

DESIGN REVIEW/CHECK SUBMITTAL

Project Name: Phillips Route 4 Section 1

WIN: 18247.00

HORIZONTAL/VERTICAL ALIGNMENT

SUBMITTALS

Submit the following:

- Completed Highway Design Requirements Form (one per speed zone)
- 1 Half Size set of plans including:
 - Preliminary Typical Sections
 - Plans
 - Include existing topo, wetlands, R/W
 - Label begin/end stations
 - Annotate with curve data
 - Show preliminary slope impacts
 - Profiles
 - Annotate with curve data
 - Cross-sections (include critical drive sections)
 - Show preliminary slope impacts
- Superelevation Table

PROJECT DATA

Provide a detailed scope description.

Highway reconstruction beginning at Toothaker Pond Rd in Phillips and extending Northerly 4.61 miles on Route 4.

TYPICAL SECTION

Complete the table with basic Typical Section data.

Lane Width:	11'
Shoulder Width:	4'
Cross-slopes:	2% travelway, 2% shoulders
Side-slopes:	4:1
Ditch Depth:	1' below subgrade

COMMENTS – provide additional discussion to help the review/check team.

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HORIZONTAL ALIGNMENT

Complete the table and provide additional tables for side roads as necessary.

PI STATION	DESIGN / POSTED SPEED (MPH)	REQUIRED MINIMUM RADIUS (FT)	PROPOSED RADIUS (EMAX 6%) (FT)	REQUIRED MIDDLE ORDINATE (FT)	MIDDLE ORDINATE MET (YES/NO)	REQUIRED SUPERELEVATION (EMAX 6%)	PROPOSED SUPERELEVATION	DEFLECTION ANGLE	RECOMMENDED CURVE LENGTH (FT)	PROPOSED CURVE LENGTH (FT)	OFF TRACKING (WB 50)
501+33.62	50	835	5000	4.52	Y	2.3	2.3	2°04'39"	750	181.29	0
504+81.52	50	835	950	23.81	Y (recheck once surface is finalized)	5.9	5.9	30°18'16"	750	502.47	3.15
513+85.84	50	835	1525	14.84	Y (recheck once surface is finalized)	5.0	5.0	20°56'22"	750	557.33	2.1
525+82.66	50	835	1275	23.25	Y (recheck once surface is finalized)	5.4	5.4	31°27'47"	750	700.15	2.6
534+42.17	50	835	1300	17.41	Y (recheck once surface is finalized)	5.4	5.4	21°24'27"	750	482.06	2.6
557+24.38	50	835	1122.5	20.16	Y	5.6	5.6	89°52'08"	750	1760.15	2.9
571+88.96	50	835	970	23.32	Y	5.9	5.9	48°47'56"	750	826.15	3.1
581+61.92	50	835	2225	10.17	Y	4.1	4.1	18°41'48"	750	726.06	0
589+00.74	50	835	1500	16.91	Y	5.1	5.1	11°31'10"	750	301.58	2.3
599+08.56	50	835	2750	8.22	Y	3.6	3.6	11°59'25"	750	575.50	0
608+16.00	50	835	1150	19.67	Y	5.6	5.6	25°34'43"	750	513.40	2.9
630+76.72	50	835	2100	10.77	Y	4.3	4.3	16°19'53"	750	598.58	0
643+26.39	40	510	2850	4.09	Y	2.5	2.5	20°40'24"	600	1028.33	0
657+07.35	40	510	625	18.68	Y (recheck once surface is finalized)	5.8	5.8	75°46'03"	600	826.49	4
670+31.14	40	510	2150	5.42	Y	3.1	3.1	19°19'46"	600	725.33	0
682+31.45	50	835	965	23.44	Y (recheck once surface is finalized)	5.9	5.9	61°07'12"	750	1029.41	3.2

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692+57.71	50	835	1000	22.62	Y (recheck once surface is finalized)	5.8	5.8	23°42'50"	750	413.88	3
696+20.41	50	835	10,000	2.26	Y	NC	NC	1°49'09"	750	317.50	0
703+88.94	50	835	3100	7.29	Y	3.3	3.3	11°51'50"	750	641.90	0
713+00.78	50	835	1750	16.14	Y	4.7	4.7	17°03'50"	750	521.19	2.1
730+09.96	50	835	1500	15.08	Y	5.1	5.1	20°35'27"	750	539.06	2.3
741+08.53	50	835	1000	25.35	Y (recheck once surface is finalized)	5.8	5.8	23°57'27"	750	418.14	3
746+17.34	50	835	1500	16.91	Y	5.1	5.1	11°12'35"	750	293.47	2.3

COMMENTS – provide additional discussion to help the review/check team.

