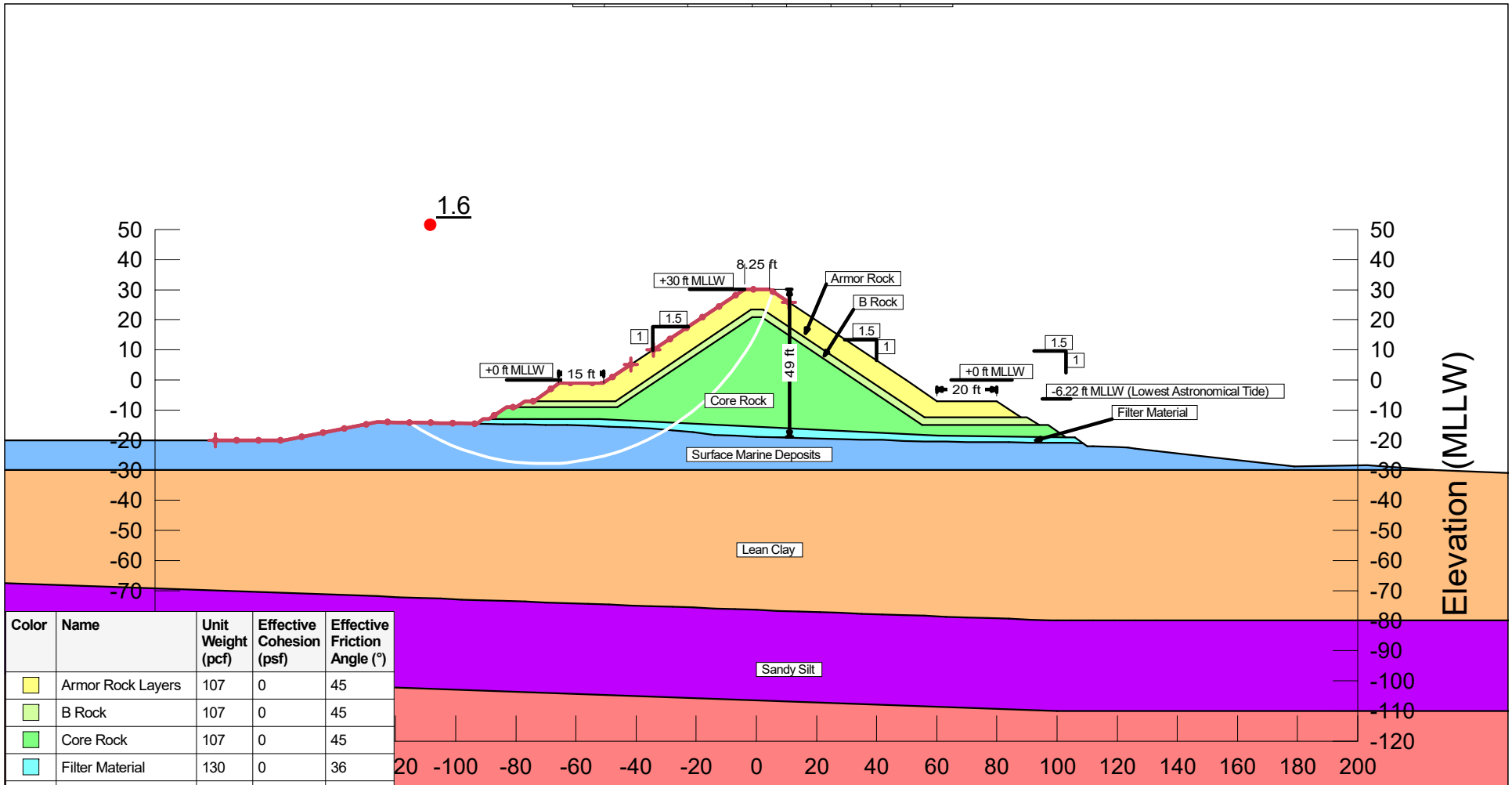
