

April 28, 2025

Town of Chapel Hill
405 Martin Luther King Jr. Blvd.
Chapel Hill, NC 28514

Attention: Mr. John Richardson

Subject: Updated Remedial Alternatives Cost Evaluation
Chapel Hill Police Property
828 Martin Luther King Jr. Blvd
Chapel Hill, North Carolina
Brownfields Project No. 23022-19-068
H&H Job No. TCH-009

Dear John:

Per your request, Hart & Hickman, PC (H&H) has prepared an updated cost evaluation of remedial alternatives for the coal combustion products (CCPs), impacted cover soil, and construction and demolition (C&D) material in the fill area of the property located at 828 Martin Luther King, Jr. Blvd. in Chapel Hill (site). H&H provided previous evaluations to the Town on August 20, 2018 and March 2, 2023. Consistent with the previous evaluations, in the 2025 evaluation we considered the following two options:

- Option 1 – Removal of the CCPs, reuse of the inert C&D material, and restoration of the property. The updated estimated cost range for this alternative is \$12MM to \$16.4MM for 30,000 cubic yards (cy) of CCPs and \$19.2MM to \$25.9MM for 60,000 cy of CCPs, excavation and disposal of 19,000 cy of impacted cover soil, and on-site management of 134,000 to 164,000 cy of C&D material with the range dependent upon variable estimates of CCP and C&D volumes and costs obtained from three remedial contractors.
- Option 2 – Installation of an earth retention system along the embankment at the base of the fill area to obtain an appropriate embankment grade, cover of exposed CCPs along the embankment and in areas where minimal cover is present, and restoration. The estimated

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costs for this alternative are \$2.9MM to \$4.8MM, with the range largely dependent upon the type of earth retention system used.

The assumptions for each option are summarized in Table 1, with additional details provided in Table 2 for Option 1 and in Tables 3A, 3B, and 4 for Option 2.

Please note the following with regard to the cost estimates:

- For comparison purposes, the 2025 cost estimate evaluation columns are in white and the 2018 and 2023 cost estimate evaluation columns are in grey shading.
- The CCP volumes used in the 2023 and 2025 evaluations were modified based upon subsurface information obtained during assessment activities conducted after the 2018 evaluation. Based upon observations made during drilling through the fill materials in 2019 and 2020, which are documented in H&H's *Results of Post-Data Gap Assessment* report dated December 1, 2020, the previous volume estimate of CCPs present at the Site (60,700 cy) is likely an overestimate because observations indicate that the CCPs are intermixed with C&D materials. As such, for the 2023 and 2025 estimates, we used a CCP volume range from 30,000 cy to 60,000 cy.
- Because erosional CCP Areas G, H, and I (volume of 700 cy) were removed as part of the Interim Remedial Measurements as documented in H&H's *Interim Remedial Measures Report* dated April 19, 2021, removal of these materials is not included in the 2023 or 2025 cost estimates.
- Additional remedial subcontractor activities incorporated in the 2025 evaluation include the following:
 - Implementation of wet methods for fugitive dust emissions during excavation and transportation activities.
 - While no suspect asbestos-containing materials (ACMs) were identified during previous investigations, there remains a possibility of undiscovered ACMs due to the nature of the debris buried at the site. Therefore, costs are included for excavation, transportation, and disposal of approximately 20 tons of buried ACMs.

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- Screening and crushing of approximately 134,000 cy to 164,000 cy of inert C&D material for use as backfill (Option 1 only). Note that reuse and/or export of C&D material was not previously included in the 2018 and 2023 cost evaluations. However, based on recent discussions with the remedial contractors, it is likely that these materials will need to be screened and crushed prior to use as backfill. Therefore, costs are included for the on-Site management of C&D materials.

For comparison purposes, costs are also provided for off-site disposal of C&D debris as a separate line item not included in the estimated total for Option 1.

If you have any questions or comments concerning our evaluation, please let us know.

Sincerely,

Hart & Hickman, PC



Steve Hart, PG
Principal



Justin Ballard, PG
Project Manager

cc: Mary Jane Nirdlinger, Town of Chapel Hill (via email)

Attachments

Table 1
 Remedial Options and Costs Summary
 828 Martin Luther King, Jr. Blvd
 Chapel Hill, North Carolina
H&H Job No. TCH-009

