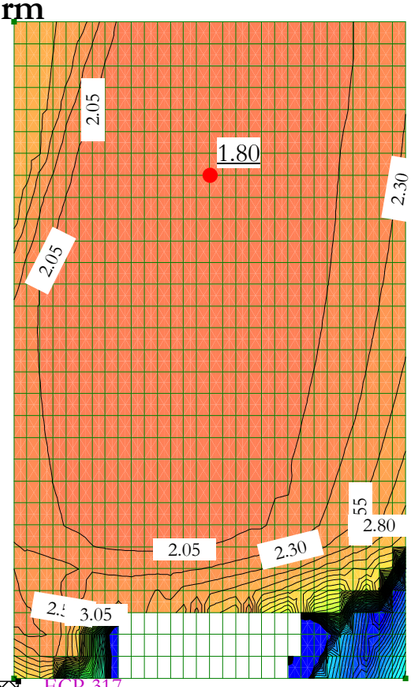
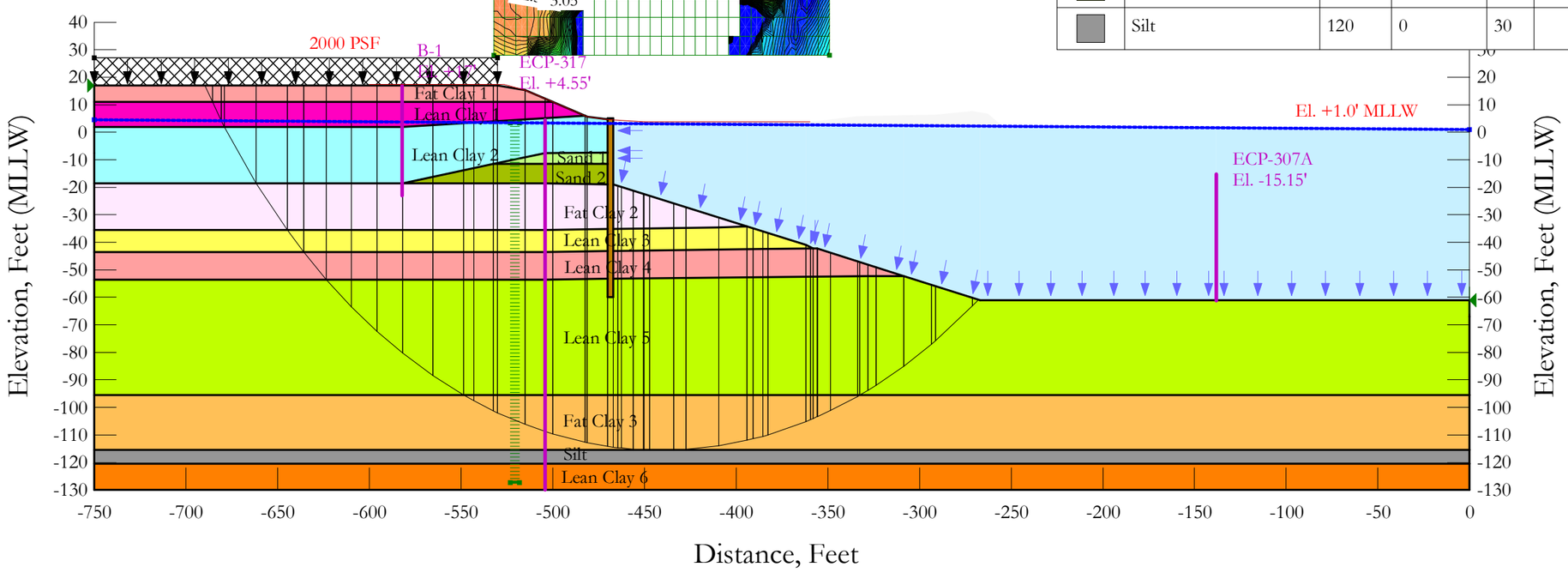
| Soil Parameters for Slope Stability Analyses – Barbours Cut Channel, Site 1 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Boring Numbers** | **Soil Description** | **Elevation, Feet** | | **Total Unit Weight (γ), pcf** | **Short Term** | **Long Term** | | **Rapid Drawdown** | |
| | | **Top** | **Bottom** | | **Undrained Shear Strength, psf** | **Cohesion, psf** | **Friction Angle (ϕ'), degrees** | **Cohesion, psf** | **Friction Angle (ϕ'), degrees** |
| ECP-319& ECP-308A | Lean Clay | 10 | 3 | 110 | 660 | 180 | 26 | 310 | 16 |
| | Lean Clay | 3 | -3 | 110 | 160 | 180 | 26 | 310 | 16 |
| | Lean Clay | -3 | -7 | 110 | 1,200 | 180 | 26 | 310 | 16 |
| | Fat Clay | -7 | -14 | 110 | 340 | 160 | 22 | 160 | 22 |
| | Lean Clay | -14 | -24 | 110 | 350 | 180 | 26 | 310 | 16 |
| | Fat Clay | -24 | -34 | 120 | 900 | 160 | 22 | 160 | 22 |
| | Lean Clay | -34 | -64 | 130 | 2,800 | 180 | 26 | 310 | 16 |
| | Fat Clay | -64 | -79 | 130 | 3,000 | 160 | 22 | 160 | 22 |
| | Lean Clay | -79 | -105 | 130 | 2,800 | 180 | 26 | 310 | 16 |
| | Fat Clay | -105 | -115 | 130 | 3,000 | 160 | 22 | 160 | 22 |