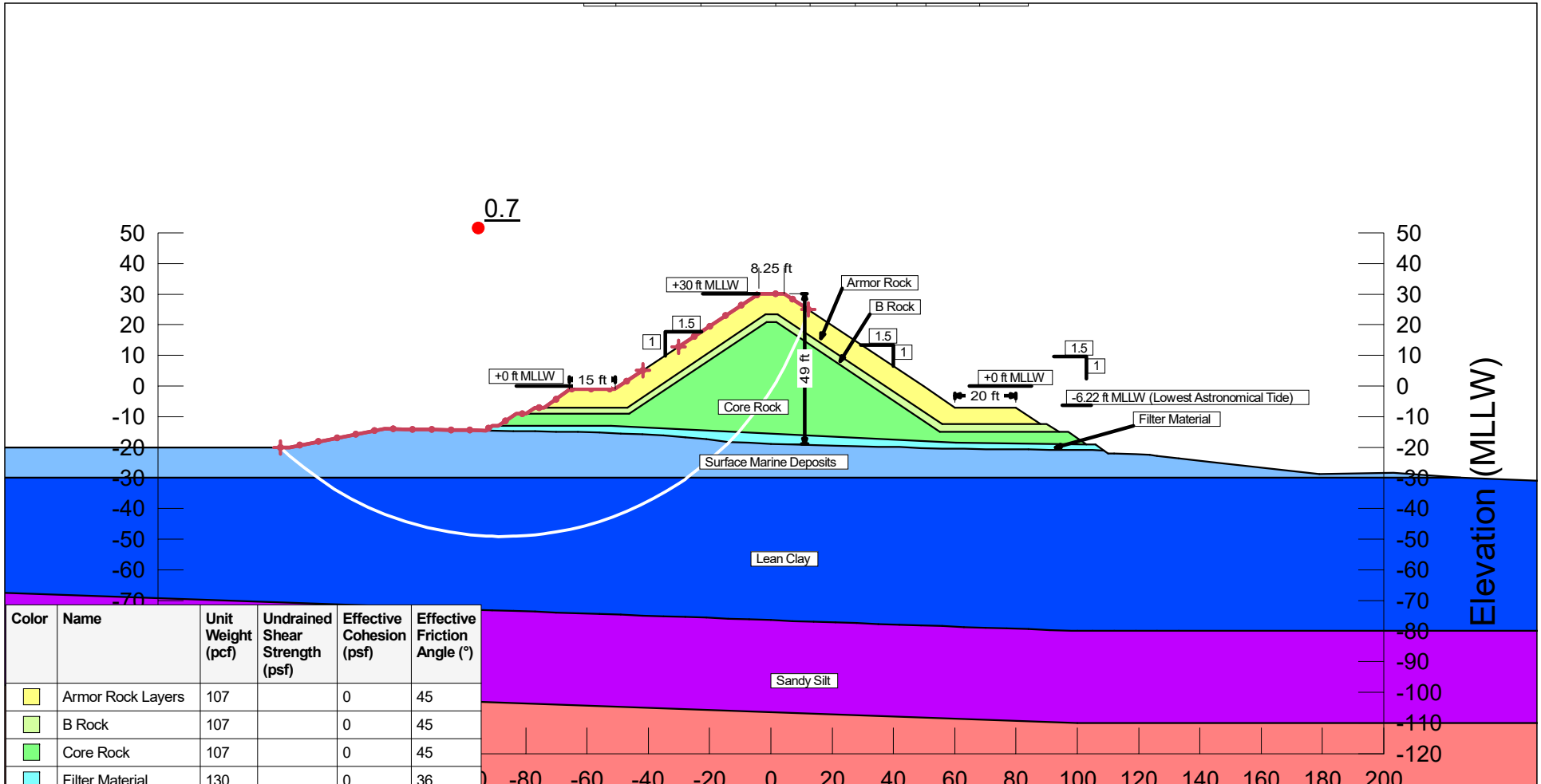