Option 1 - Full Removal of CCPs and Site Restoration			
	Estimated Cost (2025)	Estimated Cost (2023)	Estimated Cost (2018)
<p>Option 1 includes full removal of CCPs at the site to the extent practicable and is based upon the following assumptions (2025 Estimate):</p> <ul style="list-style-type: none"> - Pre-construction sampling to obtain pre-approval to direct load CCPs and cover soil for off-site disposal. - Implementation of Erosion and Sediment Control measures. - Site clearing and grubbing. - Existing police building structure and asphalt paving demolition. Costs assume no significant asbestos containing materials in building. - Implementation of wet methods for fugitive dust emissions during excavation and transportation activities. - Excavation, transportation, and disposal of approximately 30,000 to 60,000 cubic yards (45,500 to 90,000 tons) of non-hazardous CCPs in Areas A-F. - Excavation, transportation, and disposal of approximately 19,000 cubic yards (28,500 tons) of non-hazardous cover soil overlying the CCPs which contains CCP constituents. - On-Site Management of approximately 134,000 cy to 164,000 cy of C&D debris as inert material.¹ - Excavation, transportation, and disposal of approximately 20 tons of asbestos containing materials (if warranted). - Backfill placement and compaction of approximately 46,000 to 90,000 tons of soil and grading to promote positive drainage in the disturbed area. - Engineering and oversight costs. Total of approximately 100 to 200 field days of work assumed. - Area of disturbance of approximately 5 acres. - 20% Contingency applied to all costs. <p>Table 2 details costs associated with the full removal remedial option. Costs from three different remedial contractors were obtained to provide a range of costs.</p>	<p>\$12MM - \$16.4MM (30,000 cubic yards of CCPs; 19,000 cubic yards of cover soil; and 164,000 cubic yards of C&D material)</p> <p>\$19.2MM - \$25.9MM (60,000 cubic yards of CCPs; 19,000 cubic yards of cover soil; and 134,000 cubic yards of C&D material)</p>	<p>\$8.8MM - \$11.2MM (30,000 cubic yards of CCPs; and 19,000 cubic yards of cover soil)</p> <p>\$14.5MM - \$18.2MM (60,000 cubic yards of CCPs; and 19,000 cubic yards of cover soil)</p>	<p>\$13.4MM - \$15.9MM (60,700 cubic yards of CCPs; and 19,000 cubic yards of cover soil)</p>
Option 2 - Installation of Earth Retention System Along Embankment, Cover of Exposed CCPs Along Embankment and Where Existing Cover is Minimal, and Site Restoration			
<p>Option 2 includes placement of additional soil cover in an upland area of the site where the existing soil cover is less than 2 ft thick, installation of an earth retention system at the base of the fill area, and placement of backfill behind the earth retention system and to cover exposed CCP along the embankment. Key assumptions for this option are as follows (2025 Estimate):</p> <ul style="list-style-type: none"> - Performance of geotechnical evaluation to determine feasibility and design of earth retention system. - Implementation of Erosion and Sediment Control measures. - Site clearing and grubbing. - Placement of approximately 800 cubic yards (1,200 tons) of additional soil cover over Area A where existing soil cover is less than 2 ft thick. - Installation of a variable height (approximately 2 to 19 ft high), approximately 9,000 sq ft area, and 370-ft long earth retention system at the base of the fill area (see Appendix A). Costs are provided for two types of earth retention systems: Mechanically Stabilized Earth (MSE) Wall or Cast-In-Place Wall. - Backfill placement and compaction of approximately 11,000 tons of import soil to support the earth retention system and cover the exposed CCPs along the embankment. The soil import volumes are based upon the cut/fill analysis as summarized in Appendix A and assume a maximum 3:1 slope and at least 2 ft of additional soil cover on the embankment. - Implementation of wet methods for fugitive dust emissions during excavation and transportation activities. - Removal and off-site disposal of approximately 200 to 500 tons of non-hazardous soil impacted with CCPs for the earth retention system foundation. Volume dependent upon the type of earth retention system selected. - Area of total site disturbance estimated to be approximately 1.2 acres. - Engineering and oversight costs. Total of 110 field days assumed. - 20% Contingency applied to all costs. <p>Tables 3A and 3B detail costs associated with Option 2. Each table represents a different type of earth retention system and also includes costs for three different remedial contractors. Details regarding the installation of an earth retention system and the associated cut/fill analysis are included in Table 4 and Appendix A, respectively.</p>	<p>\$2.9MM - \$4.8MM²</p>	<p>\$2.9MM - \$3.3MM²</p>	<p>\$1.6MM - \$3.5MM²</p>

Notes:

¹ Estimated quantities based on the known lateral extent of fill materials and the deepest CCPs were observed (29 ft) with cover soil (19,000 cy) and CCPs (30,000 cy to 60,000 cy) subtracted out.

² Estimated cost range represents MSE Wall (low end) and Cast-In-Place Wall (high end).

Table 2
 Option 1 Details - Full Removal of CCP
 828 Martin Luther King, Jr. Blvd
 Chapel Hill, North Carolina
 H&H Job No. TCH-009

