



TECHNICAL MEMORANDUM

DATE: May 9, 2025

TO: Erica Mutschler
Capital Projects Team
PWC Department of Parks & Recreation
14420 Bristow Road
Manassas, VA 20112

FROM: Edward Umbrell, P.E.
Sarah Jonuzaj, E.I.T.
Dewberry Engineers Inc.
13575 Heathcote Blvd., Suite 130
Gainesville, VA 20155

SUBJECT: Doves Landing Park – Kayak Launch Study

Background and Scope

The scope of this task includes preparation of a study to assess potential kayak launch location sites within the Doves Landing Park. There will be three potential kayak launch locations, each with a number of access approach routes - see Figure 1.

1. Kayak launch location along the west side of the park (study area 1)
 - a. Approach 1A – access from the existing parking lot
 - b. Approach 1B – access to the west of the historic site
 - c. Approach 1C – access along the 50' Doves Lane ROW.
2. Kayak launch location along the southeast side of the park (study area 2)
3. Kayak launch location along the eastern side of the park (study area 3)

The alignment of these routes have been partially determined by the topography of the site. The routes will each include grading of an 18' wide asphalt road with 2' shoulders and 10% maximum slopes. Plate RL-1 from the PWC DCSM will be utilized for road cross section.

Also included will be a list of constraints for the three potential access routes. This list will this be compared to potential kayak launch points within the park. A matrix of pros and cons will be developed for each Kayak launch location and associated approach route.

Items that will impact the approach routes:

1. Topography. Slopes greater than 15% will be avoided if possible. Maximum road slope will be 10%.
2. Tree clearing. The old growth forest area near the western end of the park will be avoided (if possible). The cleared corridors for the existing overhead powerlines will be utilized (if possible).
3. RPA/wetland impact. Encroachment into the RPA and any wetlands, especially along the east side of the park, will be minimal.
 - a. Any stream crossings will be noted.
4. Cultural resource impact. The Historic farmstead site will be avoided.

5. Kayak trail location/connectivity. Any proposed kayak portage trails will be assessed for length, steepness and ADA accessibility.
6. River access. The height of the riverbanks will be accessed for the kayak launch locations
7. Lake Jackson HOA property. Any Lake Jackson HOA property along the western and southern sides of the park will be noted.