Design Speed (typically equals posted speed)

50 mph from STA. 500+00 to STA. 641+32

40 mph from STA. 641+32 to STA. 675+81

50 mph from STA. 675+81 to STA. 743+52.16

Minimum Radius The minimum radius for 40 mph is 510' according to HDG Table 5-2. The minimum radius for 50 mph is 835' according to HDG Table 5-2. The proposed minimum radius for this design is 625' in the 40 mph section and 950' in the 50 mph section

Middle Ordinate for Stopping Sight Distance (requires a graphical check) The middle ordinate for the proposed curves was determined by using the formula in HDG Figure 5-8. There are multiple curves along the project where existing tree lines are within the middle ordinate distance. These areas will need to be cleared if the area is outside of clearing limits for slope impacts. The additional clearing will insure that middle ordinate distances are met.

Superelevation The maximum allowed superelevation rate according to HDG Table 7-2 for rural arterials is 6%. The proposed maximum superelevation for this design is 6%.

Curve Length (not a controlling criteria) Recommended minimum curve length for 40 mph is 600' using the formula on p5-6 of HDG. Recommended minimum curve length for 50 mph is 750' using the formula on p5-6 of HDG. Many of the horizontal curves have lengths less than the minimum recommended length. These curves were designed with less than ideal curve lengths to minimize impacts to existing land owners and due to the fact that the proposed alignment roughly matches the existing alignment. The existing alignment is not deficient in regards to any controlling criteria other than middle ordinate which will be addressed with clearing.

Off-tracking (check that shoulder width is adequate to accommodate offtracking) Many of the proposed horizontal curves on this project require widening greater than 2' according to HDG Figure 5-3. Full depth paved shoulders will be considered along the project in at least these areas.

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VERTICAL ALIGNMENT

Complete the table and provide additional tables for side roads as necessary.

PI STATION	DESIGN / POSTED SPEED (MPH)	MAXIMUM GRADE (%)	MINIMUM GRADE (%)	PROPOSED GRADE AHEAD (%)	CREST/SAG	REQUIRED SSD (FT) *	PROPOSED SSD/HLSD (FT)	REQUIRED COMFORT CRITERIA LENGTH (SAG) (FT) **	MINIMUM CURVE LENGTH (3V) (FT) **	PROPOSED CURVE LENGTH (FT)
504+00	50	7%	0.25%	-3.27	Sag	425	515	188.17	150	400
511+75	50	7%	0.25%	1.41	Sag	425	543	251.61	150	600
524+62.50	50	7%	0.25%	-7.00	Crest	425	427		150	710
535+25	50	7%	0.25%	-0.25	Sag	425	427	389.78	150	650
544+00	50	7%	0.25%	-1.30	Crest	425	1152		150	250
551+00	50	7%	0.25%	-0.39	Sag	425	1060	48.92	150	250
556+50	50	7%	0.25%	-2.41	Crest	425	658		150	250
563+00	50	7%	0.25%	-0.25	Sag	425	1141	116.13	150	250
570+00	50	7%	0.25%	3.40	Sag	425	427	196.24	150	335
575+12.50	50	7%	0.25%	-4.10	Crest	425	426		150	630
580+30.29	50	7%	0.25%	-0.91	Sag	425	429	171.51	150	260.57
583+04.32	50	7%	0.25%	-3.40	Crest	425	578		150	287.5
588+62.47	50	7%	0.25%	0.12	Sag	425	486	189.25	150	375
592+97.28	50	7%	0.25%	-1.07	Crest	425	1019		150	225
606+00	50	7%	0.25%	-0.46	Sag	425	1539	32.80	150	250
618+50	50	7%	0.25%	2.92	Sag	425	460	181.72	150	325
624+25	50	7%	0.25%	-1.92	Crest	425	607		150	825
632+25	50	7%	0.25%	-5.00	Crest	425	500		150	300
638+00	50	7%	0.25%	-2.05	Sag	425	535	158.60	150	300
643+00	40	7%	0.25%	-1.40	Sag	305	1452	22.37	120	250
648+00	40	7%	0.25%	-1.70	Crest	305	3722		120	250
653+00	40	7%	0.25%	-1.00	Sag	305	1355	24.09	120	250
657+00	40	7%	0.25%	-2.10	Crest	305	1133		120	300
667+00	40	7%	0.25%	1.18	Sag	305	426	112.86	120	275
671+50	40	7%	0.25%	-2.24	Crest	305	426		120	220
676+08.69	50	7%	0.25%	-0.97	Sag	425	839	68.28	150	267.37
688+93.24	50	7%	0.25%	.035	Sag	425	800	70.97	150	263.52
695+00	50	7%	0.25%	-0.25	Crest	425	1924		150	250
699+87.69	50	7%	0.25%	-3.50	Crest	425	482		150	300
709+24.31	50	7%	0.25%	4.34	Sag	425	425	421.50	150	750