Task Description	2018				2023				2025								
	Remedial Contractor #1		Remedial Contractor #2		Remedial Contractor #1		Remedial Contractor #2		Remedial Contractor #3		Remedial Contractor #1		Remedial Contractor #2		Remedial Contractor #3		
	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total (60,000 cy)	Total (30,000 cy)	Unit Cost	Total (60,000 cy)	Total (30,000 cy)	Unit Cost	Total (60,000 cy)	Total (30,000 cy)	Unit Cost	Total (60,000 cy)	Total (30,000 cy)	
Remedial Subcontractor Costs																	
Planning, Permitting, Mobilization, & Demobilization	LS	\$20,000	LS	\$15,000	LS	\$23,000	\$23,000	LS	\$64,000	\$64,000	LS	\$17,500	\$17,500	LS	\$25,000	\$25,000	
Erosion & Sediment Control	LS	\$30,000	LS	\$30,000	LS	\$32,000	\$32,000	LS	\$186,000	\$186,000	LS	\$37,500	\$37,500	LS	\$85,000	\$85,000	
Clearing and Tree Removal (5 acres)	LS	\$75,000	\$18,000/AC	\$90,000	LS	\$86,500	\$86,500	LS	\$52,000	\$52,000	LS	\$97,500	\$97,500	LS	\$86,500	\$86,500	
Removal of On-Site Structure	LS	\$165,000	LS	\$250,000	LS	\$188,500	\$188,500	LS	\$98,000	\$98,000	LS	\$295,000	\$295,000	LS	\$188,500	\$188,500	
Remove Asphalt Parking Lot and Driveway (1,200 tons)	--	--	\$25/ton	\$41,250	--	--	--	--	--	--	\$35/Ton	\$57,500	\$57,500	\$56/Ton	\$67,200	\$67,200	
Wet Methods for Fugitive Dust Emissions	--	--	--	--	--	--	--	--	--	--	--	--	--	LS	\$45,000	\$45,000	
Non-Haz CCP Excavation, Transportation, & Disposal for Areas A-F (30,000 cy / 45,500 tons to 60,000 cy / 90,000 tons) ¹	\$85/ton	\$7,735,000	\$65/ton	\$5,947,500	\$98/Ton	\$8,775,000	\$4,459,000	\$106/Ton	\$9,540,000	\$4,823,000	\$68.50/Ton	\$6,165,000	\$3,116,750	\$135/Ton	\$12,150,000	\$6,142,500	
Non-Haz Cover Soil Excavation, Transportation, & Disposal for Areas A, B, C, and E (19,000 cy / 28,500 tons) ²	\$85/ton	\$2,422,500	\$65/ton	\$1,852,500	\$98/Ton	\$2,778,750	\$2,778,750	\$106/Ton	\$3,021,000	\$3,021,000	\$68.50/Ton	\$1,952,250	\$1,952,250	\$120/Ton	\$3,420,000	\$2,736,000	
On-Site Management of C&D Debris as Inert Material (134,000 cy to 164,000 cy)	--	--	--	--	--	--	--	--	--	--	--	--	--	LS	\$1,400,000	\$1,400,000	
Asbestos Management and Disposal (20 tons)	--	--	--	--	--	--	--	--	--	--	--	--	--	\$200/Ton	\$4,000	\$4,000	
Import, Place, & Compact Backfill (46,000 to 90,000 tons)	\$25/ton	\$2,250,000	\$28/ton	\$2,520,000	\$30/Ton	\$2,700,000	\$1,350,000	\$13.75/Ton	\$1,237,500	\$618,750	\$33.50/Ton	\$3,015,000	\$1,507,500	\$40/Ton	\$3,600,000	\$1,840,000	
Site Restoration (5 acres)	LS	\$175,000	\$7,500/AC	\$37,500	LS	\$185,000	\$185,000	LS	\$73,000	\$73,000	LS	\$37,000	\$37,000	LS	\$75,000	\$75,000	
Remedial Subcontractor Subtotals (Excluded Off-Site C&D Debris Disposal)	\$12,872,500	\$10,783,750		\$14,768,750		\$9,102,750		\$14,271,500		\$8,935,750		\$11,674,250		\$7,118,500		\$21,146,200	
Optional Subcontractor Task															\$13,378,700		
C&D Debris Excavation, Transportation & Disposal (134,000 cy / 84,000 tons to 164,000 cy / 103,000 tons) ³	--	--	--	--	--	--	--	--	--	--	--	--	--	\$90/Ton	\$7,560,000	\$9,270,000	
Engineering/Oversight Costs ⁴															\$83/Ton	\$6,972,000	
Planning and Permitting	--	\$30,000	--	\$30,000	--	\$34,500	\$34,500	--	\$34,500	\$34,500	--	\$34,500	\$34,500	--	\$39,675	\$39,675	
Live Loading Grid Sampling (49,000 to 79,000 cy)	\$140/1,000 cy	\$11,760	\$140/1,000 cy	\$11,760	\$160/1,000 cy	\$12,640	\$7,350	\$160/1,000 cy	\$12,640	\$7,350	\$160/1,000 cy	\$12,640	\$7,350	\$185/1,000 cy	\$14,615	\$9,065	
Oversight & Project Management (100 to 200 days)	\$1,500/day	\$300,000	\$1,500/day	\$300,000	\$1,725/day	\$345,000	\$172,500	\$1,725/day	\$345,000	\$172,500	\$1,725/day	\$345,000	\$172,500	\$1,985/day	\$1,985/day	\$1,985/day	
Final Reporting and As Built Drawings	--	\$30,000	--	\$30,000	--	\$34,500	\$34,500	--	\$34,500	\$34,500	--	\$34,500	\$34,500	--	\$39,675	\$39,675	
20% Contingency																	
Contingency Costs (20%)	%	\$2,636,852	%	\$2,219,102	%	\$3,025,278	\$1,856,520	%	\$2,925,828	\$1,823,120	%	\$2,406,378	\$1,459,670	%	\$4,311,563	\$2,717,253	
Estimated Project Totals (Rounded)		\$15,900,000		\$13,400,000		\$18,200,000	\$11,200,000		\$17,600,000	\$11,000,000		\$14,500,000	\$8,800,000		\$25,900,000	\$16,400,000	
															\$19,200,000	\$12,000,000	
															\$23,200,000	\$15,100,000	

Notes:

cy = cubic yard; LS = lump sum; AC = acre; C&D = construction and demolition

1. Transportation and disposal costs are for Republic Services' Uwharrie Environmental Landfill in Mount Gilead, North Carolina.

2. Transportation and disposal costs are for Republic Services' Upper Piedmont Environmental Landfill in Rougemont, North Carolina.

3. Transportation and disposal costs are for Orange County's landfill in Chapel Hill, North Carolina.

4. 15% increase in labor and laboratory costs for 2025

Table 3A
Option 2A Details - Installation of Earth Retention System (MSE Wall)
828 Martin Luther King, Jr. Blvd
Chapel Hill, North Carolina
H&H Job No. TCH-009

