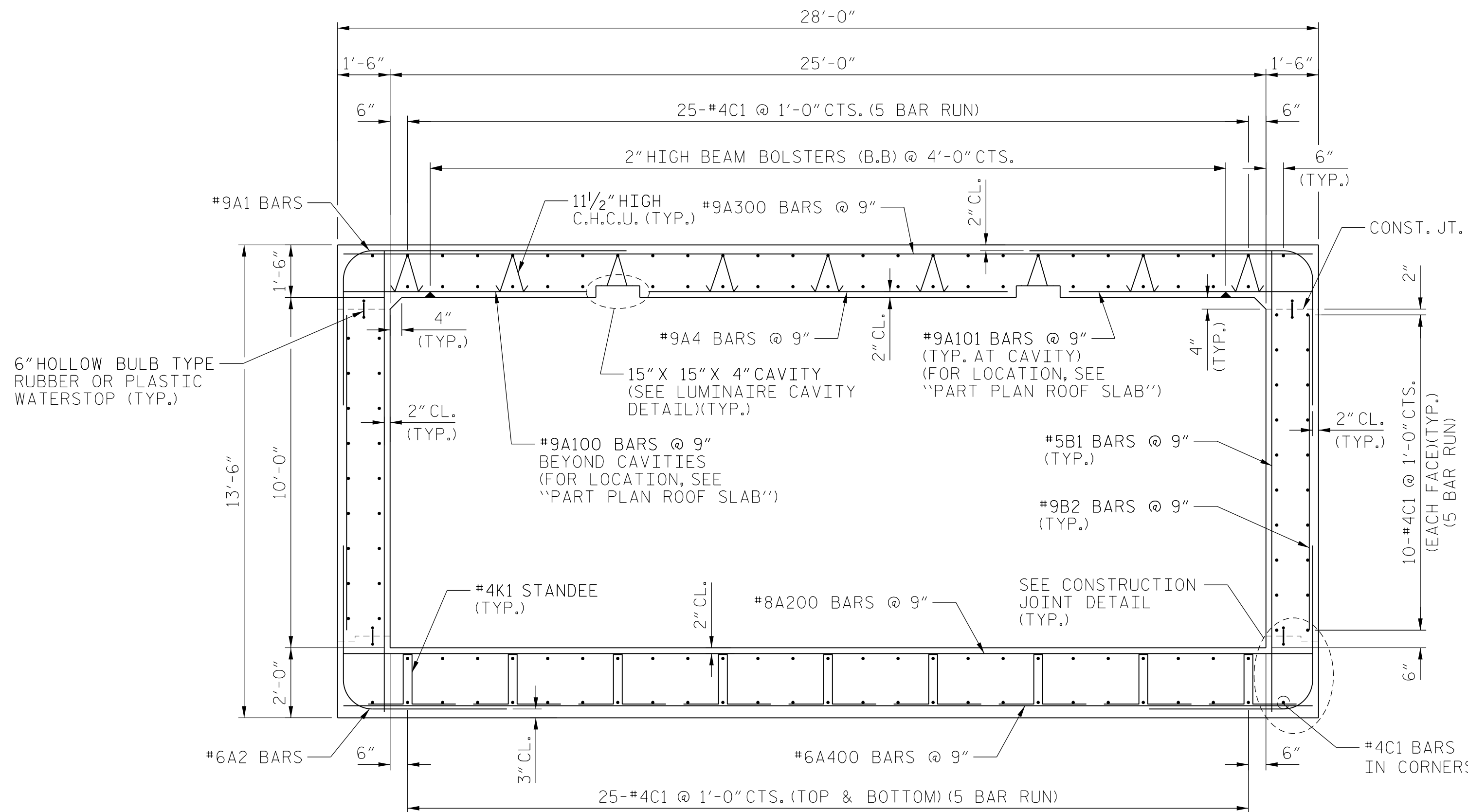


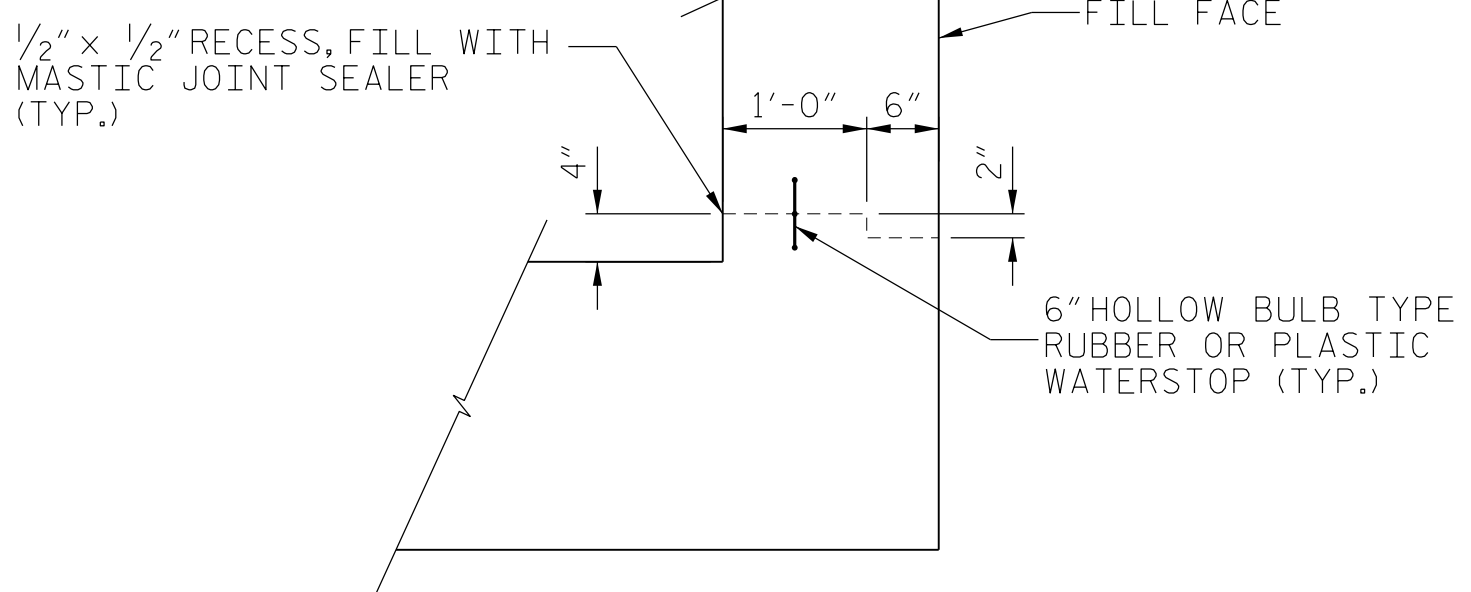
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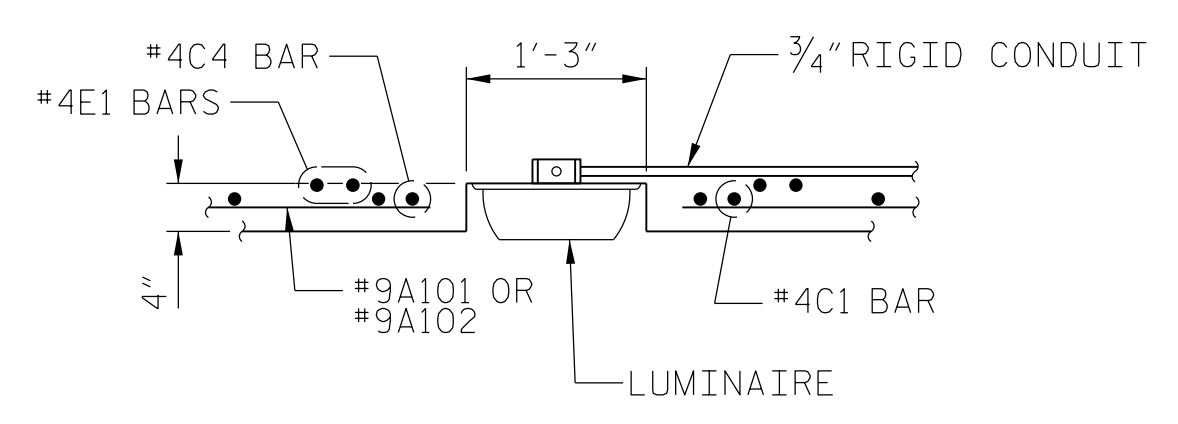