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715+24.70	50	7%	0.25%	-1.01	Crest	425	427		150	450.78
726+00	50	7%	0.25%	-.25	Sag	425	1256	40.86	150	250
730+00	50	7%	0.25%	-0.75	Crest	425	2283		150	250
737+00	50	7%	0.25%	-3.00	Sag	425	605	26.88	150	250

*Based on level criteria

** For Rehabilitation or lesser scopes of work, if meeting HLSD is impractical

COMMENTS – provide additional discussion to help the review/check team.

Design Speed (typically equals posted speed)

50 mph from STA. 500+00 to STA. 641+32

40 mph from STA. 641+32 to STA. 675+81

50 mph from STA. 675+81 to STA. 743+52.16

Grade (consider truck lane warrants)

Some grades warrant truck lanes based on speed reduction but do not meet criteria #1 and #2 on page 244 of *AASHTO Geometric Design of Highway and Streets*. Truck lanes are not included in the proposed design.

Stopping Sight Distance The required stopping sight distance for 40 mph is 305' according to HDG Table 4-1. The required stopping sight distance for 50 mph is 425' according to HDG Table 7-2. **All proposed vertical curves exceed the required stopping sight distance.**

Curve Length Recommended minimum curve length for vertical crest and sag curves at 40 mph is 120' using the formula on p4-17 and p4-19 of HDG. Recommended minimum curve length for vertical crest and sag curves at 50 mph is 150' using the formula on p4-17 and p4-19 of HDG. **Proposed vertical crest and sag curves exceed minimum curve length requirements.**

INTERSECTION SIGHT DISTANCE

Complete the table.

<i>Location</i>	<i>Direction of Sight</i>	<i>Design Speed</i>	<i>Signal (Y/N)</i>	<i>ISD Required</i>	<i>ISD Provided*</i>
Smalls Falls Entrance	Left	50	N	555	Yes
Smalls Falls Entrance	Right	50	N	555	Yes
Gravel Road 520+35.2 RT	Left	50	N	555	Yes
Gravel Road 520+35.2 RT	Right	50	N	555	Yes
Gravel Road 523+85 LT	Left	50	N	555	Yes
Gravel Road 523+85 LT	Right	50	N	555	Yes
Gravel Road 533+45.5 RT	Left	50	N	555	Yes
Gravel Road 533+45.5 RT	Right	50	N	555	Yes
Cranefitch Road	Left	50	N	555	Yes
Cranefitch Road	Right	50	N	555	Yes
Mud Pond Road	Left	50	N	555	Yes

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Mud Pond Road	Right	50	N	555	Yes
Staples Road	Left	40	N	445	Yes
Staples Road	Right	40	N	445	Yes
Reeds Mill Road	Left	40	N	445	Yes
Reeds Mill Road	Right	40	N	445	Yes
Dodge Road	Left	40	N	445	No
Dodge Road	Right	40	N	445	Yes
Lufkin Hill Road	Left	50	N	555	
Lufkin Hill Road	Right	50	N	555	
Mooseley Ridge Drive	Left	50	N	555	
Mooseley Ridge Drive	Right	50	N	555	
Gravel Road 722+03.5 LT	Left	50	N	555	Yes
Gravel Road 722+03.5 LT	Right	50	N	555	Yes
Cleo Lane	Left	50	N	555	Yes
Cleo Lane	Right	50	N	555	Yes
Calden Road	Left	50	N	555	Yes
Calden Road	Right	50	N	555	Yes
Toothaker Pond Road	Left	50	N	555	Yes
Toothaker Pond Road	Right	50	N	555	Yes

**Eye Height: 3.5 ft. Object Height: 3.5 ft*

COMMENTS – *provide additional discussion to help the review/check team.*