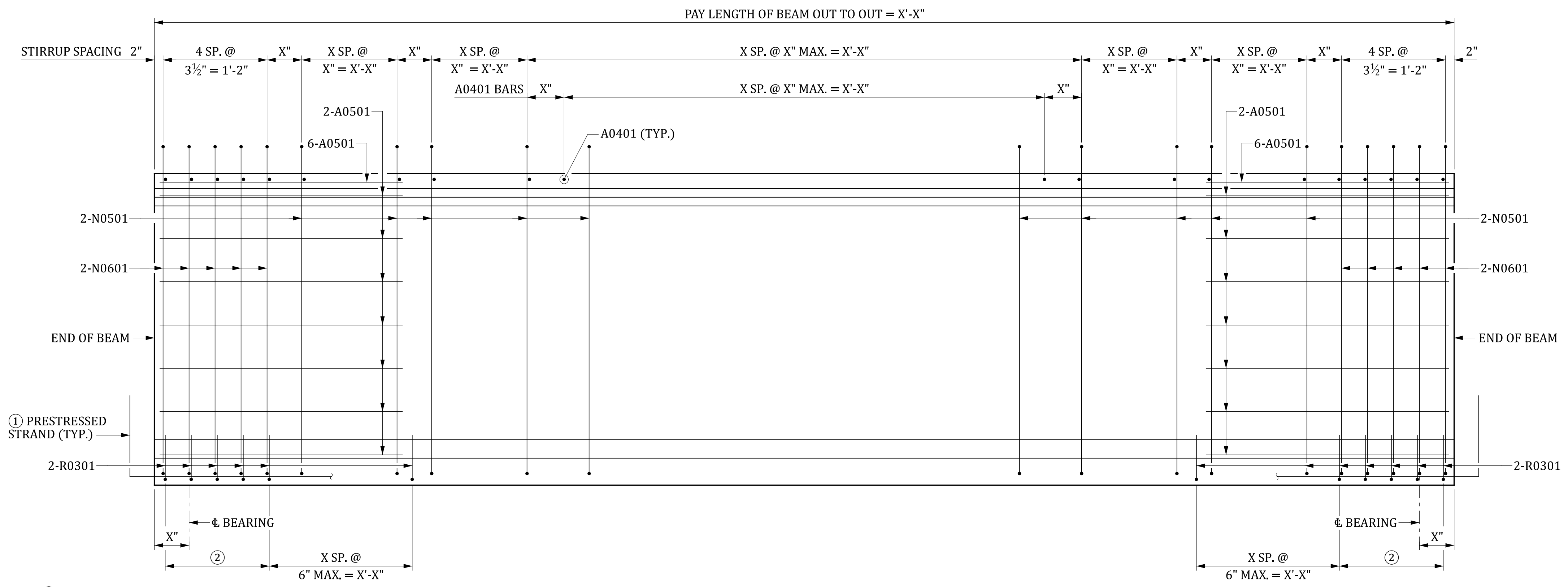
  

QUANTITIES		
ITEM	UNIT	ONE BEAM
CONCRETE, f'c X,XXX	CY	XXXX.X
REINFORCING STEEL	LB	XXXX
0.6"Ø L.R. STRANDS	LF	XXXX
STRUCTURAL STEEL	NEC	AS NECESSARY

FOR INFORMATION ONLY -  
PAID FOR AS PRESTRESSED BEAM

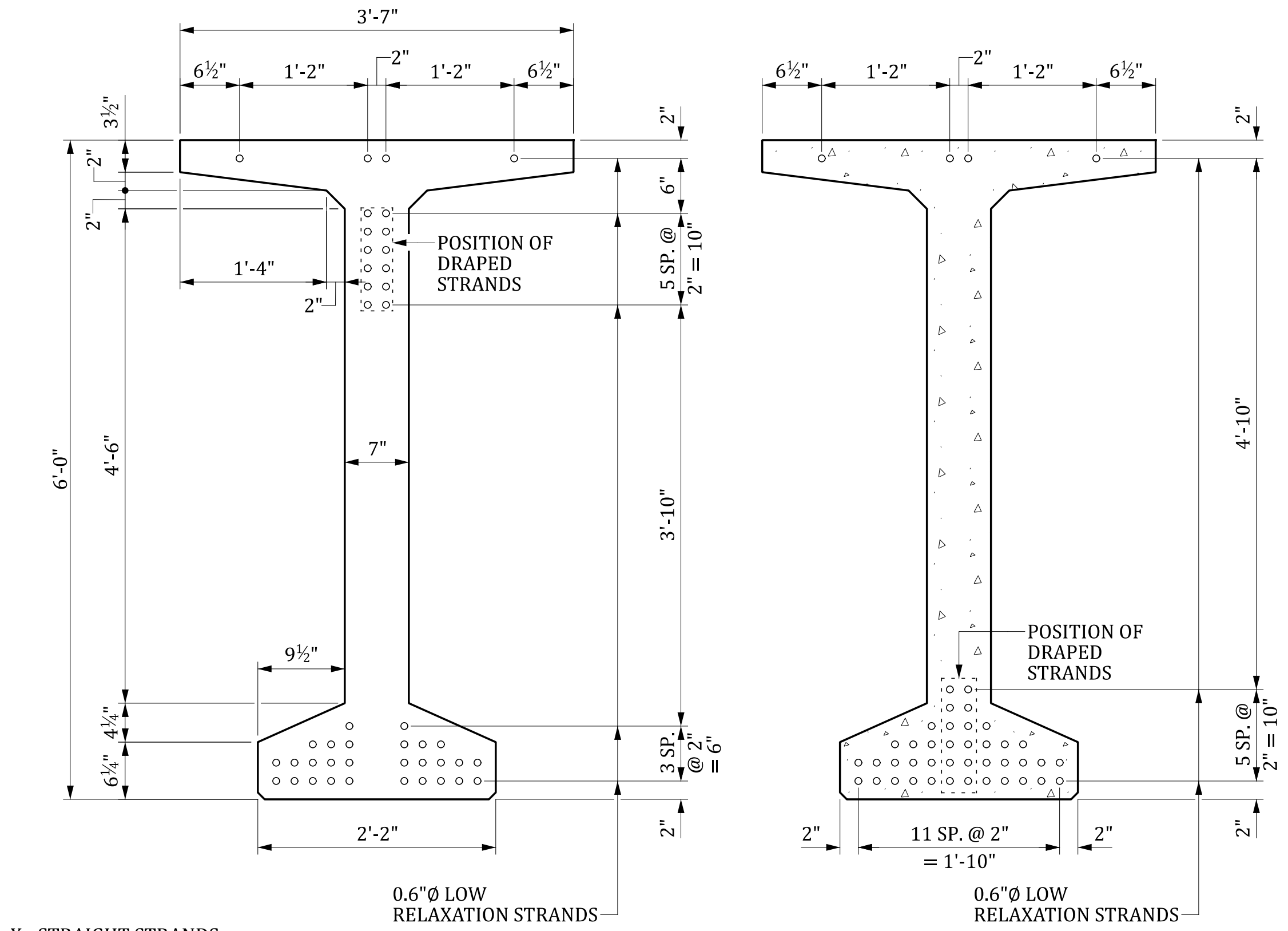
DESIGN DATA	
STRANDS:	0.6" Ø LOW RELAXATION GRADE 270
AREA=	0.217 SQ. IN.
TENSIONING LOAD =	43.9 KIPS
CONCRETE:	f'c =X.X KSI
	f'ci =X.X KSI

- REINFORCEMENT STEEL
- FULLY BONDED STRANDS
- ① △ FULLY BONDED STRANDS TO BE EXTENDED
- ⊕ DEBONDED STRANDS FOR X'-X" FROM END OF BEAM
- ⊗ DEBONDED STRANDS FOR X'-X" FROM END OF BEAM

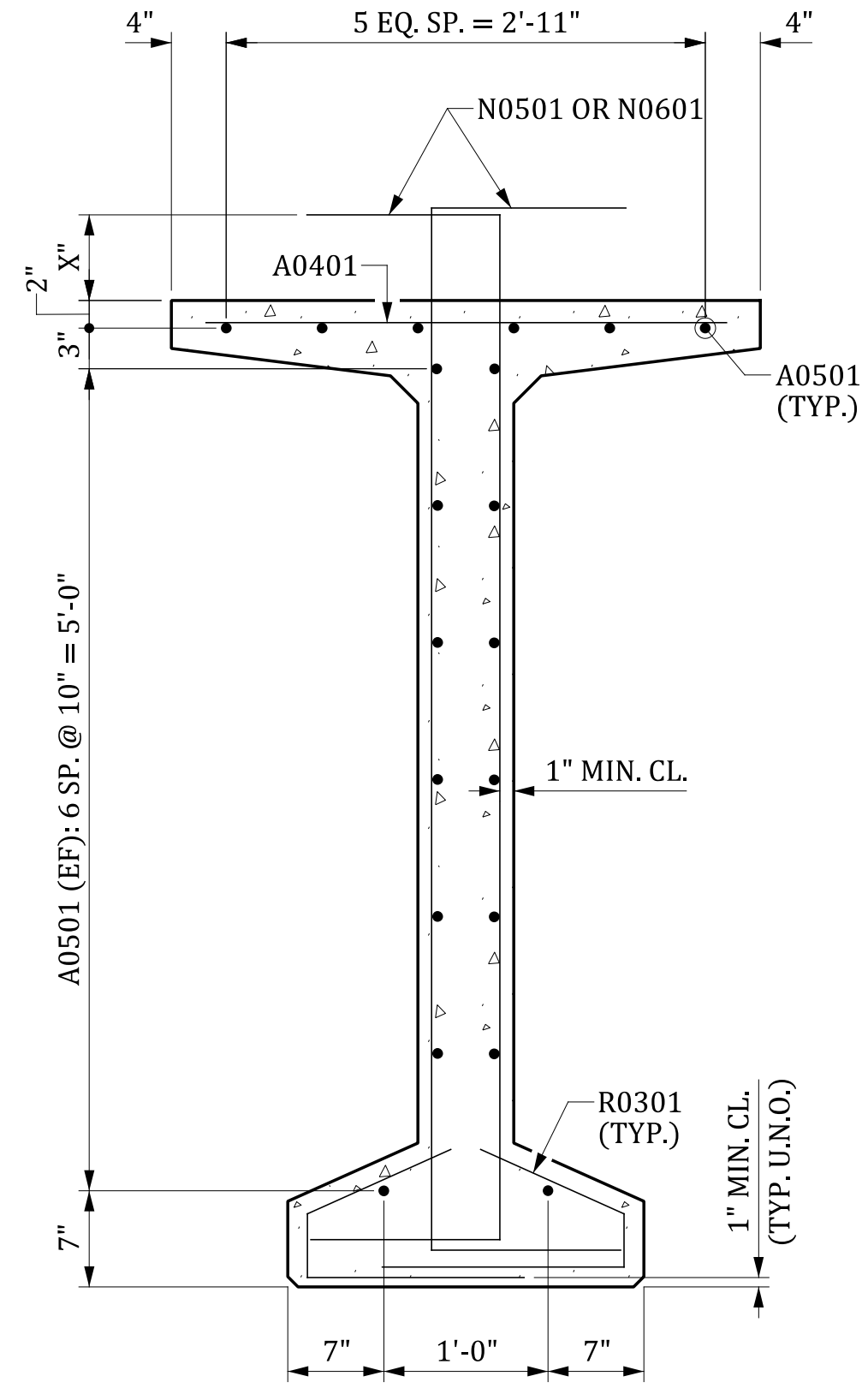


① SEE "MODIFIED BULB TEE GENERAL DETAILS" SHEET FOR PRESTRESSING STRAND BENDING DETAIL.  
 ② SPACE WITH N0601.

**SIDE ELEVATION**  
 SHOWING REINFORCING STEEL, SOLE PLATE & DIAPHRAGM HOLES NOT SHOWN FOR CLARITY.



**STRAND LAYOUT**



**SECTION THRU BEAM**  
 STRANDS NOT SHOWN FOR CLARITY.

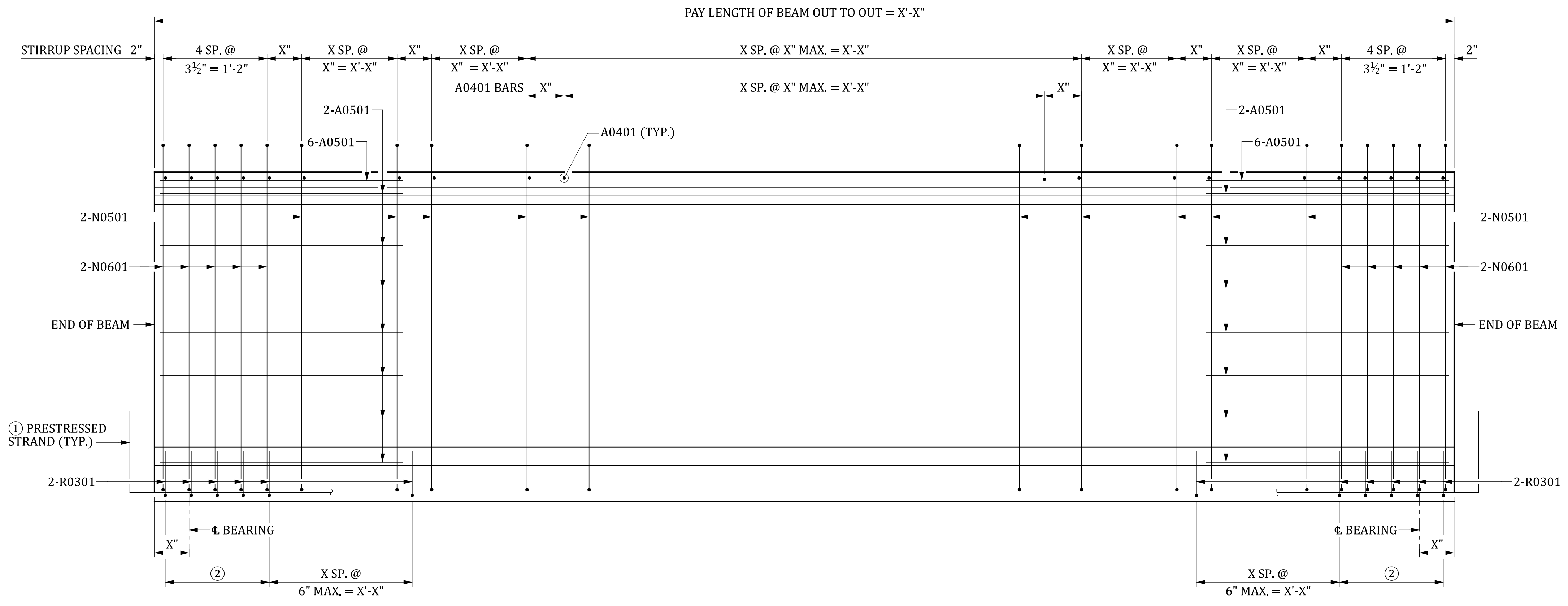
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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
<b>PRESTRESSED CONCRETE BEAM 72" MODIFIED BULB TEE SPAN X</b>	
COUNTY: #####	ROUTE: #####

REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	04-24

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① SEE "MODIFIED BULB TEE GENERAL DETAILS" SHEET FOR PRESTRESSING STRAND BENDING DETAIL.  
 ② SPACE WITH N0601.

**SIDE ELEVATION**  
 SHOWING REINFORCING STEEL, SOLE PLATE & DIAPHRAGM HOLES NOT SHOWN FOR CLARITY.

**FOR INFORMATION ONLY - PAID FOR AS PRESTRESSED BEAM**

BILL OF MATERIAL ONE 74" MODIFIED BULB TEE						
MARK	NO REQ'D	DIMENSION				LENGTH
		"a"	"b"	"c"	"d"	
A0401	X	3'-3"				3'-3"
A0402	X	X'-X"				X'-X"
A0501	40	10'-0"				10'-0"
N0501	X	10"	X'-X"	10"		X'-X"
N0601	X	1'-0"	X'-X"	1'-0"		X'-X"
R0301	X	1'-6"	4"	1'-0"	11"	2'-10"
U0501	X	5'-6"	4"			11'-2"

QUANTITIES		
ITEM	UNIT	ONE BEAM
CONCRETE, f'c X,XXX	CY	XXXX.X
REINFORCING STEEL	LB	XXXX
0.6" Ø L.R. STRANDS	LF	XXXX
STRUCTURAL STEEL	NEC	AS NECESSARY

**DESIGN DATA**

STRANDS:  
 0.6" Ø LOW RELAXATION GRADE 270  
 AREA=0.217 SQ. IN.  
 TENSIONING LOAD = 43.9 KIPS

CONCRETE:  
 f'c =X.X KSI  
 f'ci =X.X KSI

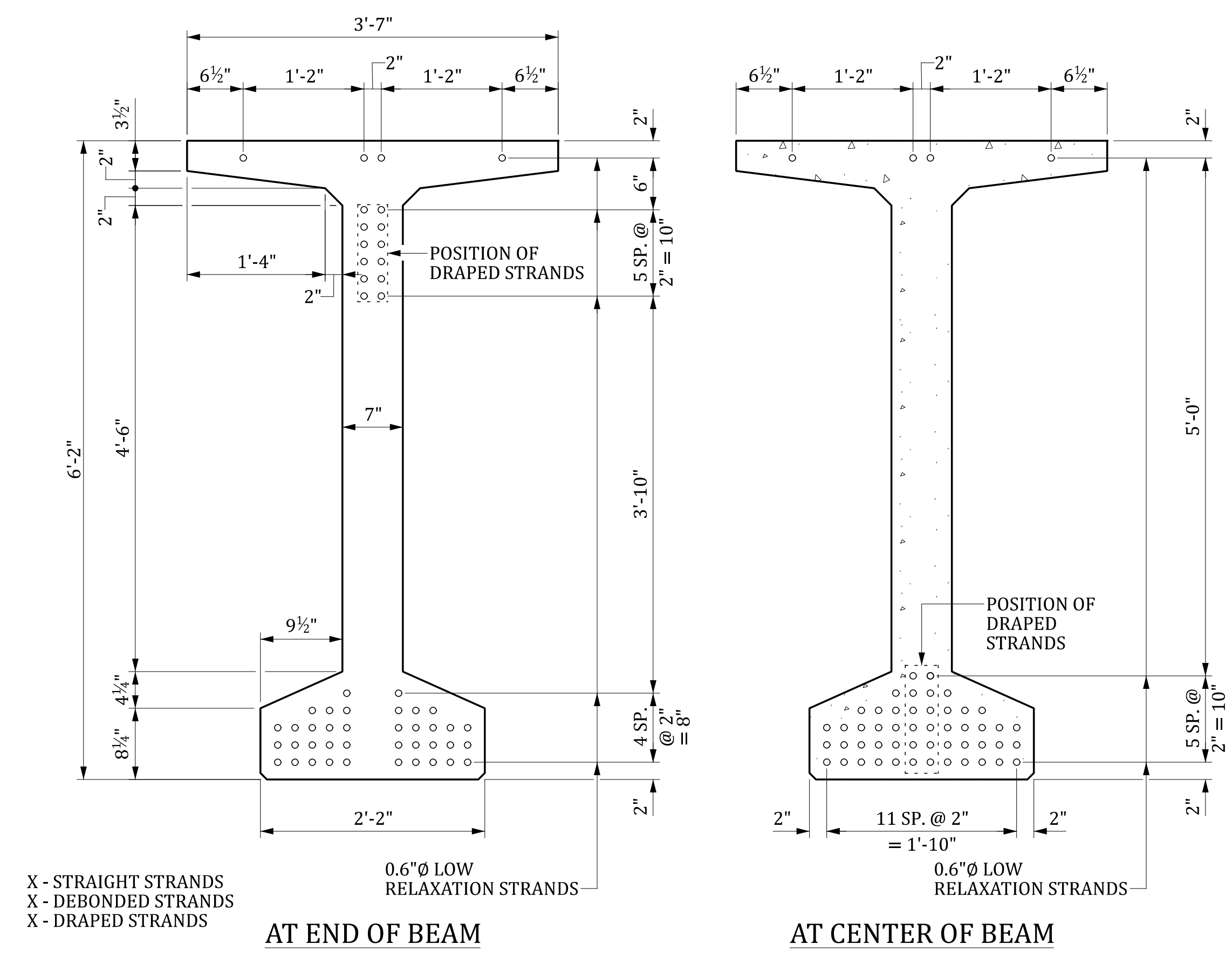
- REINFORCEMENT STEEL
- FULLY BONDED STRANDS
- ① △ FULLY BONDED STRANDS TO BE EXTENDED
- ◇ DEBONDED STRANDS FOR X'-X" FROM END OF BEAM
- ⊙ DEBONDED STRANDS FOR X'-X" FROM END OF BEAM

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REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

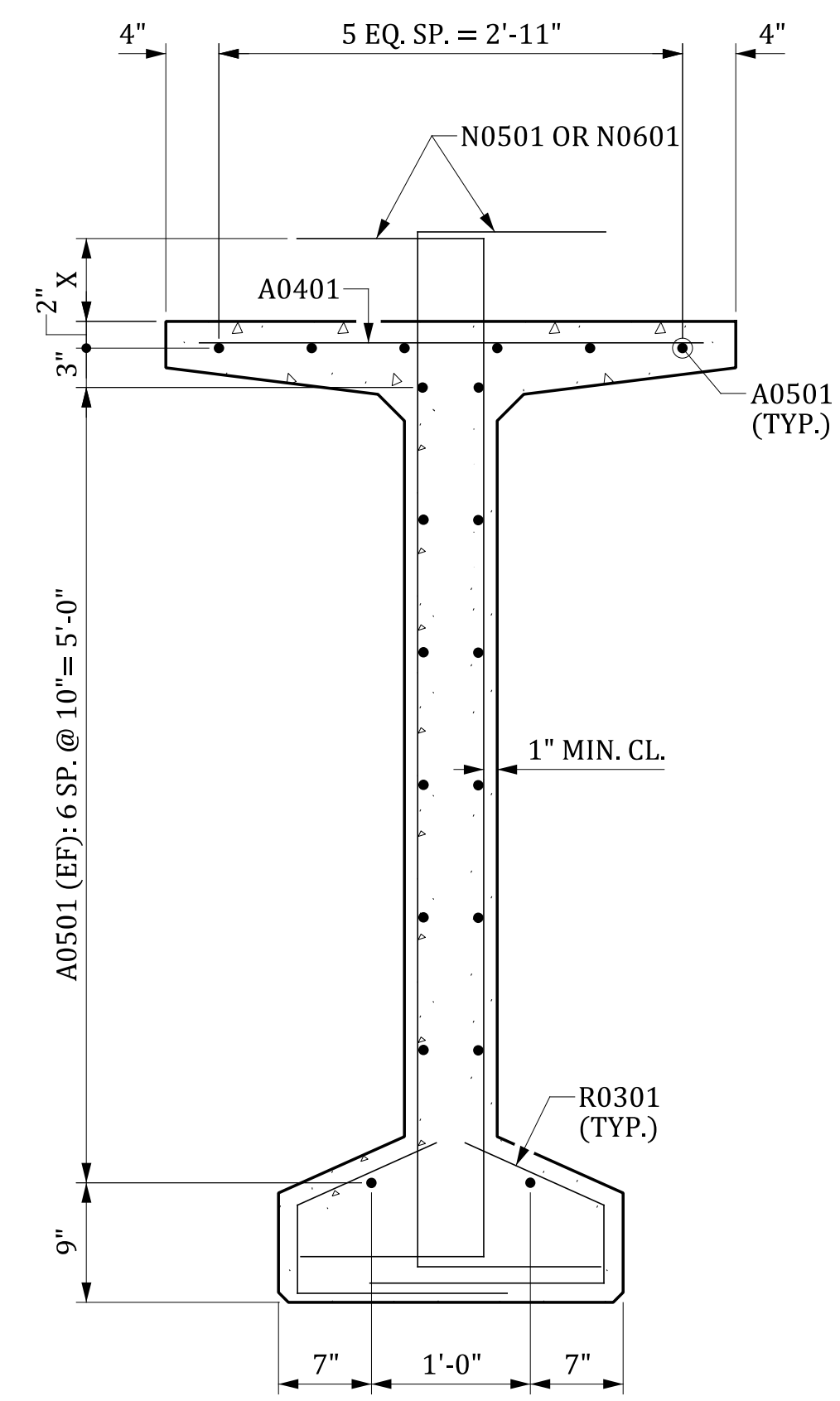
REVIEWED	QUAN.	DR.	DMD	AEL	04-24	BY	CHK.	DATE



X - STRAIGHT STRANDS  
 X - DEBONDED STRANDS  
 X - DRAPED STRANDS

0.6" Ø LOW RELAXATION STRANDS

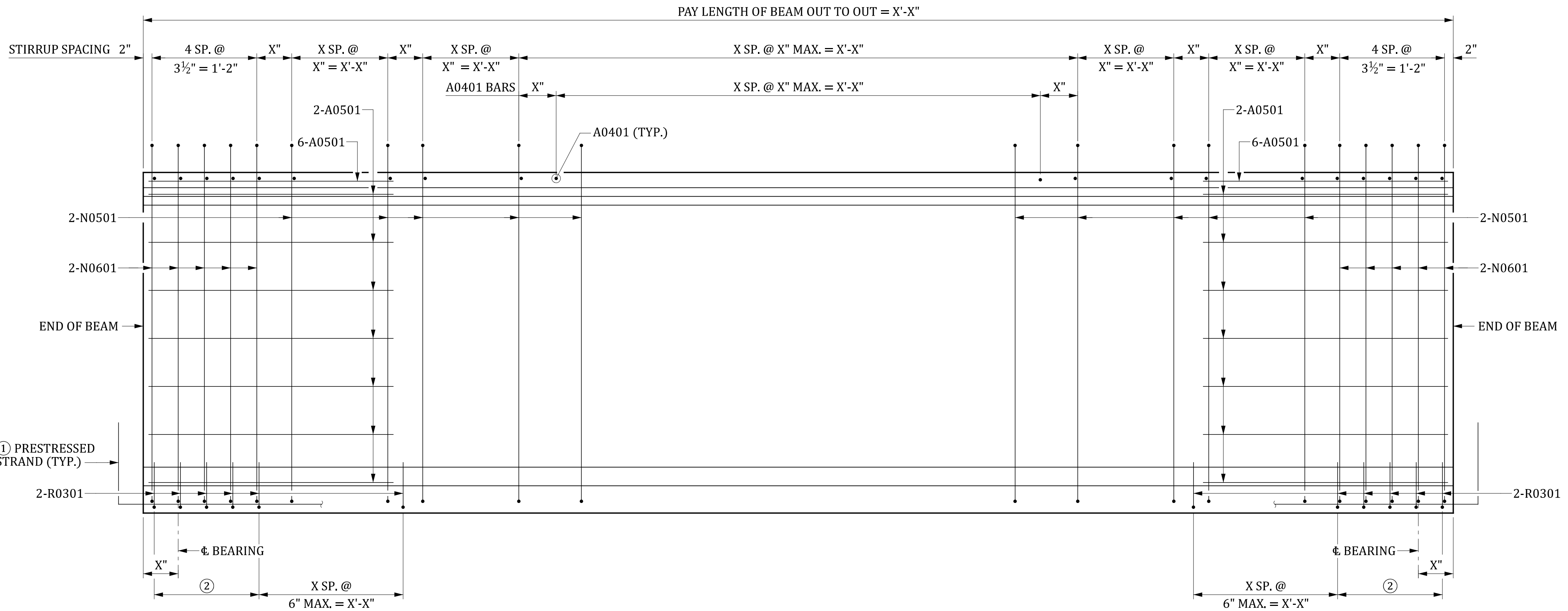
**STRAND LAYOUT**



**SECTION THRU BEAM**  
 STRANDS NOT SHOWN FOR CLARITY.

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
<b>PRESTRESSED CONCRETE BEAM 74" MODIFIED BULB TEE SPAN X</b>	
COUNTY: ####	ROUTE: ####



① SEE "MODIFIED BULB TEE GENERAL DETAILS" SHEET FOR PRESTRESSING STRAND BENDING DETAIL.  
 ② SPACE WITH N0601.