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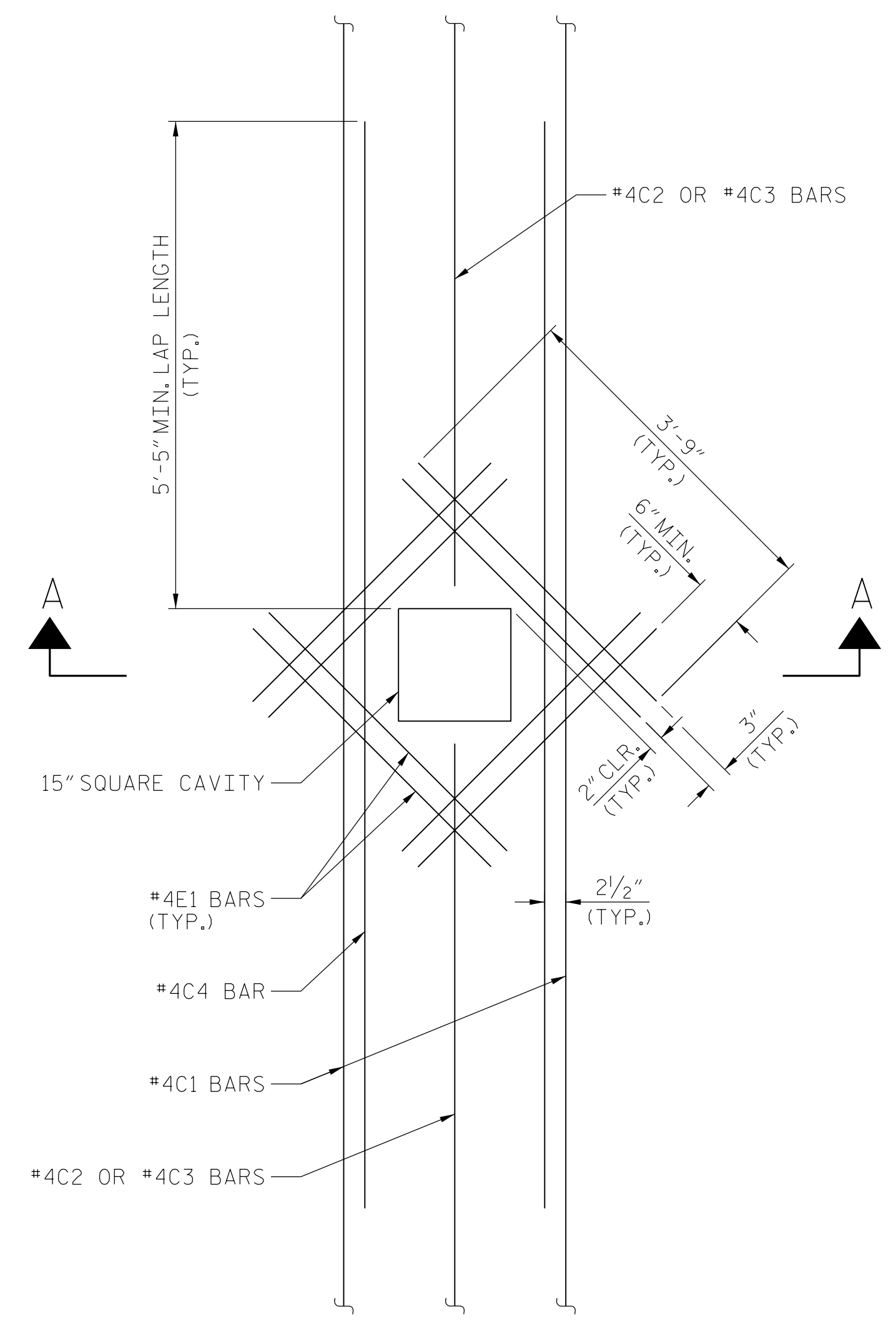
RIGHT ANGLE SECTION OF UNDERPASS
(SECTION SHOWN AT LOCATION OF LUMINAIRE CAVITIES)