# BARBOURS CUT SHIP CHANNEL – SITE 1
# OPTION 3 WITH BULKHEAD

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Barbours Cut Ship Channel near Morgans Point**
**Boring: ECP-317**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term**
**Slip Surface: Circular**

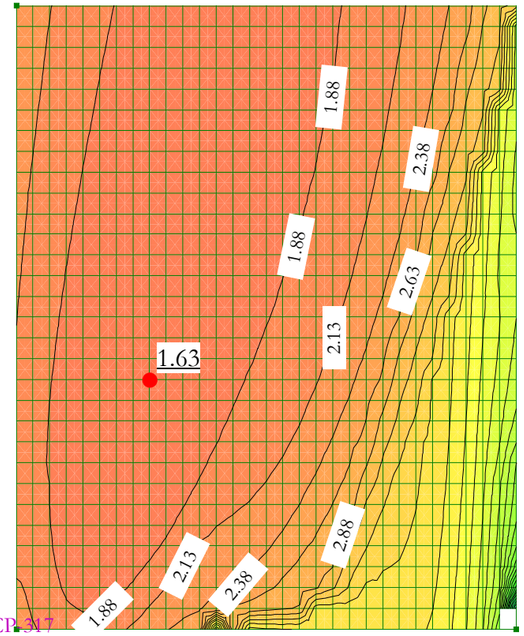


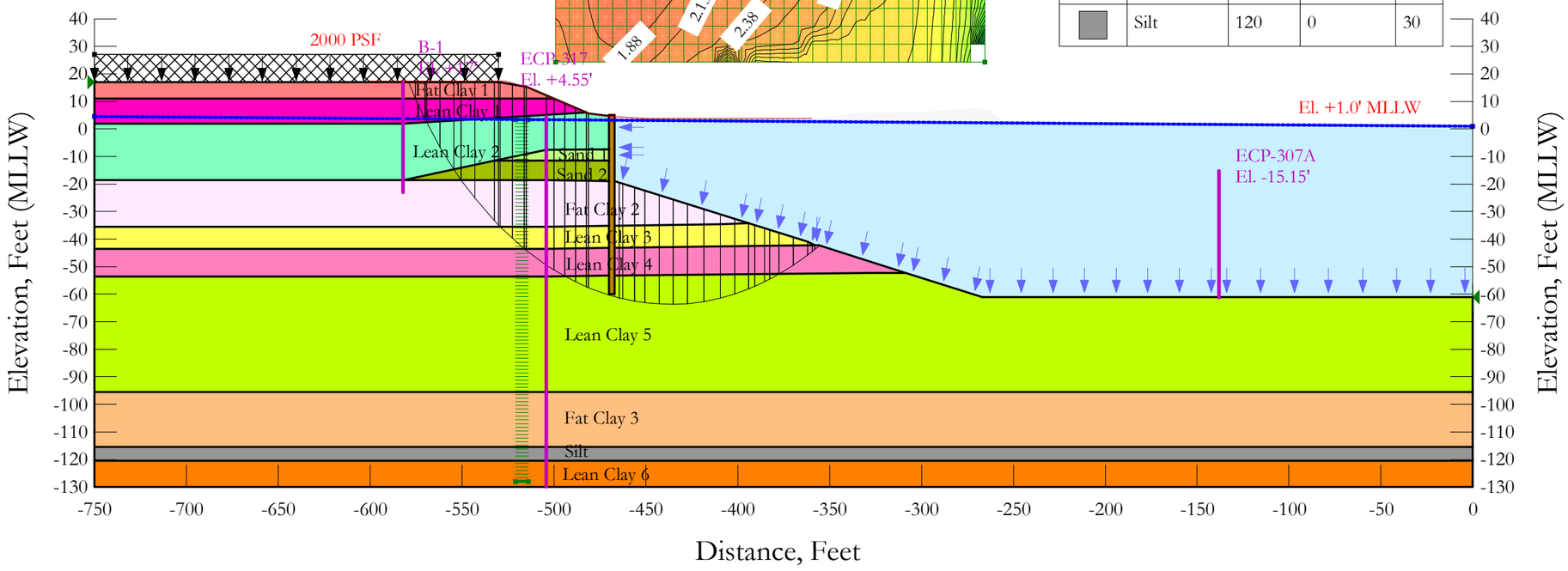

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Bulkhead | 150 | | | |
| | Fat Clay 1 (Undrained) | 120 | | | 2,000 |
| | Fat Clay 2 (Undrained) | 130 | | | 950 |
| | Fat Clay 3 (Undrained) | 120 | | | 1,400 |
| | Lean Clay 1 (Undrained) | 120 | | | 2,400 |
| | Lean Clay 2 (Undrained) | 115 | | | 1,300 |
| | Lean Clay 3 (Undrained) | 130 | | | 2,300 |
| | Lean Clay 4 (Undrained) | 130 | | | 1,500 |
| | Lean Clay 5 (Undrained) | 130 | | | 3,700 |
| | Lean Clay 6 (Undrained) | 115 | | | 2,100 |
| | Sand 1 | 110 | 0 | 32 | |
| | Sand 2 | 110 | 0 | 26 | |
| | Silt | 120 | 0 | 30 | |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Barbours Cut Ship Channel near Morgans Point**
**Boring: ECP-317**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term**
**Slip Surface: Circular**