**SIDE ELEVATION**  
 SHOWING REINFORCING STEEL, SOLE PLATE & DIAPHRAGM HOLES NOT SHOWN FOR CLARITY.

**FOR INFORMATION ONLY - PAID FOR AS PRESTRESSED BEAM**

BILL OF MATERIAL ONE 78" MODIFIED BULB TEE							
MARK	NO REQ'D	DIMENSION					LENGTH
		"a"	"b"	"c"	"d"	"e"	
A0401	X	3'-3"					3'-3"
A0402	X	X'-X"					X'-X"
A0501	40	10'-0"					10'-0"
N0501	X	10"	X'-X"	10"			X'-X"
N0601	X	1'-0"	X'-X"	1'-0"			X'-X"
R0301	X	1'-6"	4"	1'-0"	11"		2'-10"
U0501	X	5'-6"	4"				11'-2"

QUANTITIES		
ITEM	UNIT	ONE BEAM
CONCRETE, f'c X,XXX	CY	XXXX.X
REINFORCING STEEL	LB	XXXX
0.6" Ø L.R. STRANDS	LF	XXXX
STRUCTURAL STEEL	NEC	AS NECESSARY

**DESIGN DATA**

STRANDS:  
 0.6" Ø LOW RELAXATION GRADE 270  
 AREA=0.217 SQ. IN.  
 TENSIONING LOAD = 43.9 KIPS

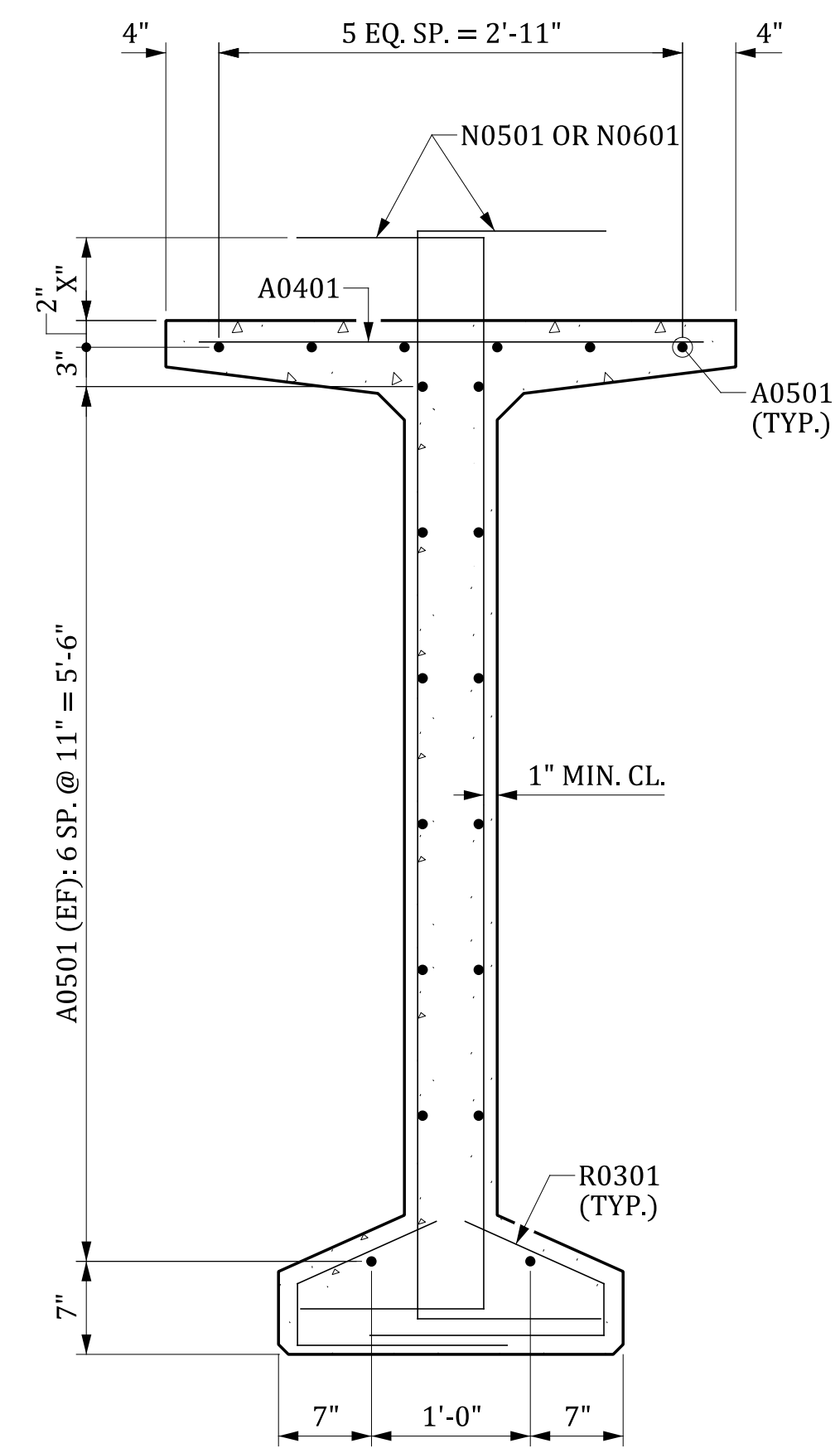
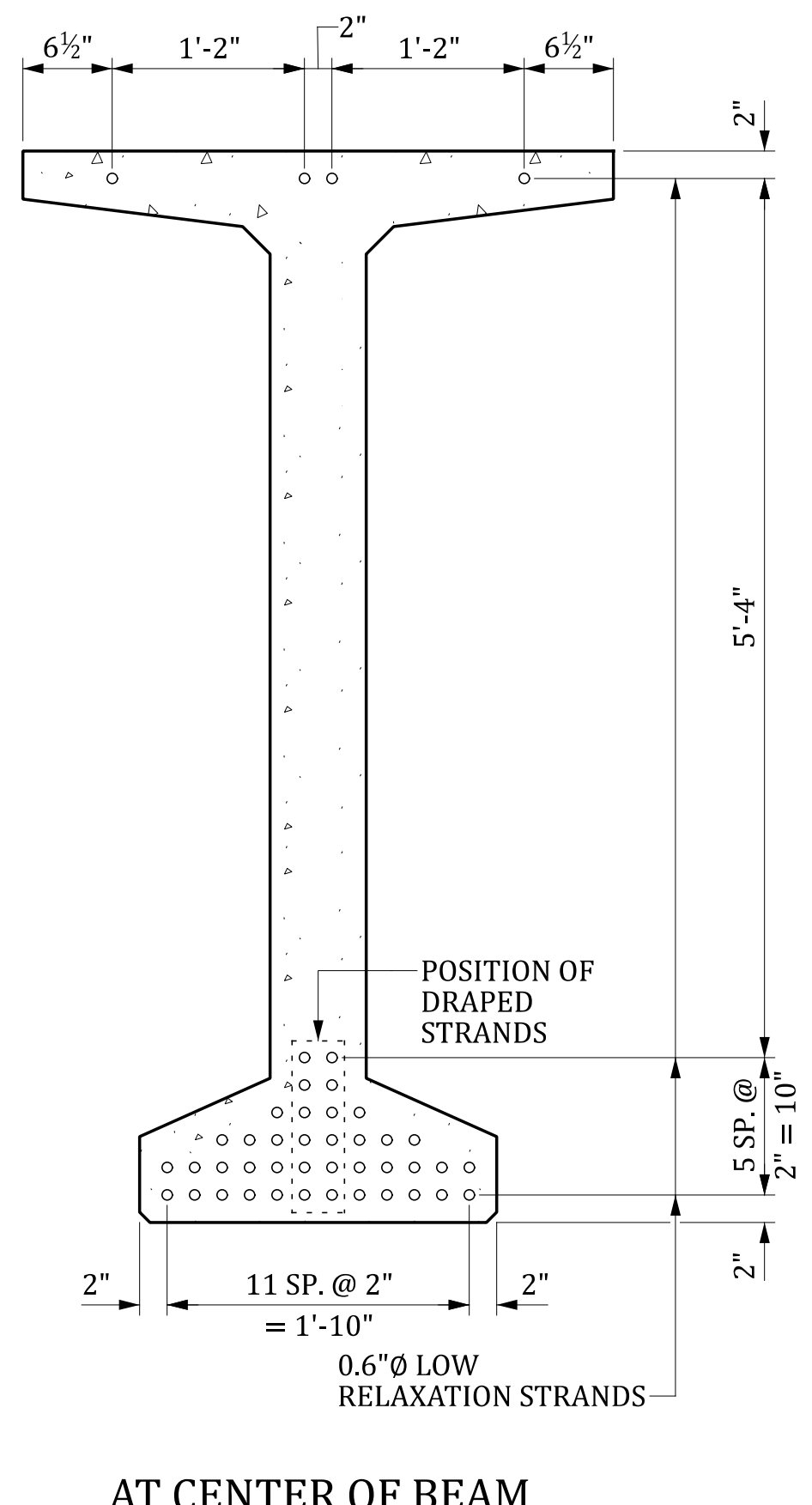
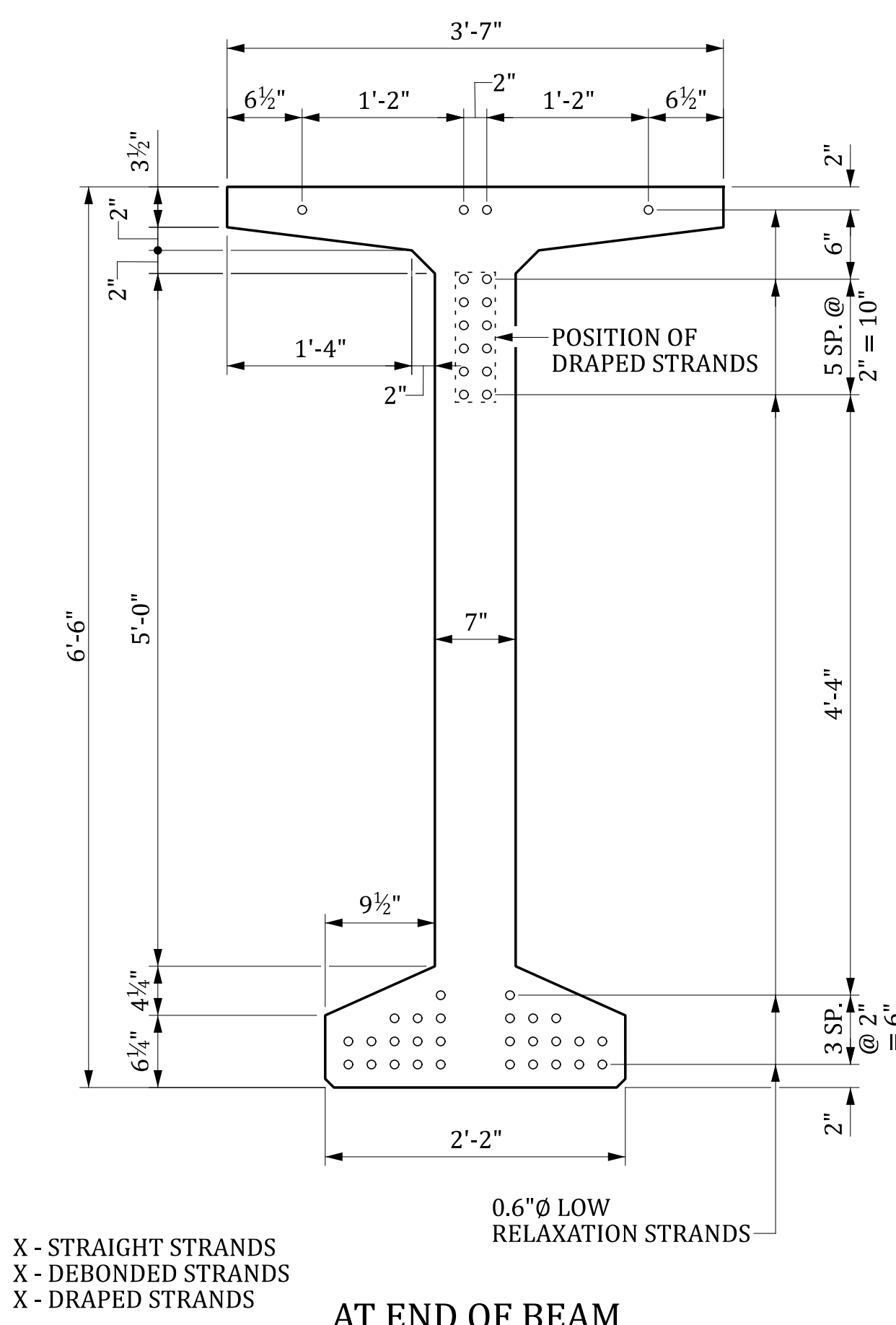
CONCRETE:  
 f'c =X.X KSI  
 f'ci =X.X KSI

- REINFORCEMENT STEEL
- FULLY BONDED STRANDS
- ① △ FULLY BONDED STRANDS TO BE EXTENDED
- ⊕ DEBONDED STRANDS FOR X'-X" FROM END OF BEAM
- ⊖ DEBONDED STRANDS FOR X'-X" FROM END OF BEAM

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REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

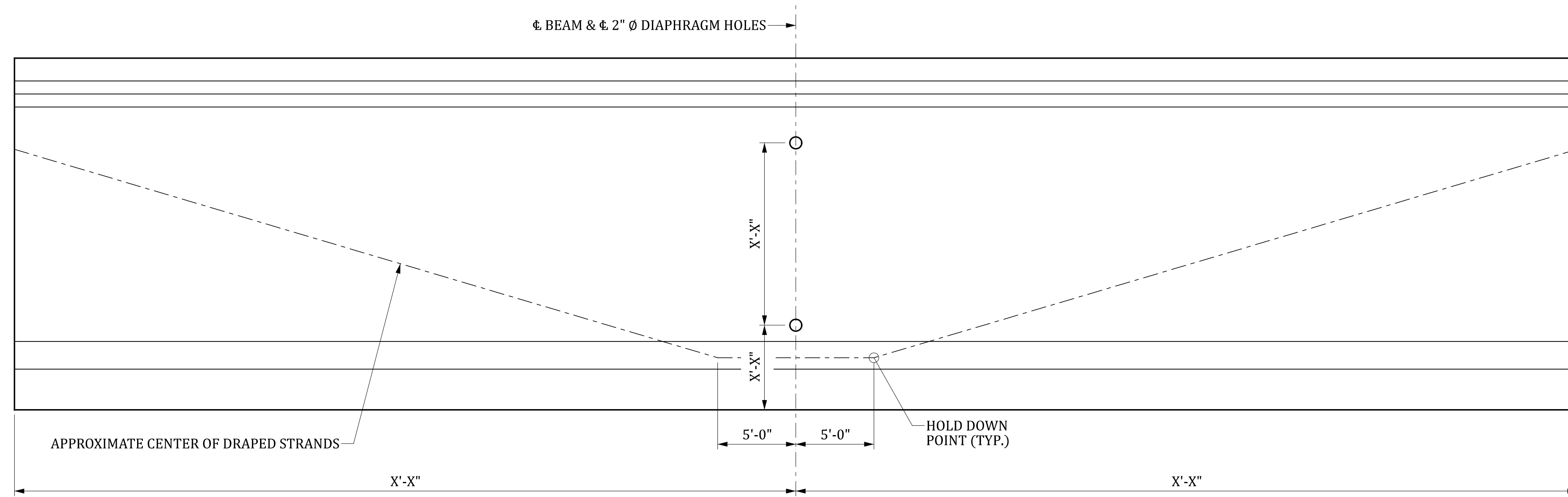
REVIEWED	QUAN.	DR.	DMD	AEL	04-24	BY	CHK.	DATE



**SECTION THRU BEAM**  
 STRANDS NOT SHOWN FOR CLARITY.

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
<b>PRESTRESSED CONCRETE BEAM</b>	
<b>78" MODIFIED BULB TEE SPAN X</b>	
COUNTY: #####	ROUTE: #####



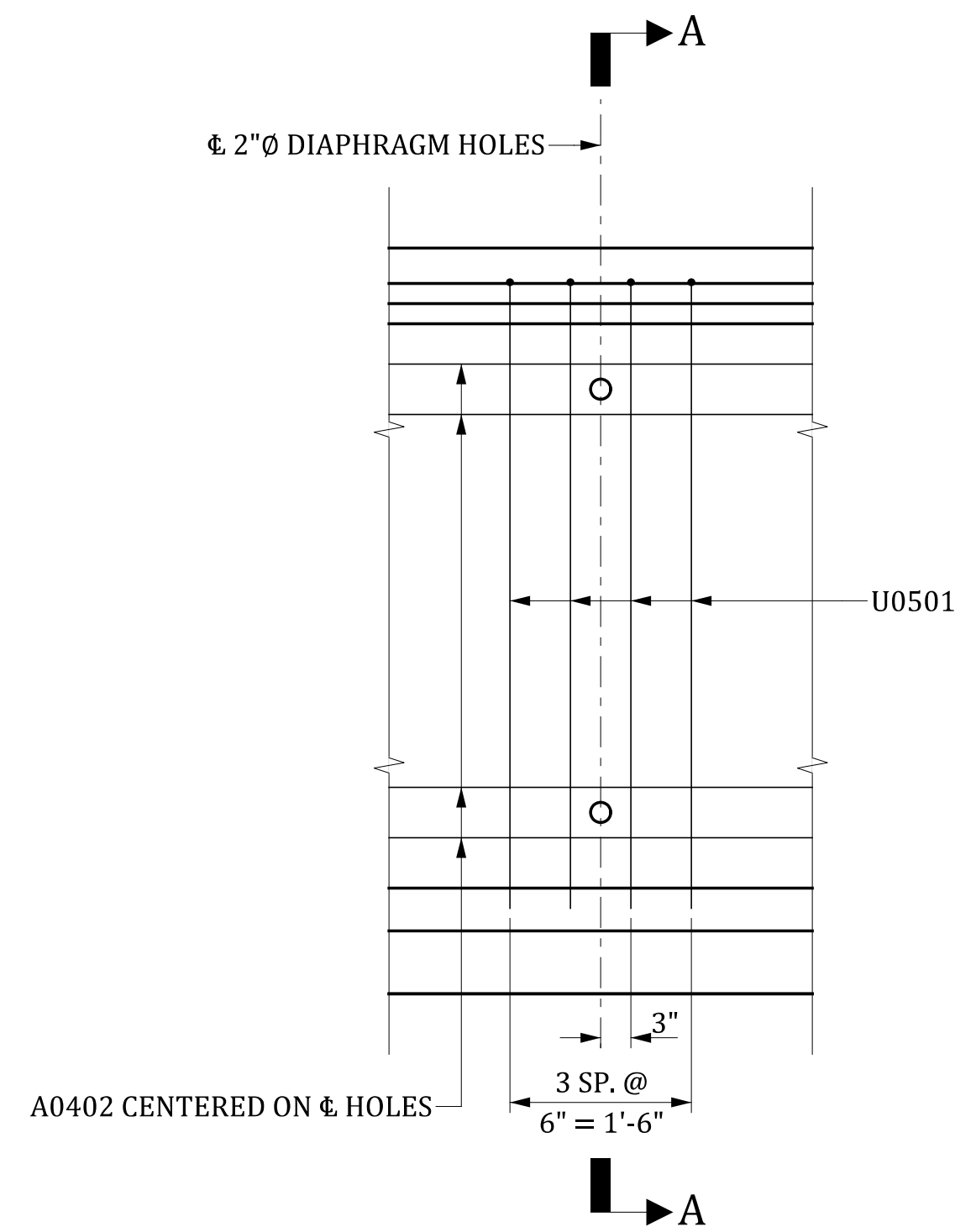
**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**

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

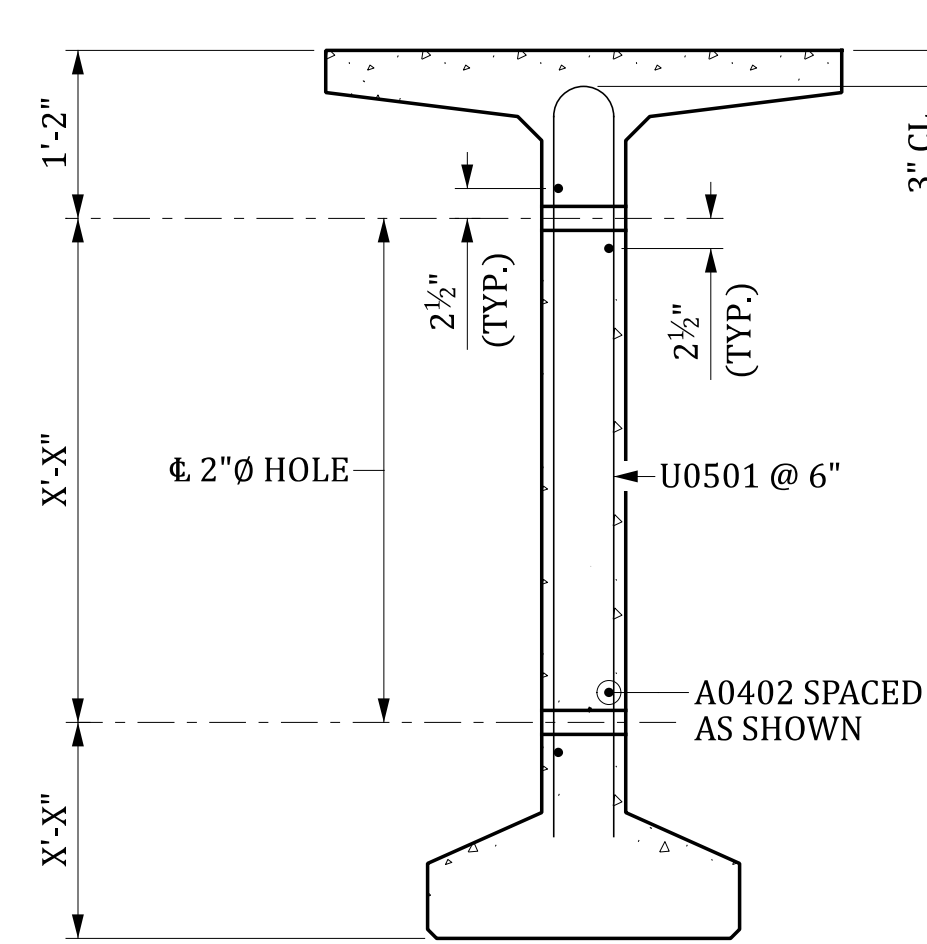
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION

\*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.