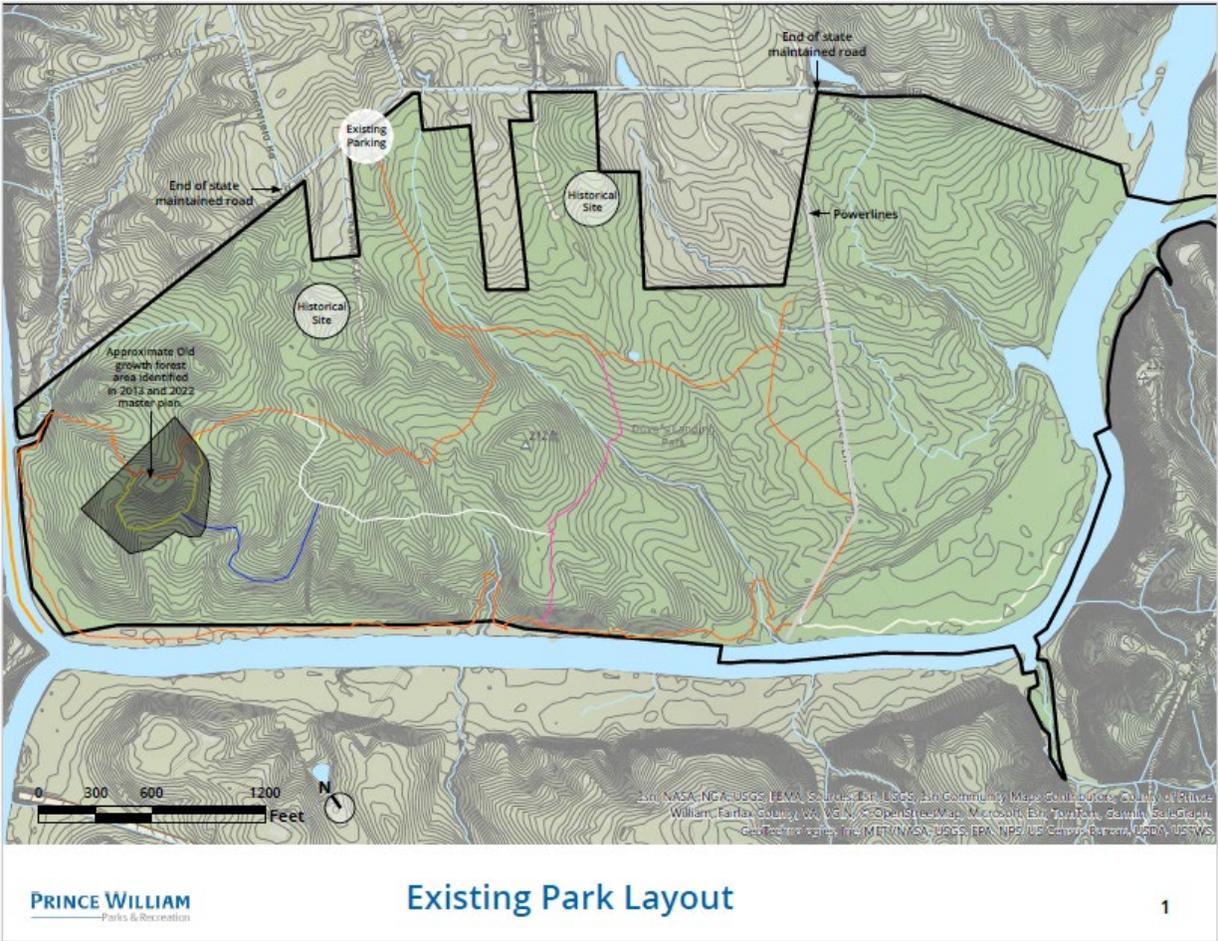


Figure 1 – Map of Existing Doves Landing Park

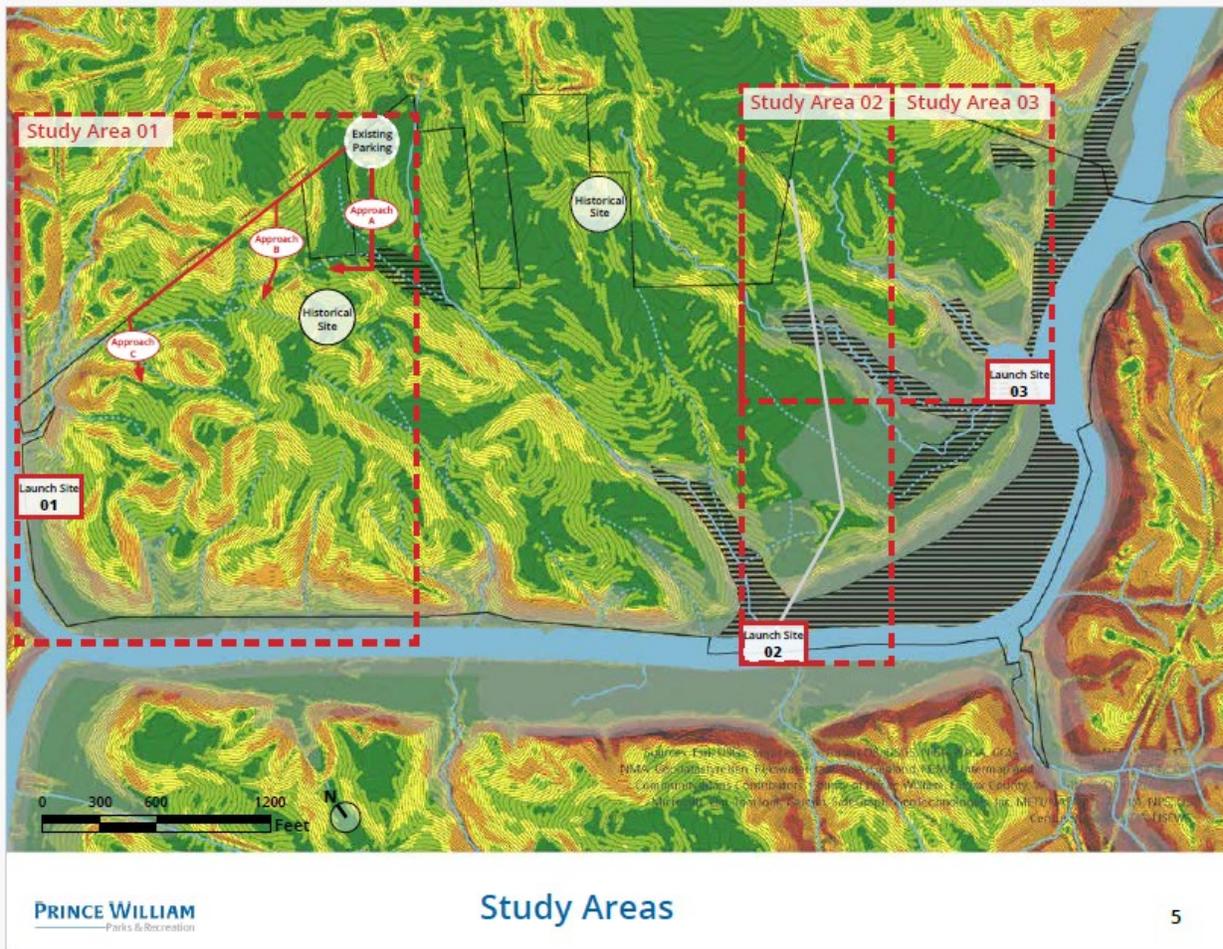


Figure 2 – Map of Kayak Launch Study Areas and Slope Analysis

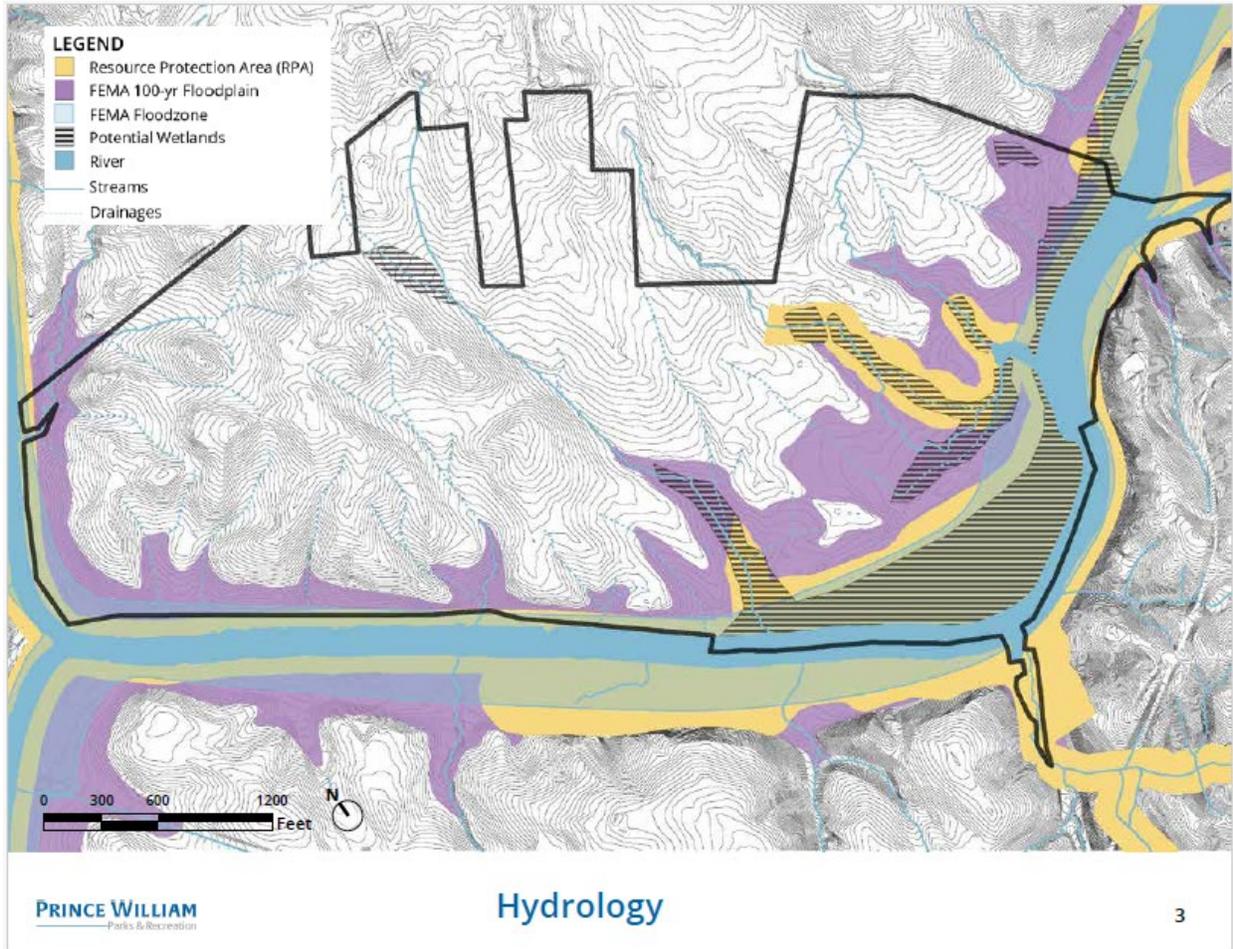


Figure 3 – Map of Floodplains and RPA Areas

Assessment of Conditions

See Appendix A for plans and profiles of the (5) proposed Kayak Launch Road alignments.

Launch site 1 explores the area on the northwest side of the park with the kayak launch located within the Lake Jackson HOA owned portion of the land that has a 6 ft high riverbank. The kayak launch site is located within the RPA where minimal grading is required. All 3 road alignments utilize the same parking lot location and access trails down to the river. The northwest side of the park has topography that is steeper and more variable in comparison to the eastern side of the park. Due to the existing topography, the length of the ADA compliant trail would be 962 LF, which would not exceed the maximum slope of 5%. An additional non-ADA compliant trail is also provided that is 400 LF with a maximum slope of 8%. These trails are partially located within the 100-year floodplain where minimal grading is required. In addition, the northwest side of the park also contains several existing natural trails that would need to be re-routed.

Option 1A on Launch Site 1 ties into the existing parking lot located on the north side of the park. The access road is approximately 2,885 ft with a maximum slope of 5.77% and does not cross any streams. The road is within 100 ft of the historic farmstead site. The road skirts the edge of the old growth forest. The total clearing for this option would be 5.38 acres.

Option 1B is located at the end of Doves Lane, beginning at the start of the 50' right of way. The access road is approximately 1,992 ft with a maximum slope of 7.45% and does not cross any streams. The road is within 312 ft of the historic farmstead site. The road skirts the edge of the old growth forest. The total clearing for this option is 4.51 acres.

Option 1C follows the existing 50' right of way along the north side of the park. The access road is approximately 2,125 ft with a maximum slope of 9.45% and does not cross any streams. The road is within 985 ft from the historic farmstead site. The road skirts the edge of the old growth forest. The total clearing for this option is 4.58 acres.

Launch site 2 is located on the southern end of the park and has a 2 to 3 ft high riverbank. This launch site does not cross the Lake Jackson HOA property line. The access road is approximately 2,383 ft with a maximum slope of 3.76% and has one major stream crossing where a culvert would have to be installed. There is 0.27 acres where the access road goes through the RPA, and the kayak launch is located within the RPA so minimal grading will be required for the trails. The ADA compliant trail for this launch site is 534 LF with a maximum slope of 5%. There is 1.95 acres of the road and trails located within the 100-year floodplain. The total clearing for this site is 3.44 acres. The launch site is located 2,700 ft from the historic farmstead site.

Launch site 3 is located on the eastern side of the park and has a 1 ft high riverbank. This launch site does not cross the Lake Jackson HOA property. The kayak launch is located within the RPA so minimal grading is required for the trails. The ADA compliant trail is 687 LF with a maximum slope of 5%. The trail is partially located within the 100-year floodplain where minimal grading is required. The access road is approximately 1,617 ft with a maximum slope of 2.36%. The access road does not cross any streams and does not go through the RPA. The total clearing for this site is 2.50 acres. The launch site is located 2,900 ft from the historic farmstead site.