Task Description	2018								2023								2025							
	Remedial Contractor #1		Remedial Contractor #2		Remedial Contractor #1		Remedial Contractor #2		Remedial Contractor #3		Remedial Contractor #1		Remedial Contractor #2		Remedial Contractor #3		Remedial Contractor #1		Remedial Contractor #2		Remedial Contractor #3			
	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total		
Remedial Subcontractor Costs																								
Planning, Permitting, Mobilization, & Demobilization	LS	\$20,000	LS	\$10,000	LS	\$23,000	LS	\$49,000	LS	\$11,500	LS	\$20,000	LS	\$35,000	LS	\$9,500								
Erosion & Sediment Control	LS	\$30,000	LS	\$15,000	LS	\$32,000	LS	\$68,000	LS	\$15,000	LS	\$45,000	LS	\$50,000	LS	\$13,000								
Clearing and Tree Removal (1.2 acres)	LS	\$35,000	\$40,000/AC	\$48,000	LS	\$40,000	LS	\$14,500	LS	\$54,900	LS	\$22,000	LS	\$14,500	\$29,500/AC	\$35,400								
Import, Place, & Compact Backfill for Area A (800 cy / 1,200 tons)	\$30/ton	\$36,000	\$32/ton	\$48,000	\$40/ton	\$48,000	\$13.75/Ton	\$16,500	\$72/Ton	\$86,400	\$45/ton	\$54,000	\$12/Ton	\$14,400	\$40/Ton	\$48,000								
Earth Retention System (370 ft long with variable height) ¹	--	\$1,265,600	--	\$110/sqft	--	\$1,645,280	--	\$1,645,280	--	\$1,645,280	--	\$1,645,280	--	\$1,645,280	--	\$1,645,280								
Earth Retention System Drainage Layer	--	\$74,000	--	\$74,000	--	\$96,200	--	\$96,200	--	\$96,200	--	\$96,200	--	\$96,200	--	\$96,200								
Wet Methods for Fugitive Dust Emissions											LS	\$18,500	LS	\$7,500	LS	\$8,500								
Non-Haz Soil/CCPs Foundation Excavation, Transportation, & Disposal for Retaining Wall (500 tons) ²	\$105/ton	\$52,500	\$85/ton	\$42,500	\$120/ton	\$60,000	\$106/Ton	\$53,000	\$95/Ton	\$47,500	\$140/ton	\$70,000	\$115/Ton	\$57,500	\$115/Ton	\$57,500								
Import, Place, & Compact Backfill for Retaining Wall (7,000 cy / 11,000 tons). ³ Amount of soil backfill reduced by one-half to account for some backfill costs included in estimate of retention wall system.	\$30/ton	\$319,200	\$32/ton	\$340,480	\$40/ton	\$425,600	\$13.75/Ton	\$146,300	\$33.50/Ton	\$356,440	\$60/ton	\$660,000	\$12/Ton	\$132,000	\$44/Ton	\$484,000								
Site Restoration (1.2 acres)	LS	\$85,000	LS	\$30,000	LS	\$97,500	LS	\$21,000		\$9,150	LS	\$20,000	LS	\$18,000	\$8,800/AC	\$10,560								
	Remedial Subcontractor Subtotals		\$1,917,300		\$607,980		\$2,467,580		\$2,109,780		\$2,322,370		\$2,650,980		\$2,070,380		\$2,407,940							
Engineering/Oversight Costs⁴																								
Planning and Permitting	--	\$30,000	--	\$30,000	--	\$34,500	--	\$34,500	--	\$34,500	--	\$39,675	--	\$39,675	--	\$39,675								
Geotechnical Evaluation for Earth Retention System Selection	--	\$50,000	--	\$50,000	--	\$57,500	--	\$57,500	--	\$57,500	--	\$66,125	--	\$66,125	--	\$66,125								
Oversight & Project Management (110 days)	\$1,500/day	\$165,000	\$1,500/day	\$165,000	\$1,725/day	\$189,750	\$1,725/day	\$189,750	\$1,725/day	\$189,750	\$1,985/day	\$218,350	\$1,985/day	\$218,350	\$1,985/day	\$218,350								
Final Reporting and As Built Drawings	--	\$30,000	--	\$30,000	--	\$34,500	--	\$34,500	--	\$34,500	--	\$39,675	--	\$39,675	--	\$39,675								
	Engineering/Oversight Subtotal		\$275,000		\$275,000		\$316,250		\$316,250		\$316,250		\$363,825		\$363,825									
20% Contingency																								
Contingency Costs (20%)	%	\$416,460	%	\$154,596	%	\$531,466	%	\$459,906	%	\$502,424	%	\$573,866	%	\$457,746	%	\$525,258								
	Estimated Project Totals (Rounded)		\$2,600,000		\$1,000,000		\$3,300,000		\$2,900,000		\$3,100,000		\$3,600,000		\$2,900,000		\$3,300,000							

Notes:

cy = cubic yard; ft = feet; LS = lump sum

1. See Table 4 (high end cost used)

2. Transportation and disposal costs are for Republic Services' Uwharrie Environmental Landfill in Mount Gilead, North Carolina.

3. See Appendix A

4. 15% increase in labor and laboratory costs for 2025

Table 3B
Option 2B Details - Installation of Earth Retention System (Cast-In-Place Wall)
828 Martin Luther King, Jr. Blvd
Chapel Hill, North Carolina
H&H Job No. TCH-009

Task Description	2018								2023								2025							
	Remedial Contractor #1		Remedial Contractor #2		Remedial Contractor #1		Remedial Contractor #2		Remedial Contractor #3		Remedial Contractor #1		Remedial Contractor #2		Remedial Contractor #3		Remedial Contractor #1		Remedial Contractor #2		Remedial Contractor #3			
	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total	Unit Cost	Total		
Remedial Subcontractor Costs																								
Planning, Permitting, Mobilization, & Demobilization	LS	\$20,000	LS	\$10,000	LS	\$23,000	LS	\$49,000	LS	\$11,500	LS	\$20,000	LS	\$35,000	LS	\$9,500								
Erosion & Sediment Control	LS	\$30,000	LS	\$15,000	LS	\$32,000	LS	\$68,000	LS	\$15,000	LS	\$45,000	LS	\$50,000	LS	\$13,000								
Clearing and Tree Removal (1.2 acres)	LS	\$35,000	\$40,000/AC	\$48,000	LS	\$40,000	LS	\$14,500	LS	\$54,900	LS	\$22,000	LS	\$14,500	\$29,500/AC	\$35,400								
Import, Place, & Compact Backfill for Area A (800 cy / 1,200 tons)	\$30/ton	\$36,000	\$32/ton	\$48,000	\$40/ton	\$48,000	\$13.75/Ton	\$16,500	\$72/Ton	\$86,400	\$45/ton	\$54,000	\$12/Ton	\$14,400	\$40/Ton	\$48,000								
Earth Retention System (370 ft long with variable height) ¹	--	\$1,265,600	--	\$110/sqft	--	\$1,645,280	--	\$1,645,280	--	\$1,645,280	--	\$2,061,120	--	\$2,061,120	--	\$2,061,120								
Earth Retention System Drainage Layer	--	\$74,000	--	\$74,000	--	\$96,200	--	\$96,200	--	\$96,200	--	\$96,200	--	\$96,200	--	\$96,200								
Wet Methods for Fugitive Dust Emissions											LS	\$18,500	LS	\$7,500	LS	\$8,500								
Non-Haz Soil/CCPs Foundation Excavation, Transportation, & Disposal for Retaining Wall (500 tons) ²	\$105/ton	\$52,500	\$85/ton	\$42,500	\$120/ton	\$60,000	\$106/Ton	\$53,000	\$95/Ton	\$47,500	\$140/ton	\$70,000	\$115/Ton	\$57,500	\$115/Ton	\$57,500								
Import, Place, & Compact Backfill for Retaining Wall (14,000 cy / 21,000 tons). ³	\$30/ton	\$319,200	\$32/ton	\$340,480	\$40/ton	\$425,600	\$13.75/Ton	\$146,300	\$33.50/Ton	\$356,440	\$60/ton	\$1,260,000	\$12/Ton	\$252,000	\$44/Ton	\$924,000								
Site Restoration (1.2 acres)	LS	\$85,000	LS	\$30,000	LS	\$97,500	LS	\$21,000		\$9,150	LS	\$20,000	LS	\$18,000	\$8,800/AC	\$10,560								
Remedial Subcontractor Subtotals	\$1,917,300		\$607,980		\$2,467,580		\$2,109,780		\$2,322,370		\$3,666,820		\$2,606,220		\$3,263,780									
Engineering/Oversight Costs⁴																								
Planning and Permitting	--	\$30,000	--	\$30,000	--	\$34,500	--	\$34,500	--	\$34,500	--	\$39,675	--	\$39,675	--	\$39,675								
Geotechnical Evaluation for Earth Retention System Selection	--	\$50,000	--	\$50,000	--	\$57,500	--	\$57,500	--	\$57,500	--	\$66,125	--	\$66,125	--	\$66,125								
Oversight & Project Management (110 days)	\$1,500/day	\$165,000	\$1,500/day	\$165,000	\$1,725/day	\$189,750	\$1,725/day	\$189,750	\$1,725/day	\$189,750	\$1,985/day	\$218,350	\$1,985/day	\$218,350	\$1,985/day	\$218,350								
Final Reporting and As Built Drawings	--	\$30,000	--	\$30,000	--	\$34,500	--	\$34,500	--	\$34,500	--	\$39,675	--	\$39,675	--	\$39,675								
Engineering/Oversight Subtotal	\$275,000		\$275,000		\$316,250		\$316,250		\$316,250		\$363,825		\$363,825		\$363,825									
20% Contingency																								
Contingency Costs (20%)	%	\$416,460	%	\$154,596	%	\$531,466	%	\$459,906	%	\$502,424	%	\$777,034	%	\$564,914	%	\$696,426								
Estimated Project Totals (Rounded)	\$2,600,000		\$1,000,000		\$3,300,000		\$2,900,000		\$3,100,000		\$4,800,000		\$3,500,000		\$4,300,000									