"+" INDICATES UPWARD MOVEMENT  
 "-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
 SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.

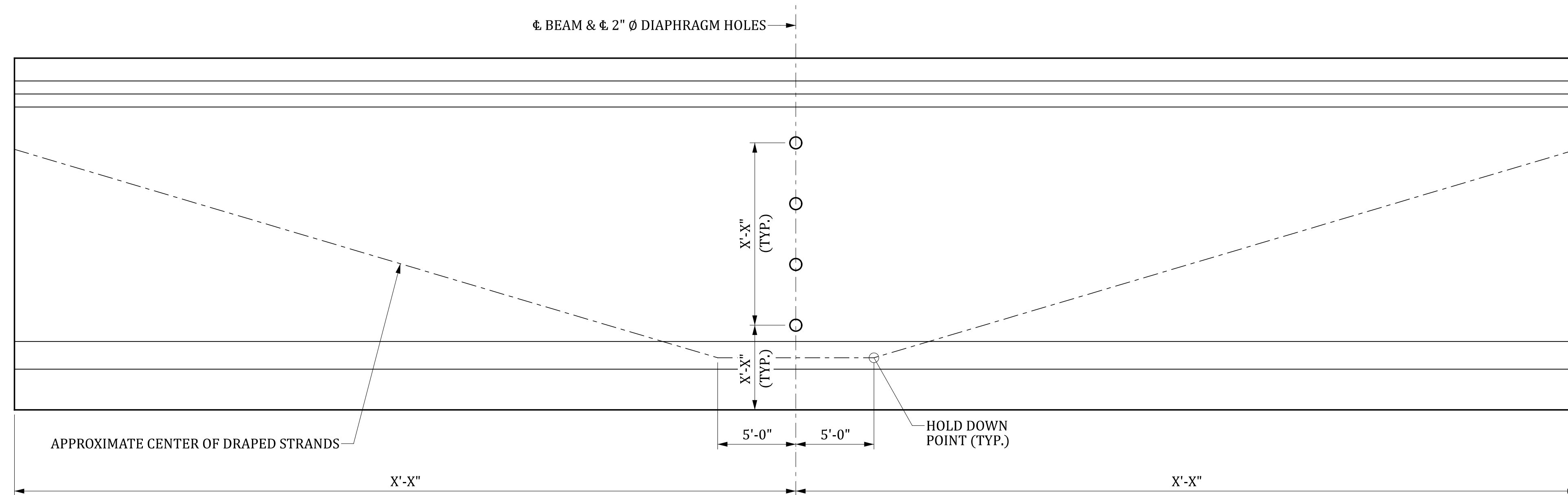
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REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	DATE

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
MODIFIED BULB TEE DETAILS SPAN X - ALT 1	
COUNTY: ###	ROUTE: ###



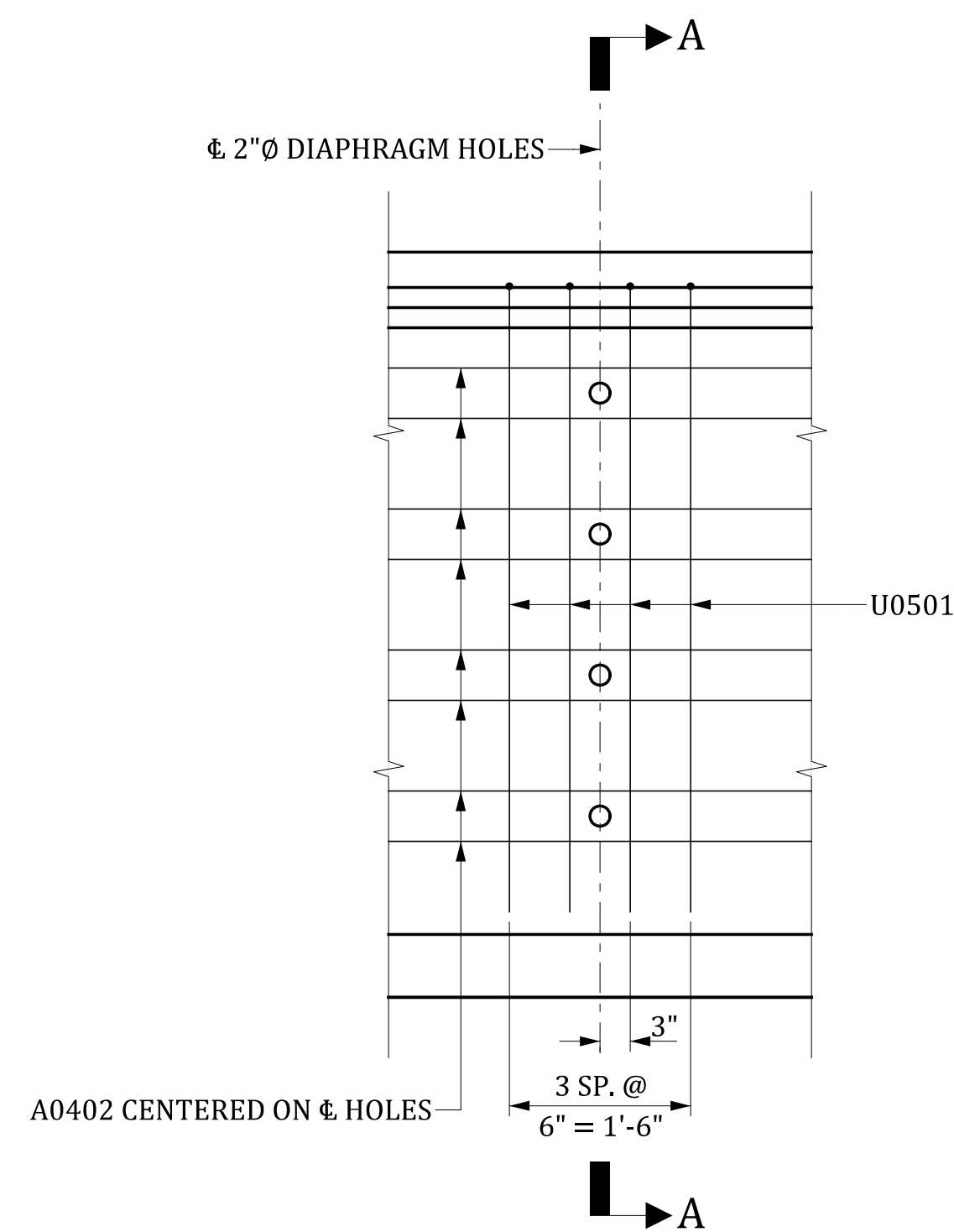
**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**

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

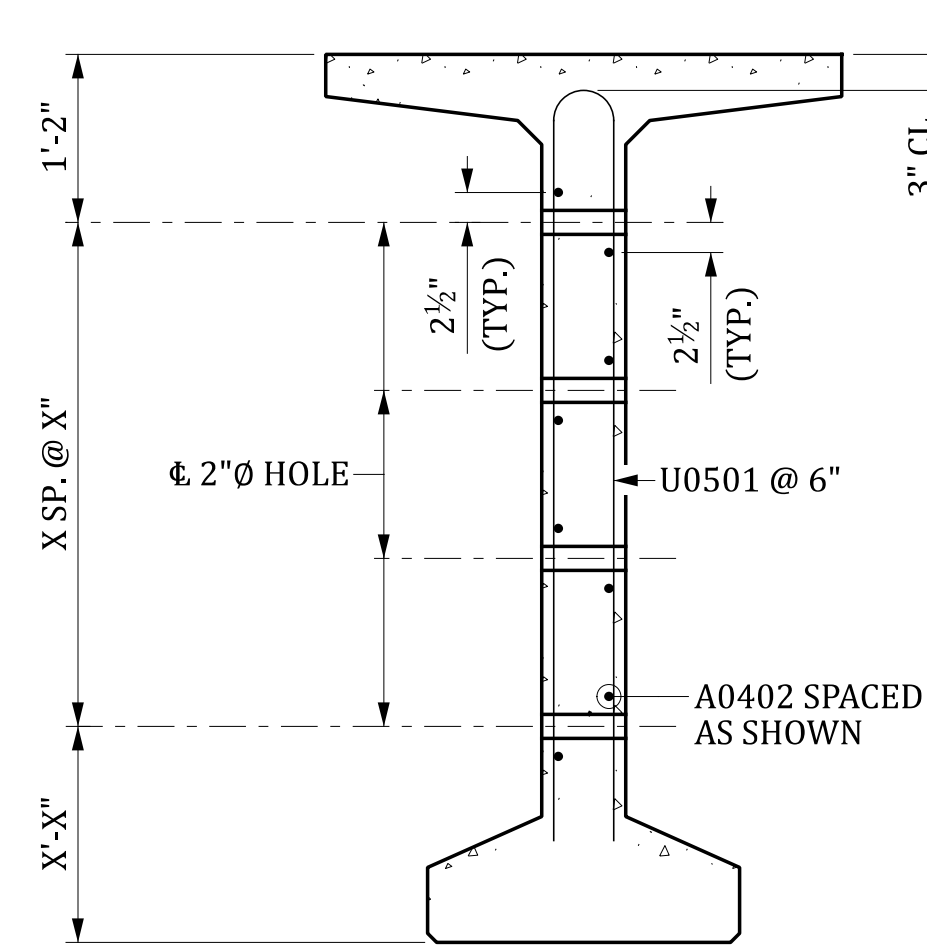
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION

\*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.

"+" INDICATES UPWARD MOVEMENT  
 "-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
 SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.

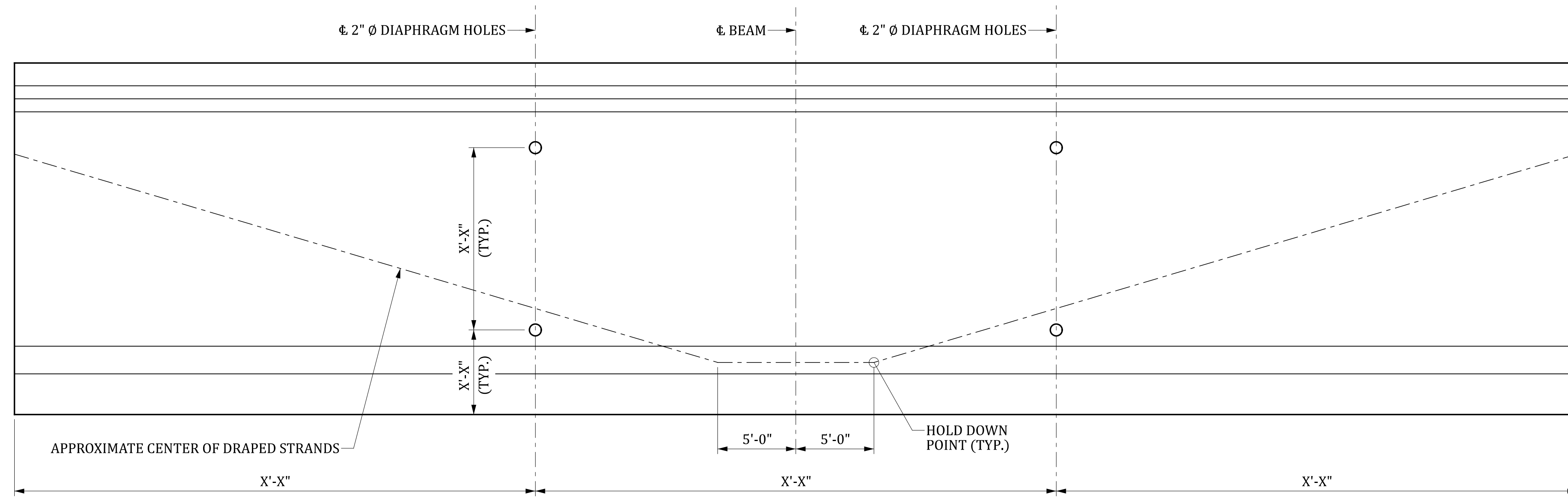
REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	04-24	BY	CHK.	DATE

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
MODIFIED BULB TEE DETAILS SPAN X - ALT 2	
COUNTY: ###	ROUTE: ###

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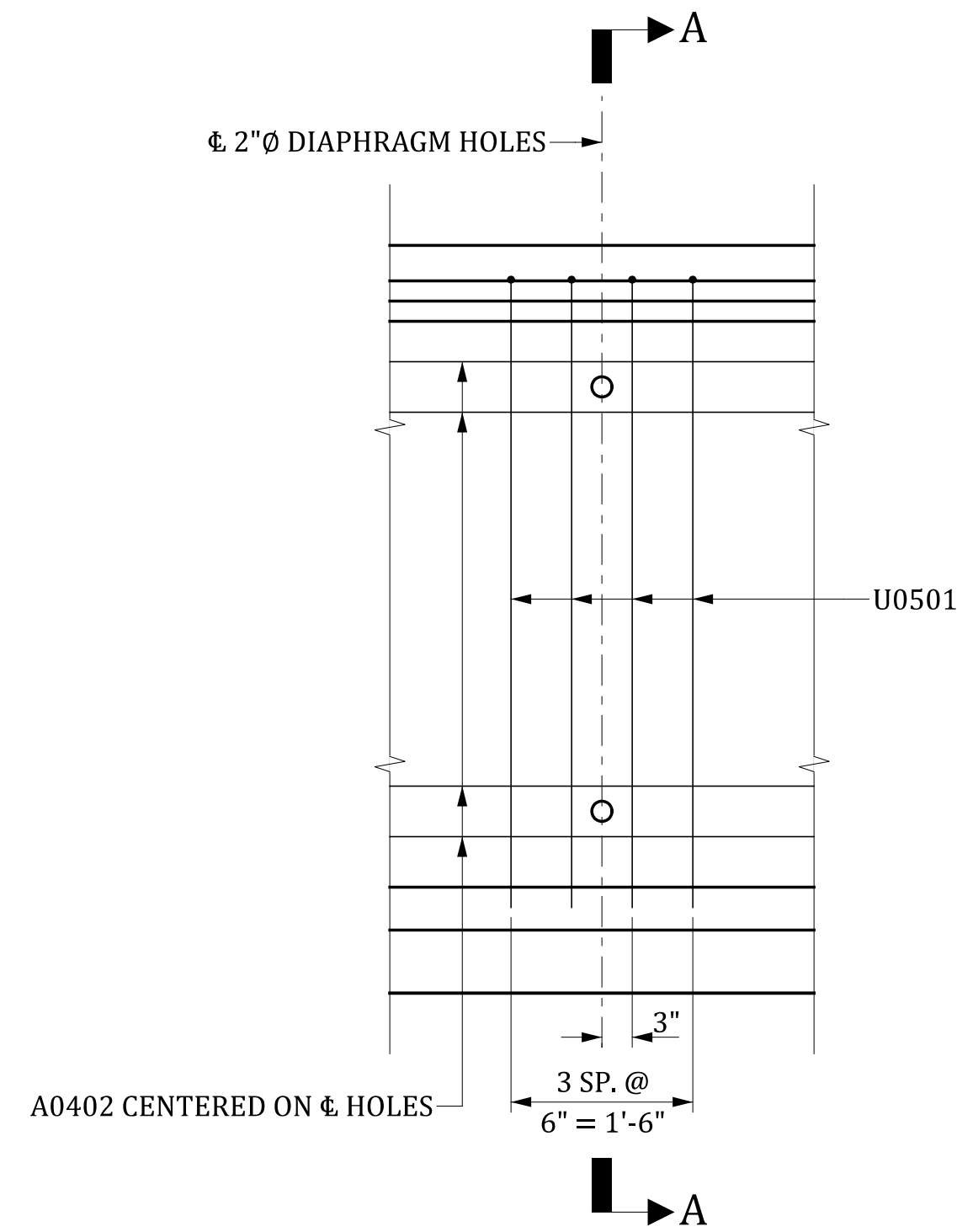
**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**

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

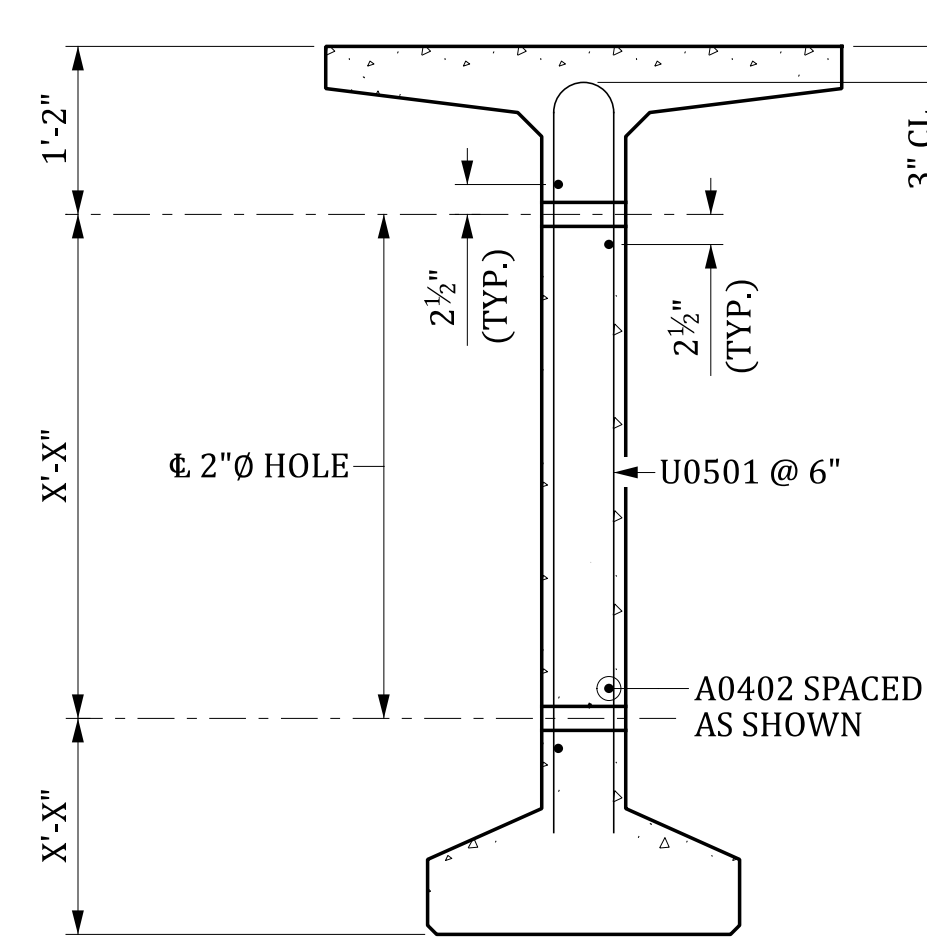
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION

\*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.

"+" INDICATES UPWARD MOVEMENT  
 "-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
 SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.

Dylan.Danks 6/18/2024 9:18:17 AM 704\_MBT.dgn

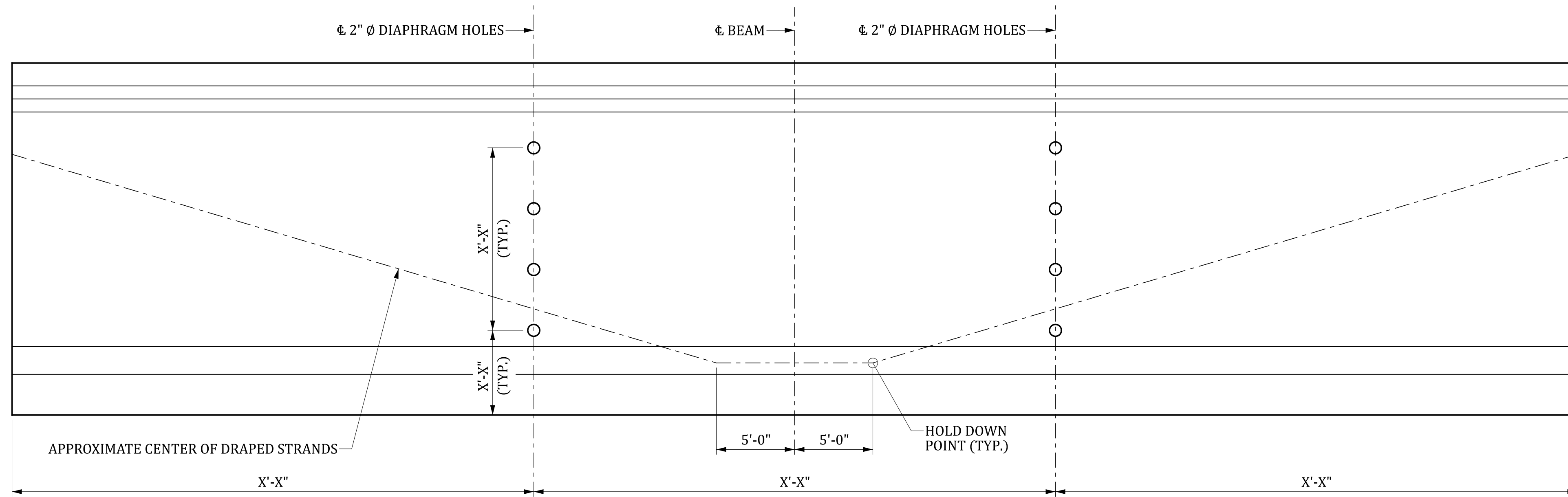
REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	04-24	BY	CHK.	DATE

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
MODIFIED BULB TEE DETAILS SPAN X - ALT 3	
COUNTY: ###	ROUTE: ###





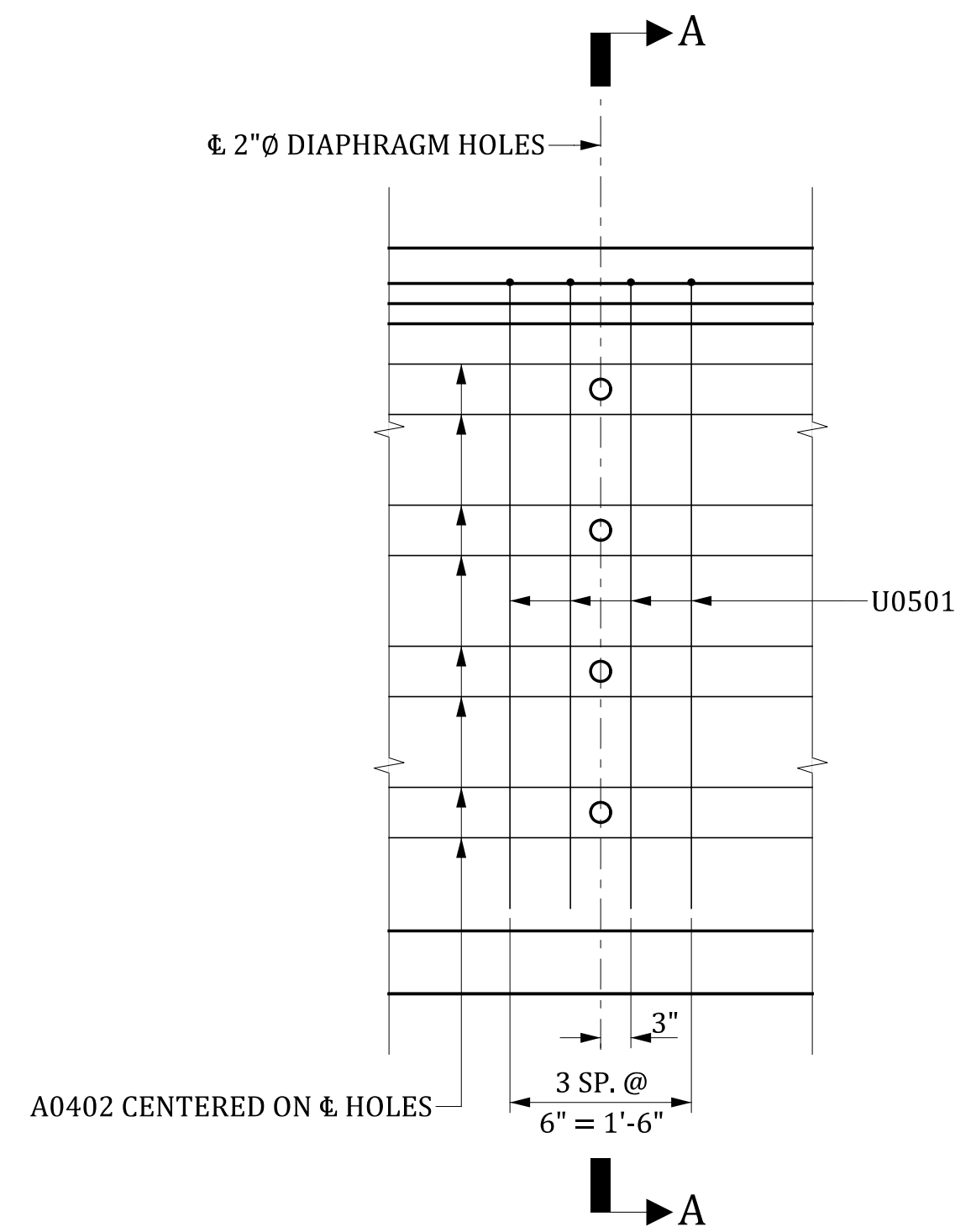
**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**