The assessment of conditions is summarized in the table below:

Kayak Launch Study					
	Launch Site 1			Launch Site 2	Launch Site 3
	Approach A	Approach B	Approach C		
Road Length	2,885 ft	1,992 ft	2,125 ft	2,383 ft	1,617 ft
Max Road Slope	5.77%	7.45%	9.45%	3.76%	2.36%
Disturbance	5.38 acres	4.51 acres	4.58 acres	3.44 acres	2.50 acres
Tree clearing	5.38 acres	4.51 acres	4.58 acres	3.38 acres	2.49 acres
RPA/Wetland Impact	Minimal, minor grading required for the trail			0.27 acres where road crosses RPA, minor grading required for trail	Minimal, minor grading required for trail
100-yr Floodplain Impact	Minimal, minor grading required for the trail			1.95 acres where road crosses floodplain, minor grading required for trail	Minimal, minor grading required for trail
# of Stream Crossings	0	0	0	1 (culvert required)	0
Existing Trails to be Re-routed?	Yes	Yes	Yes	No	Yes
Approximate Distance from Historic Farmstead Site	<100 ft	312 ft	985 ft	2,700 ft	2,900 ft

Kayak Trail Details					
ADA Accessible?	Yes	Yes	Yes	Yes	Yes
Length of Trail	962 LF ADA & 400 LF			534 LF ADA	687 LF ADA
Max Trail Slope	5% (ADA) & 8%			5%	5%
River Bank Height	6 ft	6 ft	6 ft	2-3 ft	1-2 ft
Crosses HOA Property Line?	Yes	Yes	Yes	No	No
Additional Comments					

Table 1 – Map of Floodplains and RPA Areas

Conclusions and Recommendations

Dewberry recommends Launch Option 3 due to a number of reasons including 1) the route doesn't cross the Lake Jackson HOA controlled parcel, 2) the route doesn't impact the old growth forest, 3) the length of the ADA trail is manageable (687 ft) for launch users, the amount of clearing is only 2.50 acres, and 5) the height of the riverbank is 1 foot high.

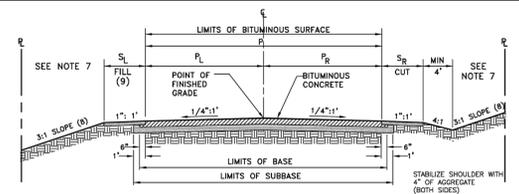
Attachments

- A. Plan and Profiles for 5 Kayak Launch Study Areas

Attachment A

Plan and Profiles for Five (5) Kayak Launch Study Areas

Q:\50169524\50182170-Doves Landing Park\CAD\Civil\ENGR\Design\Bases\Kayak Launch Study\Bases\LAUNCH SITE 1-APPROACH A.dwg, Apr. 23, 2025 - 12:45pm



CATEGORY	TRAFFIC VOLUME (VPD)	R.O.W. WIDTH (ft.)	DESIGN SPEED (mph)	MAX. GRAD. (%)	MIN. C.L. RADIUS (ft.)	MIN. SIGHT DISTANCE (ft.)	S _L (%)	S _R (%)	P (%)	P _h (%)	S _h (%)	TYPE I SUBBASE AGG. BASE (BM-25.0A)	BASE (SM-9.5A)	SURFACE (SM-9.5A)
I (4)	UP TO 250	42	20	10%	120	125	4	9	18	9	4	6 in	6 in	2 in
II	251 TO 400	44	20	10%	120	125	5	10	20	10	5	8 in	8 in	2 in
III	401 TO 1,000	56	25	10%	200	155	280	6	11	22	11	8 in	4 in	2 in

- GENERAL NOTES:
- This typical cross section shall be used in all subdivisions considered as rural/semi-rural, (subdivisions where average lot size is one (1) acre or greater.)
 - Standard landings required at intersections.
 - Pavement section is standard requirement. Refer to Detail 650.01 for alternative pavement sections.
 - Forty foot (40 ft.) right-of-way allowed in certain circumstances where all slopes and drainage structures can be included and the average lot size is five (5) acres or more and approved by the Director of Transportation and VDOT.
 - Off street parking shall be required in accordance with Section 610.02 of this manual.
 - Trafficways or roadways serving large lot subdivisions shall be designed conforming to VDOT and/or County requirements whichever is more stringent.
 - Additional right-of-way shall be required if streetlights and shared use paths are required.
 - 2:1 slopes will be allowed when soil type supported by soil report is acceptable and where special stabilization in accordance with Erosion Control ordinance is provided.
 - Wider shoulder shall be required in accordance with VDOT standards where guardrails are provided.
 - Minimum radius applies to level and rolling terrain.
 - Changes in categories, where permitted, shall be at intersections only and to the next lower or higher category only.
 - Sidewalk or shared use path is required per VDOT Secondary Street Acceptance Requirements.

Detail No.	650.02	RL-1	COUNTY OF PRINCE WILLIAM VIRGINIA	STANDARD TYPICAL SECTION FOR RESIDENTIAL LOCAL STREETS WITHOUT CURB AND GUTTER (FIXED TRAFFIC)	Date 7/15/14
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Cut/Fill Report

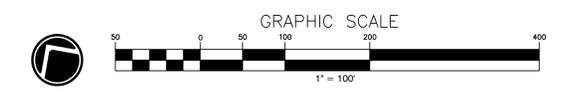
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* Value adjusted by cut or fill factor other than 1.0