Color	Name	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Armor Rock Layers	107	0	45
	B Rock	107	0	45
	Core Rock	107	0	45
	Filter Material	130	0	36
	Marine Surface Deposit	100	0	28
	Marine Unit 1 (Lean Clay) (Improved)	130	1,000	18
	Marine Unit 2 (Silt w/ Sand) (Improved)	120	0	30
	Marine Unit 3 (Silty Sand)	125	0	31

US Army Corps of Engineers
Alaska District

01 Long Term Steady State Landside (Improved)

Project:	Homer Harbor Navigation Improvements	Date:	04/14/2026 07:12:18 PM
Location:	Homer, Alaska	Factor of Safety:	1.6
Engineer:	Twain M. Cacek, EIT, GIT	Scale:	1:600

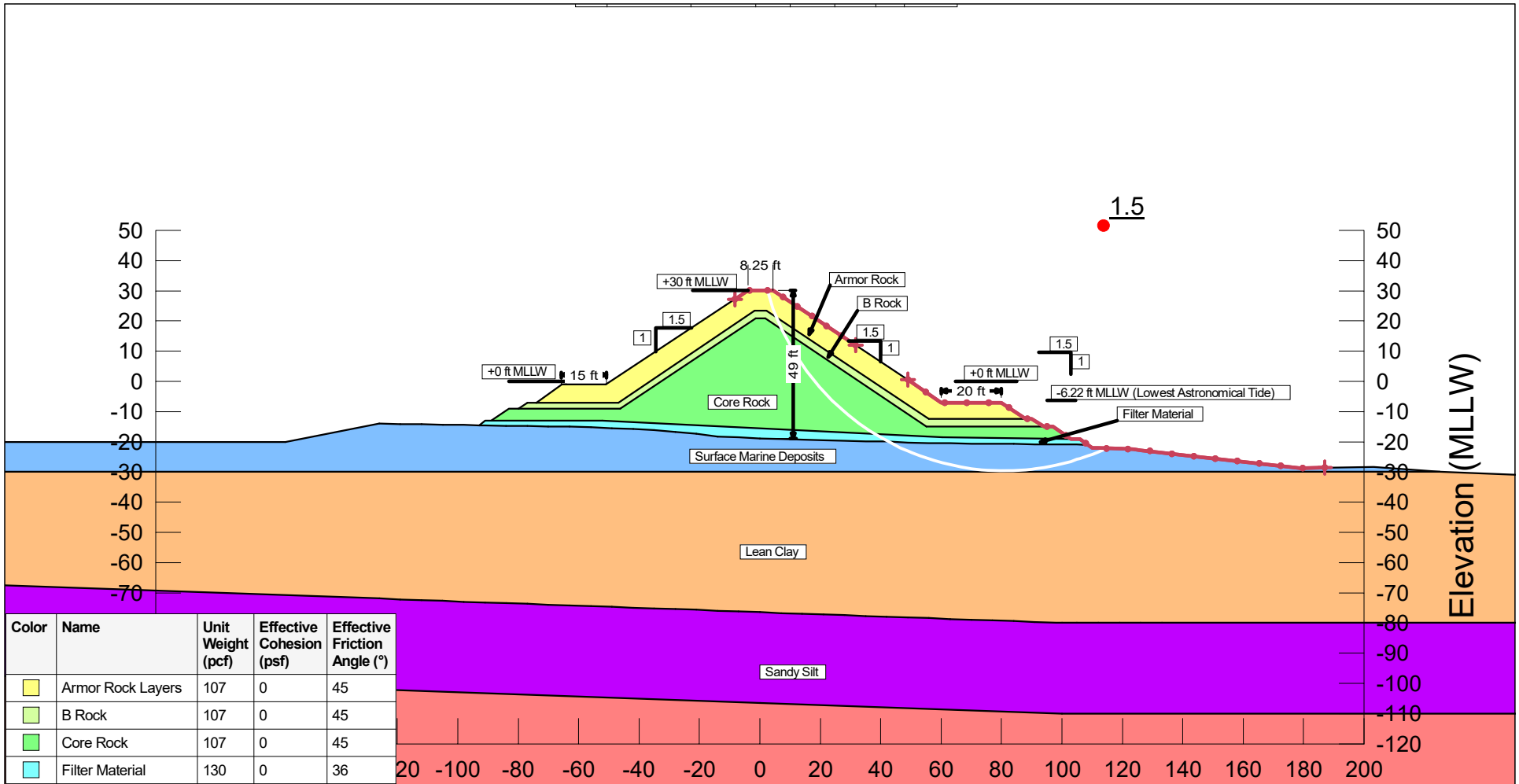


Color	Name	Unit Weight (pcf)	Undrained Shear Strength (psf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Armor Rock Layers	107		0	45
	B Rock	107		0	45
	Core Rock	107		0	45
	Filter Material	130		0	36
	Marine Surface Deposit	100		0	28
	Marine Unit 1 (Lean Clay) (Undrained)	115	100		
	Marine Unit 2 (Silt w/ Sand) (Improved)	120		0	30
	Marine Unit 3 (Silty Sand)	125		0	31

US Army Corps of Engineers
Alaska District

02 Long Term Steady State Landside (Unimproved)

Project:	Homer Harbor Navigation Improvements	Date:	04/14/2026 07:12:18 PM
Location:	Homer, Alaska	Factor of Safety:	0.7
Engineer:	Twain M. Cacek, EIT, GIT	Scale:	1:600