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

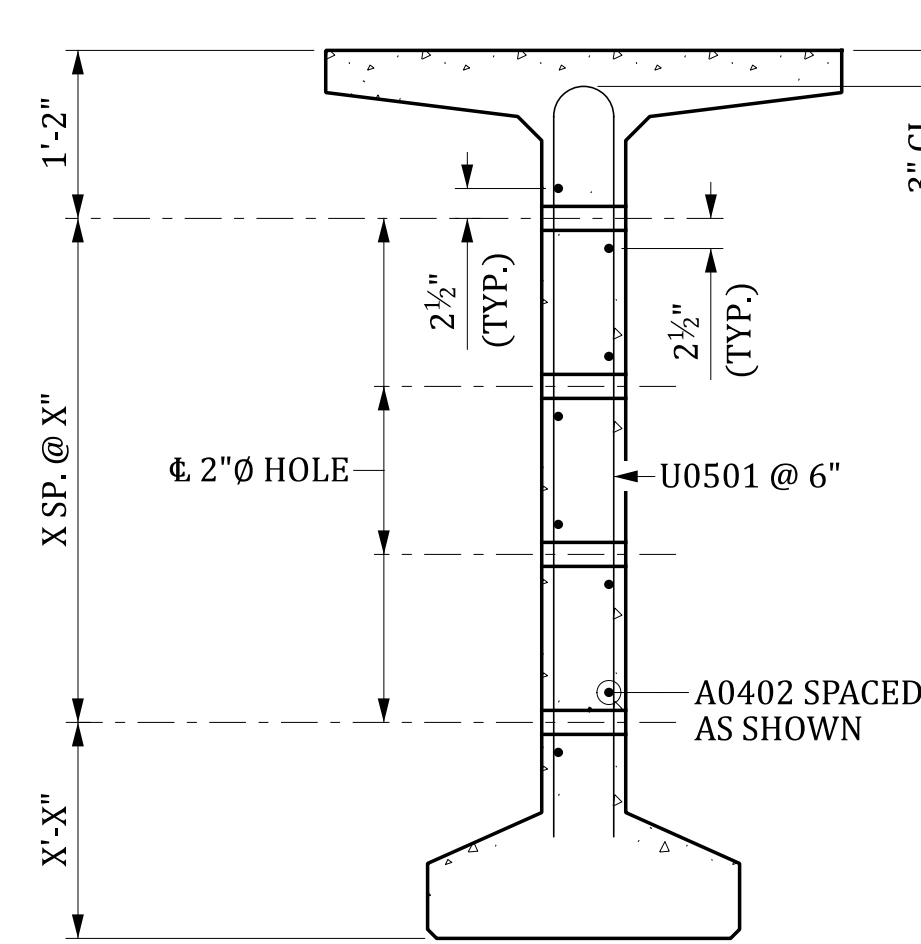
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION

\*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.

"+" INDICATES UPWARD MOVEMENT  
 "-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
 SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.

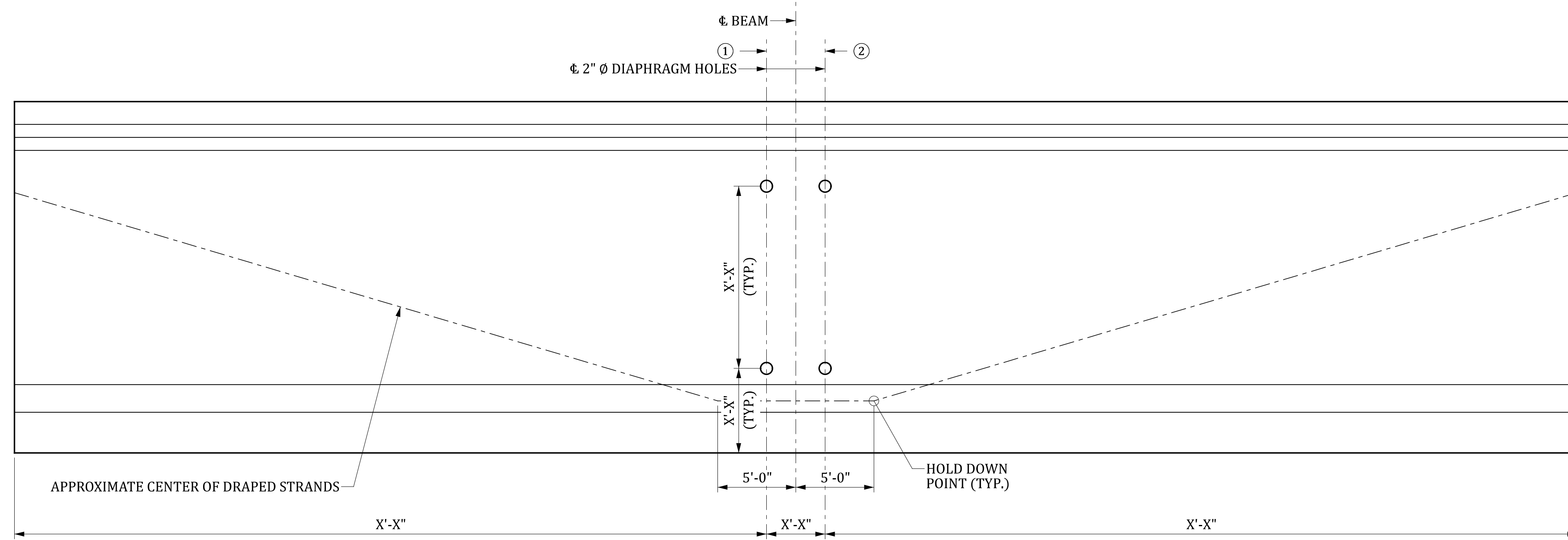
Dylan.Danks 6/18/2024 9:18:18 AM 704\_MBT.dgn

REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	04-24	BY	CHK.	DATE

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
MODIFIED BULB TEE DETAILS SPAN X - ALT 4	
COUNTY: ###	ROUTE: ###



**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**  
INTERIOR BEAM SHOWN.

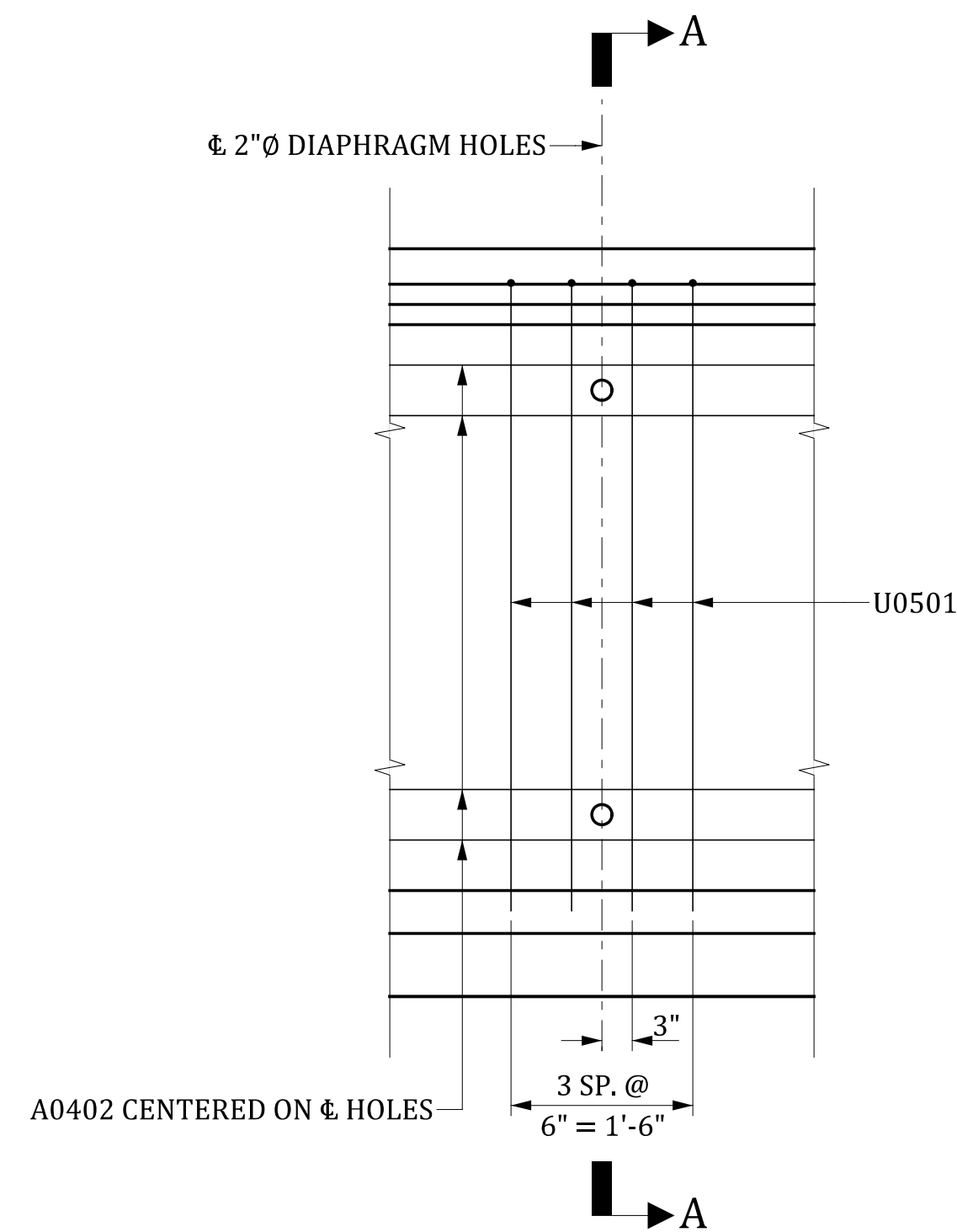
- ① OMIT THESE HOLES ON BEAM 1.
- ② OMIT THESE HOLES ON BEAM X.

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

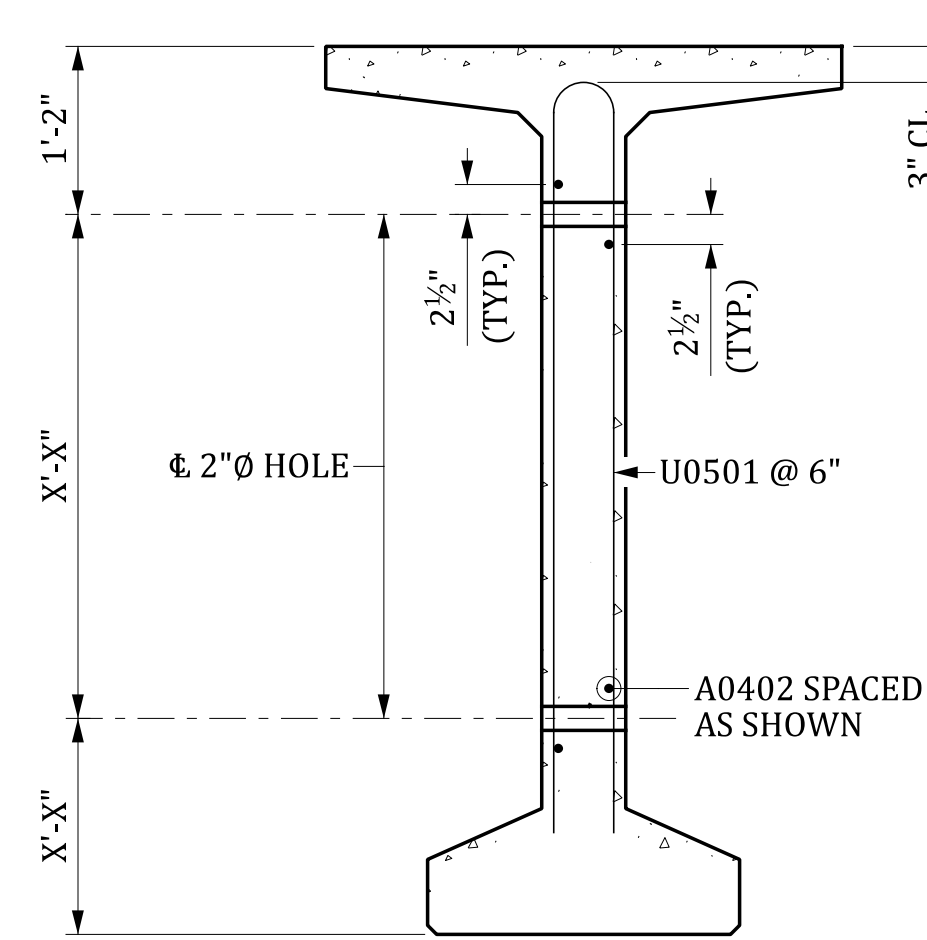
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION

\*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.

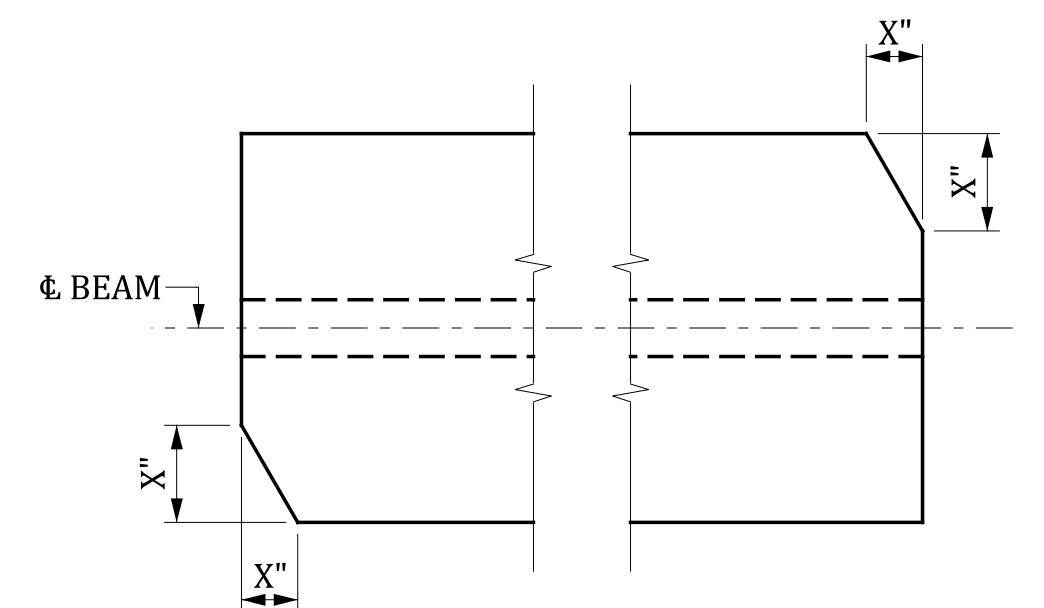
"+" INDICATES UPWARD MOVEMENT  
"-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.



**TOP FLANGE CLIP DETAIL**

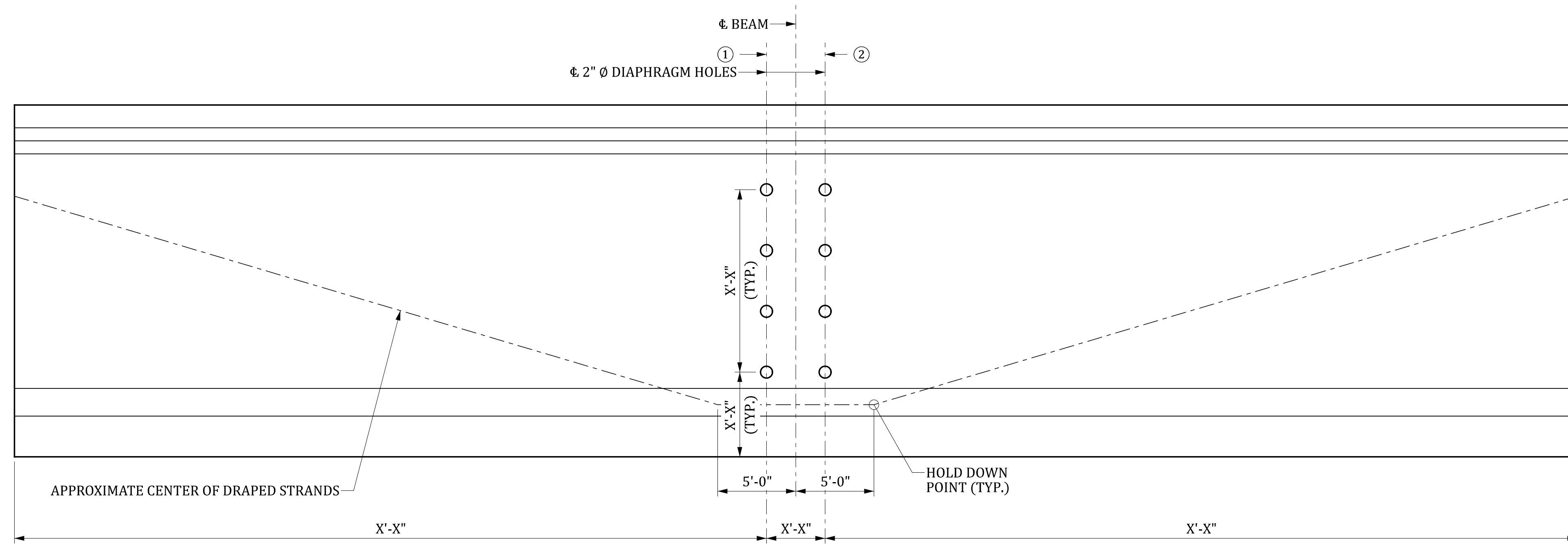
REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	04-24	DATE

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
<b>MODIFIED BULB TEE DETAILS</b> SPAN X - ALT 5	
COUNTY: ####	ROUTE: ####

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**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**  
INTERIOR BEAM SHOWN.

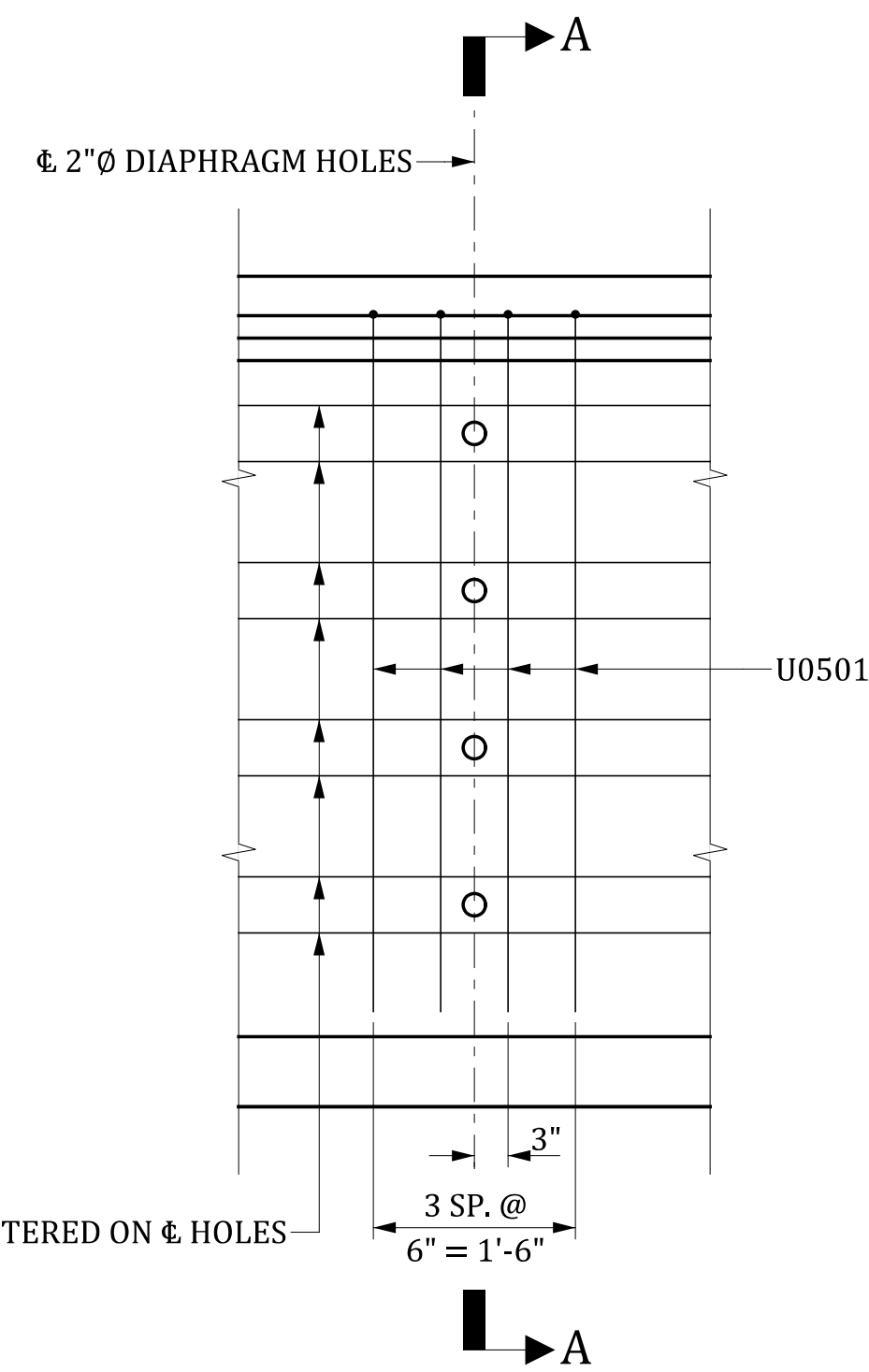
- ① OMIT THESE HOLES ON BEAM 1.
- ② OMIT THESE HOLES ON BEAM X.

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

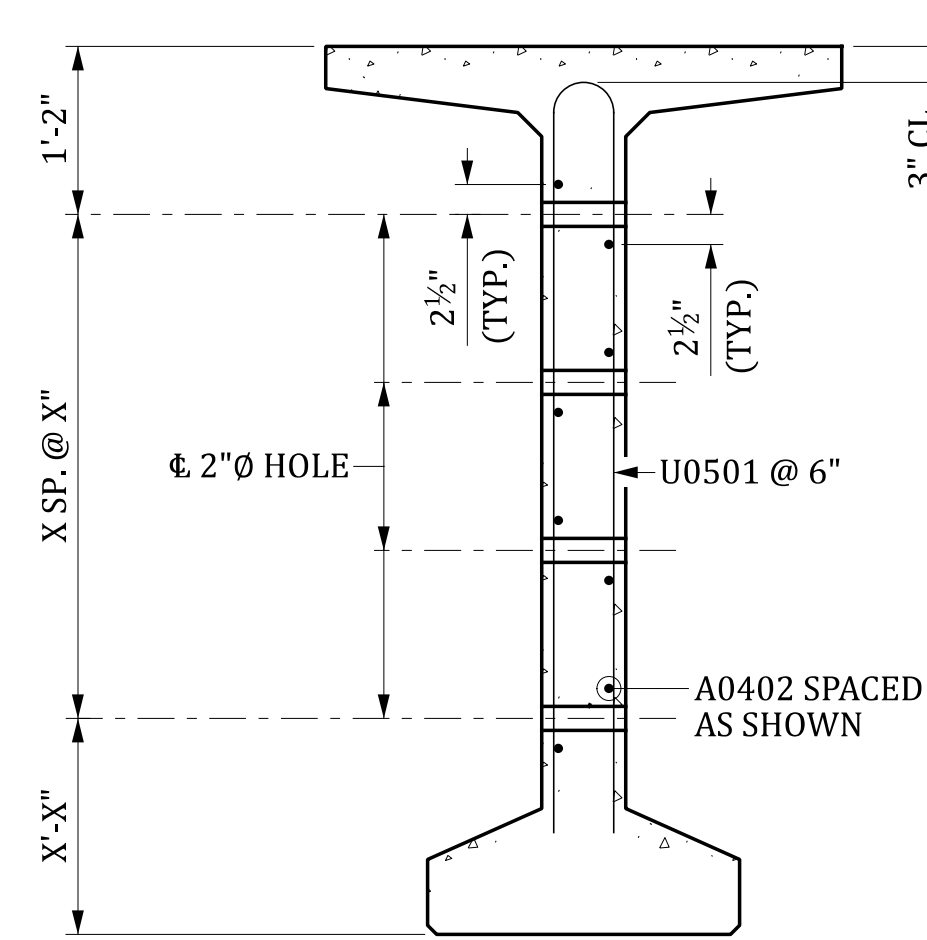
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION

\*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.