5.38 ACRES OF DISTURBANCE
5.38 ACRES OF TREE CLEARANCE



DOVES LANDING PARK

KAYAK LAUNCH STUDY

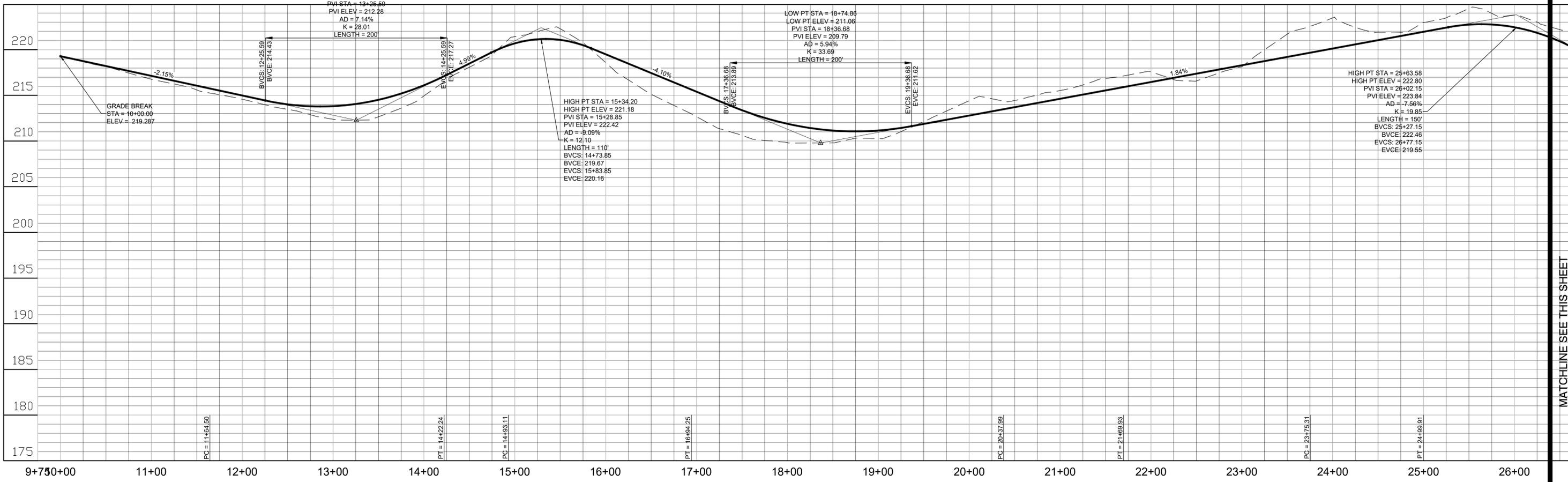
LAUNCH SITE 1 - APPROACH A

DATE: 04/24/2025
 PAGE 1 OF 2

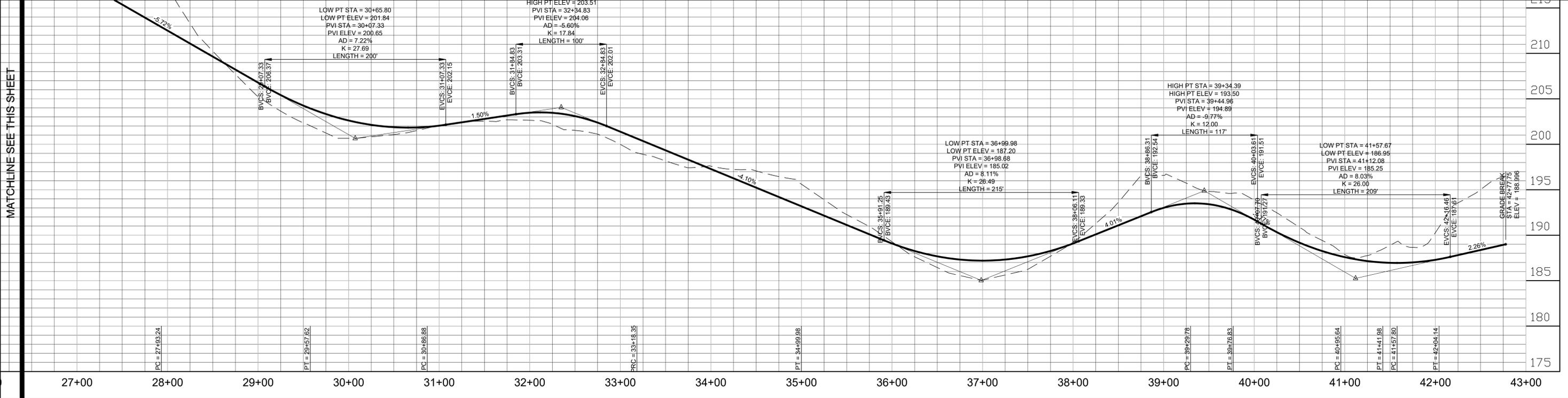


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APPROACH A ROAD



MATCHLINE SEE THIS SHEET



MATCHLINE SEE THIS SHEET

SCALE:
H: 1" = 50'
V: 1" = 5'
DATE: 04/15/2025
PAGE 2 OF 2

**DOVES LANDING
PARK**
KAYAK LAUNCH STUDY
LAUNCH SITE 1 - APPROACH A



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I (4)	UP TO 250	42	20	10%	120	125	225	4	9	18	9	4	6 in.	2 in.
II	251 TO 400	44	20	10%	120	125	225	5	10	20	10	5	8 in.	2 in.
III	401 TO 1,000	56	25	10%	200	155	280	6	11	22	11	6	9 in.	4 in.

GENERAL NOTES:

1. This typical cross section shall be used in all subdivisions considered as rural/semi-rural, (subdivisions where average lot size is one (1) acre or greater).
2. Standard landings required at intersections.
3. Pavement section is standard requirement. Refer to Detail 650.01 for alternative pavement sections.
4. Forty foot (40 ft.) right-of-way allowed in certain circumstances where all slopes and drainage structures can be included and the average lot size is five (5) acres or more and approved by the Director of Transportation and VDOT.
5. Off street parking shall be required in accordance with Section 610.02 of this manual.
6. Trowels or rockways serving large lot subdivisions shall be designed conforming to VDOT and/or County requirements whichever is more stringent.
7. Additional right-of-way shall be required if streetcrops and shared use paths are required.
8. 2:1 slopes will be allowed when soil type supported by soil report is acceptable and where special stabilization in accordance with Erosion Control ordinance is provided.
9. Wider shoulder shall be required in accordance with VDOT standards where guardrails are provided.
10. Minimum radius applies to level and rolling terrain.
11. Changes in categories, where permitted, shall be at intersections only and to the next lower or higher category only.
12. Sidewalk or shared use path is required per VDOT Secondary Street Acceptance Requirements.

Detail No.	RL-1		COUNTY OF PRINCE WILLIAM VIRGINIA	STANDARD TYPICAL SECTION FOR RESIDENTIAL LOCAL STREETS WITHOUT CURB AND GUTTER (FIXED TRAFFIC)	Date 7/15/14
650.02					

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* Value adjusted by cut or fill factor other than 1.0

4.51 ACRES OF DISTURBANCE

4.51 ACRES OF TREE CLEARANCE

DOVES LANDING PARK

KAYAK LAUNCH STUDY

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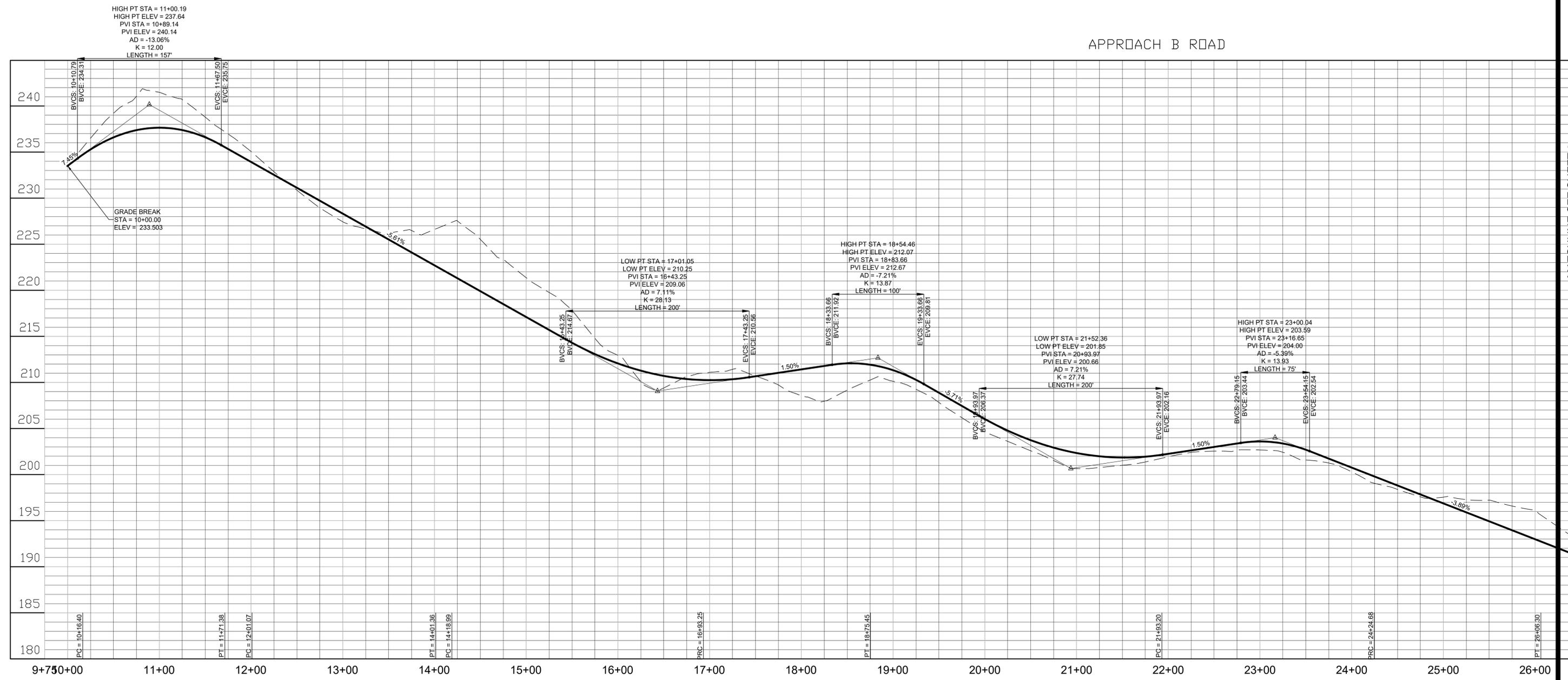
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PAGE 1 OF 3