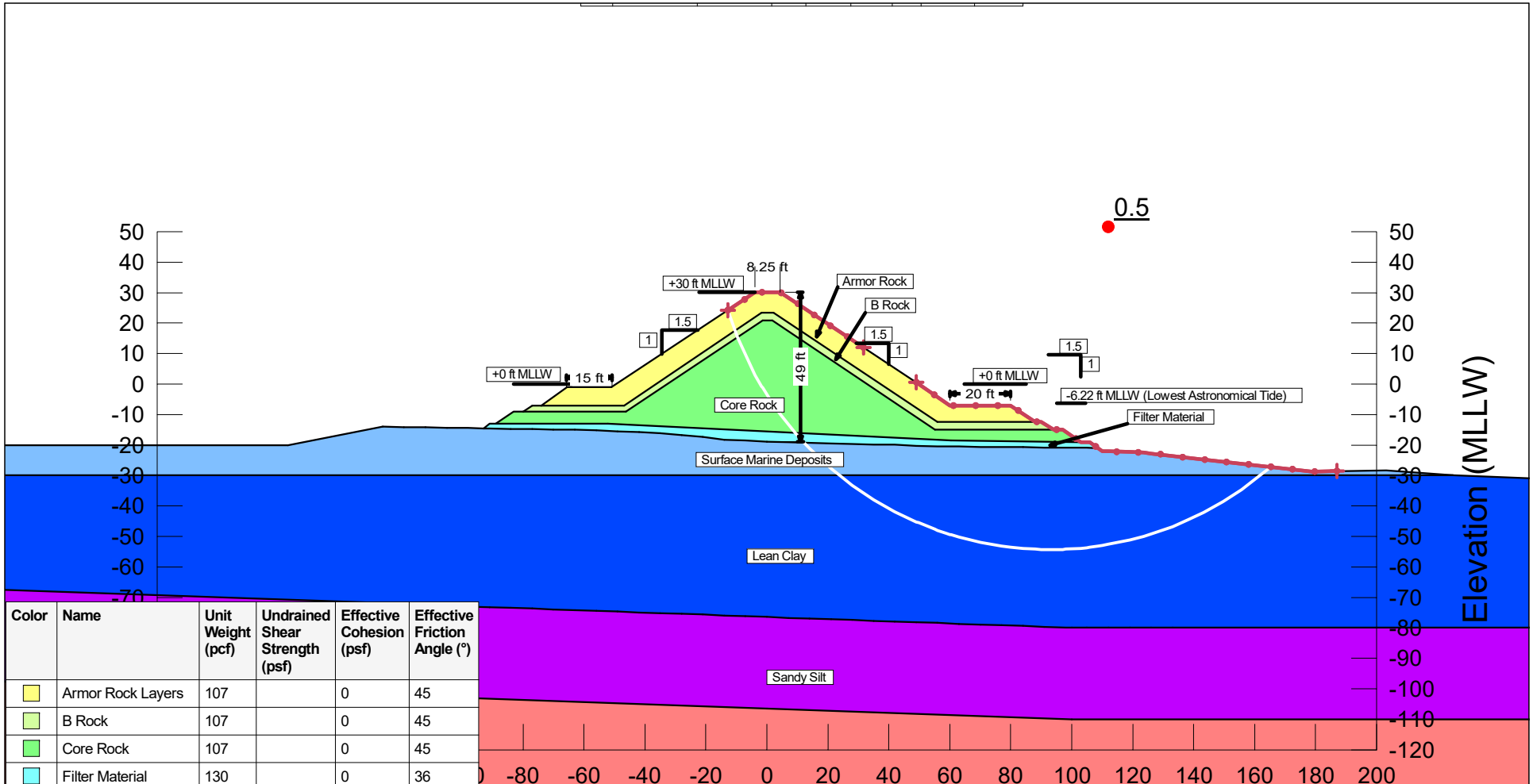


Color	Name	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Armor Rock Layers	107	0	45
	B Rock	107	0	45
	Core Rock	107	0	45
	Filter Material	130	0	36
	Marine Surface Deposit	100	0	28
	Marine Unit 1 (Lean Clay) (Improved)	130	1,000	18
	Marine Unit 2 (Silt w/ Sand) (Improved)	120	0	30
	Marine Unit 3 (Silty Sand)	125	0	31

US Army Corps of Engineers
Alaska District

03 Long Term Steady State Oceanside (Improved)

Project:	Homer Harbor Navigation Improvements	Date:	04/14/2026 07:12:18 PM
Location:	Homer, Alaska	Factor of Safety:	1.5
Engineer:	Twain M. Cacek, EIT, GIT	Scale:	1:600