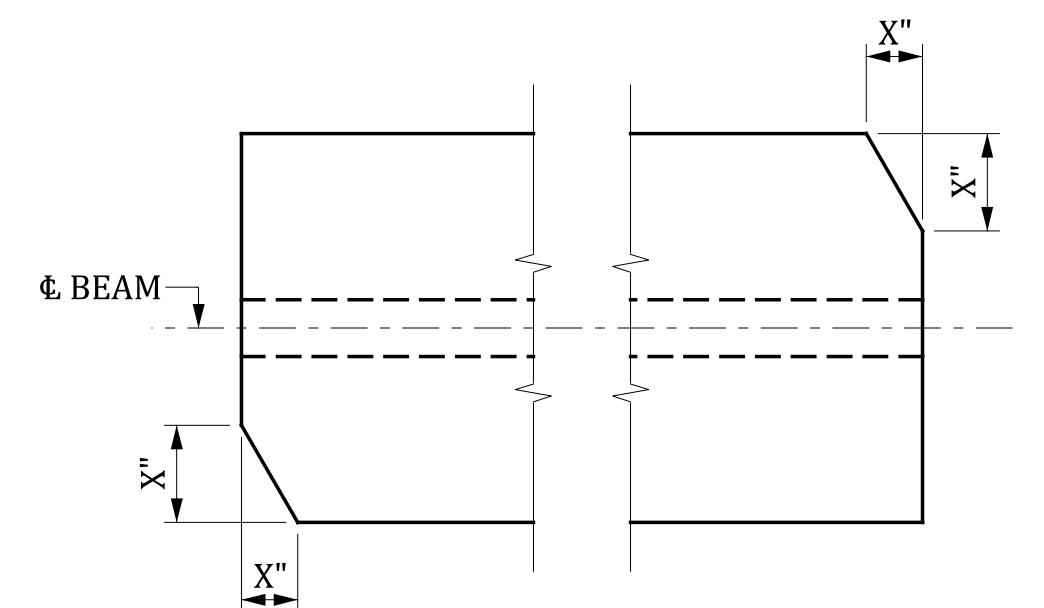
"+" INDICATES UPWARD MOVEMENT  
"-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.



**TOP FLANGE CLIP DETAIL**

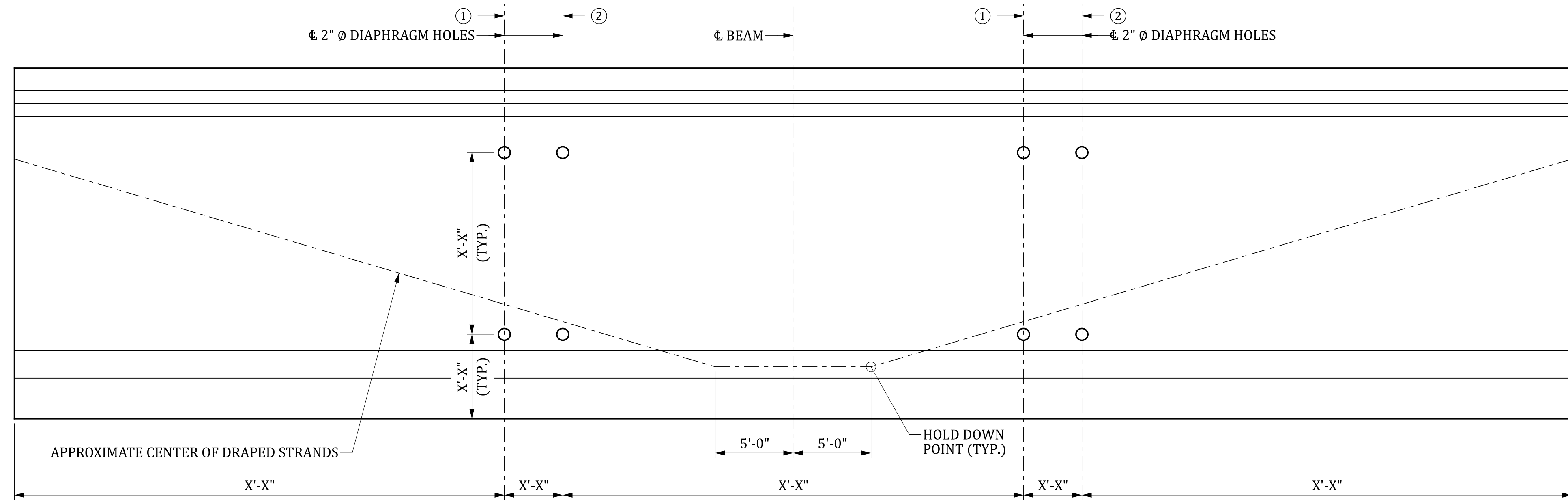
REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	04-24	DATE

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
<b>MODIFIED BULB TEE DETAILS</b> SPAN X - ALT 6	
COUNTY: ###	ROUTE: ###

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**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**  
INTERIOR BEAM SHOWN.

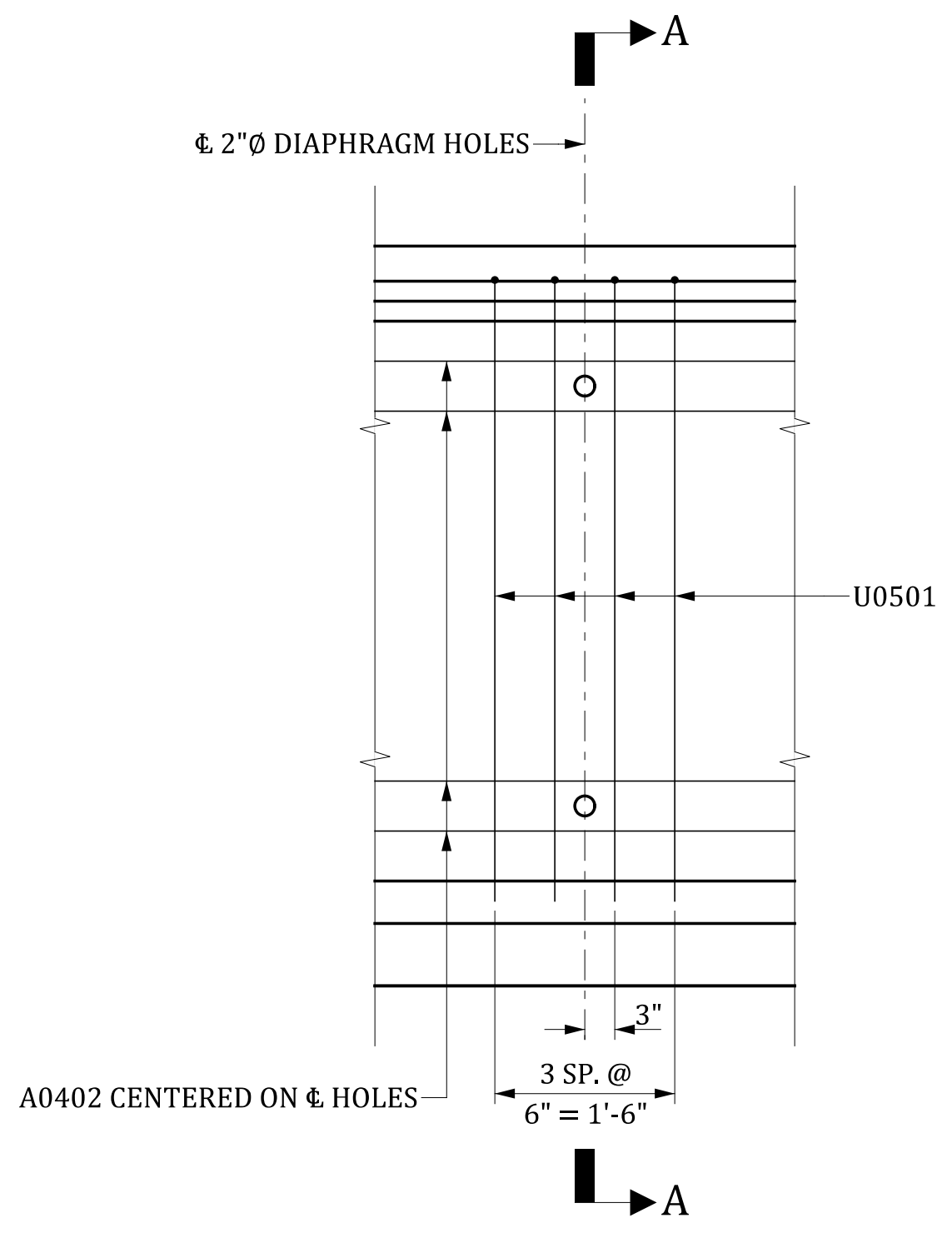
- ① OMIT THESE HOLES ON BEAM 1.
- ② OMIT THESE HOLES ON BEAM X.

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

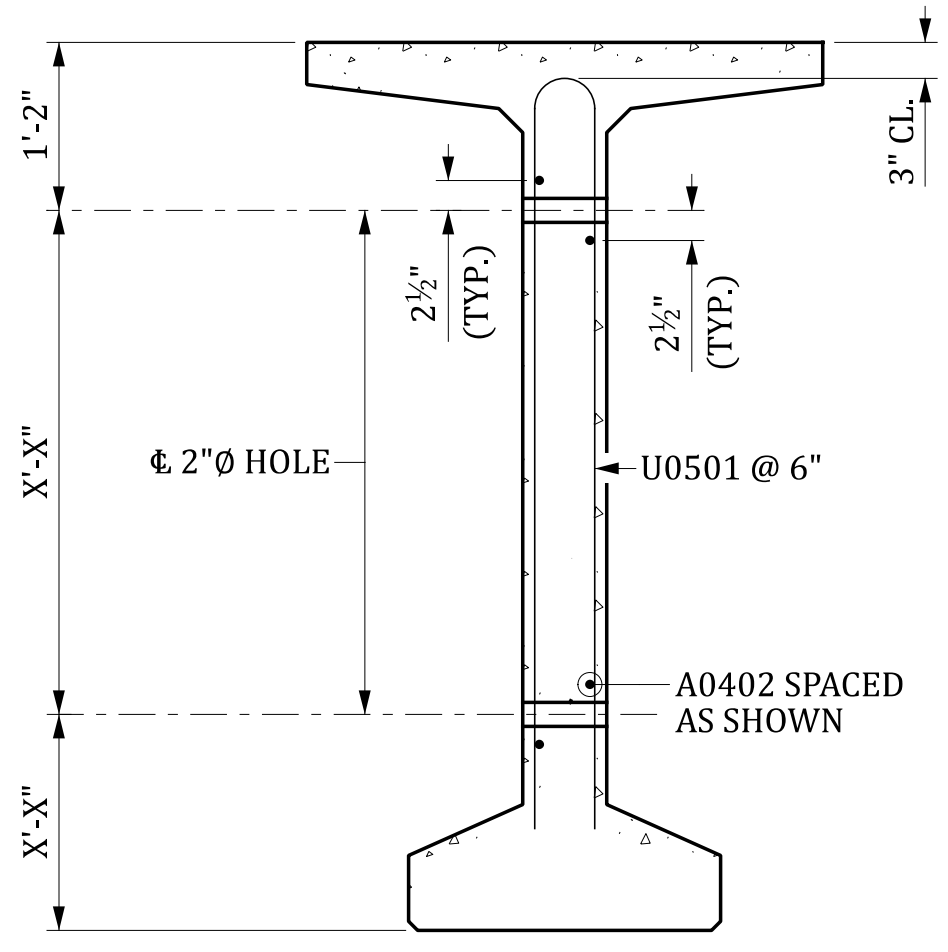
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION

\*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.

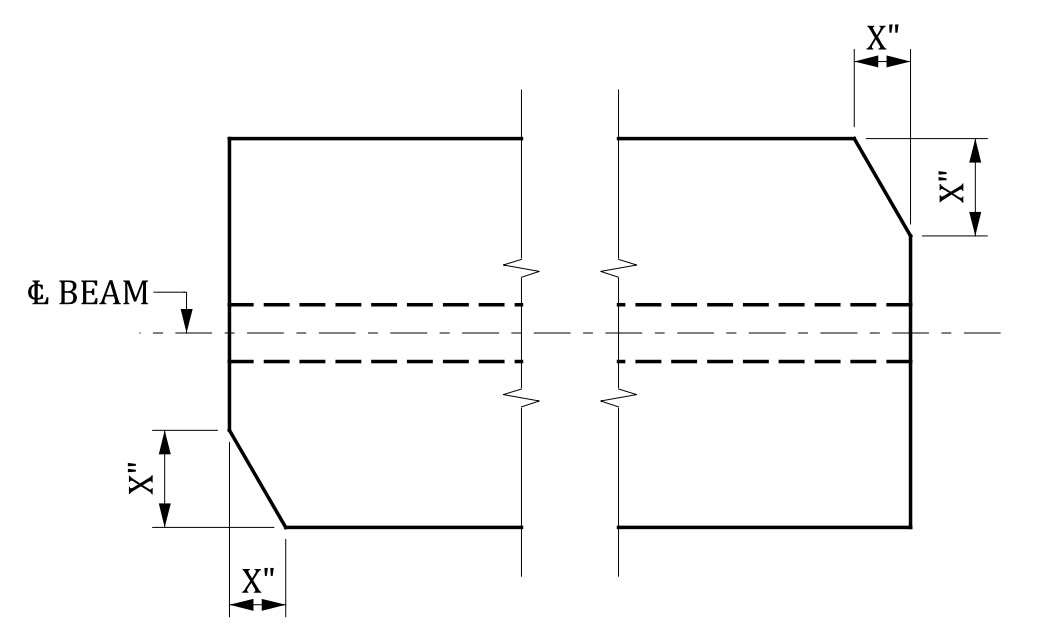
"+" INDICATES UPWARD MOVEMENT  
"-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.



**TOP FLANGE CLIP DETAIL**

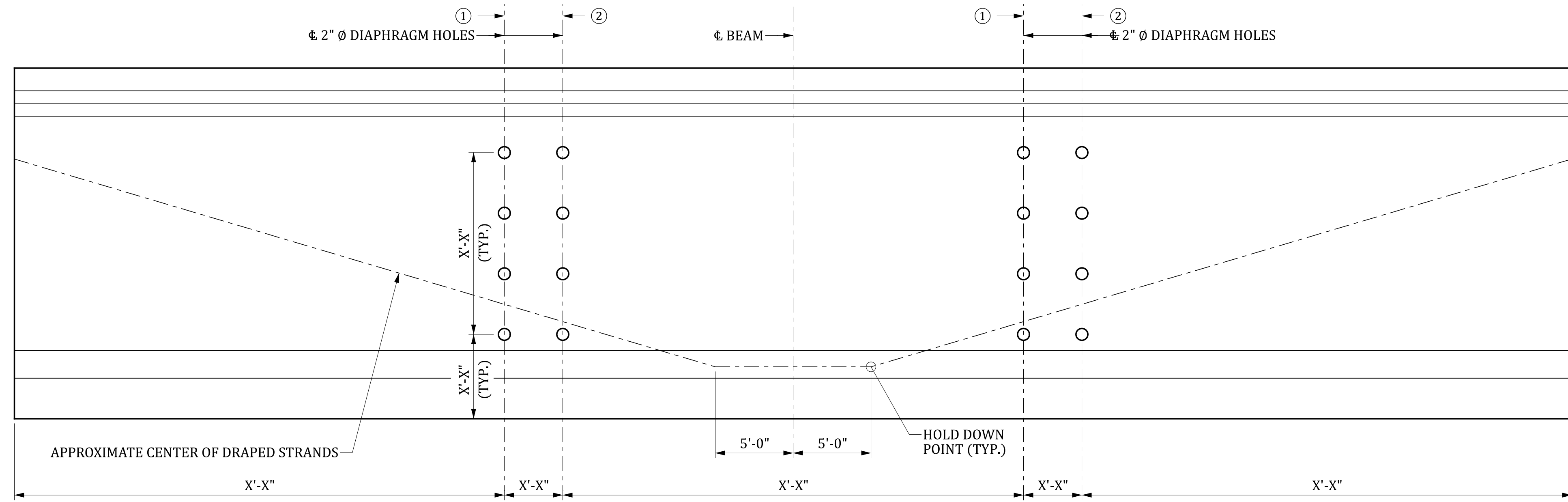
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REVIEWED					
QUAN.					
DR.	DMD	AEL	04-24		
DES.					

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
<b>MODIFIED BULB TEE DETAILS</b> SPAN X - ALT 7	
COUNTY: ####	ROUTE: ####

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**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**  
INTERIOR BEAM SHOWN.

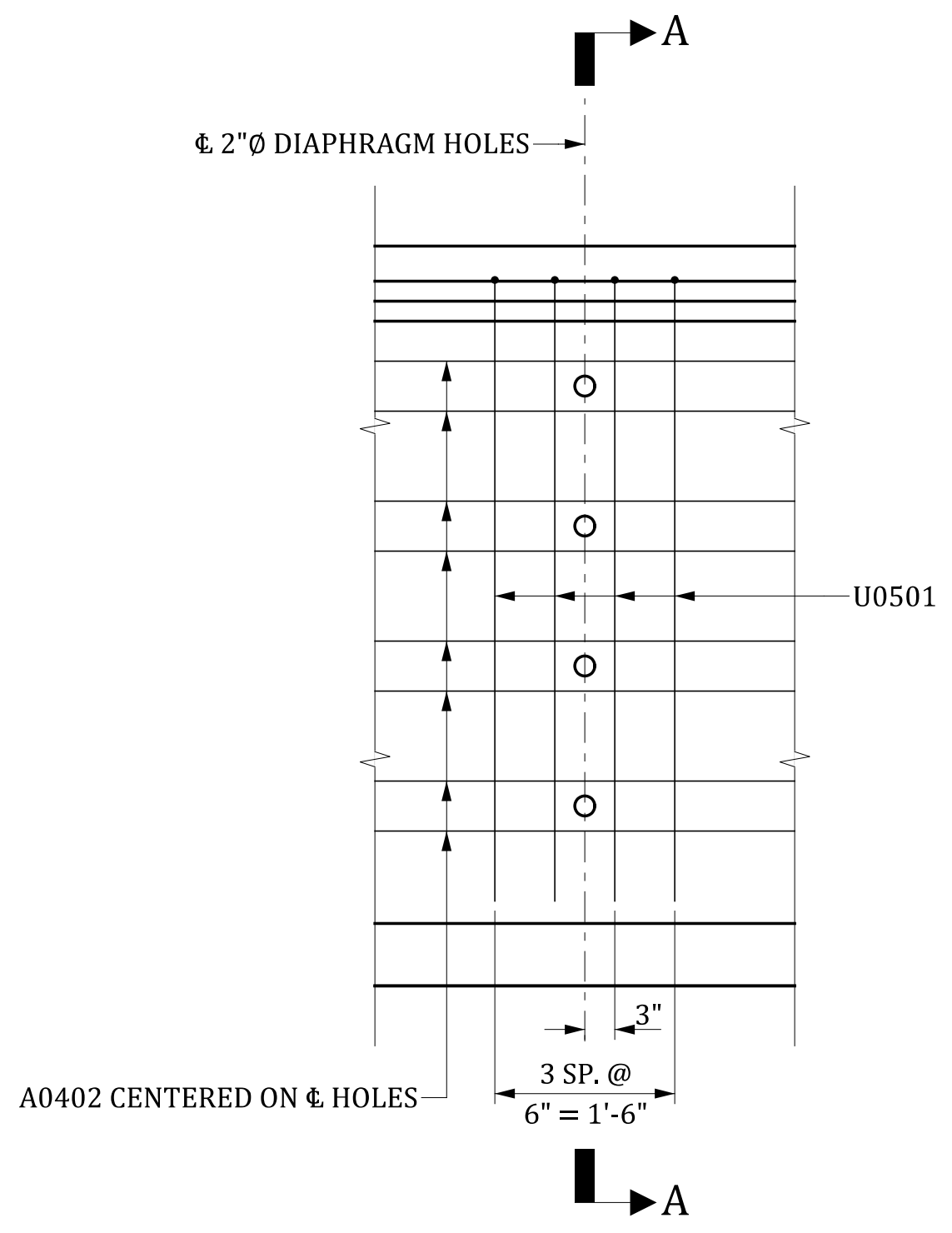
- ① OMIT THESE HOLES ON BEAM 1.
- ② OMIT THESE HOLES ON BEAM X.

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

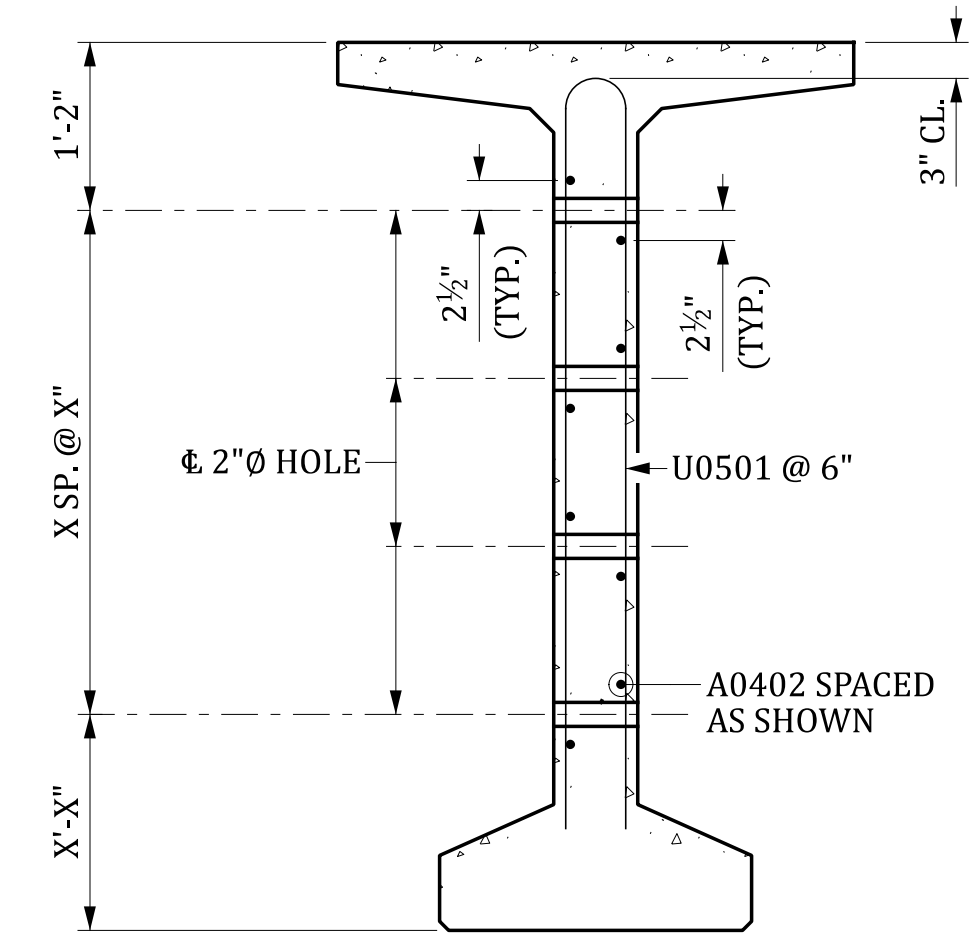
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION

\*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.