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APPROACH B ROAD



MATCHLINE SEE SHEET 3

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DOVES LANDING PARK

KAYAK LAUNCH STUDY

LAUNCH SITE 1 - APPROACH B

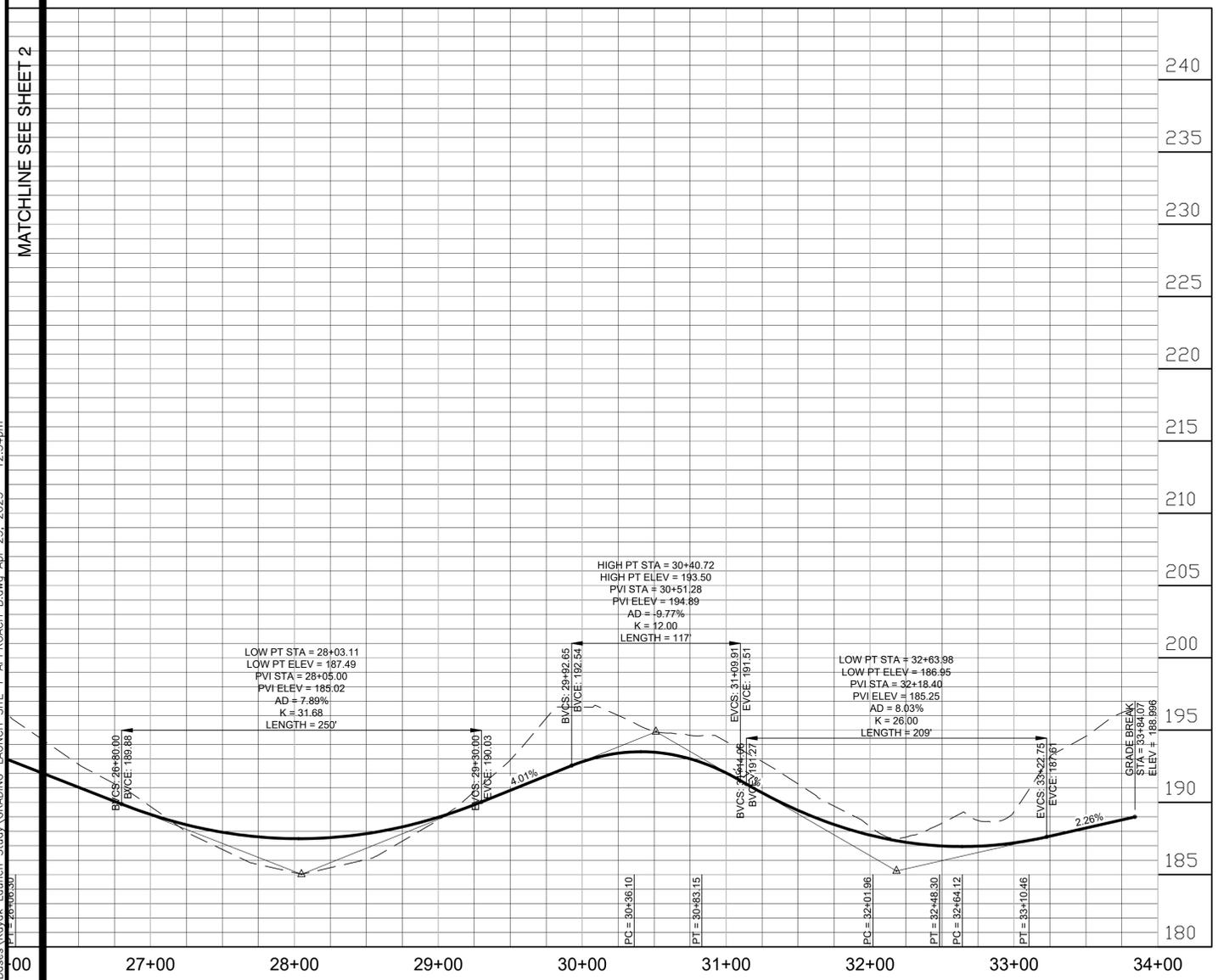
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PAGE 2 OF 3



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MATCHLINE SEE SHEET 2



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DOVES LANDING PARK

KAYAK LAUNCH STUDY

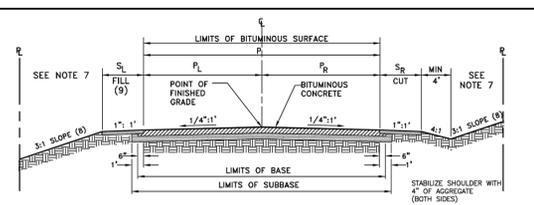
LAUNCH SITE 1 - APPROACH B

DATE: 04/24/2025
PAGE 3 OF 3



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I (4)	UP TO 250	42	20	10%	120	125	225	4	9	18	4	8	2
II	251 TO 400	44	20	10%	120	125	225	5	10	20	5	8	2
III	401 TO 1,000	56	25	10%	200	155	280	6	11	22	6	8	2

- GENERAL NOTES:
- This typical cross section shall be used in all subdivisions considered as rural/semi-rural, (subdivisions where average lot size is one (1) acre or greater).
 - Standard landings required at intersections.
 - Pavement section is standard requirement. Refer to Detail 650.01 for alternative pavement sections.
 - Early road (40 ft.) right-of-way allowed in certain circumstances where all slopes and drainage structures can be included and the average lot size is five (5) acres or more and approved by the Director of Transportation and VDOT.
 - Off street parking shall be required in accordance with Section 610.02 of this manual.
 - Travelways or roadways serving large lot subdivisions shall be designed conforming to VDOT and/or County requirements whichever is more stringent.
 - Additional right-of-way shall be required if streetscapes and shared use paths are required.
 - 2:1 slopes will be allowed when soil type supported by soil report is acceptable and where special stabilization in accordance with Erosion Control ordinance is provided.
 - Water shoulder shall be required in accordance with VDOT standards where guardrails are provided.
 - Minimum radius applies to level and rolling terrain.
 - Changes in categories, where permitted, shall be at intersections only and to the next lower or higher category only.
 - Sidewalk or shared use path is required per VDOT Secondary Street Acceptance Requirements.

Detail No. 650.02	RL-1	COUNTY OF PRINCE WILLIAM VIRGINIA	STANDARD TYPICAL SECTION FOR RESIDENTIAL LOCAL STREETS WITHOUT CURB AND GUTTER (FIXED TRAFFIC)	Date 7/15/14
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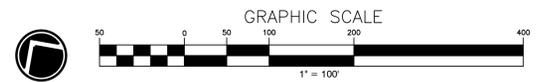
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* Value adjusted by cut or fill factor other than 1.0

4.58 ACRES OF DISTURBANCE
4.58 ACRES OF TREE CLEARANCE



DOVES LANDING PARK

KAYAK LAUNCH STUDY

LAUNCH SITE 1 - APPROACH C

DATE: 04/24/2025
 PAGE 1 OF 3



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MATCHLINE SEE SHEET 3

DOVES LANDING PARK

KAYAK LAUNCH STUDY LAUNCH SITE 1 - APPROACH C

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V: 1" = 5'

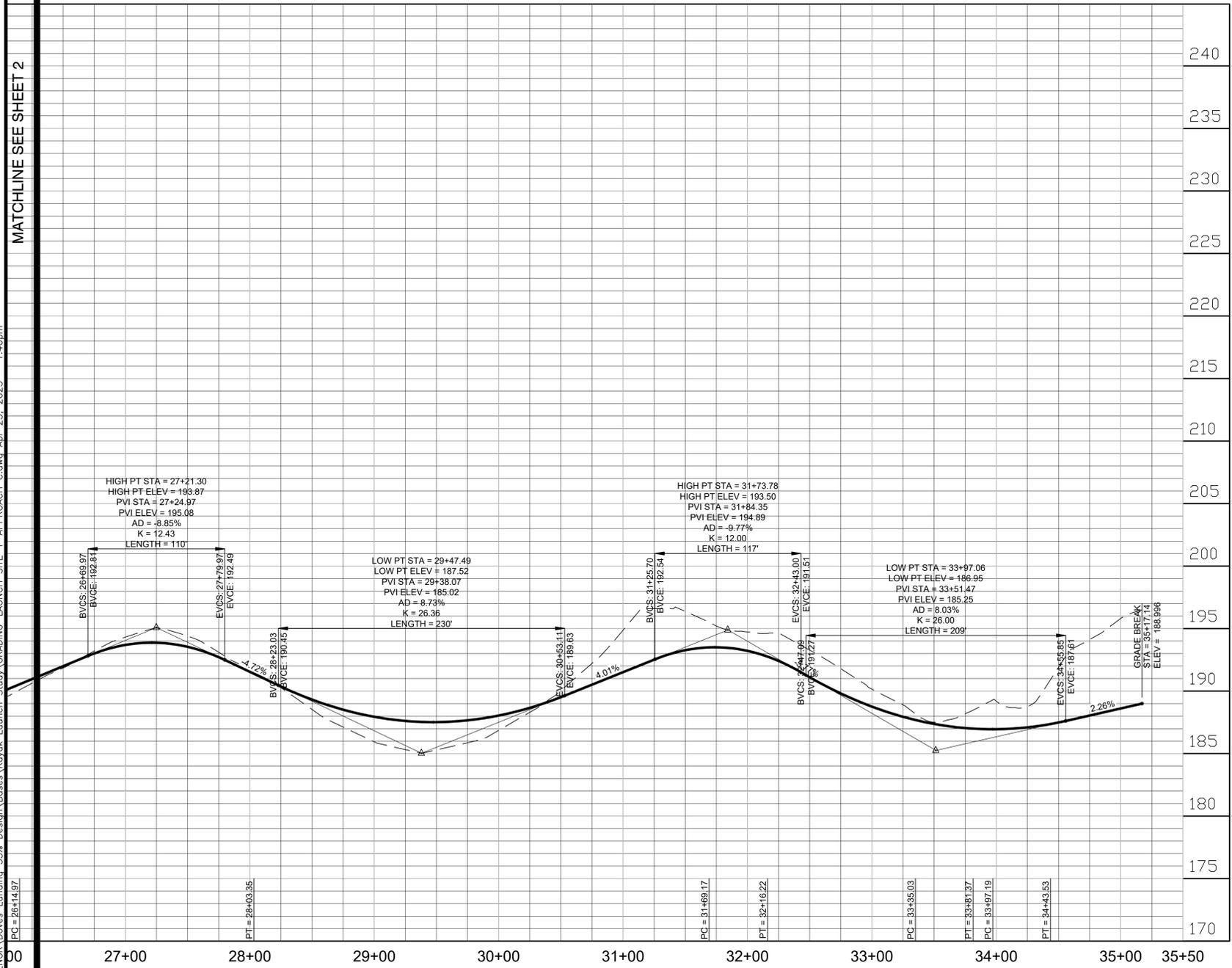
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PAGE 1 OF 3