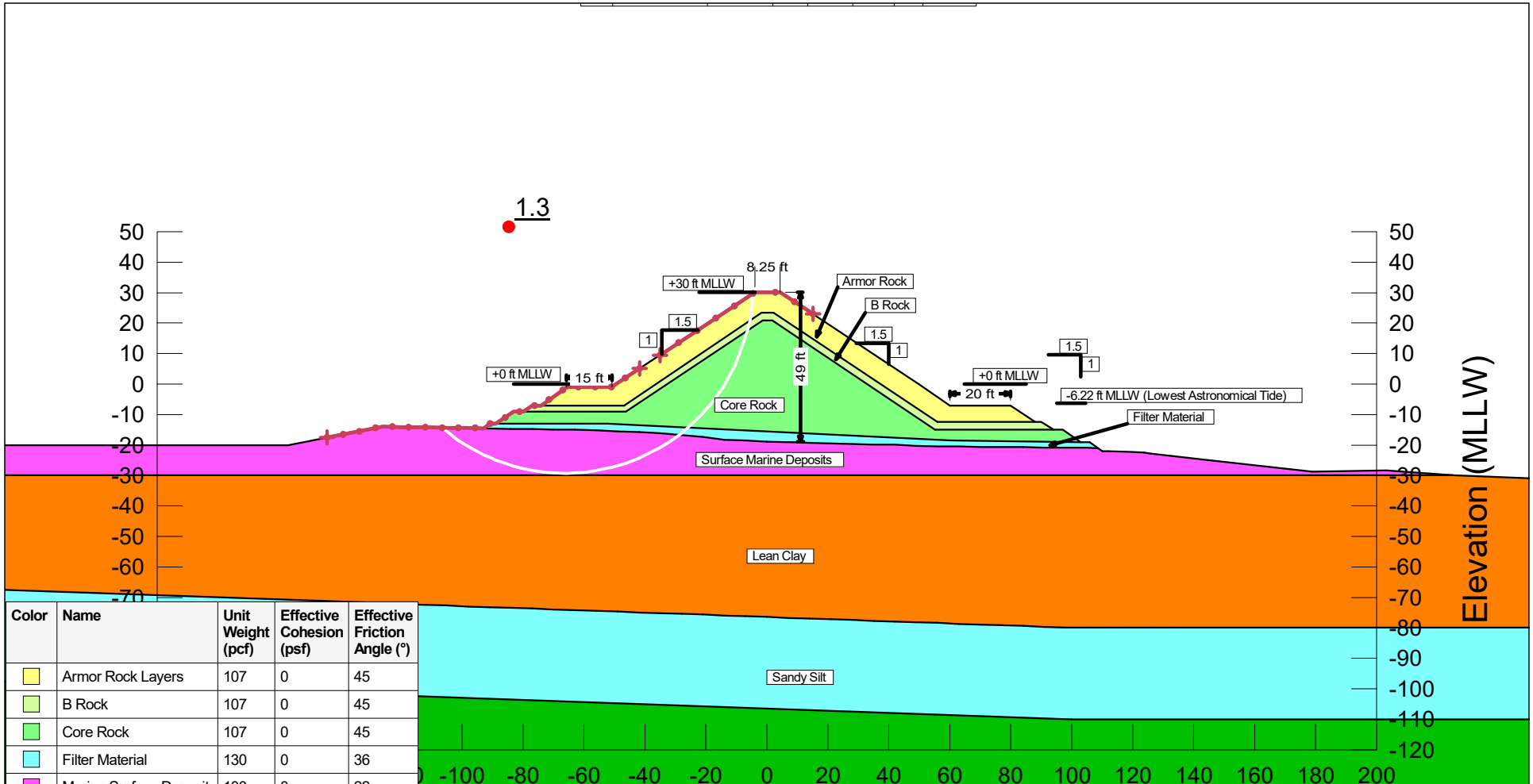


Color	Name	Unit Weight (pcf)	Undrained Shear Strength (psf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Armor Rock Layers	107		0	45
	B Rock	107		0	45
	Core Rock	107		0	45
	Filter Material	130		0	36
	Marine Surface Deposit	100		0	28
	Marine Unit 1 (Lean Clay) (Undrained)	115	100		
	Marine Unit 2 (Silt w/ Sand) (Improved)	120		0	30
	Marine Unit 3 (Silty Sand)	125		0	31

US Army Corps of Engineers
Alaska District

04 Long Term Steady State Oceanside (Unimproved)

Project:	Homer Harbor Navigation Improvements	Date:	04/14/2026 07:12:18 PM
Location:	Homer, Alaska	Factor of Safety:	0.5
Engineer:	Twain M. Cacek, EIT, GIT	Scale:	1:600