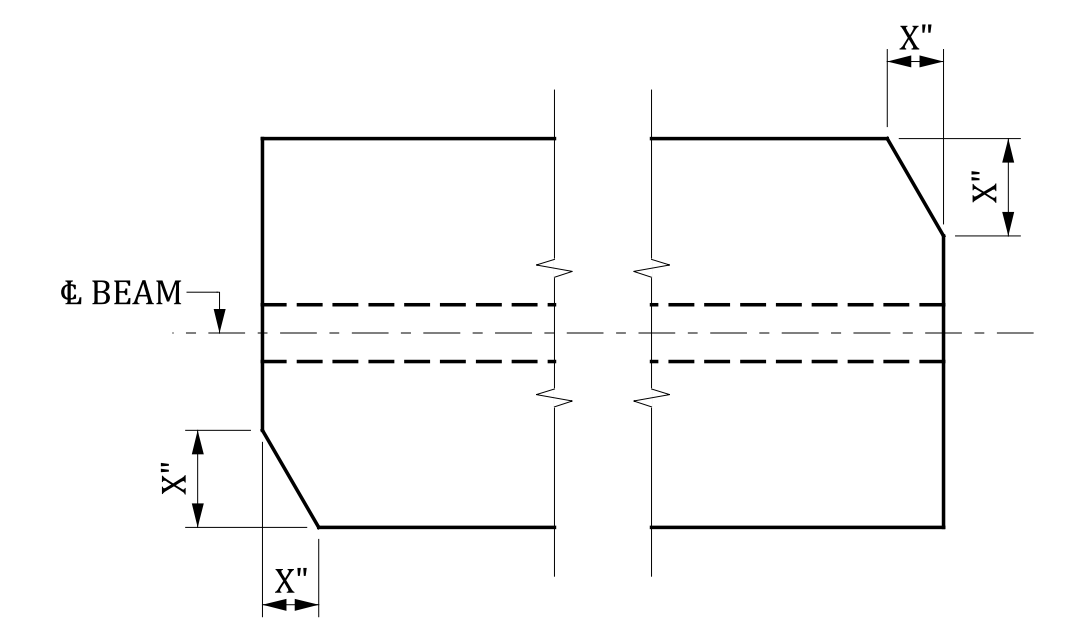
"+" INDICATES UPWARD MOVEMENT  
"-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.



**TOP FLANGE CLIP DETAIL**

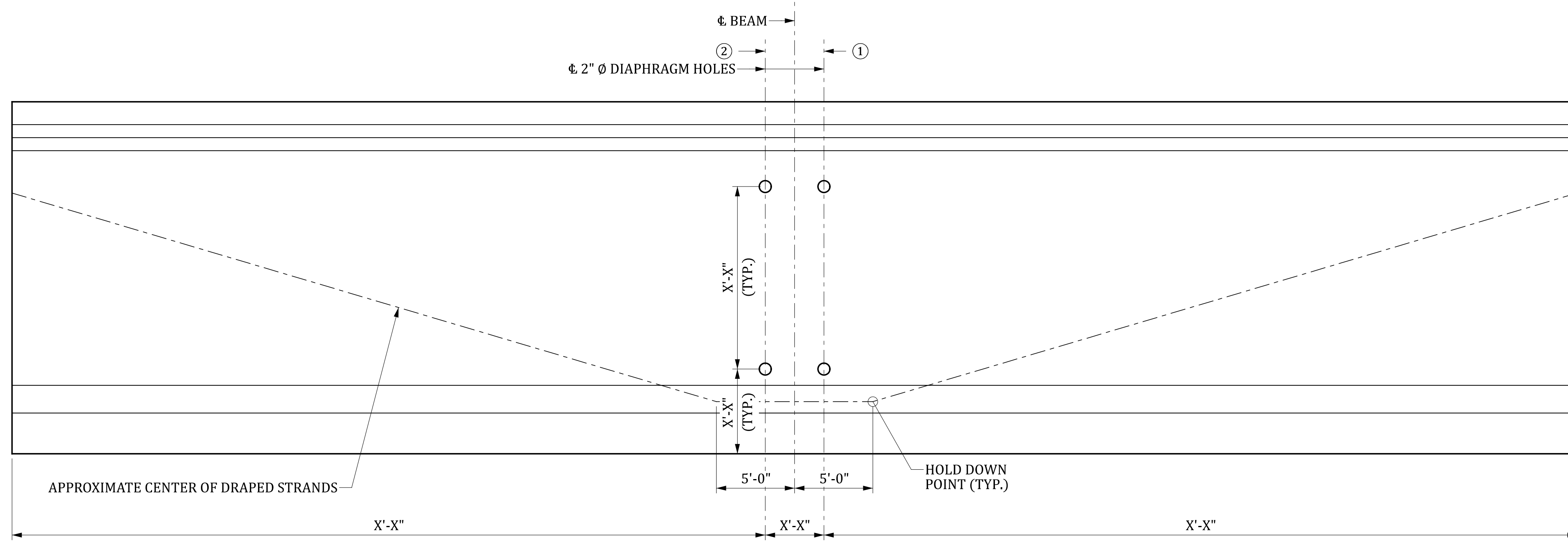
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REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	04-24	BY	CHK.	DATE

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
<b>MODIFIED BULB TEE DETAILS</b> SPAN X - ALT 8	
COUNTY: ####	ROUTE: ####



**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**  
INTERIOR BEAM SHOWN.

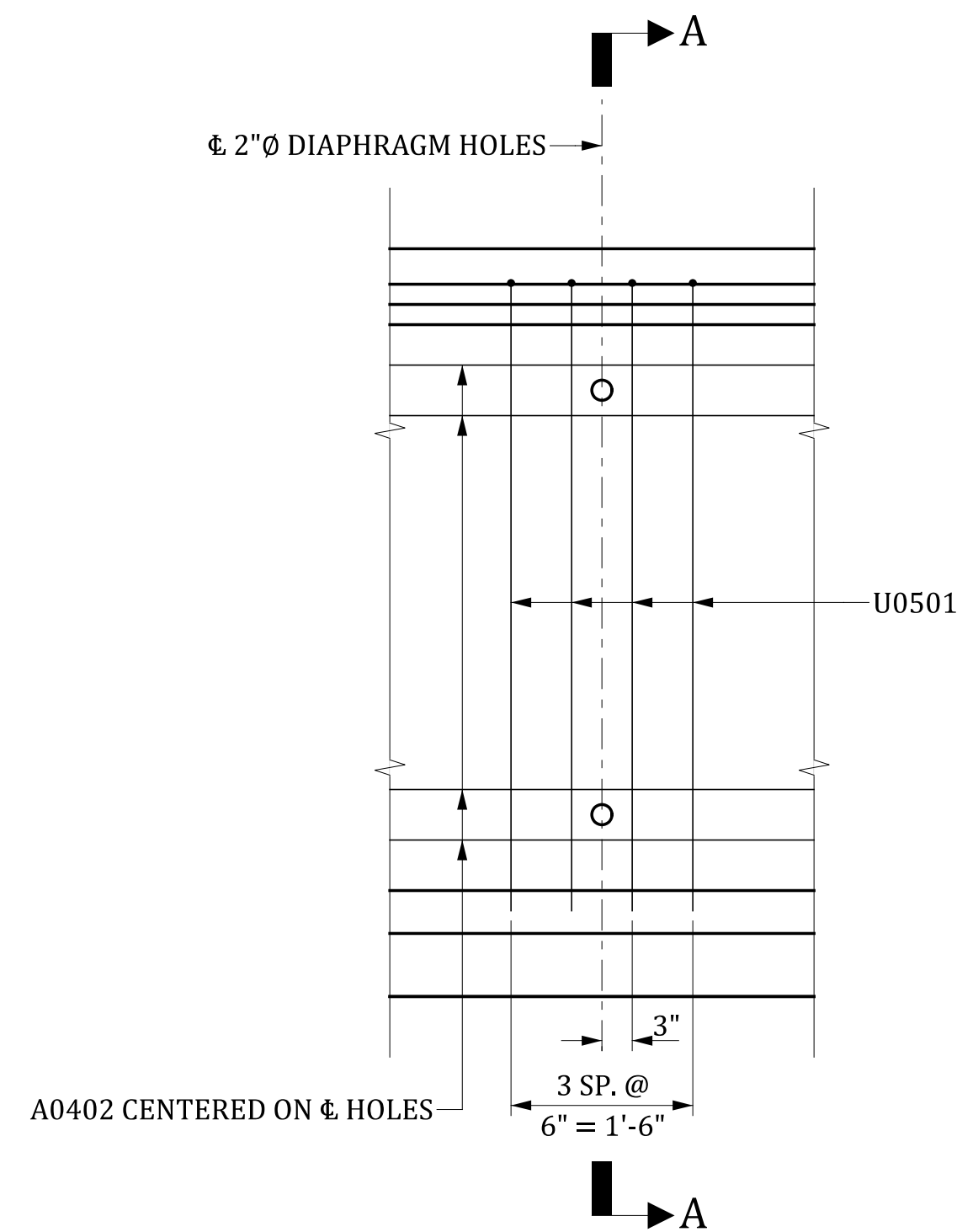
- ① OMIT THESE HOLES ON BEAM 1.
- ② OMIT THESE HOLES ON BEAM X.

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

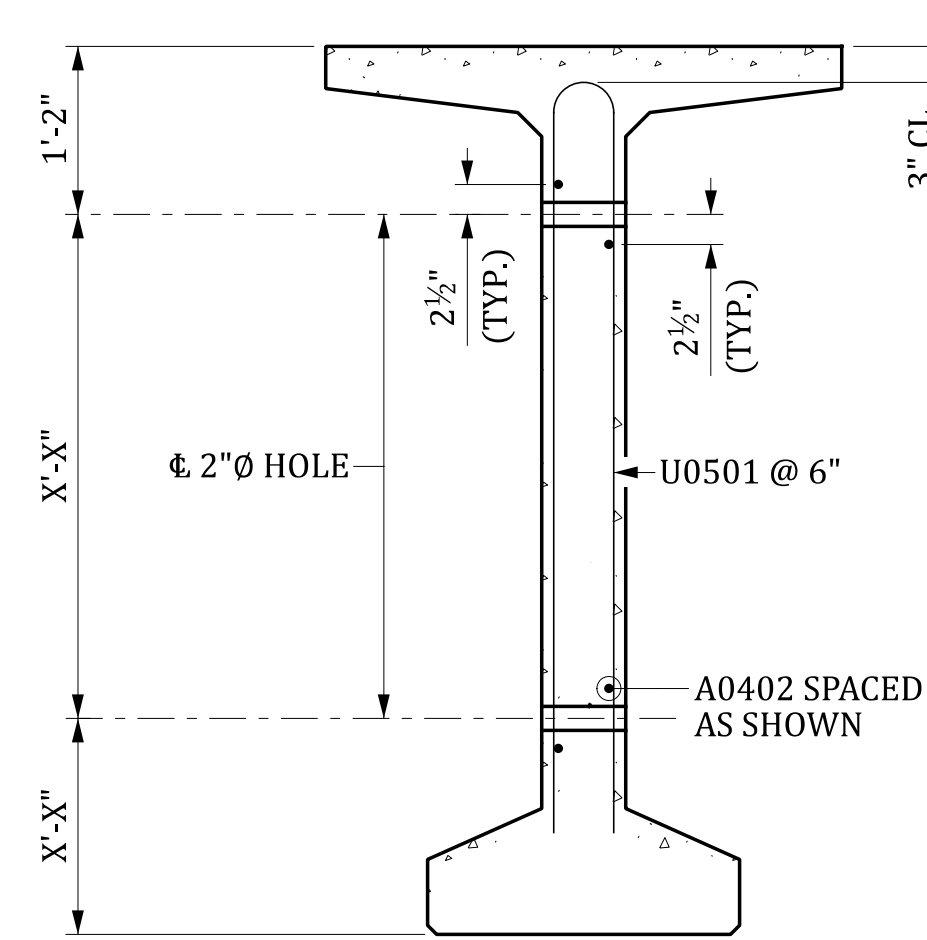
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION

\*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.

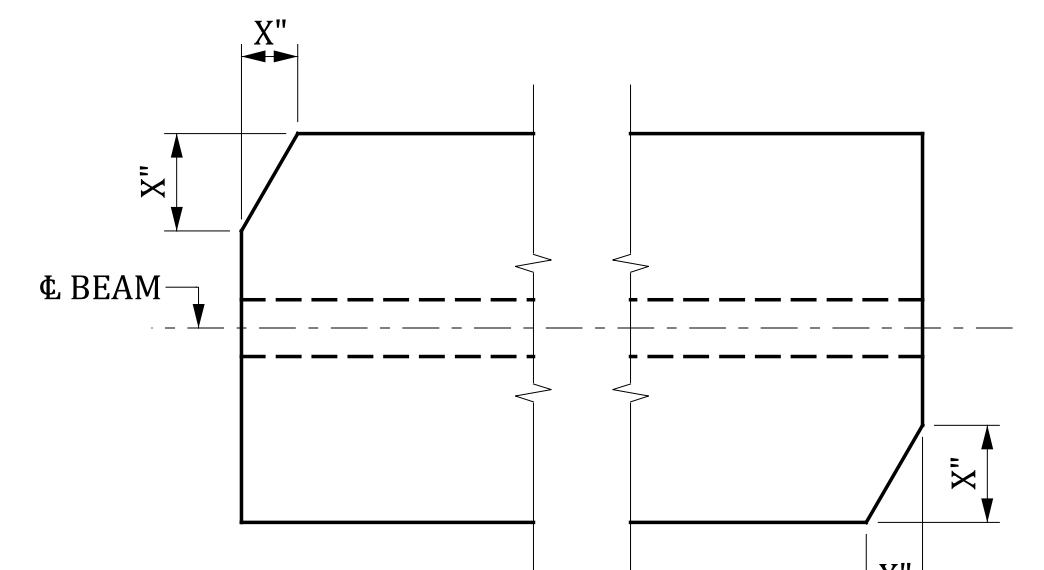
"+" INDICATES UPWARD MOVEMENT  
"-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.



**TOP FLANGE CLIP DETAIL**

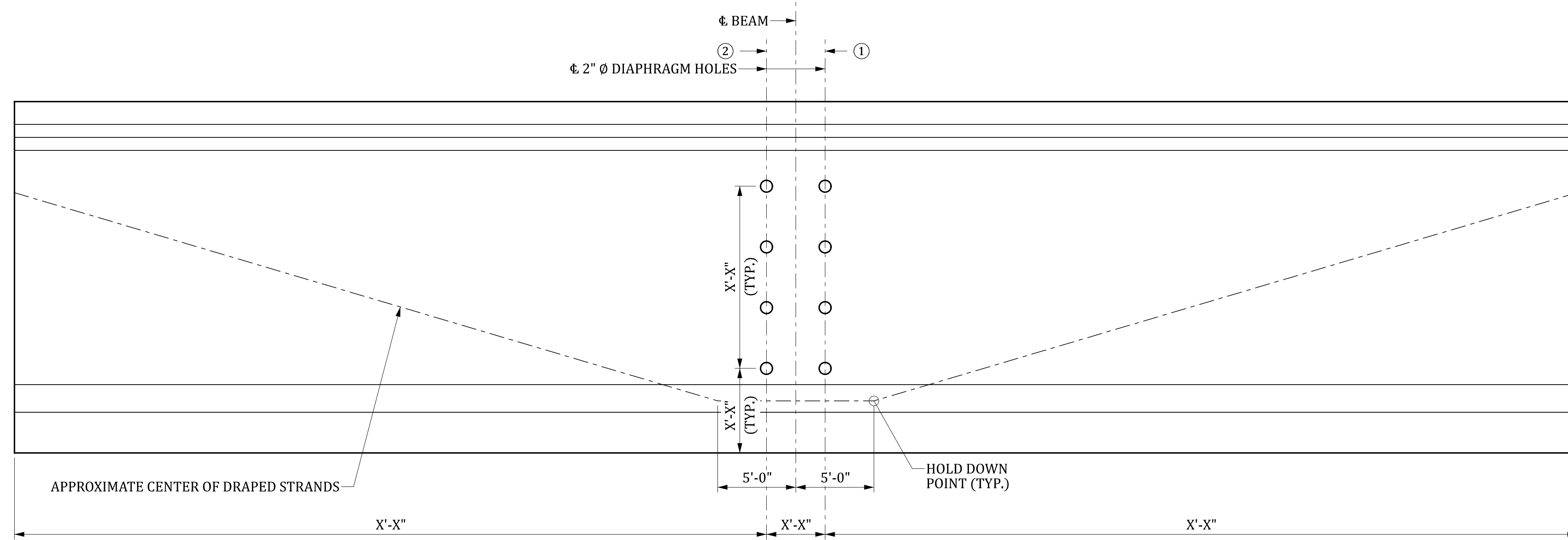
REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	04-24	DATE

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
MODIFIED BULB TEE DETAILS SPAN X - ALT 9	
COUNTY: ####	ROUTE: ####

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**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**  
INTERIOR BEAM SHOWN.

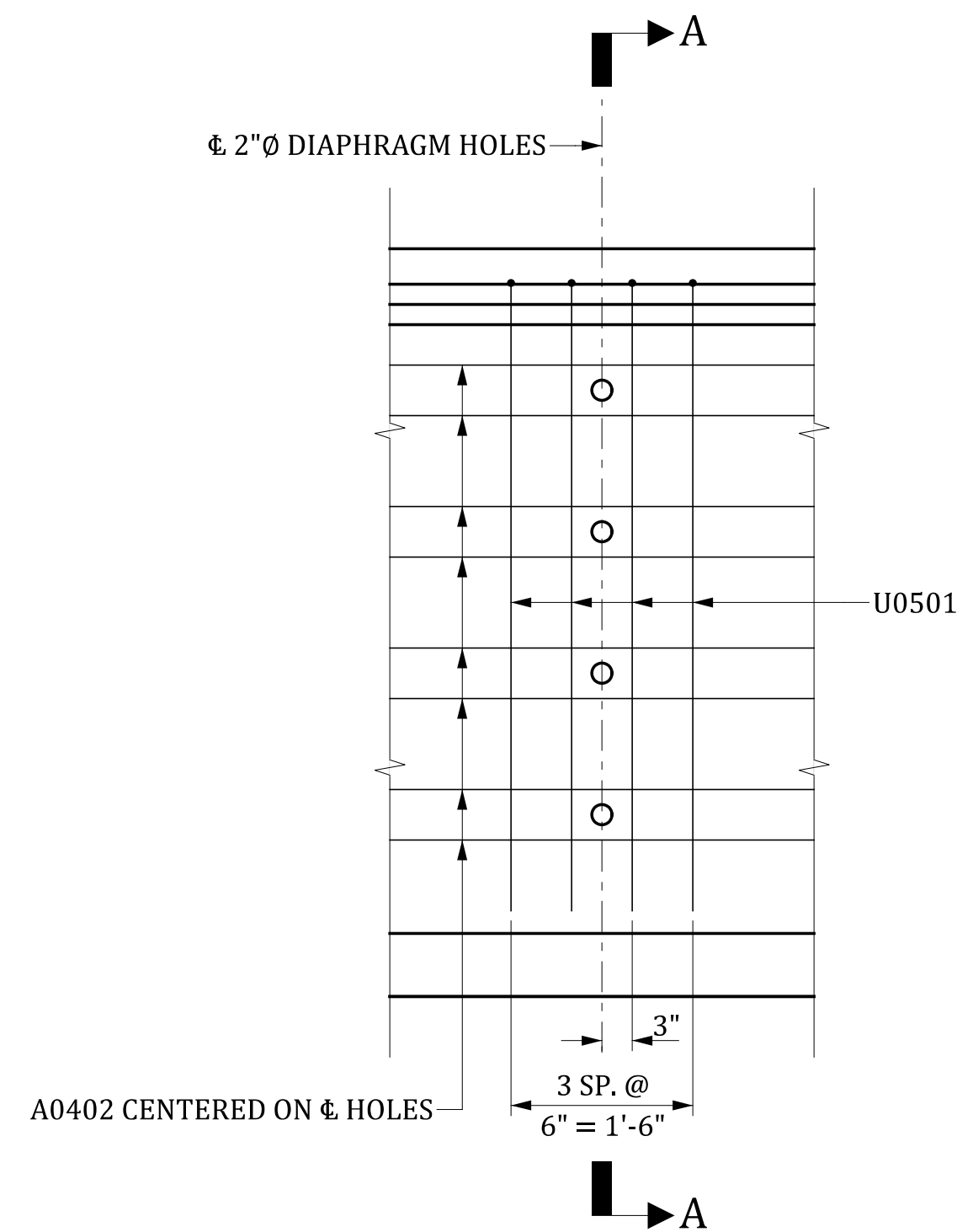
- ① OMIT THESE HOLES ON BEAM 1.
- ② OMIT THESE HOLES ON BEAM X.

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

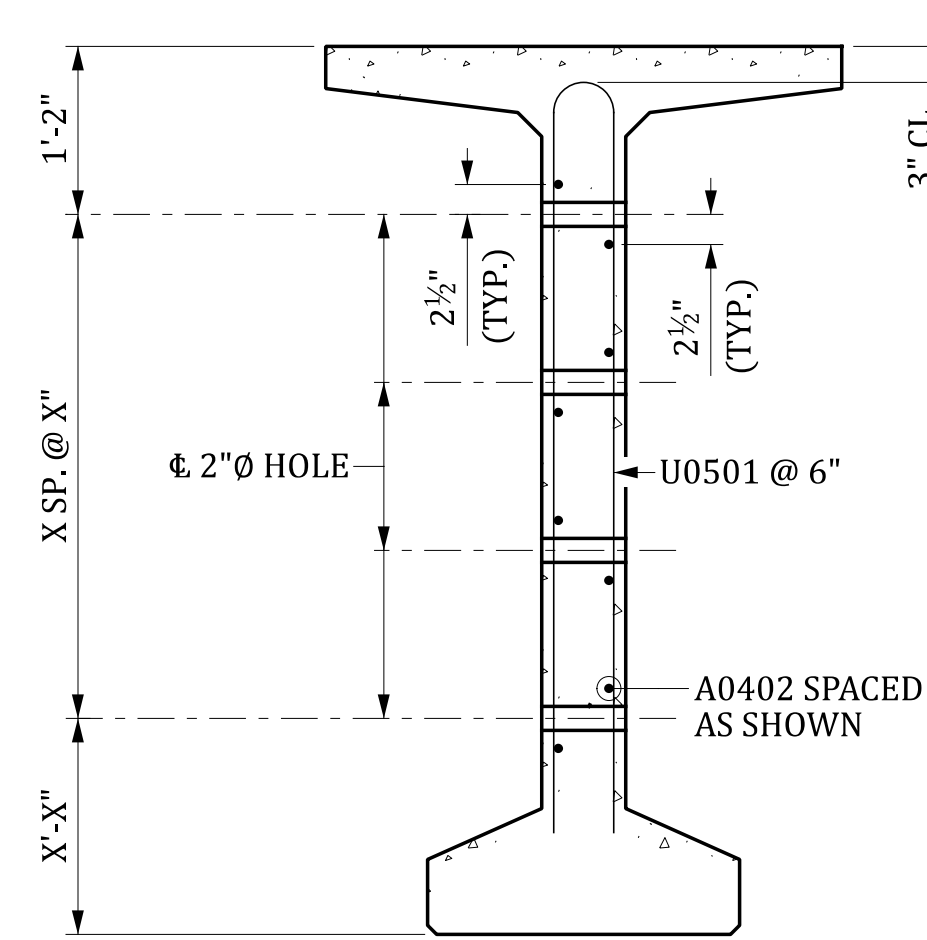
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION

\*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.

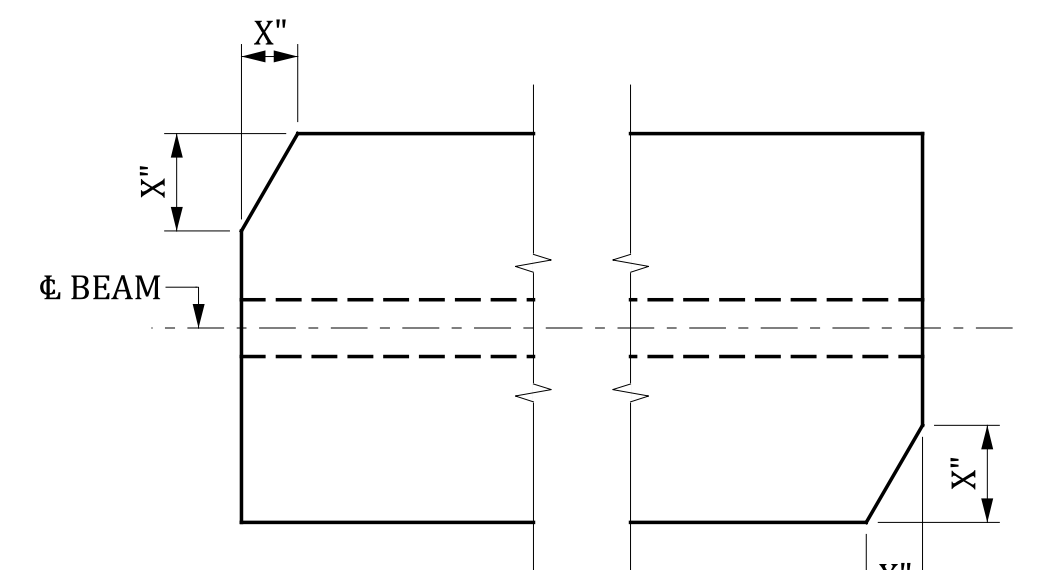
"+" INDICATES UPWARD MOVEMENT  
"-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.