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MATCHLINE SEE SHEET 2



DOVES LANDING PARK

KAYAK LAUNCH STUDY

LAUNCH SITE 1 - APPROACH C

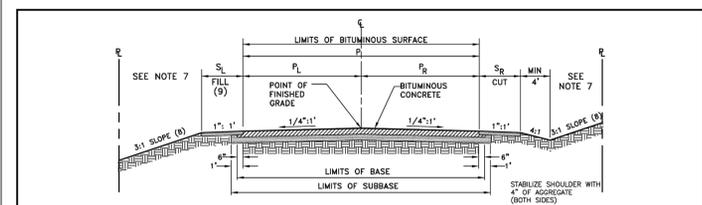
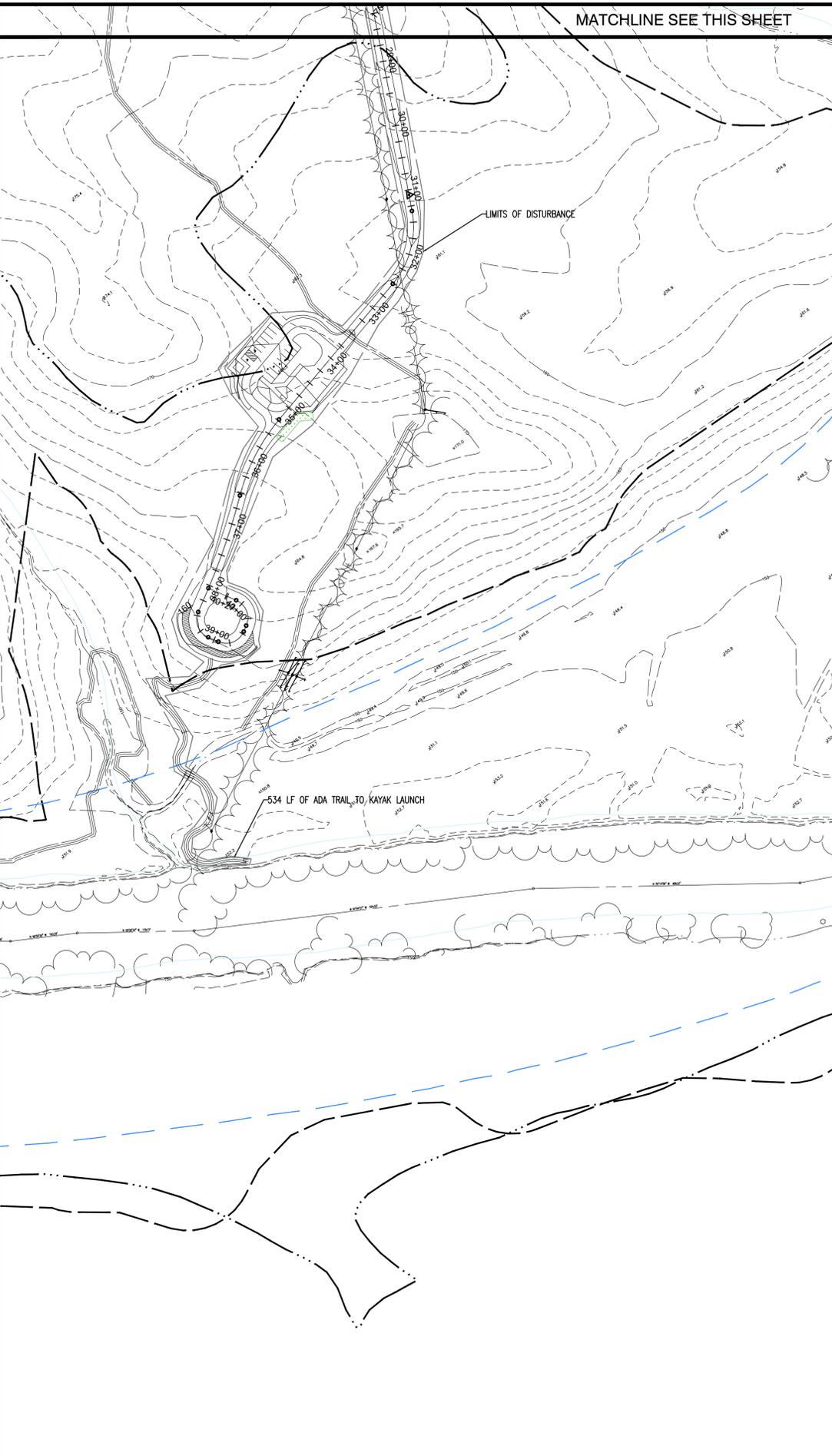
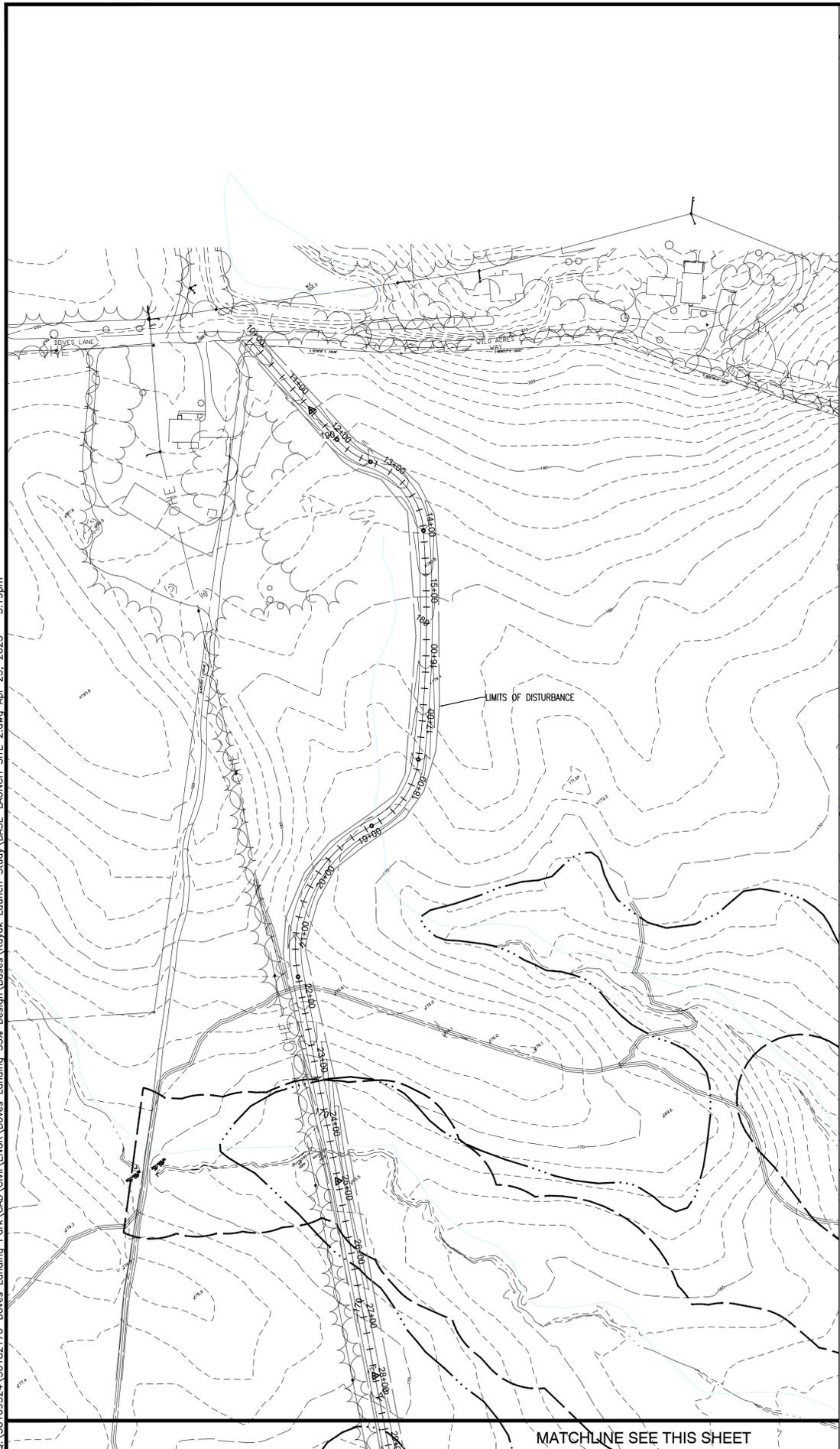
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PAGE 1 OF 3