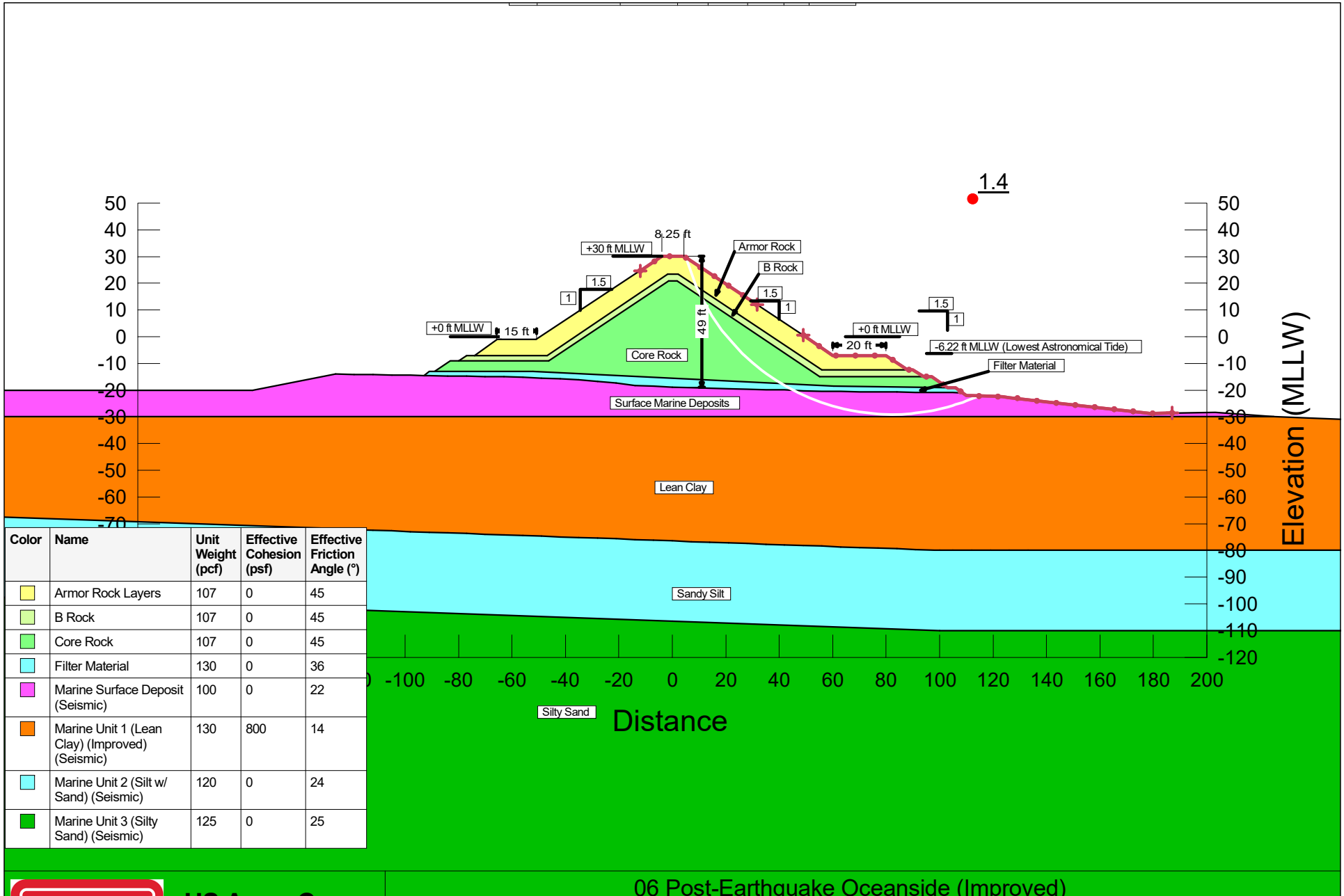


Color	Name	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Armor Rock Layers	107	0	45
	B Rock	107	0	45
	Core Rock	107	0	45
	Filter Material	130	0	36
	Marine Surface Deposit (Seismic)	100	0	22
	Marine Unit 1 (Lean Clay) (Improved) (Seismic)	130	800	14
	Marine Unit 2 (Silt w/ Sand) (Seismic)	120	0	24
	Marine Unit 3 (Silty Sand) (Seismic)	125	0	25

US Army Corps of Engineers
Alaska District

05 Post-Earthquake Landside (Improved)

Project:	Homer Harbor Navigation Improvements	Date:	04/14/2026 07:12:18 PM
Location:	Homer, Alaska	Factor of Safety:	1.3
Engineer:	Twain M. Cacek, EIT, GIT	Scale:	1:600