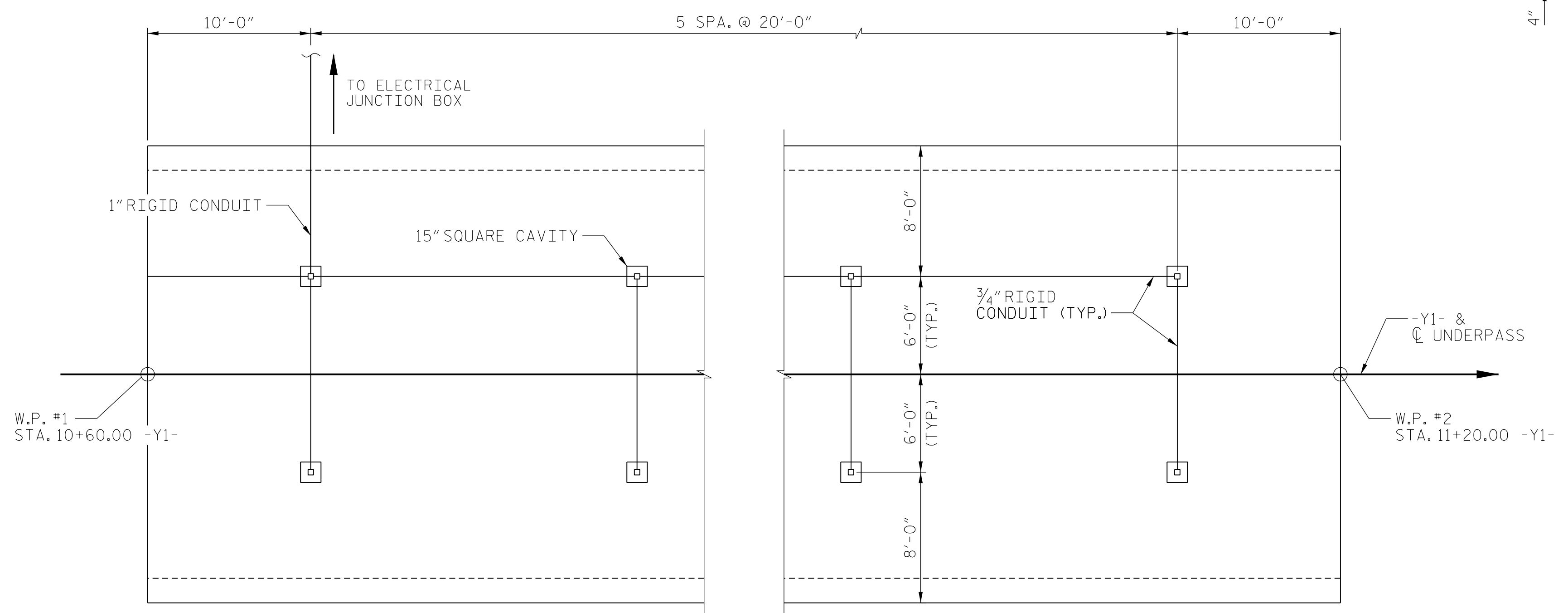
CONST. JT. DETAILS AT BOTTOM OF WALL



SECTION A-A



PLAN VIEW
(TRANSVERSE REINF. STEEL NOT SHOWN FOR CLARITY)