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CATEGORY	TRAFFIC VOLUME (VPD)	R.O.W. WIDTH (ft.)	DESIGN SPEED (mph)	MAX. GRADE (%)	MIN. C.L. RADIUS (ft.)	MIN. SIGHT STOP DISTANCE (ft.)	S _c (%)	P ₁ (%)	P (%)	P ₂ (%)	S _e (%)	MIN. CUT (ft.)	MIN. SLOPE (%)	TYPE I SUBBASE (BM-25.0A)	BASE (SM-9.5A)	SURFACE
I (4)	UP TO 250	42	20	10%	120	125	225	4	9	18	9	4	6 in	6 in	2 in	2 in
II	251 TO 400	44	20	10%	120	125	225	5	10	20	10	5	8 in	8 in	2 in	2 in
III	401 TO 1,000	56	25	10%	200	155	280	6	11	22	11	6	8 in	4 in	4 in	2 in

- GENERAL NOTES:
- This typical cross section shall be used in all subdivisions considered as rural/semi-rural, (subdivisions where average lot size is one (1) acre or greater).
 - Standard landings required at intersections.
 - Pavement section is standard requirement. Refer to Detail 650.01 for alternative pavement sections.
 - Forty foot (40 ft.) right-of-way allowed in certain circumstances where all slopes and drainage structures can be included and the average lot size is five (5) acres or more and approved by the Director of Transportation and VDOT.
 - Off street parking shall be required in accordance with Section 610.02 of this manual.
 - Travelways or roadways serving large lot subdivisions shall be designed conforming to VDOT and/or County requirements whichever is more stringent.
 - Additional right-of-way shall be required if streetscapes and shared use paths are required.
 - 2:1 slopes will be allowed when soil type supported by soil report is acceptable and where special stabilization in accordance with Erosion Control ordinance is provided.
 - Wider shoulder shall be required in accordance with VDOT standards where guardrails are provided.
 - Minimum radius applies to level and rolling terrain.
 - Changes in categories, where permitted, shall be at intersections only and to the next lower or higher category only.
 - Sidewalk or shared use path is required per VDOT Secondary Street Acceptance Requirements.

Detail No.	650.02	RL-1	COUNTY OF PRINCE WILLIAM VIRGINIA	STANDARD TYPICAL SECTION FOR RESIDENTIAL LOCAL STREETS WITHOUT CURB AND GUTTER (FIXED TRAFFIC)	Date 7/15/14
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Cut/Fill Report

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Volume Summary							
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* Value adjusted by cut or fill factor other than 1.0

3.44 ACRES OF DISTURBANCE
3.38 ACRES OF TREE CLEARANCE



DOVES LANDING PARK

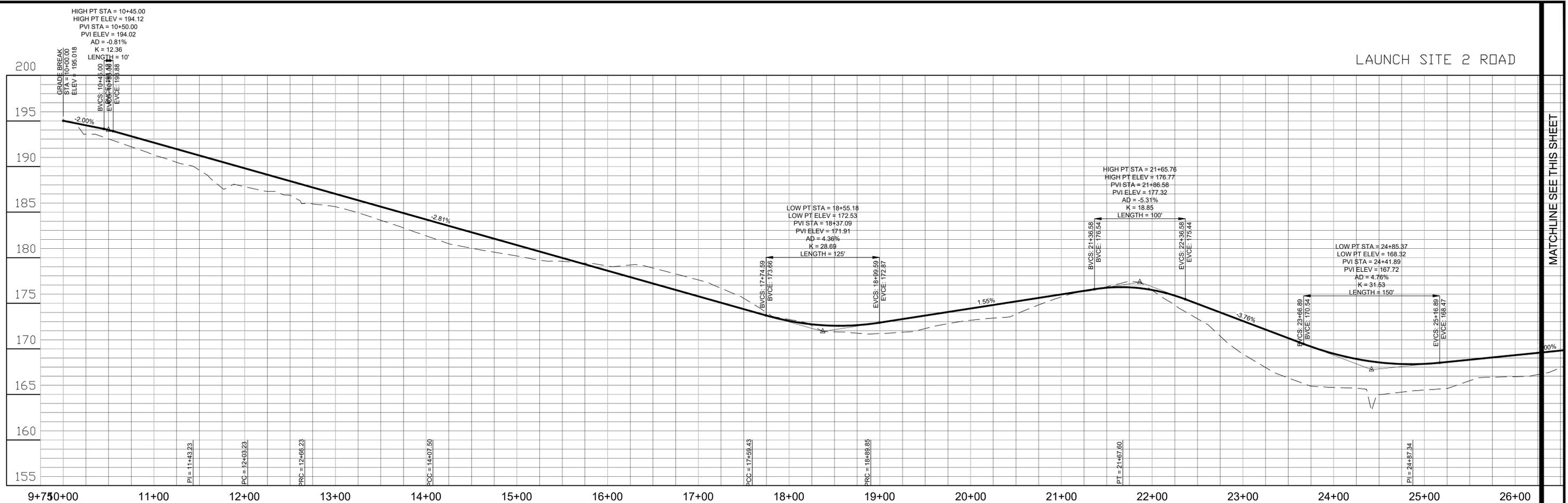
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LAUNCH SITE 2

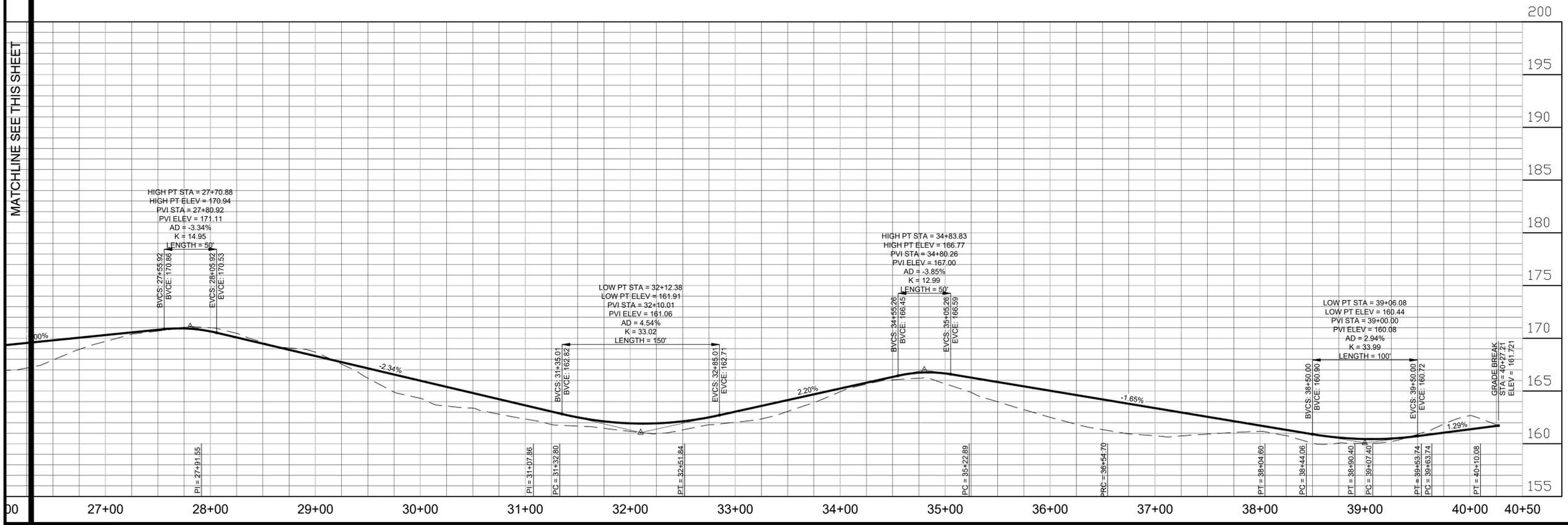
DATE: 04/24/2025
 PAGE 1 OF 2

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 Engineers Inc.