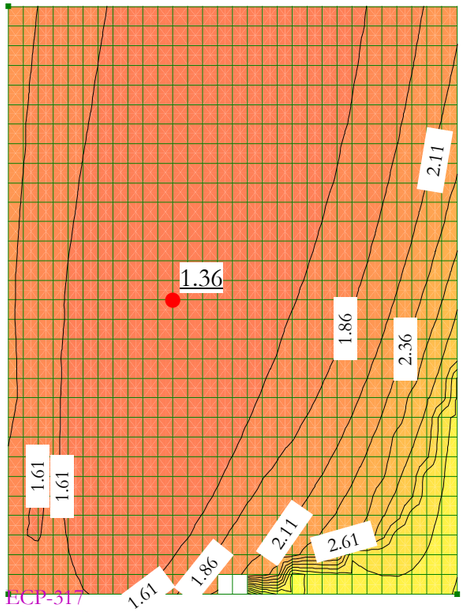


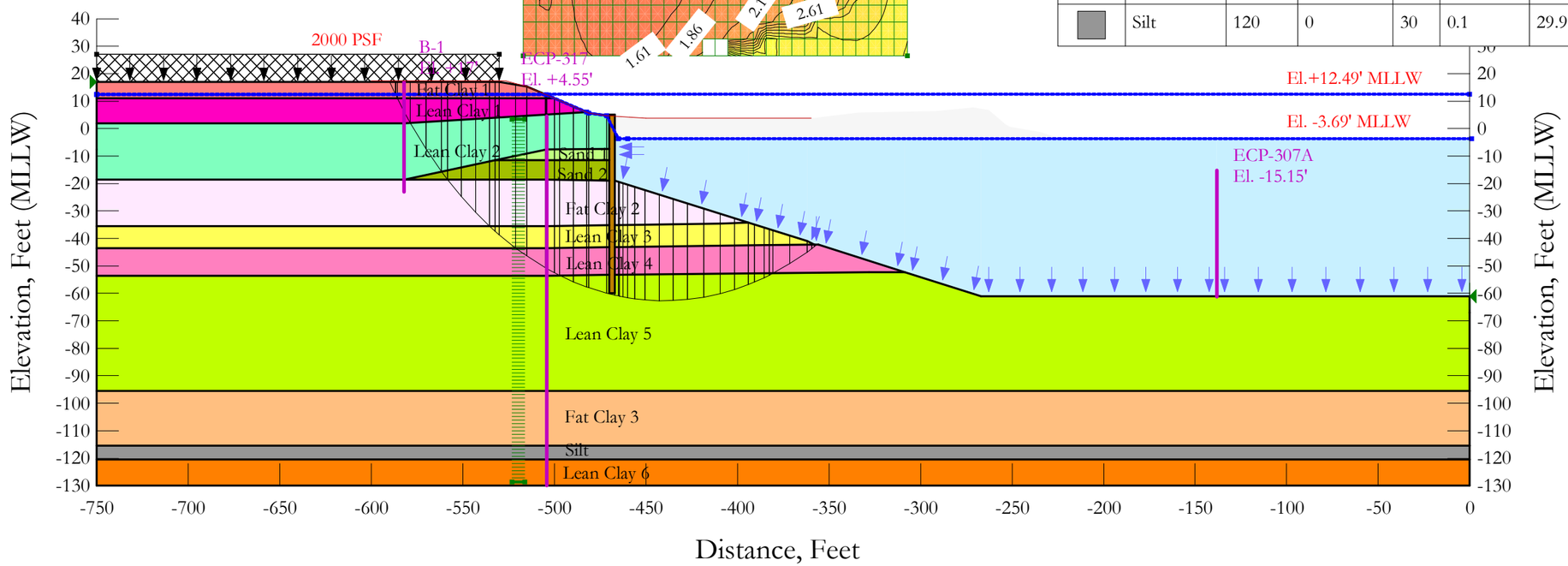

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Bulkhead | 150 | | |
| | Fat Clay 1 | 120 | 160 | 22 |
| | Fat Clay 2 | 130 | 160 | 22 |
| | Fat Clay 3 | 120 | 160 | 22 |
| | Lean Clay 1 | 120 | 180 | 26 |
| | Lean Clay 2 | 115 | 180 | 26 |
| | Lean Clay 3 | 130 | 180 | 26 |
| | Lean Clay 4 | 130 | 180 | 26 |
| | Lean Clay 5 | 130 | 180 | 26 |
| | Lean Clay 6 | 115 | 180 | 26 |
| | Sand 1 | 110 | 0 | 32 |
| | Sand 2 | 110 | 0 | 26 |
| | Silt | 120 | 0 | 30 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Barbours Cut Ship Channel near Morgans Point**
**Boring: ECP-317**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Rapid Drawdown**
**Slip Surface: Circular**