**TOP FLANGE CLIP DETAIL**

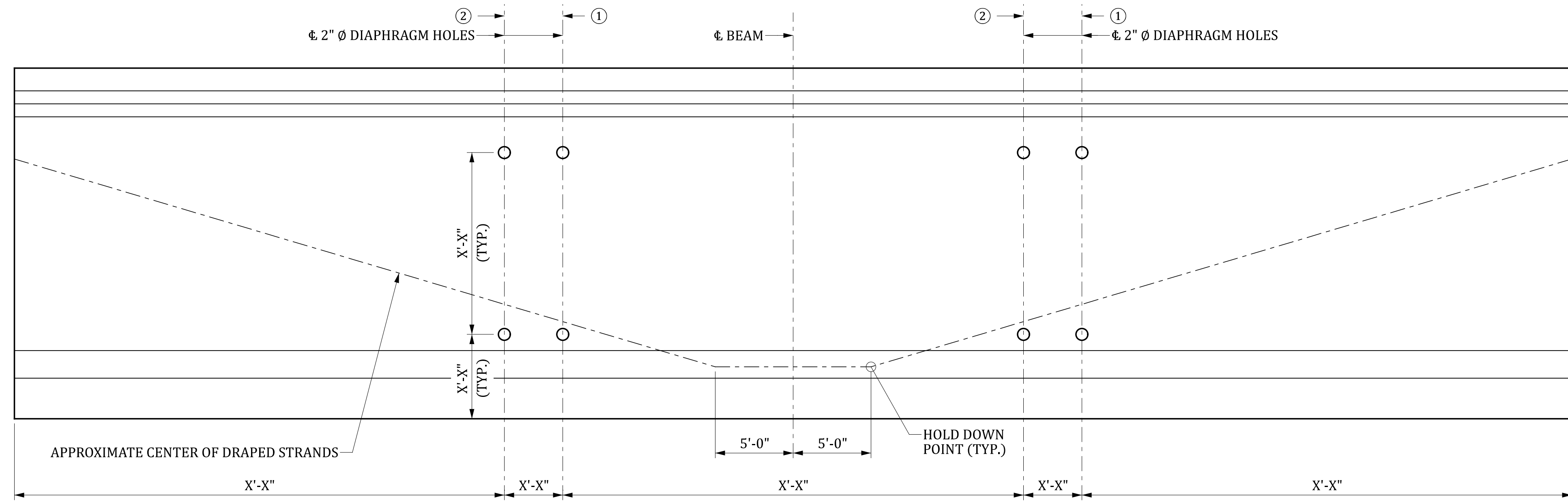
REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	04-24	DATE

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
<b>MODIFIED BULB TEE DETAILS</b> SPAN X - ALT 10	
COUNTY: ####	ROUTE: ####

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**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**  
 INTERIOR BEAM SHOWN.

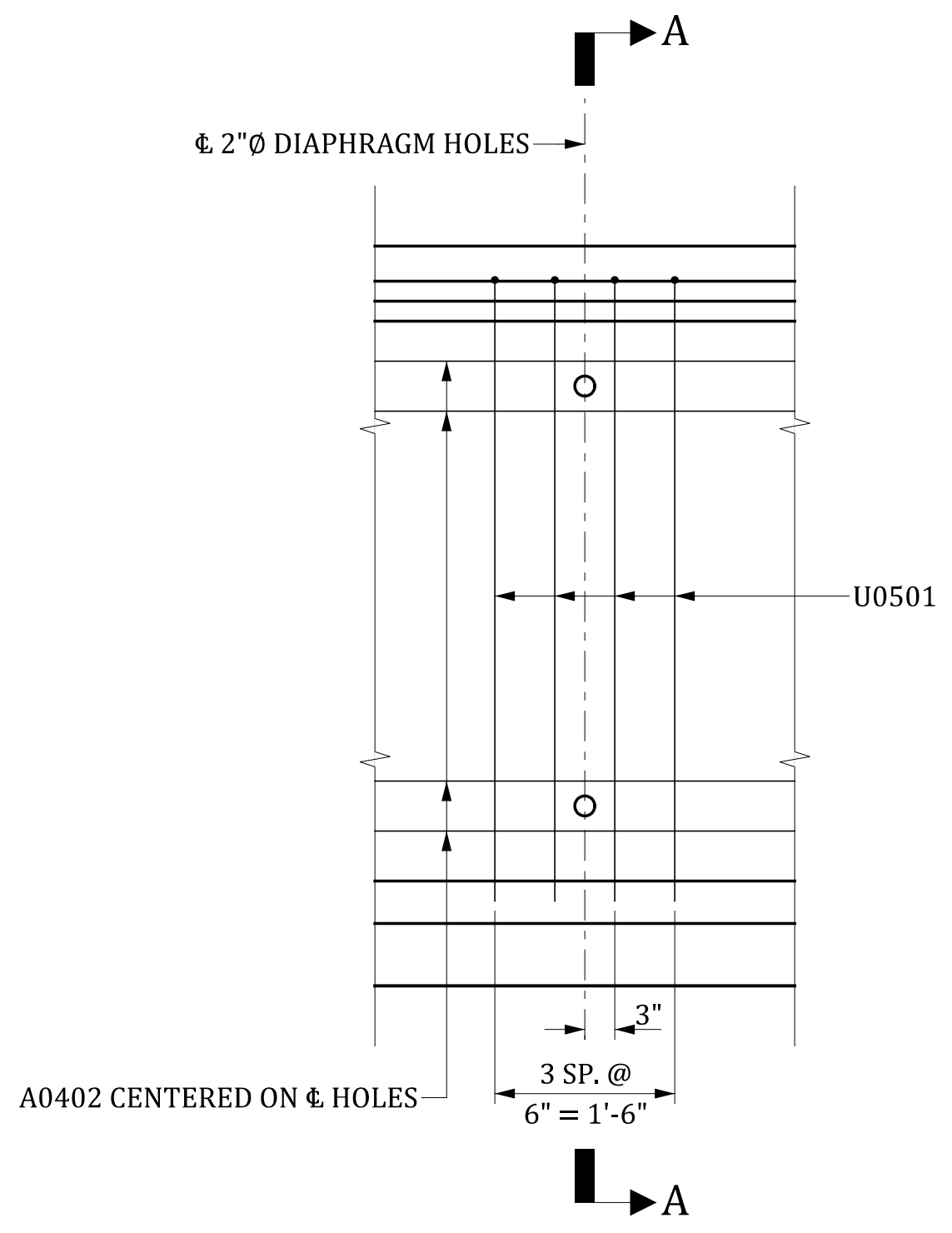
① OMIT THESE HOLES ON BEAM 1.  
 ② OMIT THESE HOLES ON BEAM X.

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

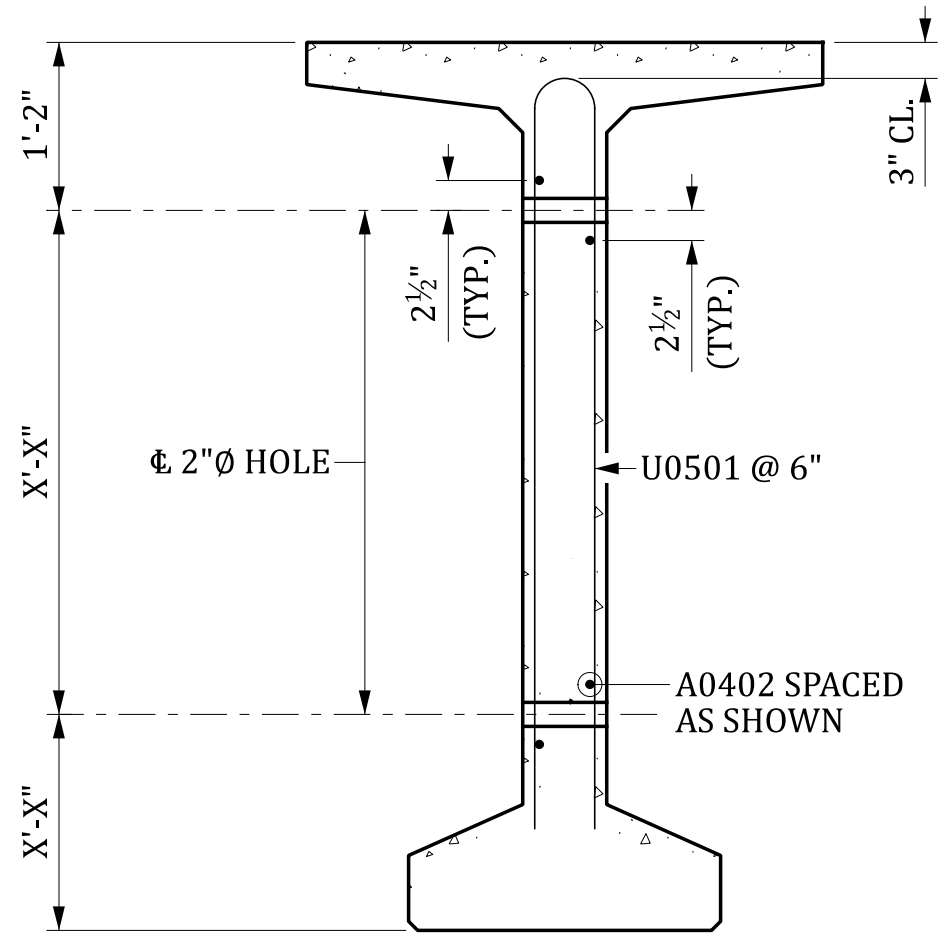
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION

\*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.

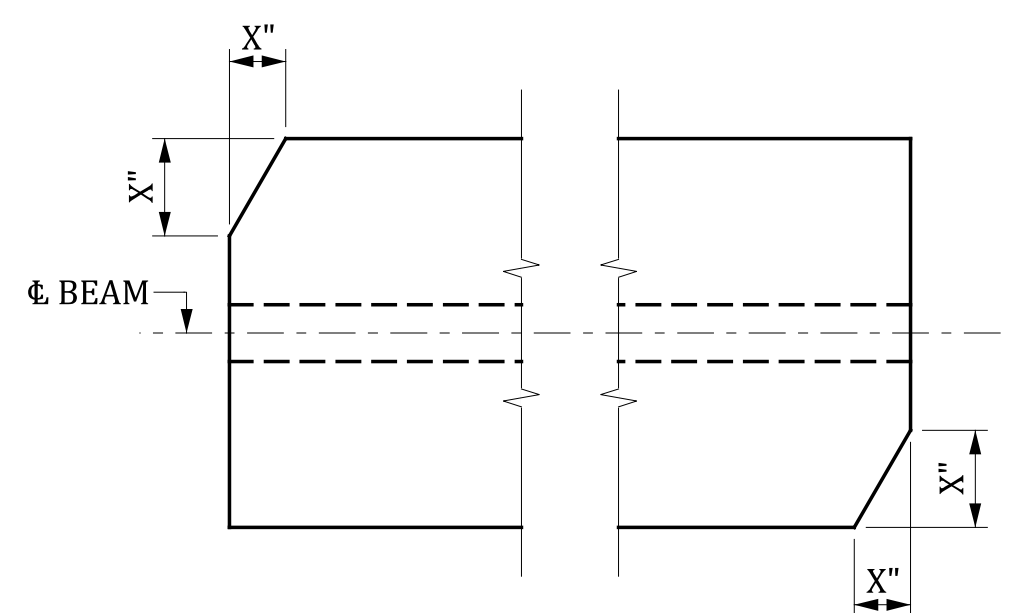
"+" INDICATES UPWARD MOVEMENT  
 "-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
 SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.



**TOP FLANGE CLIP DETAIL**

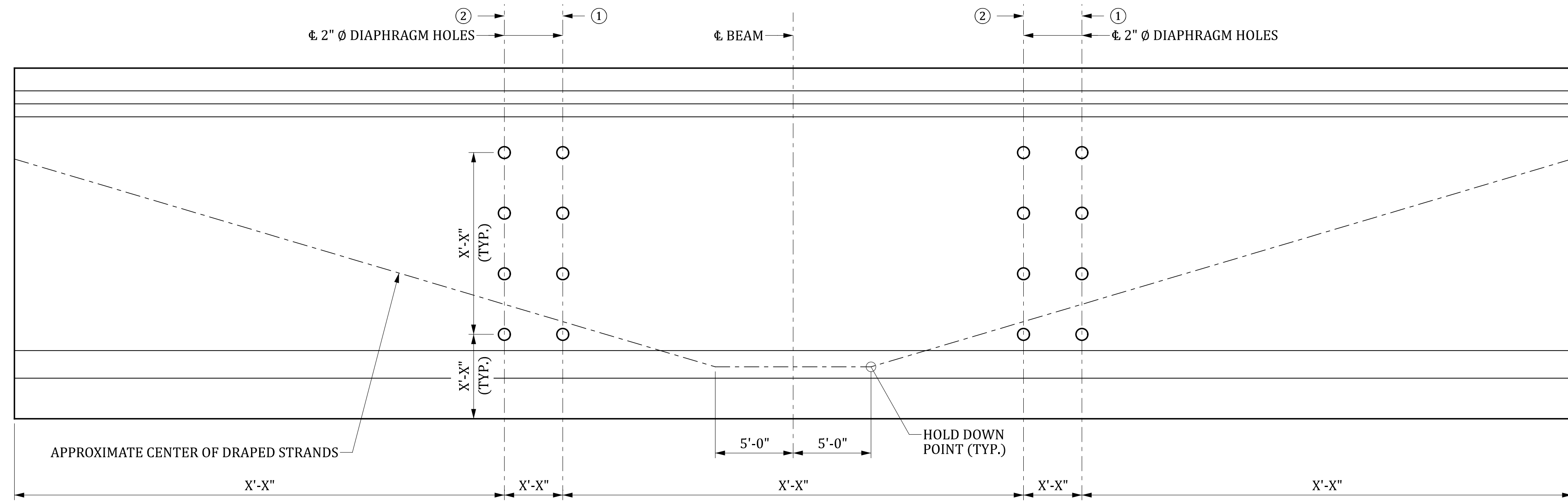
REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	04-24	DATE

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CONSULTANT NAME/LOGO
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
<b>MODIFIED BULB TEE DETAILS</b> SPAN X - ALT 11
COUNTY: #### ROUTE: ####



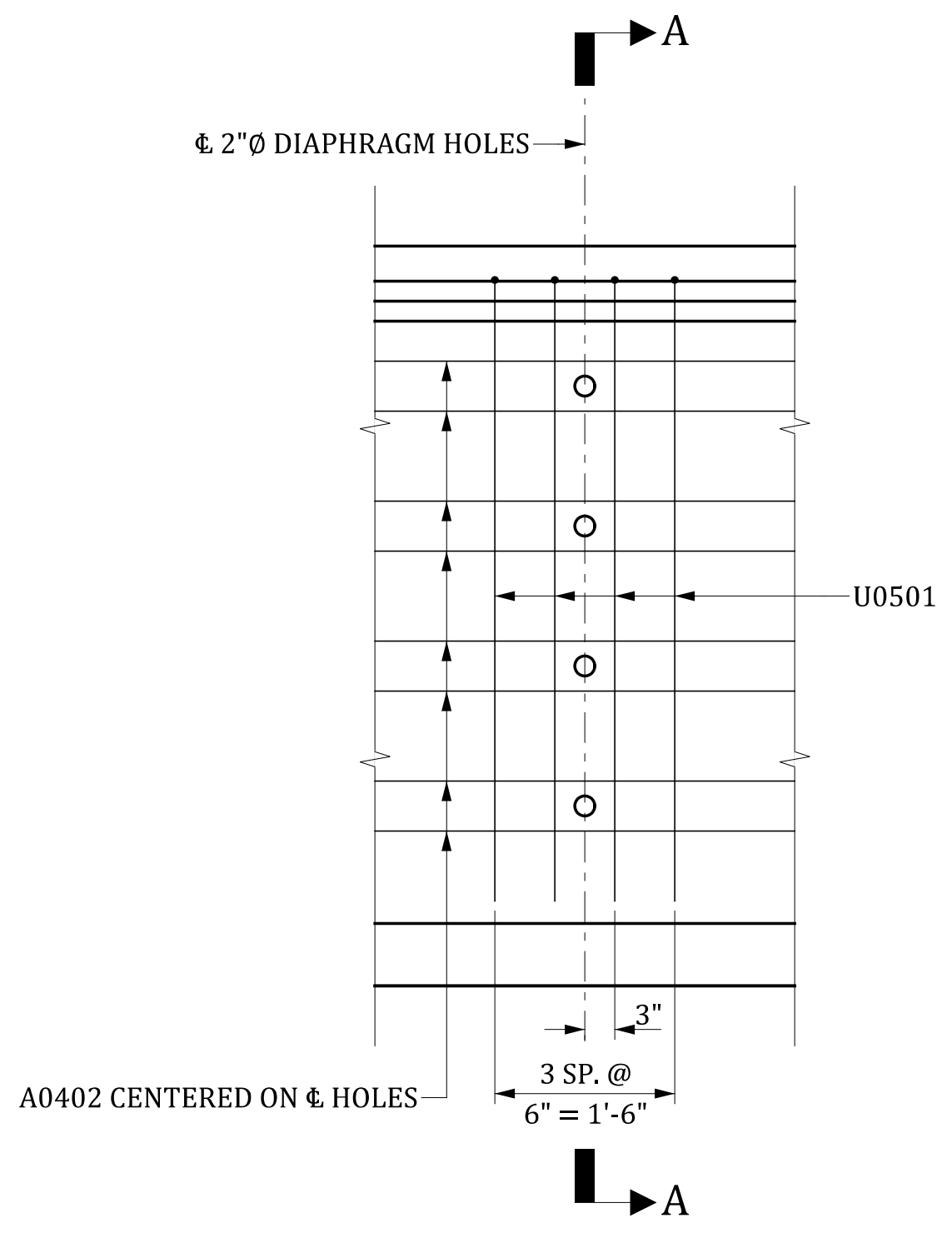


**INTERMEDIATE DIAPHRAGM HOLE LOCATION DETAIL**  
INTERIOR BEAM SHOWN.

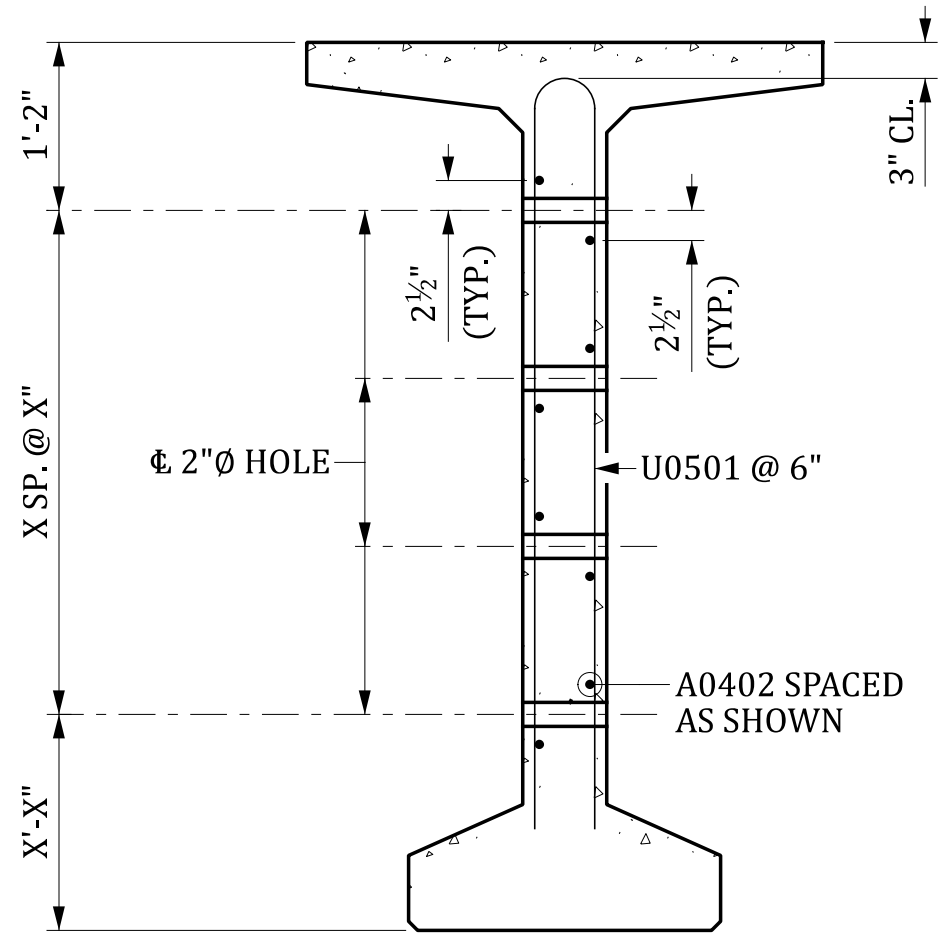
- ① OMIT THESE HOLES ON BEAM 1.
- ② OMIT THESE HOLES ON BEAM X.

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

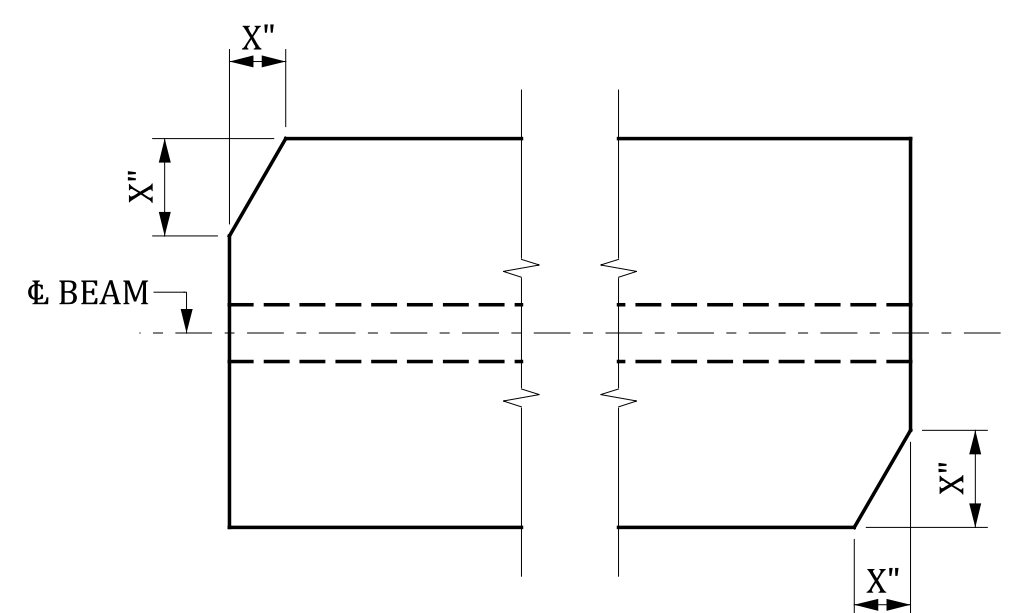
\* BASED ON A BEAM AGE OF 60 DAYS AT THE TIME OF ERECTION  
 \*\* DEFLECTION DUE TO WEIGHT OF METAL FORMS AND THE WEIGHT OF THE CONCRETE IN THE FLUTES OF THE FORMS.  
 "+" INDICATES UPWARD MOVEMENT  
 "-" INDICATES DOWNWARD MOVEMENT



**INTERMEDIATE DIAPHRAGM REINFORCEMENT DETAIL**



**SECTION A-A**  
SHOWING HOLES AND ADDITIONAL REINFORCING REQUIRED AT INTERMEDIATE DIAPHRAGMS.



**TOP FLANGE CLIP DETAIL**

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REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION

REVIEWED	QUAN.	DR.	DMD	AEL	04-24	DATE

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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
<b>MODIFIED BULB TEE DETAILS</b> SPAN X - ALT 12	
COUNTY: ####	ROUTE: ####

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.

INCLUDE STRAND BENDING PROCEDURE IN SHOP PLANS.

GALVANIZE ALL OVERHANG BRACKETS IN THE TOP FLANGE OF EXTERIOR BEAMS IN ACCORDANCE WITH AASHTO M 111, AASHTO M 232, OR ASTM F 2329 AS APPROPRIATE AND DETAIL 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 0.6" Ø LOW RELAXATION STRANDS IS 43.9 KIPS. DO NOT RELEASE THE STRANDS UNTIL THE COMPRESSIVE STRENGTH OF THE CONCRETE HAS REACHED THE VALUE SHOWN FOR f<sub>ci</sub>.