13575 HEATHCOTE BLVD.
 SUITE 150
 GAINESVILLE, VA 20155-6693
 PHONE: 703.468.2211
 FAX: 703.468.2212



MATCHLINE SEE THIS SHEET



MATCHLINE SEE THIS SHEET

SCALE:
H: 1" = 50'
V: 1" = 5'

DOVES LANDING PARK

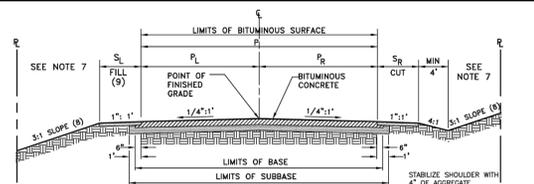
KAYAK LAUNCH STUDY LAUNCH SITE 2

DATE: 04/24/2025
PAGE 2 OF 2

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CATEGORY	TRAFFIC VOLUME (VPD)	R.O.W. WIDTH (ft.)	DESIGN SPEED (mph)	MAX GRADE (%)	MIN. C.L. RADIUS (ft.)	MIN. SIGHT DISTANCE (ft.)	S _c (ft.)	P ₁ (ft.)	P ₂ (ft.)	S _b (ft.)	TYPE SUBBASE	BASE AGG. BASE	SURFACE		
I (4)	UP TO 250	42	20	10%	120	125	225	4	9	18	9	4	6 in	2 in	
II	251 TO 400	44	20	10%	120	125	225	5	10	20	10	5	8 in	2 in	
III	401 TO 1,000	56	25	10%	200	155	280	6	11	22	11	6	8 in	4 in	2 in

- GENERAL NOTES:
1. This typical cross section shall be used in all subdivisions considered as rural/semi-rural, (subdivisions where average lot size is one (1) acre or greater).
 2. Standard landings required at intersections.
 3. Pavement section is standard requirement. Refer to Detail 650.01 for alternative pavement sections.
 4. Forty foot (40 ft.) right-of-way allowed in certain circumstances where all slopes and drainage structures can be included and the average lot size is five (5) acres or more and approved by the Director of Transportation and VDOT.
 5. Off street parking shall be required in accordance with Section 610.02 of this manual.
 6. Travelways or roadways serving large lot subdivisions shall be designed conforming to VDOT and/or County requirements whichever is more stringent.
 7. Additional right-of-way shall be required if streetscapes and shared use paths are required.
 8. 2:1 slopes will be allowed when soil type supported by soil report is acceptable and where special stabilization in accordance with Erosion Control ordinance is provided.
 9. Wider shoulder shall be required in accordance with VDOT standards where guardrails are provided.
 10. Minimum radius applies to level and rolling terrain.
 11. Changes in categories, where permitted, shall be at intersections only and to the next lower or higher category only.
 12. Sidewalk or shared use path is required per VDOT Secondary Street Acceptance Requirements.

Detail No.	650.02	RL-1	COUNTY OF PRINCE WILLIAM VIRGINIA	STANDARD TYPICAL SECTION FOR RESIDENTIAL LOCAL STREETS WITHOUT CURBS AND GUTTER (FIXED TRAFFIC)	Date 7/15/14
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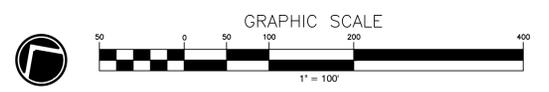
Cut/Fill Report

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Name	Type	Cut Factor	Fill Factor	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
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* Value adjusted by cut or fill factor other than 1.0

2.50 ACRES OF DISTURBANCE
2.49 ACRES OF TREE CLEARANCE



DOVES LANDING PARK

KAYAK LAUNCH STUDY

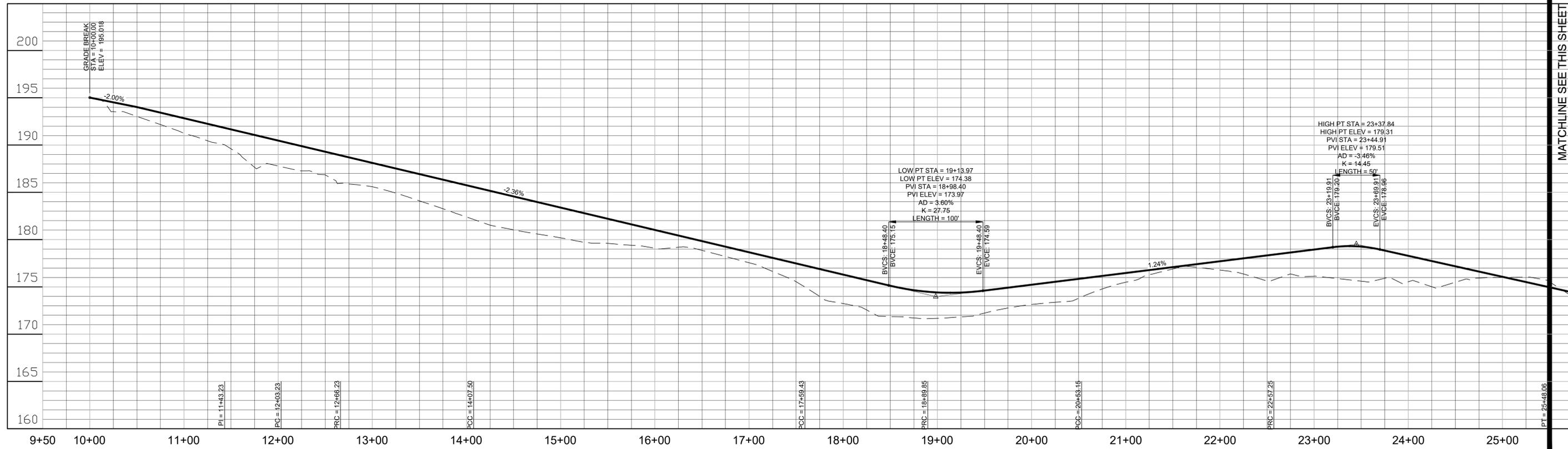
LAUNCH SITE 3

DATE: 04/24/2025
 PAGE 1 OF 2



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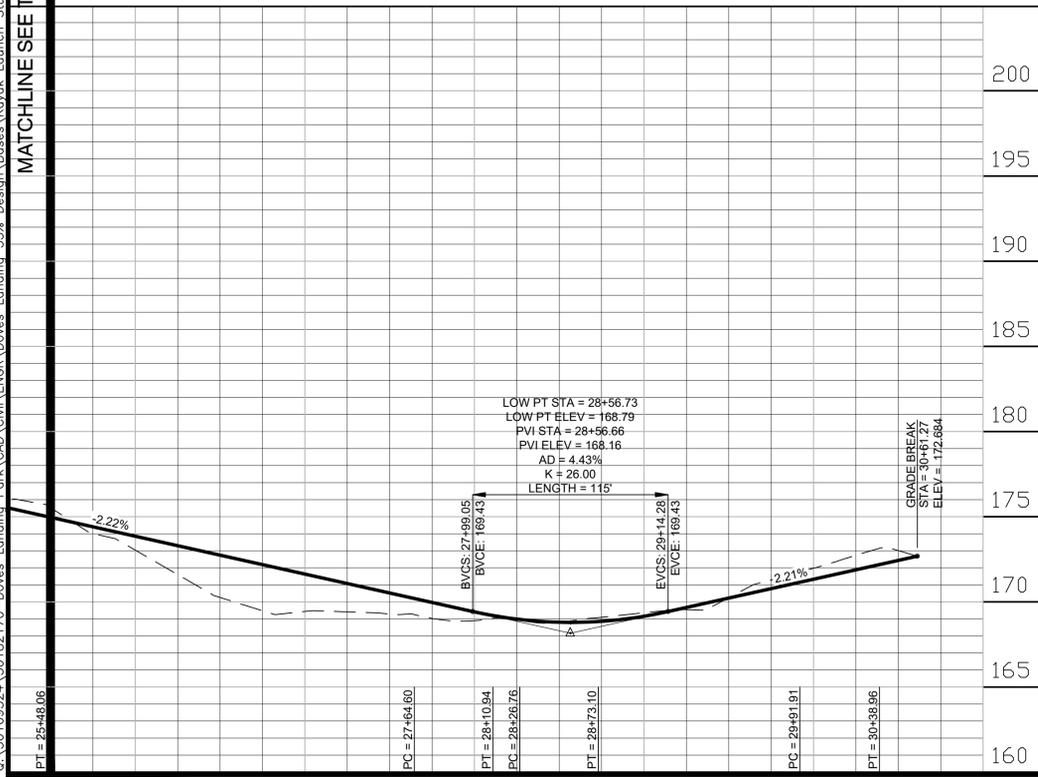
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MATCHLINE SEE THIS SHEET

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MATCHLINE SEE THIS SHEET



SCALE:
H: 1" = 50'
V: 1" = 5'

DOVES LANDING PARK
KAYAK LAUNCH STUDY
LAUNCH SITE 3

DATE: 04/24/2025
PAGE 2 OF 2



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