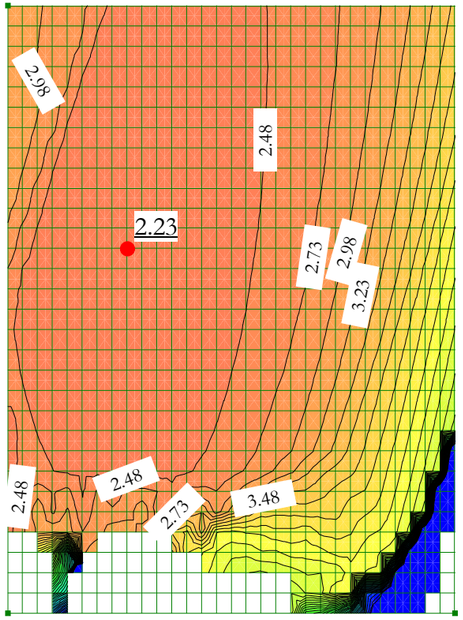


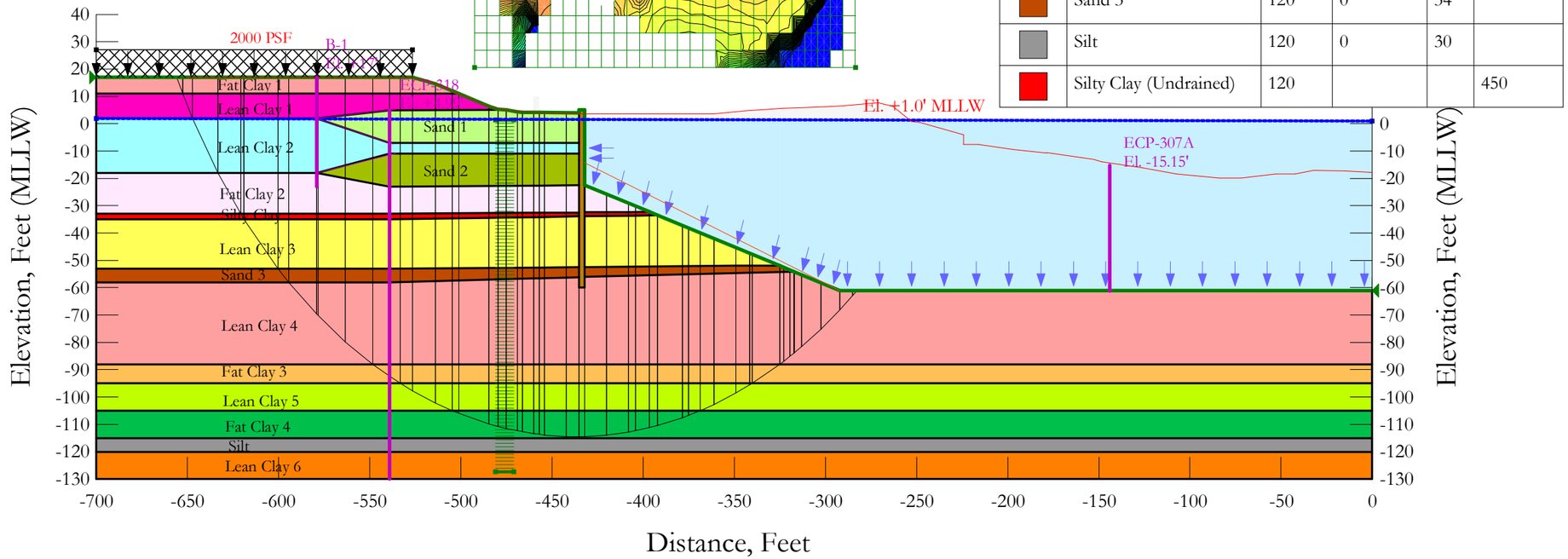

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) | Piezometric Line After Drawdown |
|---|---|---|---|---|---|---|---|
| | Bulkhead | 150 | | | | | 2 |
| | Fat Clay 1 | 120 | 160 | 22 | 161 | 21.9 | 2 |
| | Fat Clay 2 | 130 | 160 | 22 | 161 | 21.9 | 2 |
| | Fat Clay 3 | 120 | 160 | 22 | 161 | 21.9 | 2 |
| | Lean Clay 1 | 120 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 2 | 115 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 3 | 130 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 4 | 130 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 5 | 130 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 6 | 115 | 180 | 26 | 310 | 16 | 2 |
| | Sand 1 | 110 | 0 | 32 | 0.1 | 31.9 | 2 |
| | Sand 2 | 110 | 0 | 26 | 0.1 | 25.9 | 2 |
| | Silt | 120 | 0 | 30 | 0.1 | 29.9 | 2 |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Barbours Cut Ship Channel near Morgans Point**