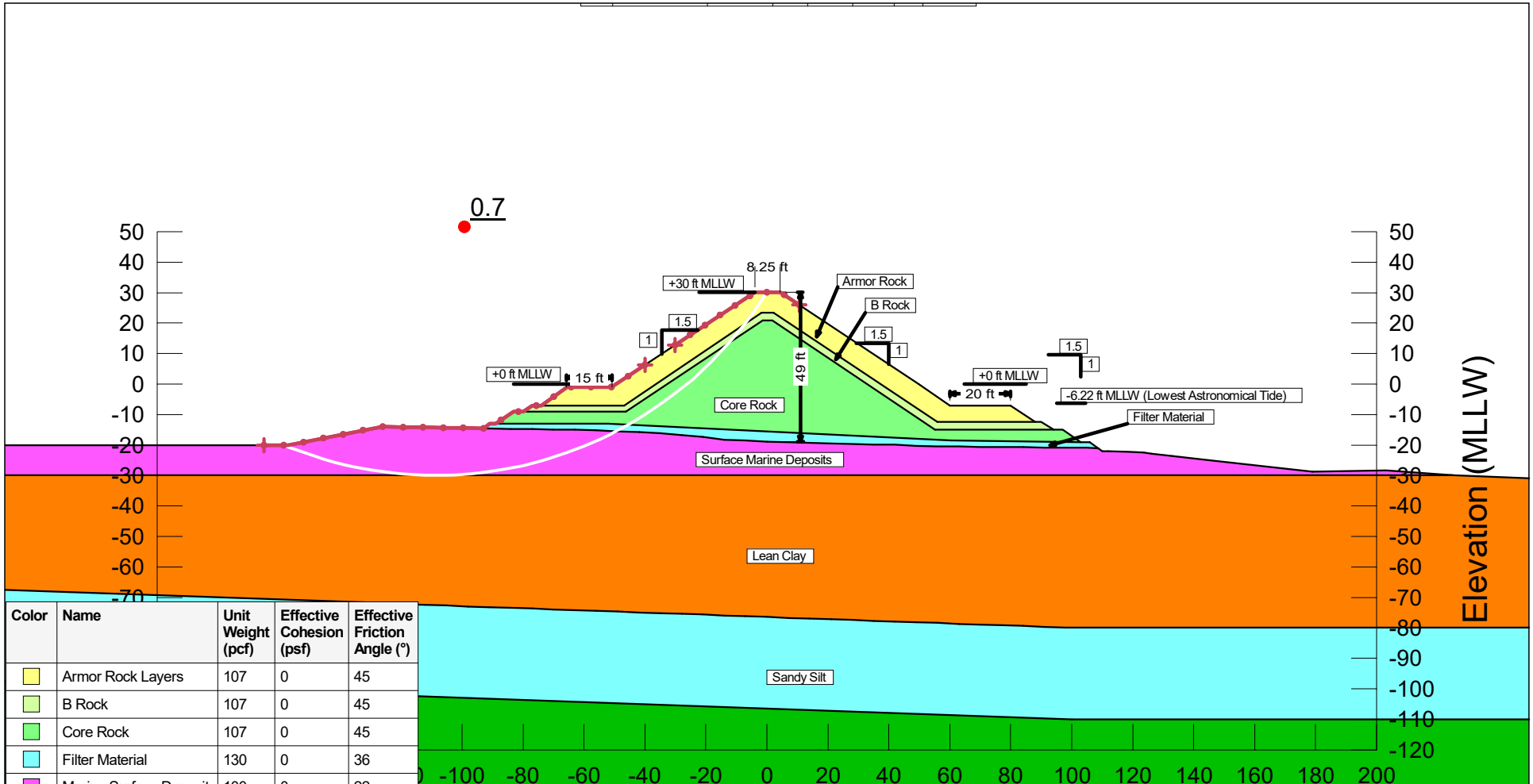


Color	Name	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Armor Rock Layers	107	0	45
	B Rock	107	0	45
	Core Rock	107	0	45
	Filter Material	130	0	36
	Marine Surface Deposit (Seismic)	100	0	22
	Marine Unit 1 (Lean Clay) (Improved) (Seismic)	130	800	14
	Marine Unit 2 (Silt w/ Sand) (Seismic)	120	0	24
	Marine Unit 3 (Silty Sand) (Seismic)	125	0	25

US Army Corps of Engineers
Alaska District

06 Post-Earthquake Oceanside (Improved)

Project:	Homer Harbor Navigation Improvements	Date:	04/14/2026 07:12:18 PM
Location:	Homer, Alaska	Factor of Safety:	1.4
Engineer:	Twain M. Cacek, EIT, GIT	Scale:	1:600