Notes:

cy = cubic yard; ft = feet; LS = lump sum

1. See Table 4 (high end cost used)

2. Transportation and disposal costs are for Republic Services' Uwharrie Environmental Landfill in Mount Gilead, North Carolina.

3. See Appendix A

4. 15% increase in labor and laboratory costs for 2025

Table 4
Earth Retention Systems Details
828 Martin Luther King, Jr. Blvd
Chapel Hill, North Carolina
H&H Job No. TCH-009

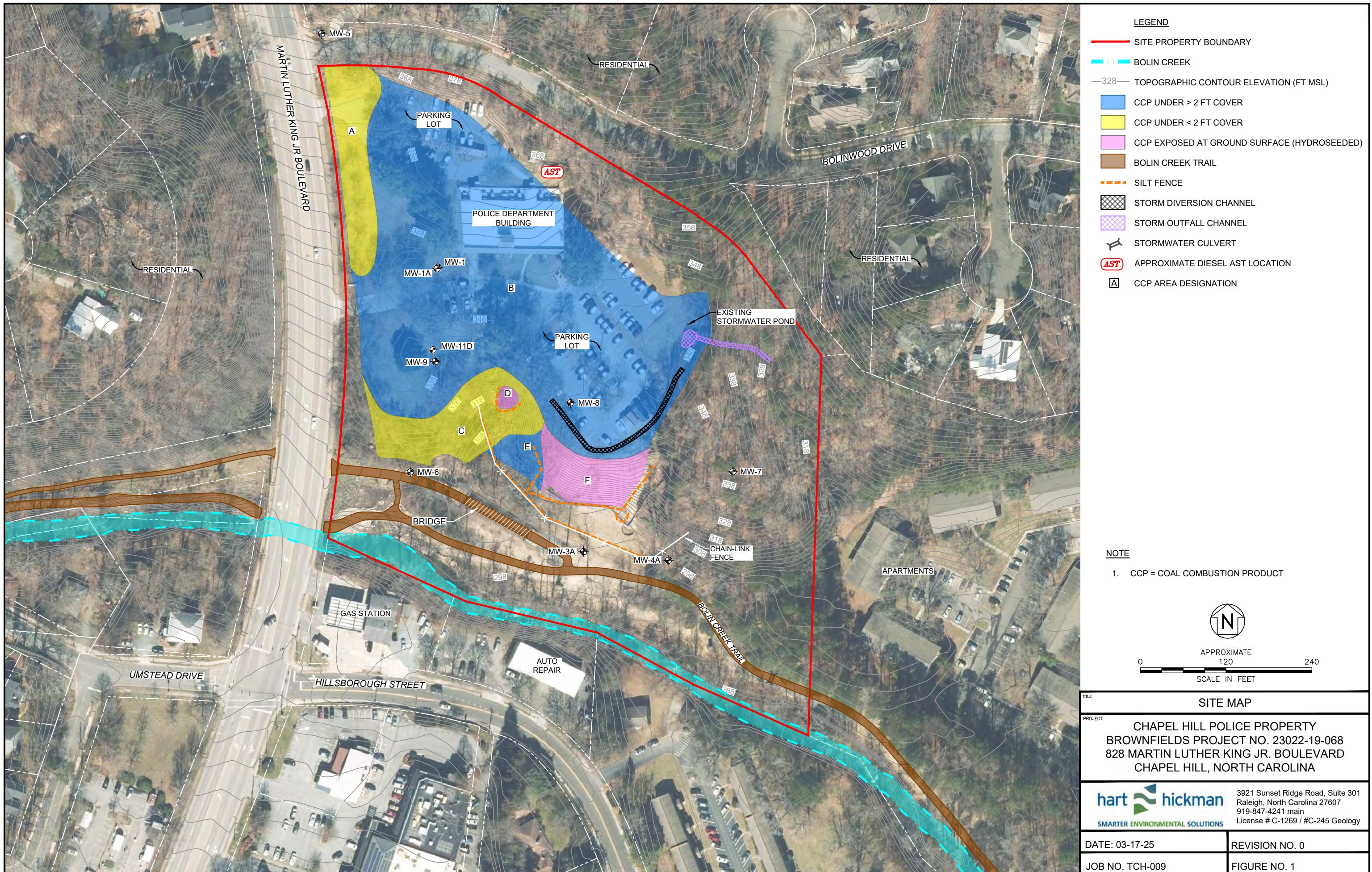
Earth Retention Systems	Estimated Cost Range															
	Unit Cost (2018)		Total (2018)		Unit Cost (2023)			Total (2023)			Unit Cost (2025)			Total (2025)		
	Low End	High End	Low End	High End	Low End	Mid Range	High End	Low End	Mid Range	High End	Low End	Mid Range	High End ¹	Low End	Mid Range	High End ¹
MSE Retaining Wall System	\$35/sqft	\$140/sqft*	\$316,400	\$1,265,600	\$36/sqft	\$110/sqft	\$182/sqft	\$325,440	\$994,400	\$1,645,280	\$25/sqft	\$36/sqft	\$182/sqft	\$226,000	\$325,440	\$1,645,280
Cast-In-Place Concrete Retaining Wall System	\$70/sqft	\$175/sqft	\$632,800	\$1,582,000	\$43/sqft	\$65/sqft	\$228/sqft	\$388,720	\$587,600	\$2,061,120	\$65/sqft	\$100/sqft	\$228/sqft	\$587,600	\$904,000	\$2,061,120