**Boring: ECP-318**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term**
**Slip Surface: Circular**

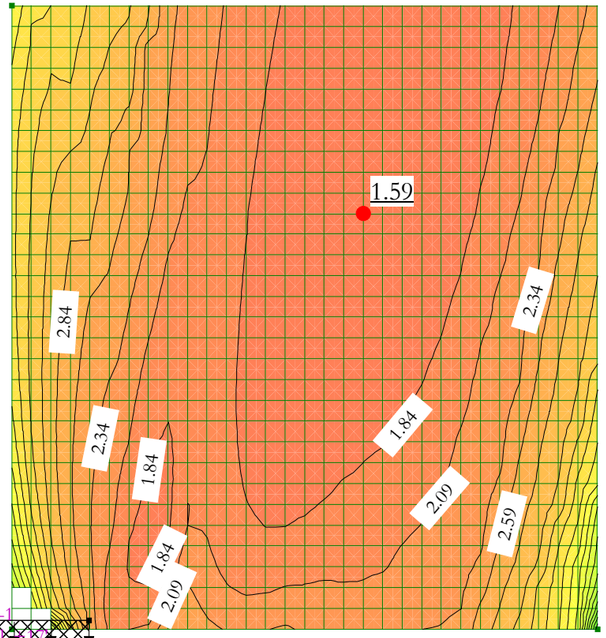



| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Bulkhead | 150 | | | |
| | Fat Clay 1 (Undrained) | 120 | | | 2,000 |
| | Fat Clay 2 (Undrained) | 120 | | | 1,700 |
| | Fat Clay 3 (Undrained) | 125 | | | 3,000 |
| | Fat Clay 4 (Undrained) | 125 | | | 1,600 |
| | Lean Clay 1 (Undrained) | 120 | | | 2,400 |
| | Lean Clay 2 (Undrained) | 110 | | | 340 |
| | Lean Clay 3 (Undrained) | 120 | | | 1,100 |
| | Lean Clay 4 (Undrained) | 125 | | | 3,600 |
| | Lean Clay 5 (Undrained) | 125 | | | 2,400 |
| | Lean Clay 6 (Undrained) | 110 | | | 2,000 |
| | Sand 1 | 110 | 0 | 30 | |
| | Sand 2 | 110 | 0 | 27 | |
| | Sand 3 | 120 | 0 | 34 | |
| | Silt | 120 | 0 | 30 | |
| | Silty Clay (Undrained) | 120 | | | 450 |