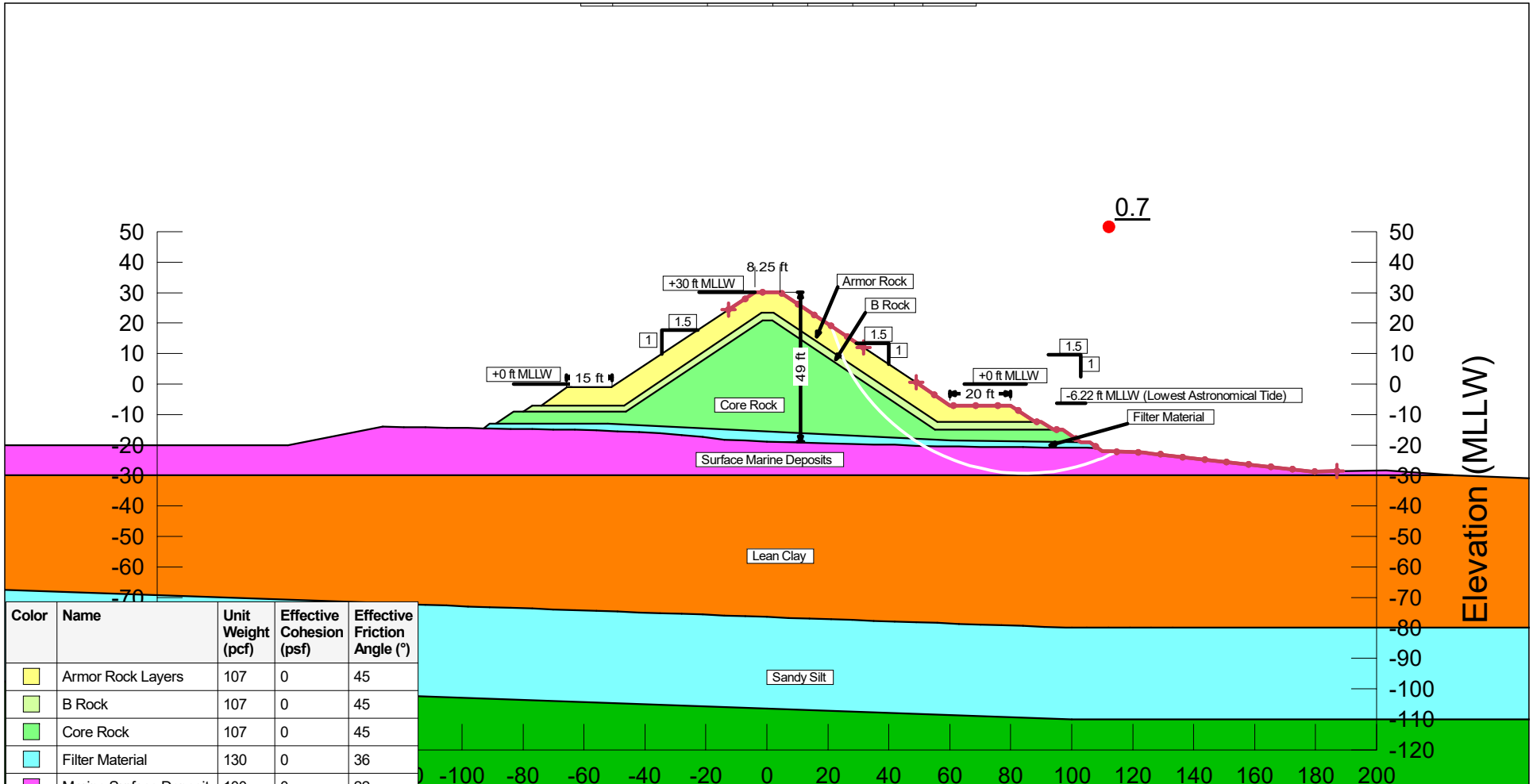


Color	Name	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Armor Rock Layers	107	0	45
	B Rock	107	0	45
	Core Rock	107	0	45
	Filter Material	130	0	36
	Marine Surface Deposit (Seismic)	100	0	22
	Marine Unit 1 (Lean Clay) (Improved) (Seismic)	130	800	14
	Marine Unit 2 (Silt w/ Sand) (Seismic)	120	0	24
	Marine Unit 3 (Silty Sand) (Seismic)	125	0	25

US Army Corps of Engineers
Alaska District

07 Seismic Landside (Improved)

Project:	Homer Harbor Navigation Improvements	Date:	04/14/2026 07:12:18 PM
Location:	Homer, Alaska	Factor of Safety:	0.7
Engineer:	Twain M. Cacek, EIT, GIT	Scale:	1:600



Color	Name	Unit Weight (pcf)	Effective Cohesion (psf)	Effective Friction Angle (°)
	Armor Rock Layers	107	0	45
	B Rock	107	0	45
	Core Rock	107	0	45
	Filter Material	130	0	36
	Marine Surface Deposit (Seismic)	100	0	22
	Marine Unit 1 (Lean Clay) (Improved) (Seismic)	130	800	14
	Marine Unit 2 (Silt w/ Sand) (Seismic)	120	0	24
	Marine Unit 3 (Silty Sand) (Seismic)	125	0	25

US Army Corps of Engineers
Alaska District

08 Seismic Oceanside (Improved)

Project:	Homer Harbor Navigation Improvements	Date:	04/14/2026 07:12:18 PM
Location:	Homer, Alaska	Factor of Safety:	0.7
Engineer:	Twain M. Cacek, EIT, GIT	Scale:	1:600