Notes:

1. High end cost from 2023.

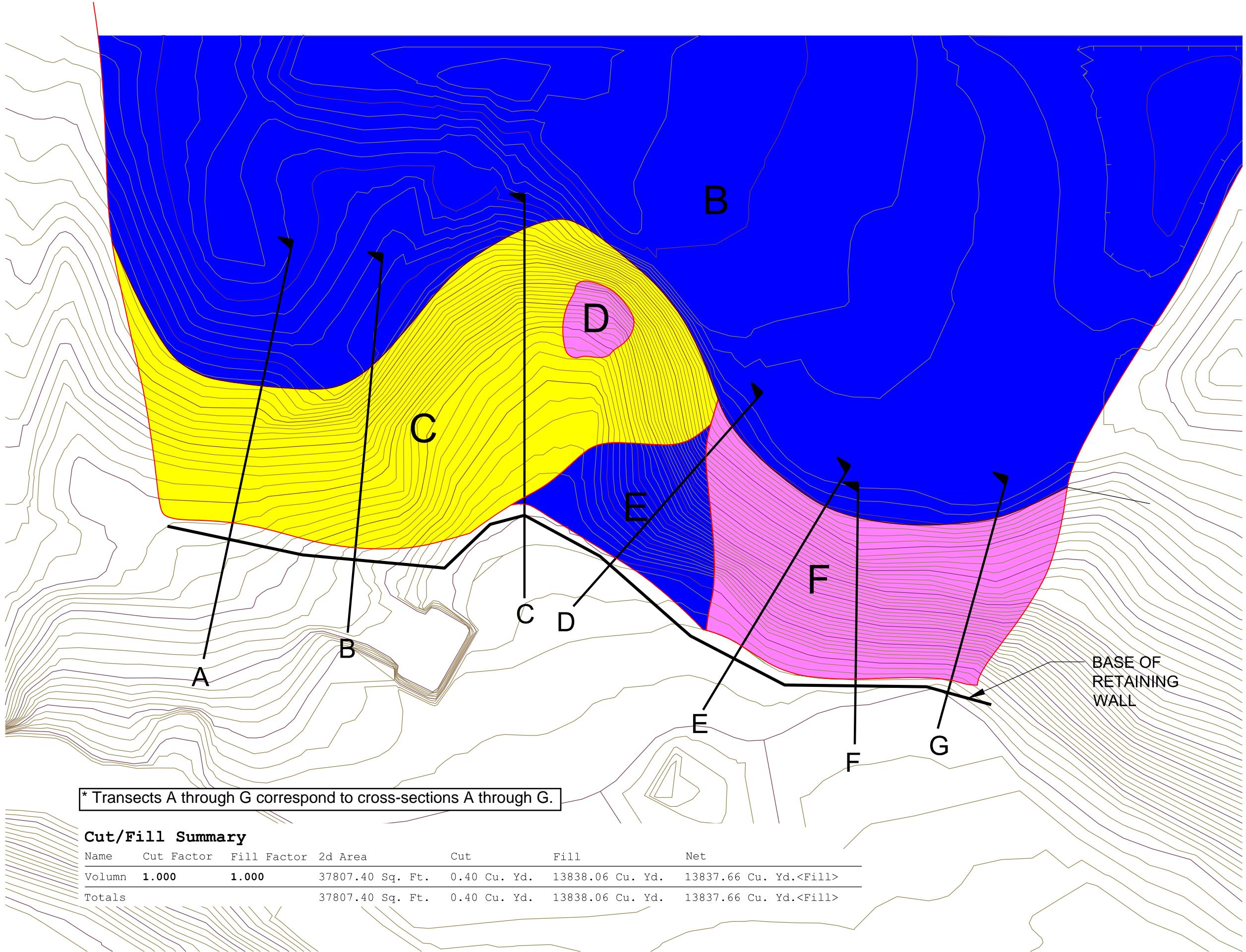
Budgetary estimations utilize a 9,040 sqft earth retention system with variable height. Estimations also assume retention system foundations will be set on bedrock, approximated at 10 feet below ground surface. See Appendix A for further details regarding system heights.

sqft = square feet; MSE = mechanically stabilized earth; * = pricing includes partial backfill costs