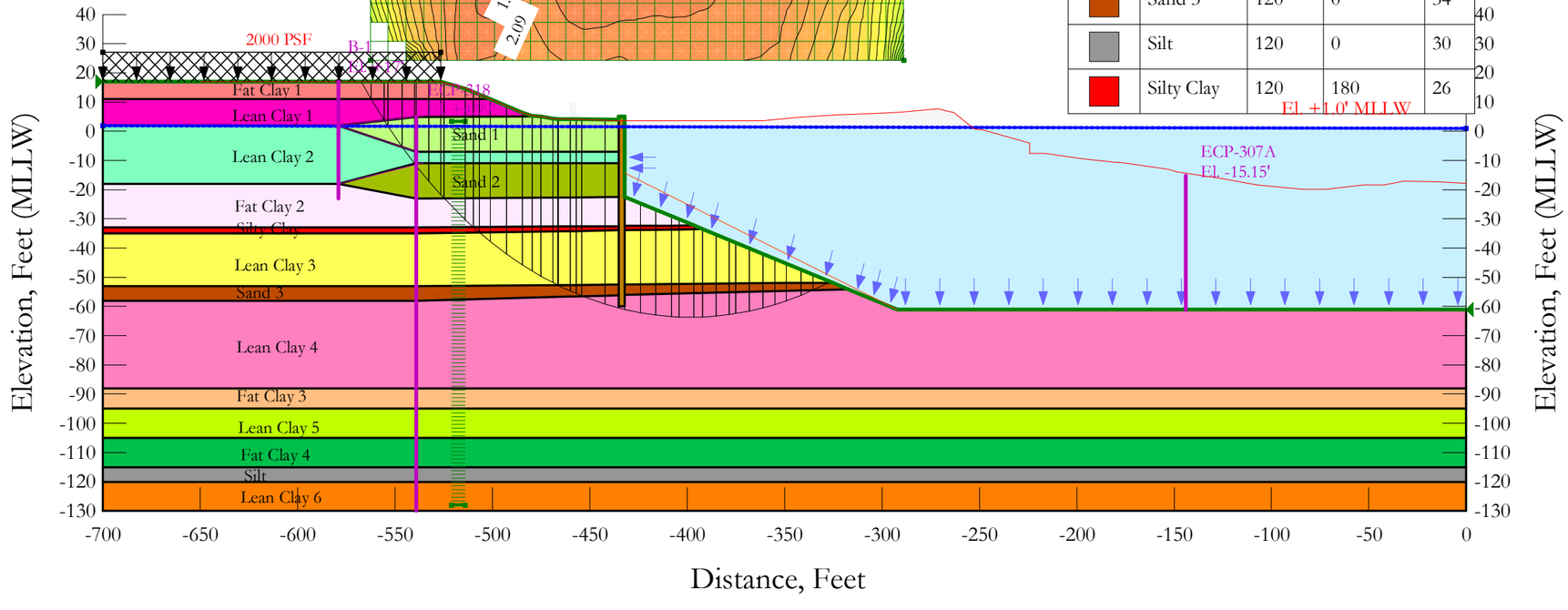


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Barbours Cut Ship Channel near Morgans Point**
**Boring: ECP-318**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term**
**Slip Surface: Circular**