RECESSED CAVITY LOCATIONS IN ROOF SLAB

NOTE: SEE LIGHTING PLANS FOR LUMINAIRE AND CONDUIT DETAILS.

PROJECT NO. W-5522
WAKE COUNTY
 STATION: 15+58.58 -L-
11+28.22 -Y1-
 SHEET 2 OF 3

AECOM
 AECOM TECHNICAL SERVICES, INC.
 701 CORPORATE CENTER DRIVE, SUITE 475
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 (919) 854-6200 www.aecom.com
 AECOM License No. F-0342

11/8/2017

NORTH CAROLINA PROFESSIONAL SEAL
 030474
 ENGINEER
 JOHN C. MORRISON

DocuSigned by:
 John C. Morrison
 A2F0E142C82F4A8

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
UNDERPASS					
25FT. X 10FT. CONCRETE BOX SECTION					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-26					TOTAL SHEETS 31

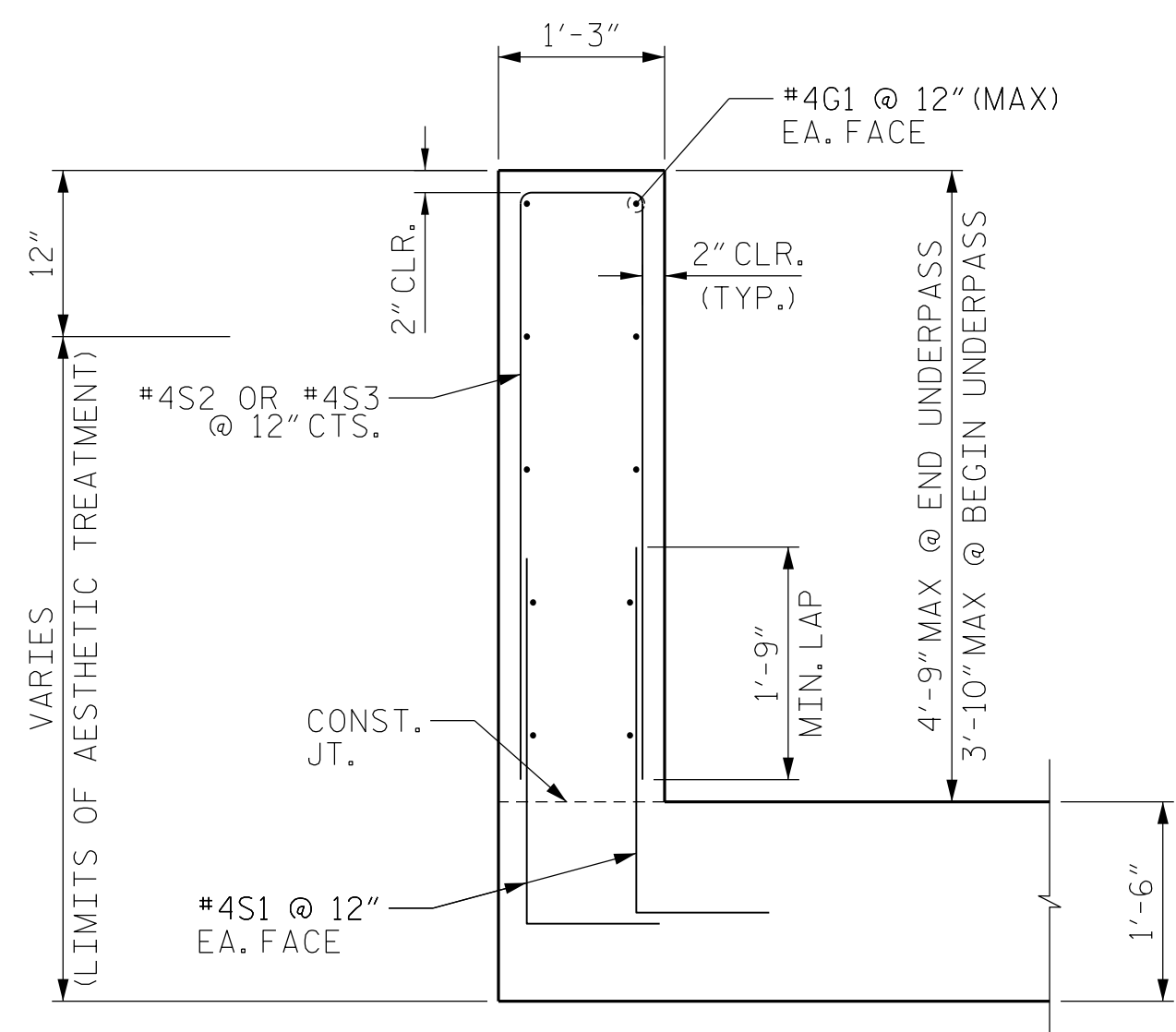
DRAWN BY : M. TOM DATE : 09/2017
 CHECKED BY : C. MORRISON DATE : 09/2017
 DESIGNED BY : M. TOM DATE : 09/2017