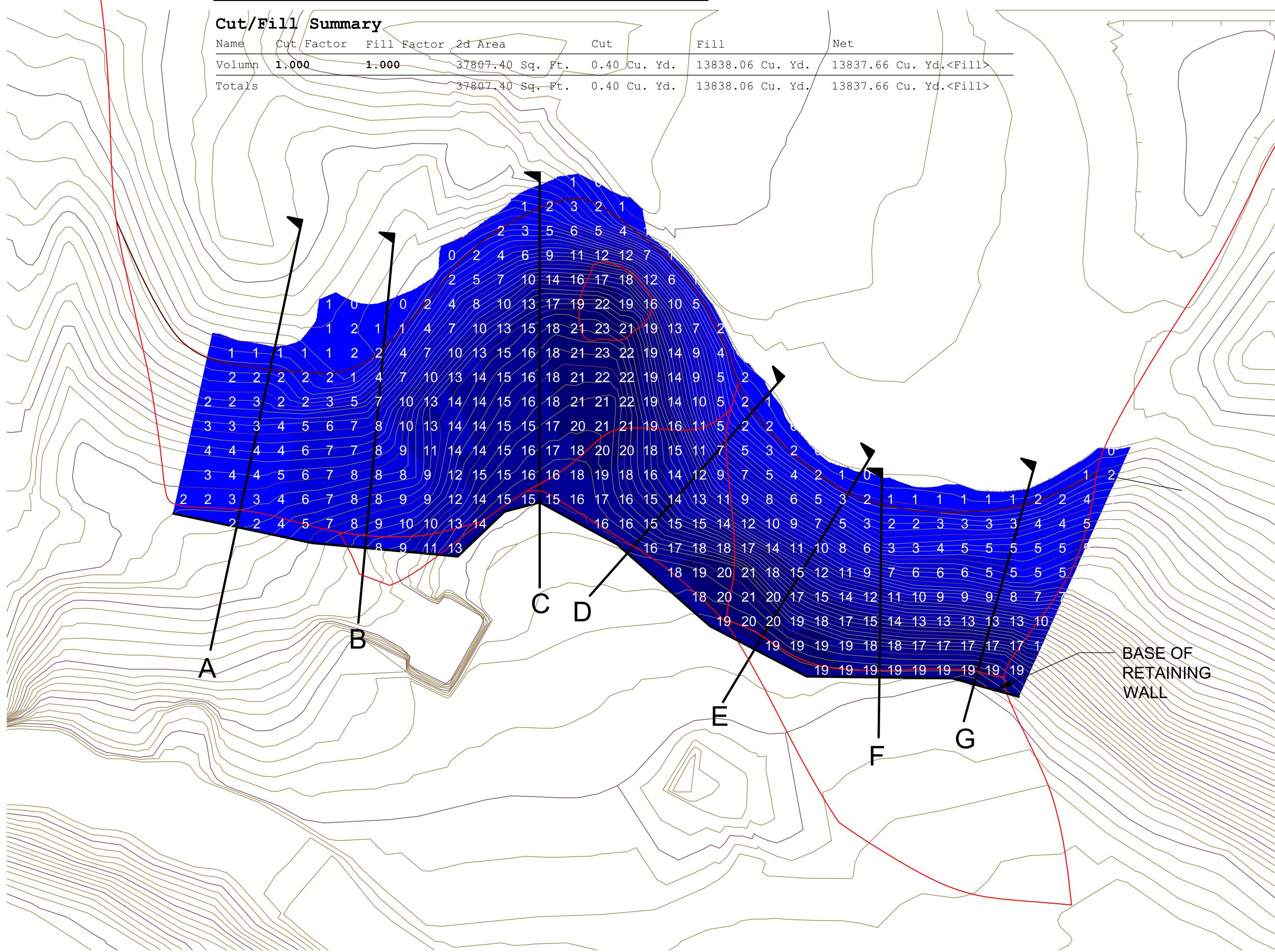


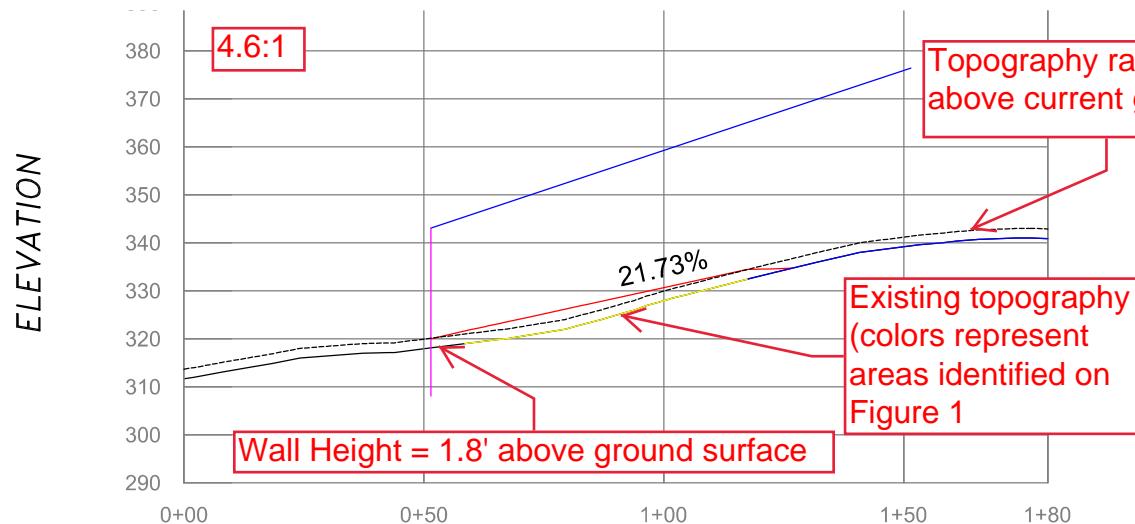
Appendix A

Cut/Fill Analysis for Earth Retention System

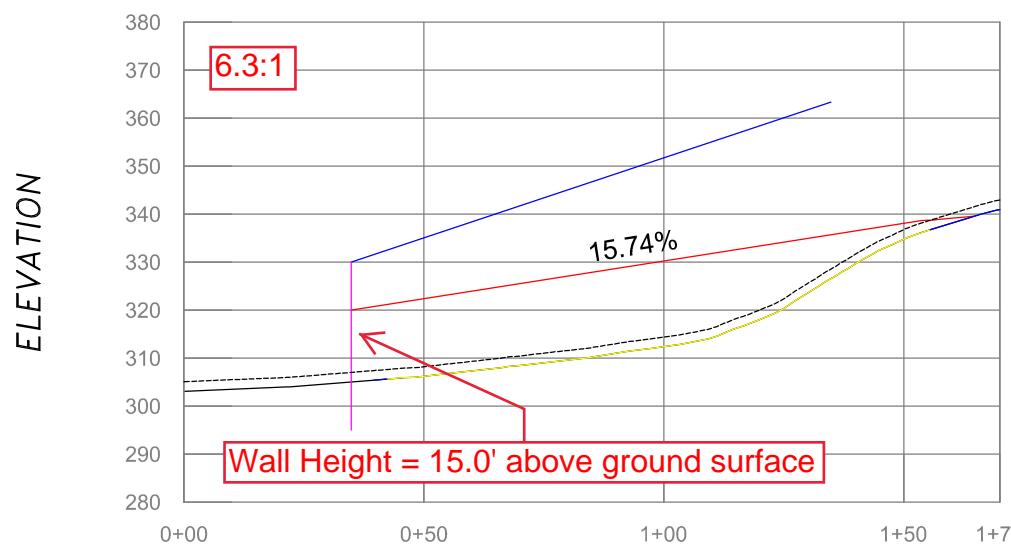


* Transects A through G correspond to cross-sections A through G.

