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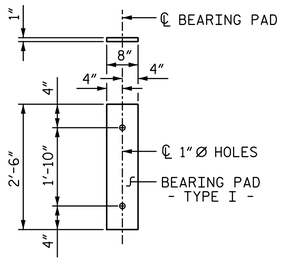


FIXED END
(TYPE I - 60 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0"x 1'-9"
25' & 35' CORED SLAB UNIT	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1/8" ↓
FINAL CAMBER	1/8" ↑

** INCLUDES FUTURE WEARING SURFACE

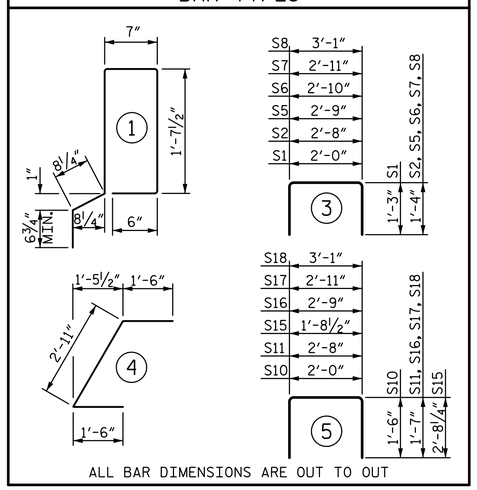
DEAD LOAD DEFLECTION AND CAMBER	
	3'-0"x 2'-0"
75' CORED SLAB UNIT	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	3/4" ↓
FINAL CAMBER	1 1/2" ↑

** INCLUDES FUTURE WEARING SURFACE

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
25' UNITS	2 5/8"	3'-8 5/8"
35' UNITS	2 5/8"	3'-8 5/8"
75' UNITS	2"	3'-8"

CONCRETE RELEASE STRENGTH	
UNIT	PSI
25' UNITS	4000
35' UNITS	4000
75' UNITS	6000

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

1'-9" CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
25' UNIT			
EXTERIOR C.S.	2	25'-0"	50'-0"
INTERIOR C.S.	8	25'-0"	200'-0"
TOTAL	10		250'-0"

1'-9" CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
35' UNIT			
EXTERIOR C.S.	2	35'-0"	70'-0"
INTERIOR C.S.	8	35'-0"	280'-0"
TOTAL	10		350'-0"

2'-0" CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
75' UNIT			
EXTERIOR C.S.	2	75'-0"	150'-0"
INTERIOR C.S.	8	75'-0"	600'-0"
TOTAL	10		750'-0"

BILL OF MATERIAL FOR ONE 25' CORED SLAB UNIT (1'-9" CSU)

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B1	2	#4	STR	24'-7"	33	24'-7"	33
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	52	#4	3	5'-4"	185	5'-4"	185
* S3	34	#5	1	5'-7"	198		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL			LB		315		315
* EPOXY COATED REINFORCING STEEL			LB		198		
5000 P.S.I. CONCRETE			CY		3.8		3.8
0.6"Ø L.R. STRANDS			No.		9		9

BILL OF MATERIAL FOR ONE 35' CORED SLAB UNIT (1'-9" CSU)

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B3	4	#4	STR	18'-3"	49	18'-3"	49
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	72	#4	3	5'-4"	257	5'-4"	257
* S3	44	#5	1	5'-7"	256		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL			LB		403		403
* EPOXY COATED REINFORCING STEEL			LB		256		
5000 P.S.I. CONCRETE			CY		5.2		5.2
0.6"Ø L.R. STRANDS			No.		9		9

BILL OF MATERIAL FOR ONE 75' CORED SLAB UNIT (2'-0" CSU)

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	26'-2"	105	26'-2"	105
* S3	84	#5	1	5'-7"	489		
S10	8	#5	5	5'-0"	42	5'-0"	42
S11	182	#4	5	5'-10"	709	5'-10"	709
S14	4	#4	4	5'-11"	16	5'-11"	16
S15	4	#5	5	7'-1"	30	7'-1"	30
S16	4	#4	5	5'-11"	16	5'-11"	16
S17	4	#4	5	6'-1"	16	6'-1"	16
S18	4	#4	5	6'-3"	17	6'-3"	17
REINFORCING STEEL			LB		951		951
* EPOXY COATED REINFORCING STEEL			LB		489		
8000 P.S.I. CONCRETE			CY		12.8		12.8
0.6"Ø L.R. STRANDS			No.		28		28

GRADE 270 STRANDS	
	0.6"Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

NOTES:

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2"Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

NOTES FOR 2'-0" CORED SLAB UNITS:

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

PROJECT NO. B-5687
WARREN COUNTY
STATION: 14+96.00 -L-

SHEET 6 OF 7

PLANS PREPARED BY:
SIMPSON ENGINEERS & ASSOCIATES
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Cary, NC 27518
(919) 852-0468
(919) 852-0598 (Fax)
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LICENSURE NO. C-2521

NORTH CAROLINA PROFESSIONAL SEAL 11268 ENGINEER BETSY S. COX
4/3/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
3'-0"X 1'-9" &
3'-0"X 2'-0"
PRESTRESSED CONCRETE
CORED SLAB UNITS
60° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			24

DRAWN BY:	S.D. COOPER	DATE:	4-18
CHECKED BY:	B.S. COX	DATE:	4-18
DESIGN ENGINEER OF RECORD:	B.S. COX	DATE:	4-18

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