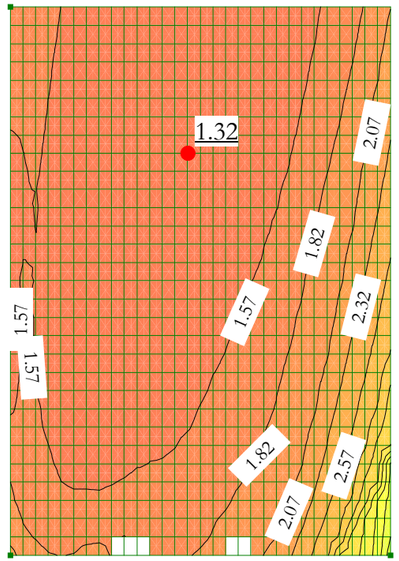


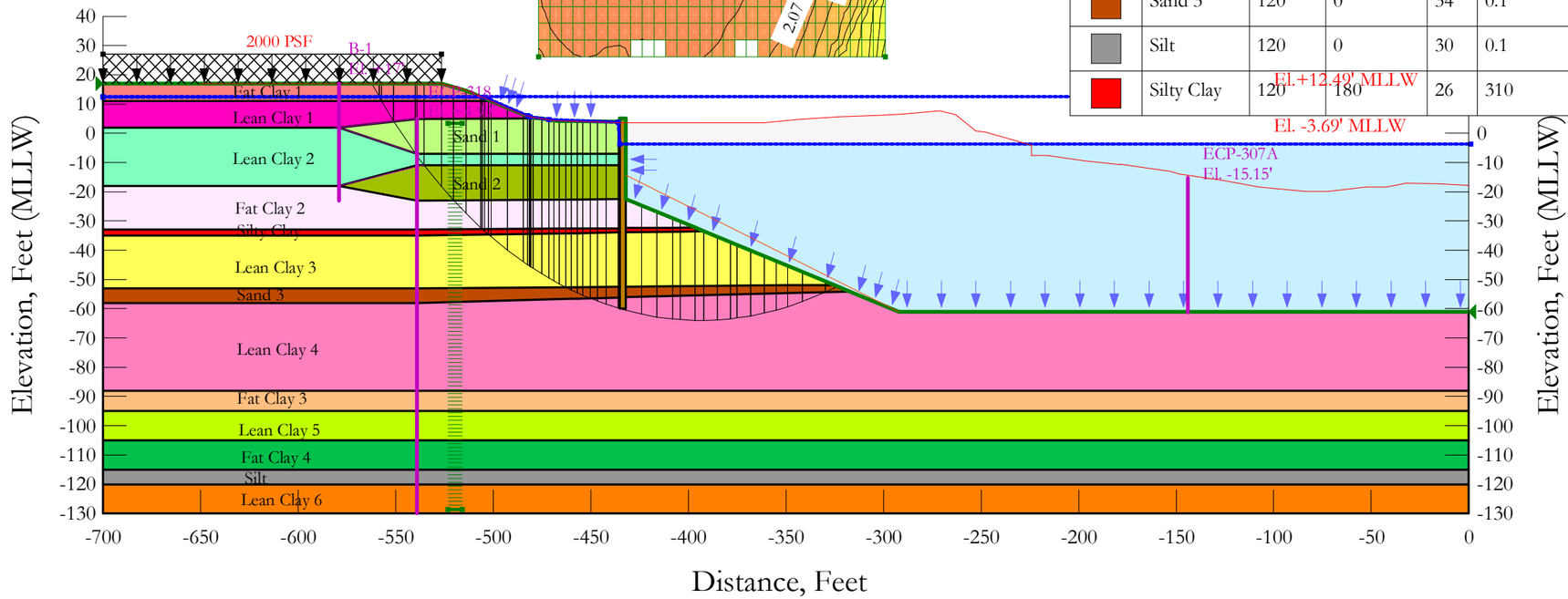

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Bulkhead | 150 | | |
| | Fat Clay 1 | 120 | 160 | 22 |
| | Fat Clay 2 | 120 | 160 | 22 |
| | Fat Clay 3 | 125 | 160 | 22 |
| | Fat Clay 4 | 125 | 160 | 22 |
| | Lean Clay 1 | 120 | 180 | 26 |
| | Lean Clay 2 | 110 | 180 | 26 |
| | Lean Clay 3 | 120 | 180 | 26 |
| | Lean Clay 4 | 125 | 180 | 26 |
| | Lean Clay 5 | 125 | 180 | 26 |
| | Lean Clay 6 | 110 | 180 | 26 |
| | Sand 1 | 110 | 0 | 30 |
| | Sand 2 | 110 | 0 | 27 |
| | Sand 3 | 120 | 0 | 34 |
| | Silt | 120 | 0 | 30 |
| | Silty Clay | 120 | 180 | 26 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Barbours Cut Ship Channel near Morgans Point**
**Boring: ECP-318**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Rapid Drawdown**
**Slip Surface: Circular**