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DATE: 11/7/2017 TIME: 2:55:32 PM USER: jcm1000 DateMorrison Job: W-5522 Trinity Rd. PegW5522 Structures Cadd 410_130_W5522_SML_S26_U.P65.dgn

DATE: 12/14/2017
TIME: 9:50:40 AM

USER: jcmorris@ncdot.gov
DIR: \\w5522\structures\code\410_135_w5522_3\11_15_17_LUPASS.dgn



SECTION THRU HEADWALL

NOTE:
USE #4S2 AT HEADWALL LOCATED AT BEGIN UNDERPASS
USE #4S3 AT HEADWALL LOCATED AT END UNDERPASS
FOR AESTHETIC TREATMENT, SEE "GENERAL NOTES".

BAR TYPES

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	320	#9	1	13'-5"	14597
A2	320	#6	1	7'-9"	3725
A100	149	#9	STR	27'-8"	14016
A101	24	#9	STR	7'-0"	571
A102	12	#9	STR	10'-4"	422
A200	160	#8	STR	27'-8"	11819
A300	160	#9	STR	27'-8"	15051
A400	160	#6	STR	27'-8"	6649
B1	320	#5	STR	13'-0"	4339
B2	320	#9	STR	9'-4"	10155
C1	720	#4	STR	25'-7"	12305
C2	10	#4	STR	18'-3"	122
C3	4	#4	STR	9'-0"	24
C4	24	#4	STR	12'-3"	196
E1	96	#4	STR	3'-9"	240
G1	20	#4	STR	27'-8"	370
K1	320	#4	4	5'-4"	1140
S1	58	#4	2	3'-9"	145
S2	29	#4	3	6'-9"	131
S3	29	#4	3	8'-7"	166
REINFORCING STEEL					96,183 LBS.
CLASS AA CONCRETE					578.1 CY.

ALL BAR DIMENSIONS ARE OUT TO OUT

SPLICE LENGTH CHART		
BAR	SIZE	SPLICE LENGTH
A1	#9	5'-5"
A2	#6	2'-7"
C2	#4	2'-0"

PROJECT NO. W-5522
WAKE COUNTY
STATION: 15+58.58 -L-
11+28.22 -Y1-
SHEET 3 OF 3

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12/14/2017
NORTH CAROLINA PROFESSIONAL SEAL
030474
ENGINEER
JOHN C. MORRISON

DocuSigned by:
John C. Morrison
ADPDE142C82F4AB

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

UNDERPASS
25FT. X 10FT.
CONCRETE BOX SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			31
2			4			

DRAWN BY : M. TOM DATE : 09/2017
CHECKED BY : C. MORRISON DATE : 09/2017
DESIGNED BY : M. TOM DATE : 09/2017

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SIGNATURES COMPLETED

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE								COMMENT NUMBER		
						MOMENT				SHEAR						
						LIVE-LOAD FACTORS (γ _{LL})	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE		DISTANCE FROM LEFT END OF ELEMENT (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.50	--	1.75	1.50	1	TOP SLAB	12.50	2.18	1	TOP SLAB	0.33		
	HL-93 (OPERATING)	N/A		1.94	--	1.35	1.94	1	TOP SLAB	12.50	2.82	1	TOP SLAB	0.33		
	HS-20 (INVENTORY)	36.000	2	1.28	45.96	1.75	1.28	1	TOP SLAB	12.50	2.65	1	TOP SLAB	0.33		
	HS-20 (OPERATING)	36.000		1.65	59.45	1.35	1.65	1	TOP SLAB	12.50	3.42	1	TOP SLAB	0.33		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		2.66	35.93	1.40	2.66	1	TOP SLAB	12.50	7.74	1	TOP SLAB	0.33		
		SNGARBS2	20,000		2.42	62.20	1.40	2.42	1	TOP SLAB	12.50	7.01	1	TOP SLAB	0.33	
		SNAGRIS2	22,000		2.54	55.84	1.40	2.54	1	TOP SLAB	12.50	7.34	1	TOP SLAB	0.33	
		SNCOTTS3	27,250		1.73	47.22	1.40	1.73	1	TOP SLAB	12.50	2.62	1	TOP SLAB	0.33	
		SNAGGRS4	34,925		1.73	60.47	1.40	1.73	1	TOP SLAB	12.50	2.36	1	TOP SLAB	0.33	
		SNS5A	35,550		1.73	61.49	1.40	1.73	1	TOP SLAB	12.50	2.41	1	TOP SLAB	0.33	
		SNS6A	39,950		1.65	66.00	1.40	1.65	1	TOP SLAB	12.50	1.91	1	TOP SLAB	0.33	
		SNS7B	42,000		1.61	88.62	1.40	1.61	1	TOP SLAB	12.50	1.86	1	TOP SLAB	0.33	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33,000		1.87	61.82	1.40	1.87	1	TOP SLAB	12.50	2.62	1	TOP SLAB	0.33	
		TNT4A	33,075		1.93	63.78	1.40	1.93	1	TOP SLAB	12.50	2.55	1	TOP SLAB	0.33	
		TNT6A	41,600	3	1.64	68.21	1.40	1.82	1	TOP SLAB	12.50	1.64	1	TOP SLAB	0.33	
		TNT7A	42,000		1.75	73.61	1.40	1.75	1	TOP SLAB	12.50	1.80	1	TOP SLAB	0.33	
		TNT7B	42,000		1.71	71.99	1.40	1.71	1	TOP SLAB	12.50	1.94	1	TOP SLAB	0.33	
		TNAGRIT4	43,000		1.82	78.27	1.40	1.82	1	TOP SLAB	12.50	2.17	1	TOP SLAB	0.33	
TNAGT5A	45,000		1.93	86.95	1.40	1.93	1	TOP SLAB	12.50	2.19	1	TOP SLAB	0.33			
TNAGT5B	45,000		1.85	83.40	1.40	1.85	1	TOP SLAB	12.50	2.61	1	TOP SLAB	0.33			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS

LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

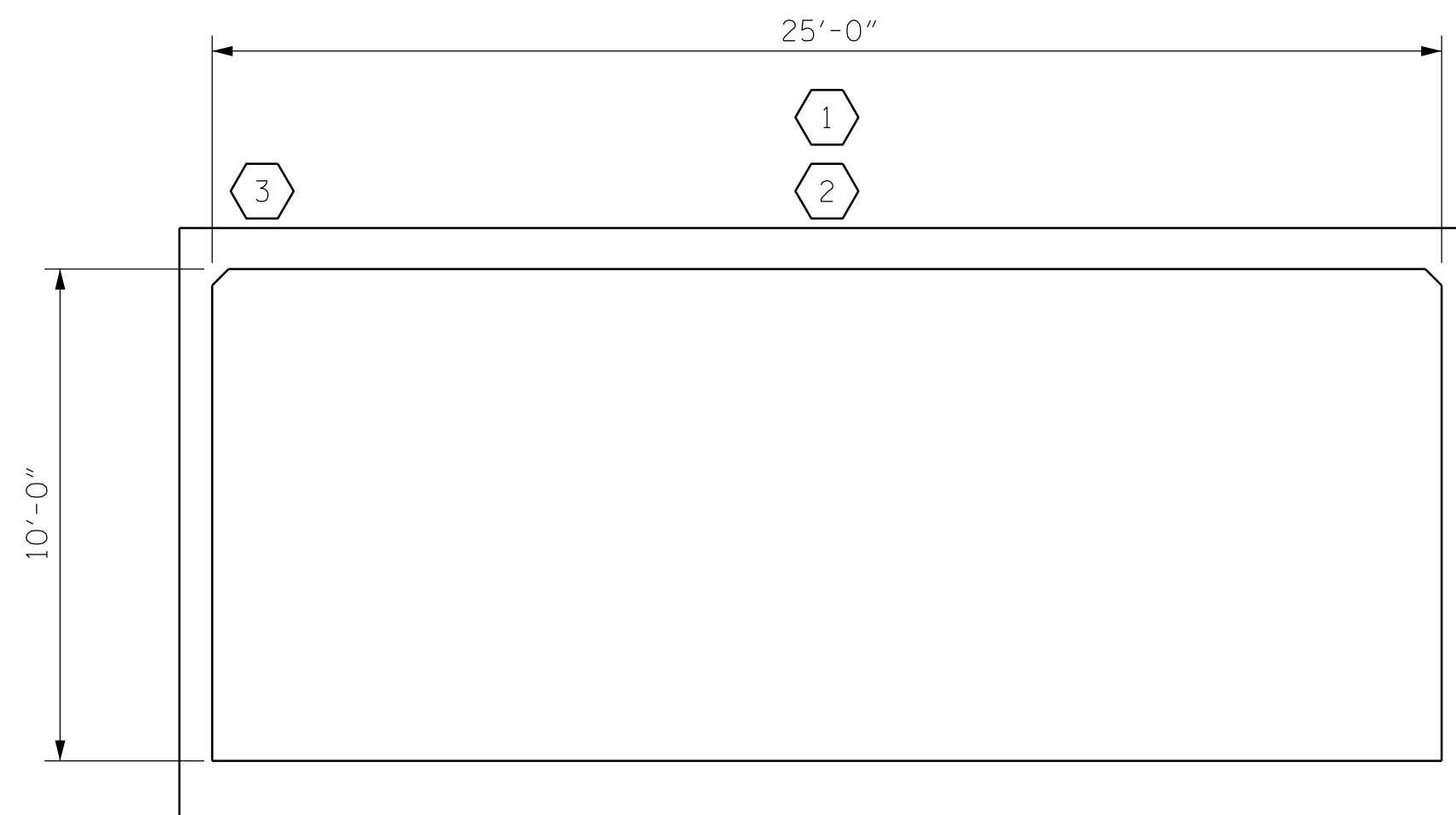
NOTE:

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

COMMENTS:

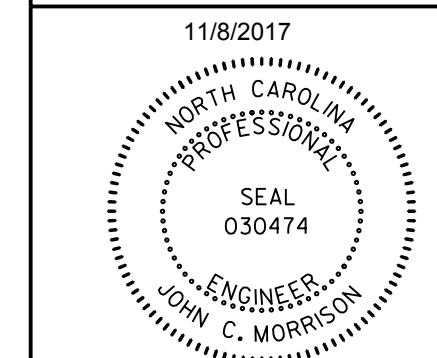
- 1.
- 2.
- 3.
- 4.

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	



LRFR SUMMARY

PROJECT NO. W-5522
WAKE COUNTY
 STATION: 15+58.58 -L-
11+28.22 -Y1-



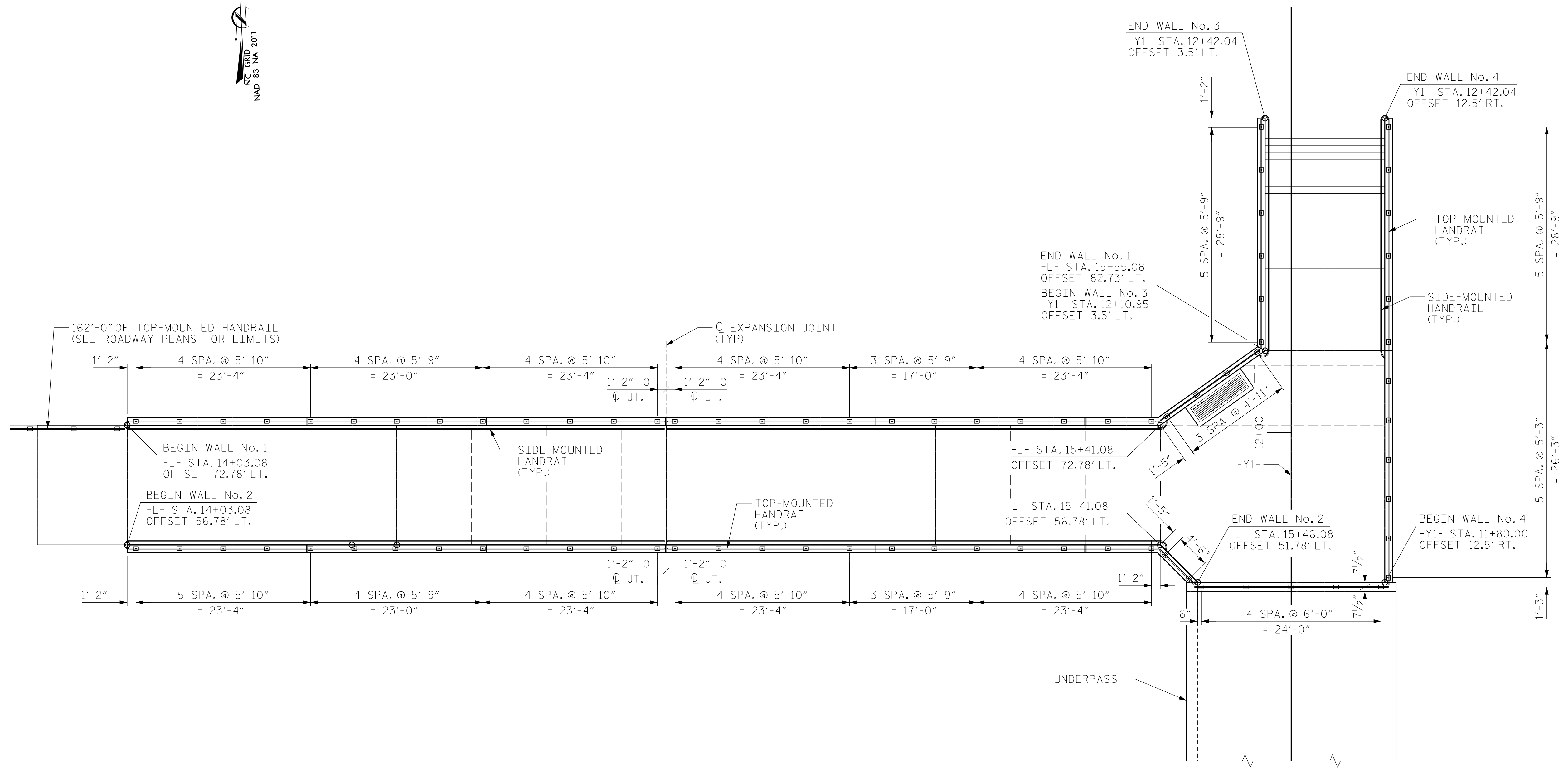
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 REINFORCED CONCRETE
 BOX CULVERTS
 (NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			31