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 ACROSS WIDTH OF FLANGE.

ALWAYS MAINTAIN PRESTRESSED CONCRETE BEAMS IN AN UPRIGHT POSITION. WHEN PLACING OR STORING BEAMS, ENSURE BEAM SUPPORTS ARE LOCATED ONLY UNDER THE SOLE PLATES.

LOCATE HOLES FOR DIAPHRAGMS OR CROSS FRAMES AS SHOWN ON "MODIFIED BULB TEE DETAILS" SHEET. FORM HOLES WITH 2" INSIDE Ø PIPE AND PREVENT MOVEMENT DURING CASTING BY SECURELY FASTENING THE PIPE.

CONTRACTOR IS RESPONSIBLE FOR INVESTIGATING THE CAPACITY OF BEAM FLANGES TO ENSURE FLANGES ARE ADEQUATE TO SUPPORT ALL CONSTRUCTION LOADS. A MINIMUM OF #4 REINFORCING BARS PLACED TRANSVERSELY AT 24" SPACING IS REQUIRED IN ALL MODIFIED BULB TEE BEAM TOP FLANGES.

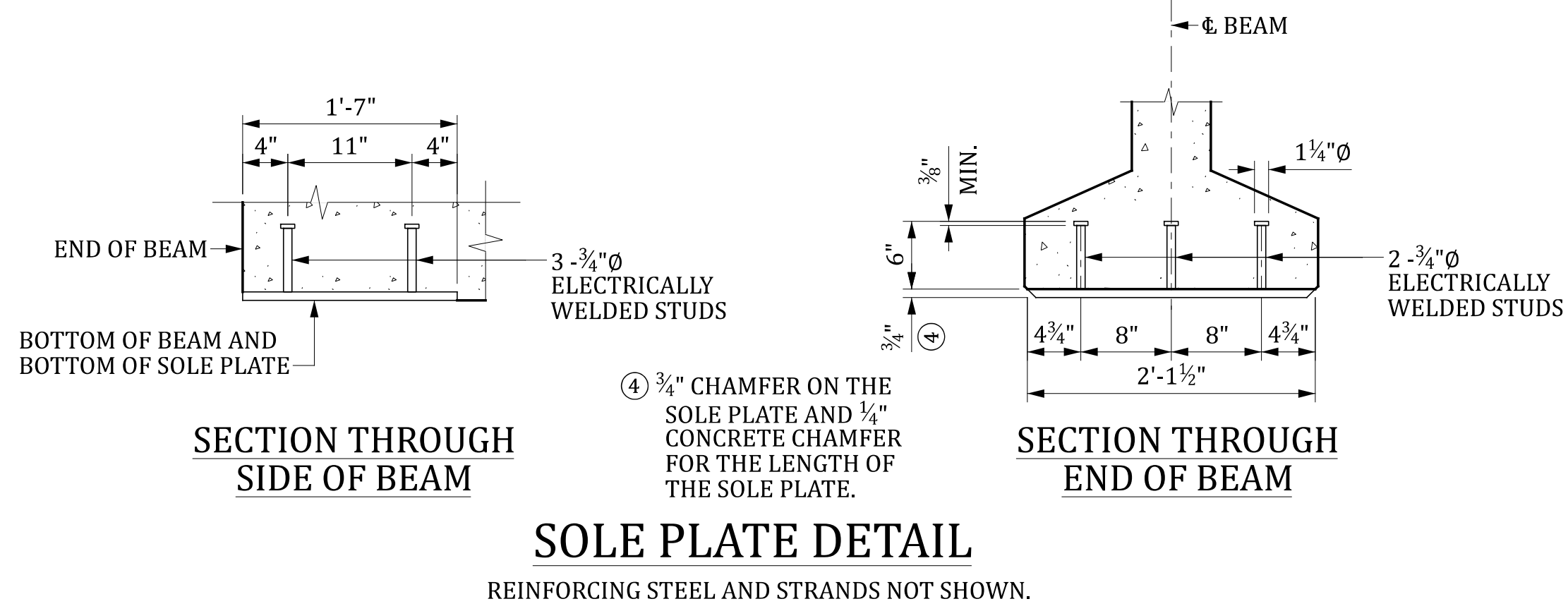
DEBONDING:

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 POLYPROPYLENE 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.

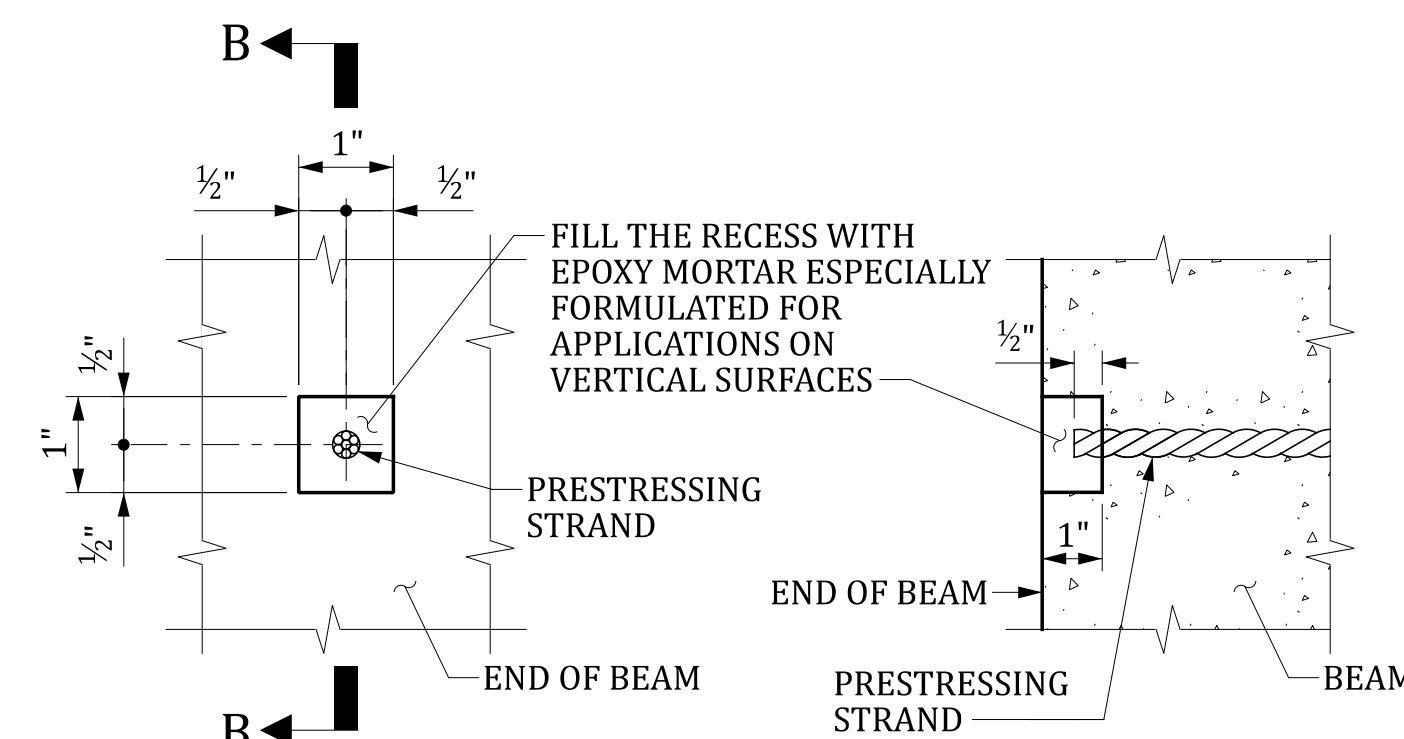
2) RELEASE STRANDS IN ACCORDANCE WITH SECTION 704 OF THE STANDARD SPECIFICATIONS.

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.

a	LENGTH	±1/4" PER 25' LENGTH, ±1" MAX.
b	WIDTH (OVERALL)	+3/8", -1/4"
b <sub>1</sub>	WEB WIDTH	+3/8", -1/4"
c	DEPTH (OVERALL)	+1/2", -1/4"
c <sub>1</sub>	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)	±1/4"
	LOCATION OF STRAND (BUNDLED)	±1/2"
k <sub>1</sub>	LOCATION OF HARP POINTS FOR HARPED STRANDS FROM DESIGN LOCATION	±20"
k <sub>2</sub>	LOCATION OF POST-TENSIONING DUCT	±1/4"
l <sub>1</sub>	LOCATION OF EMBEDMENT	±1"
l <sub>2</sub>	TIPPING AND FLUSHNESS OF EMBEDMENT	±1/4"
m <sub>1</sub>	LOCATION OF BEARING ASSEMBLY	±5/8"
m <sub>2</sub>	TIPPING AND FLUSHNESS OF BEARING ASSEMBLY	±1/8"
p	LOCATION OF INSERTS, SLEEVES, OR HOLES FOR STRUCTURAL CONNECTIONS	±1/2"
q <sub>1</sub>	LOCATION OF HANDLING DEVICE PARALLEL TO LENGTH OF MEMBER	±6"
q <sub>2</sub>	LOCATION OF HANDLING DEVICE TRANSVERSE TO LENGTH OF MEMBER	±1"
s <sub>1</sub>	LONGITUDINAL SPACING OF STIRRUPS	±2"
s <sub>2</sub>	LONGITUDINAL SPACING OF STIRRUPS WITHIN DISTANCE "C" FROM MEMBER ENDS	±1"
s <sub>3</sub>	STIRRUP PROJECTION FROM BEAM SURFACE	+1/4", -1/2"
s <sub>4</sub>	PRESTRESSED STRAND PROJECTION FROM BEAM END	±1/2"

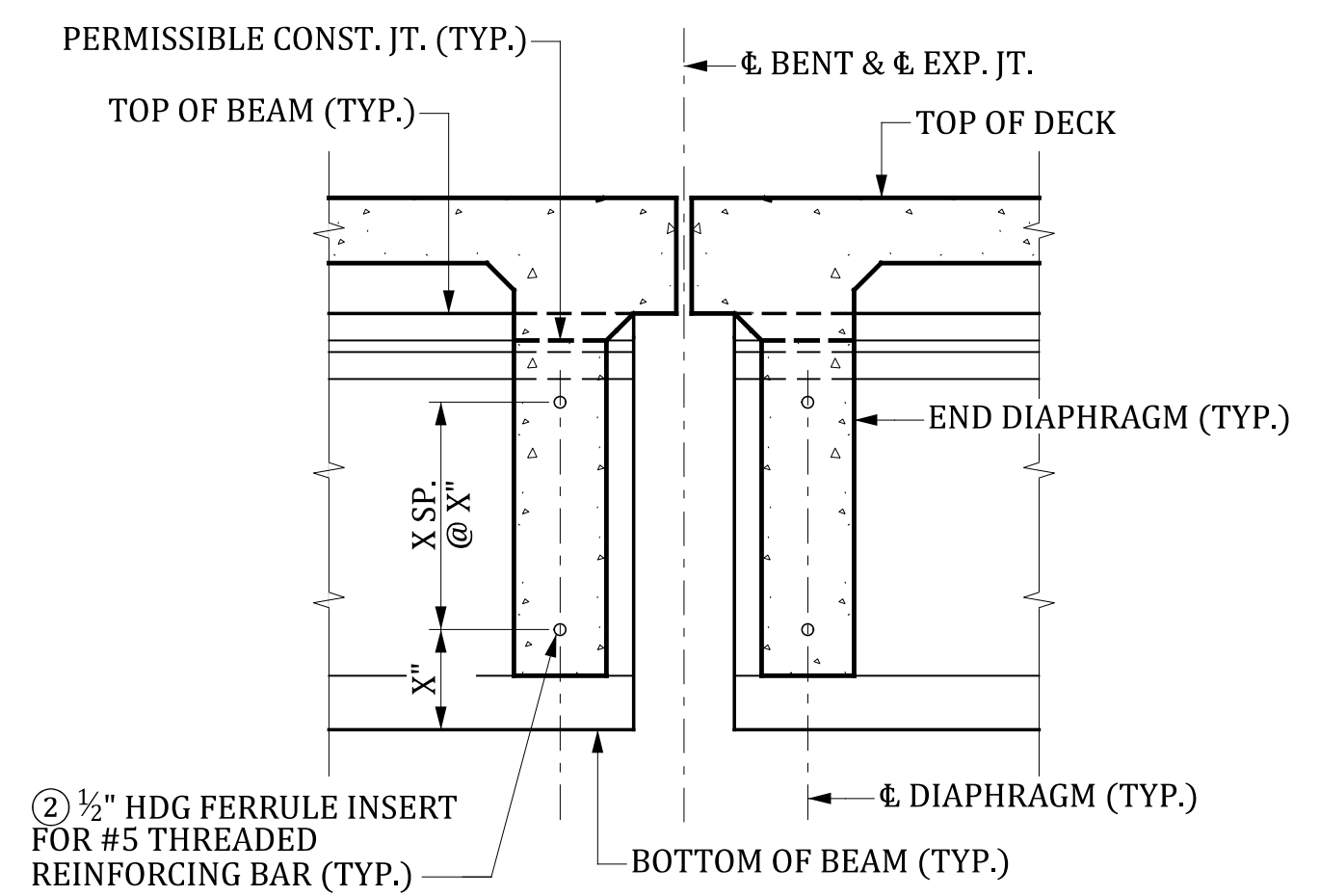


**SOLE PLATE DETAIL**  
REINFORCING STEEL AND STRANDS NOT SHOWN.



**① GROUTED RECESS AT END OF PRETENSIONED STRAND**

① PROVIDE A 1" RECESS IN THE END OF THE BEAM, ONLY AT BEAM ENDS THAT ARE NOT PERMANENTLY ENCASED IN CONCRETE. CUT ALL STRANDS 1/2" BACK INTO RECESS AND FILL THE RECESS WITH AN EPOXY MORTAR ESPECIALLY FORMULATED FOR APPLICATIONS ON VERTICAL SURFACES.



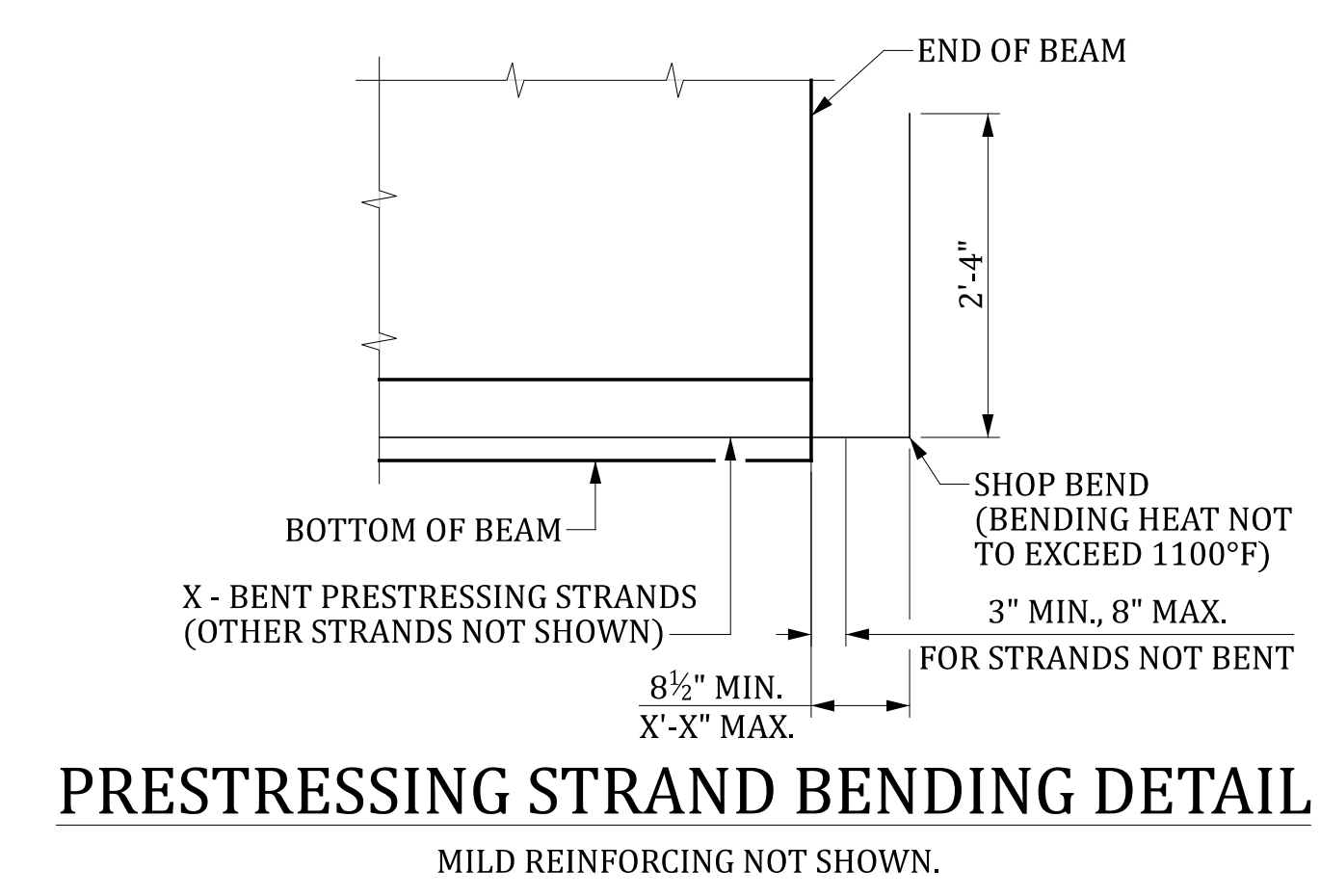
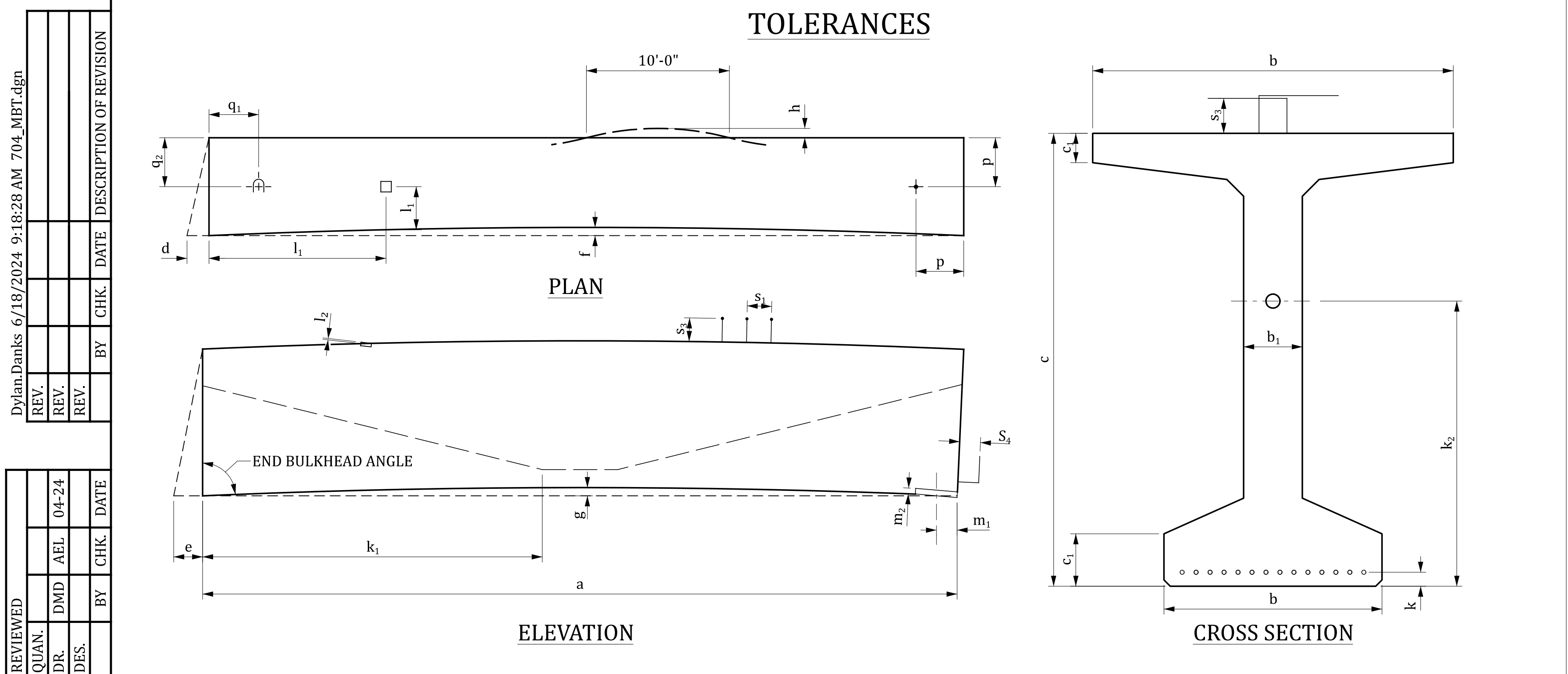
**SECTION AT END DIAPHRAGM**

REINFORCEMENT AND EXPANSION JOINT DETAILS NOT SHOWN FOR CLARITY.

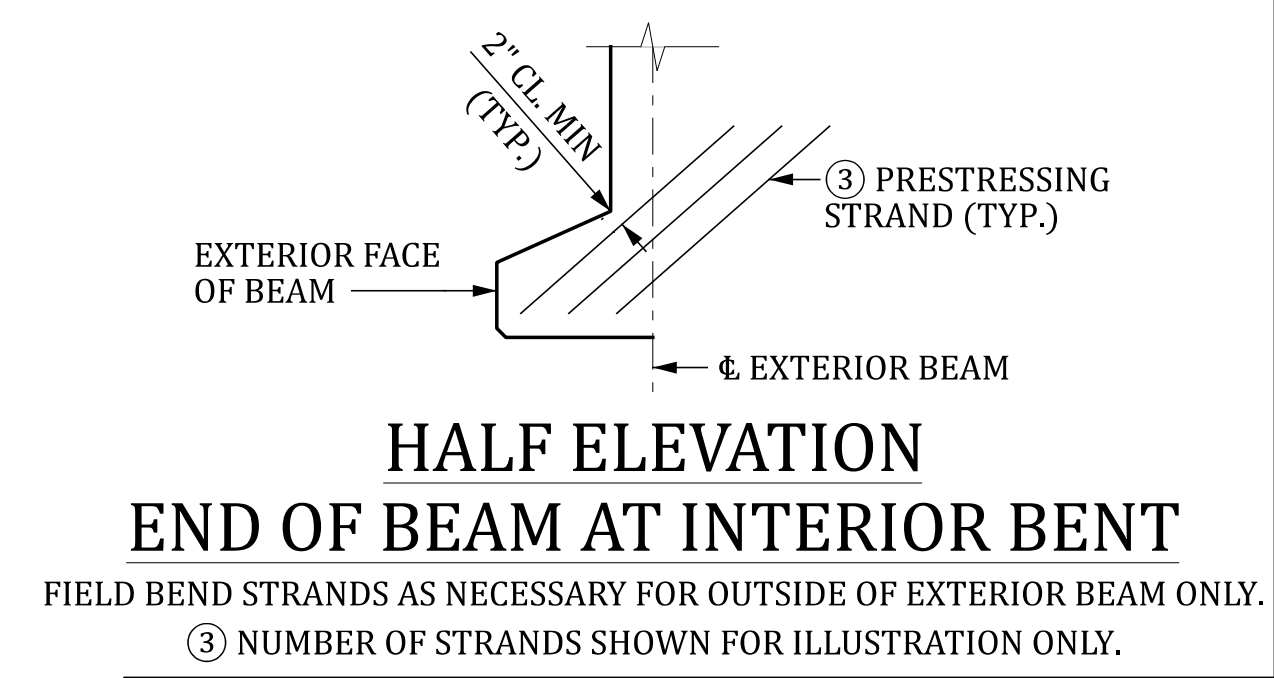
② USE APPROVED HOT-DIPPED GALVANIZED FERRULE INSERTS (1/2"- 13 UNC) AND INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION. OMIT INSERTS ON OUTSIDE FACE OF EXTERIOR BEAM. ADJUST INSERT LOCATIONS AS NECESSARY TO AVOID REINFORCEMENT IN BEAM. INSTALL INSERTS PERPENDICULAR TO THE FACE OF THE WEB.

REVIEWED	QUAN.	DR.	DES.	BY	CHK.	DATE

Dylan Danks 6/18/2024 9:18:28 AM 704\_MBT.dgn



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CONSULTANT NAME/LOGO	
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION	
MODIFIED BULB TEE GENERAL DETAILS	
COUNTY: ###	ROUTE: ###