

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO. P-5705BA	SHEET NO. 2K
RW SHEET NO.	
DATE: MARCH 16, 2018	

RAILROAD DESIGN ENGINEER

PROPOSED S2 TRACK ALIGNMENT

Point 15921 (PS #15 RH TO)
N 545,010.1003 E 1,448,725.1357 Sta 14+59.74

Course from 15921 to 15922
S 38° 00' 37.27" W Dist 39.9800

Point 15922 (PI TO #15 RH TO)
N 544,978.6001 E 1,448,700.5159 Sta 14+99.72

Course from 15922 to TS S2-1B
S 41° 49' 43.27" W Dist 159.2177

Curve 201 Ea = 1.00", V(Passenger) = 30 mph

PISCS S2-1 N 544,777.7072 E 1,448,520.7159 STA 17+69.33

Total Tangent = 110.3857
Total Length = 220.5533
Total Delta = 6° 44' 16.48" (RT)
Back Tangent = S 41° 49' 43.27" W
Ahead Tangent = S 48° 33' 59.75" W

Spiral S2-1B

Chord Definition

Angle	1°19' 01.91" (RT)	P	0.1188
LS	62.0000	K	30.9995
R	1,348.4451	LT	41.3345
YS	0.4751	ST	20.6677
XS	61.9967	LC	61.9985
BK	S 41°49' 43.27" W		
AH	S 43°08' 45.19" W		
CB	S 42°16' 03.90" W		
Defl	0°26' 20.63"		
Deg	4°15' 00.00"		

Spiral Coordinates

Point	North	East	Station
TS	544,859.9602	1,448,594.3327	16+58.94
PI	544,829.1602	1,448,566.7665	17+00.27
SC	544,814.0807	1,448,552.6327	17+20.94
CC	545,736.2261	1,447,568.7872	

Curve S2-1

Chord Definition

P.I. Station 17+69.25 N 544,778.8342 E 1,448,519.5966
Delta = 4° 06' 12.65" (RT)
Degree = 4° 15' 00.00"
Tangent = 48.3084
Length = 96.5533
Radius = 1,348.4451
External = 0.8651
Long Chord = 96.5548
Mid. Ord. = 0.8645
P.C. Station 17+20.94 N 544,814.0807 E 1,448,552.6327
P.T. Station 18+17.49 N 544,746.0421 E 1,448,484.1231
C.C. N 545,736.2261 E 1,447,568.7872
Back S 43° 08' 45.19" W
Ahead S 47° 14' 57.84" W
Chord Bear S 45° 11' 51.51" W

Spiral S2-1A

Chord Definition

Angle	1°19' 01.91" (RT)	P	0.1188
LS	62.0000	K	30.9995
R	1,348.4451	LT	41.3345
YS	0.4751	ST	20.6677
XS	61.9967	LC	61.9985
BK	S 47°14' 57.84" W		
AH	S 48°33' 59.75" W		
CB	S 48°07' 39.12" W		
Defl	0°26' 20.63"		
Deg	4° 15' 00.00"		

Spiral Coordinates

Point	North	East	Station
CS	544,746.0421	1,448,484.1231	18+17.49
PI	544,732.0127	1,448,468.9465	18+38.16
ST	544,704.6596	1,448,437.9570	18+79.49
CC	545,736.2261	1,447,568.7872	

Course from ST S2-1A to TS S2-2B
S 48° 33' 59.75" W Dist 106.7354

Curve 202 Ea = 0.50", V(Passenger) = 30 mph

PISCS S2-2 N 544,537.8395 E 1,448,248.9589 STA 21+31.58

Total Tangent = 145.3544
Total Length = 290.5765
Total Delta = 4° 19' 34.52" (LT)
Back Tangent = S 48° 33' 59.75" W
Ahead Tangent = S 44° 14' 25.23" W