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 APTD142C8F4AB

ASSEMBLED BY : H. ROSEMOND	DATE : 09/2017
CHECKED BY : C. MORRISON	DATE : 09/2017
DRAWN BY : WMC 7/II	REV. 10/1/II MAA/GM
CHECKED BY : GM 7/II	



USER: jmorrisson DGN: N:\Morrisson\wds3\W-5522 Trinity Rd Pav\W5522\Structures\Cadd\40_445_W5522_SML_S29_MHR.dgn

METAL HANDRAIL POST SPACING PLAN

PROJECT NO. W-5522
WAKE COUNTY
 STATION: 15+58.58 -L-
11+28.22 -Y1-
 SHEET 1 OF 3

DRAWN BY : H. ROSEMOND DATE : 11/2017
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 DESIGNED BY : C. MORRISON DATE : 11/2017

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12/4/2017
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 030474
 ENGINEER
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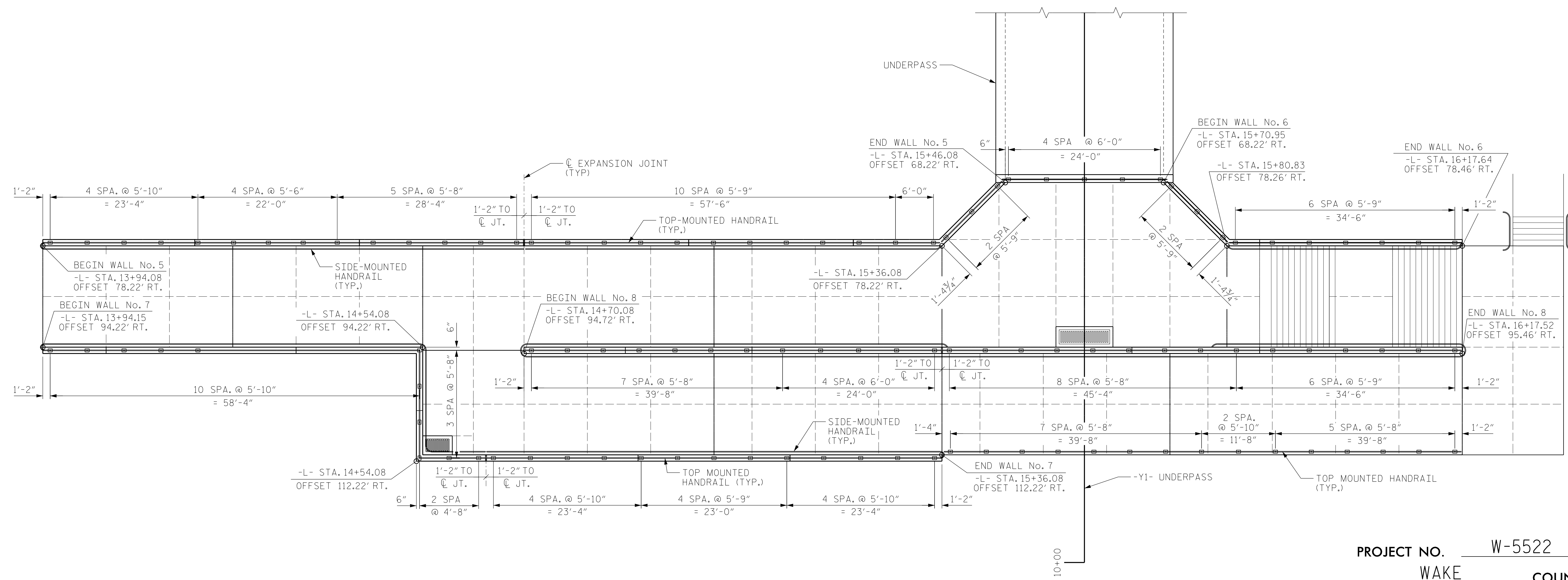
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

METAL HANDRAILING
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			31
2			4			

S-29



METAL HANDRAIL POST SPACING PLAN

PROJECT NO. W-5522
WAKE COUNTY
 STATION: 15+58.58 -L-
11+28.22 -Y1-
 SHEET 2 OF 3

TOP-MOUNTED RAILING	SIDE-MOUNTED RAILING
PAY LENGTH 1188'-0" LIN. FT.	PAY LENGTH 944'-0" LIN. FT.

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 NORTH CAROLINA PROFESSIONAL SEAL
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 ENGINEER
 JOHN C. MORRISON

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 John C. Morrison
 A2FDE14282FAB

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

METAL HANDRAIL
 DETAILS

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. **S-30**
 TOTAL SHEETS 31

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 DESIGNED BY : C. MORRISON DATE : 11/2017

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DATE: 12/4/2017 TIME: 9:20:23 AM

USER: jcmorris@wv5522 TriniTy.Rd_Pkg\W5522\Structures\Cadd\40_150_W5522_S10_MHR.dgn