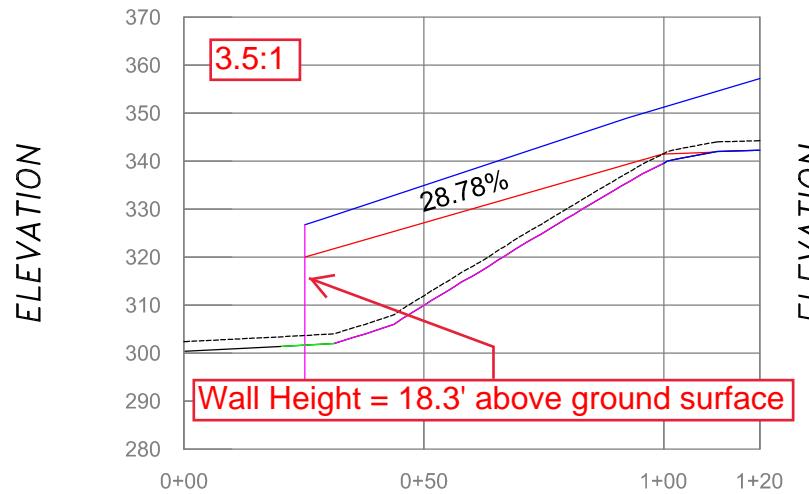




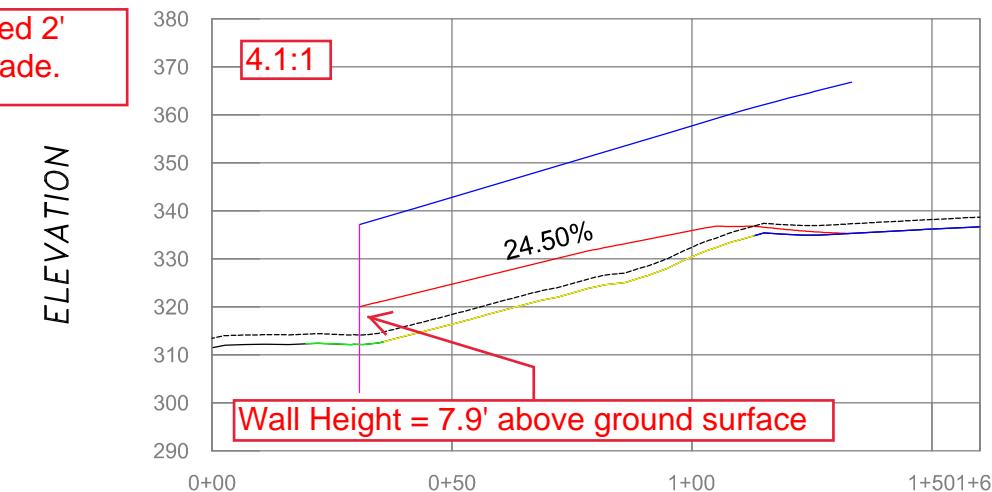
CROSS-SECTION "Alignment - A"



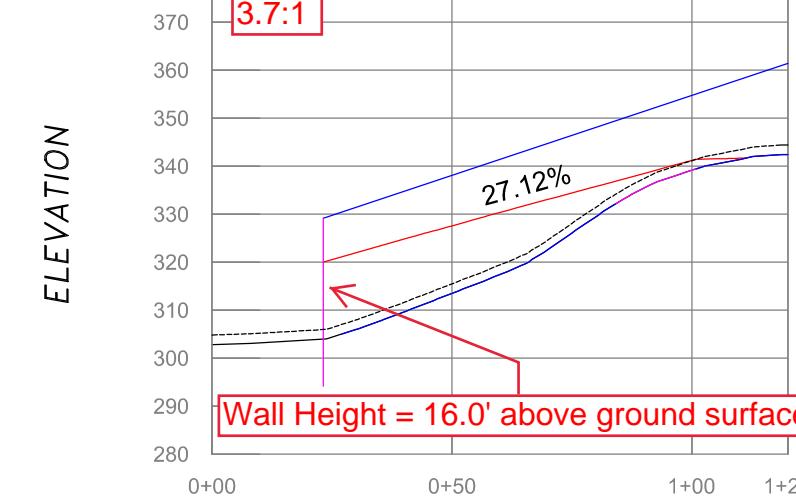
CROSS-SECTION "Alignment - C"



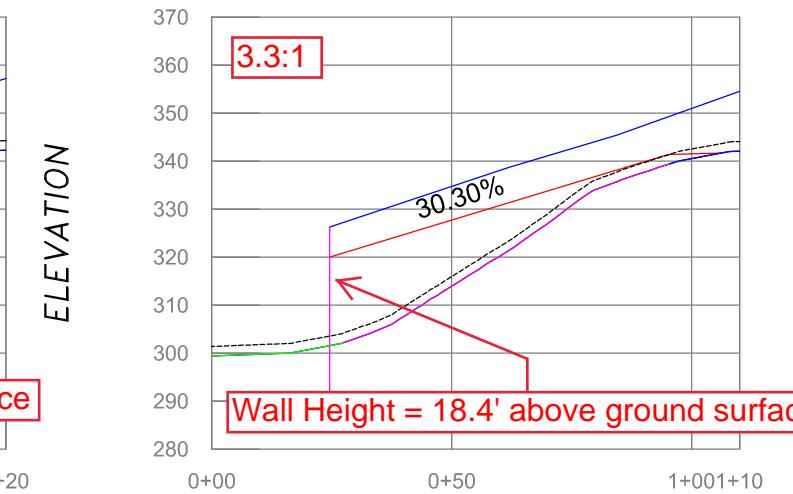
CROSS-SECTION "Alignment - E"



CROSS-SECTION "Alignment - B"



CROSS-SECTION "Alignment - D"



CROSS-SECTION "Alignment - F"



CROSS-SECTION "Alignment - G"