Spiral S2-2B

Chord Definition

Angle	0°15' 29.97" (LT)	P	0.0116
LS	31.0000	K	15.5000
R	3,437.8680	LT	20.6667
YS	0.0466	ST	10.3334
XS	30.9999	LC	31.0000
BK	S 48° 33' 59.75" W		
AH	S 48° 18' 29.78" W		
CB	S 48° 28' 49.76" W		
Defl	0° 05' 09.99"		
Deg	1° 40' 00.00"		

Spiral Coordinates

Point	North	East	Station
TS	544,634.0276	1,448,357.9348	19+86.23
PI	544,620.3514	1,448,342.4404	20+06.90
SC	544,613.4785	1,448,334.7241	20+17.23
CC	542,046.3048	1,450,621.3276	

Curve S2-2

Chord Definition

P.I. Station 21+31.56 N 544,537.4321 E 1,448,249.3467
Delta = 3° 48' 34.59" (LT)
Degree = 1° 40' 00.00"
Tangent = 114.3344
Length = 228.5765
Radius = 3,437.8680
External = 1.9007
Long Chord = 228.5424
Mid. Ord. = 1.8997
P.C. Station 20+17.23 N 544,613.4785 E 1,448,334.7241
P.T. Station 22+45.81 N 544,455.8812 E 1,448,169.2106
C.C. N 542,046.3048 E 1,450,621.3276
Back S 48° 18' 29.78" W
Ahead S 44° 29' 55.19" W
Chord Bear S 46° 24' 12.49" W

Spiral S2-2A

Chord Definition

Angle	0°15' 29.97" (LT)	P	0.0116
LS	31.0000	K	15.5000
R	3,437.8680	LT	20.6667
YS	0.0466	ST	10.3334
XS	30.9999	LC	31.0000
BK	S 44°29' 55.19" W		
AH	S 44°14' 25.23" W		
CB	S 44°19' 35.22" W		
Defl	0° 05' 09.99"		
Deg	1° 40' 00.00"		

Spiral Coordinates

Point	North	East	Station
CS	544,455.8812	1,448,169.2106	22+45.81
PI	544,448.5108	1,448,161.9680	22+56.14
ST	544,433.7047	1,448,147.5495	22+76.81
CC	542,046.3048	1,450,621.3276	

Course from ST S2-2A to TS S2-3B
S 44°14' 25.23" W Dist 527.3375

Curve 203 Ea = 0.50", V(Passenger) = 30 mph

PISCS S2-3 N 544,000.6069 E 1,447,725.7865 STA 28+81.34

Total Tangent = 77.1935
Total Length = 154.3701
Total Delta = 2° 03' 22.14" (LT)
Back Tangent = S 44° 14' 25.23" W
Ahead Tangent = S 42° 11' 03.08" W

Spiral S2-3B

Chord Definition

Angle	0°15' 29.97" (LT)	P	0.0116
LS	31.0000	K	15.5000
R	3,437.8680	LT	20.6667
YS	0.0466	ST	10.3334
XS	30.9999	LC	31.0000
BK	S 44° 14' 25.23" W		
AH	S 43° 58' 55.26" W		
CB	S 44° 09' 15.24" W		
Defl	0° 05' 09.99"		
Deg	1° 40' 00.00"		

Spiral Coordinates

Point	North	East	Station
TS	544,055.9098	1,447,779.6421	28+04.14
PI	544,041.1038	1,447,765.2236	28+24.81
SC	544,033.6683	1,447,758.0478	28+35.14
CC	541,646.3009	1,450,231.7925	

Curve S2-3

Chord Definition

P.I. Station 28+81.33 N 544,000.4323 E 1,447,725.9723
Delta = 1° 32' 22.21" (LT)
Degree = 1° 40' 00.00"
Tangent = 46.1895
Length = 92.3701
Radius = 3,437.8680
External = 0.3103
Long Chord = 92.3706
Mid. Ord. = 0.3102
P.C. Station 28+35.14 N 544,033.6683 E 1,447,758.0478
P.T. Station 29+27.51 N 543,966.3466 E 1,447,694.8013
C.C. N 541,646.3009 E 1,450,231.7925
Back S 43°58' 55.26" W
Ahead S 42°26' 33.05" W
Chord Bear S 43°12' 44.16" W

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