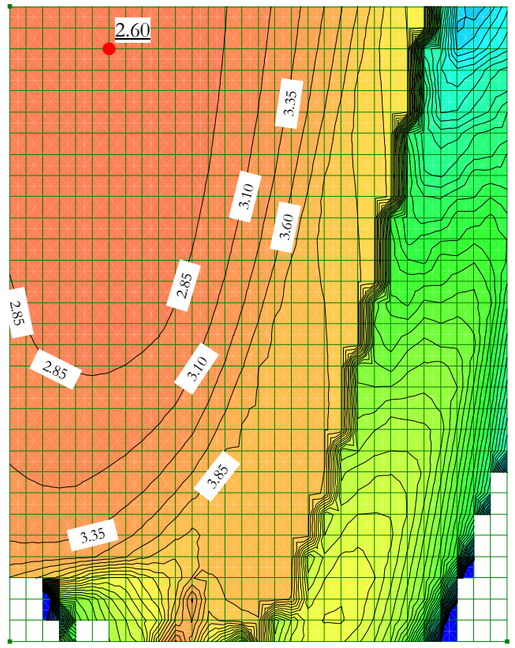


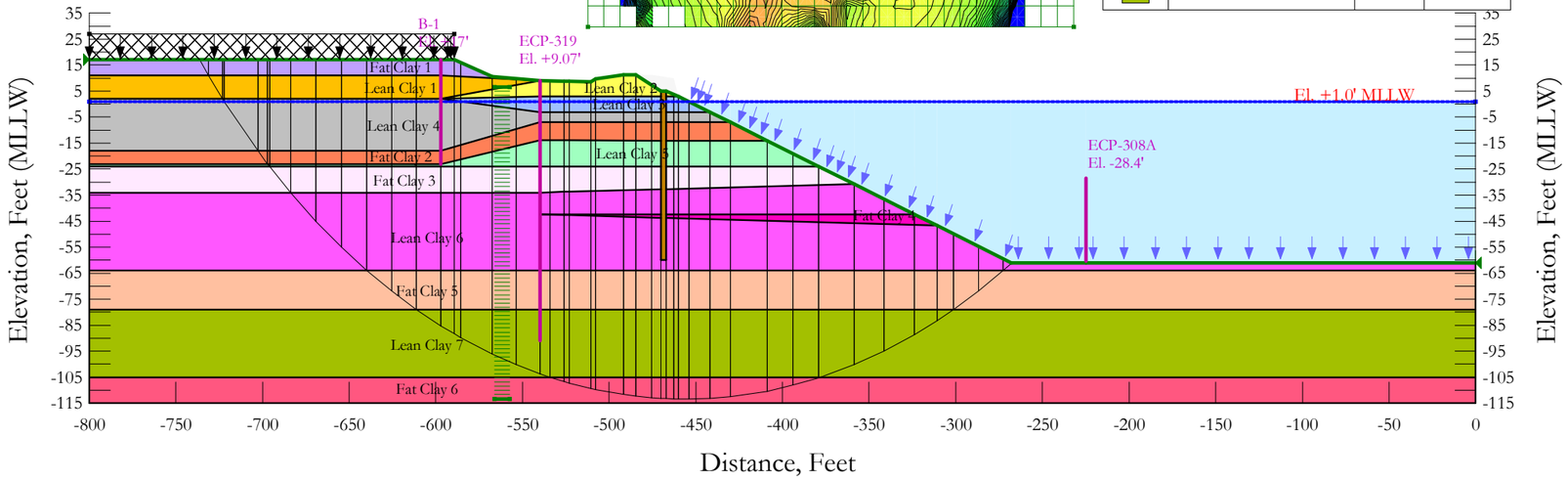

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) | Piezometric Line After Drawdown |
|---|---|---|---|---|---|---|---|
| | Bulkhead | 150 | | | | | 2 |
| | Fat Clay 1 | 120 | 160 | 22 | 161 | 21.9 | 2 |
| | Fat Clay 2 | 120 | 160 | 22 | 161 | 21.9 | 2 |
| | Fat Clay 3 | 125 | 160 | 22 | 161 | 21.9 | 2 |
| | Fat Clay 4 | 125 | 160 | 22 | 161 | 21.9 | 2 |
| | Lean Clay 1 | 120 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 2 | 110 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 3 | 120 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 4 | 125 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 5 | 125 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 6 | 110 | 180 | 26 | 310 | 16 | 2 |
| | Sand 1 | 110 | 0 | 30 | 0.1 | 29.9 | 2 |
| | Sand 2 | 110 | 0 | 27 | 0.1 | 26.9 | 2 |
| | Sand 3 | 120 | 0 | 34 | 0.1 | 33.9 | 2 |
| | Silt | 120 | 0 | 30 | 0.1 | 29.9 | 2 |
| | Silty Clay | 120 | 180 | 26 | 310 | 16 | 2 |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Barbours Cut Ship Channel near Morgans Point**
**Boring: ECP-319**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term**
**Slip Surface: Circular**

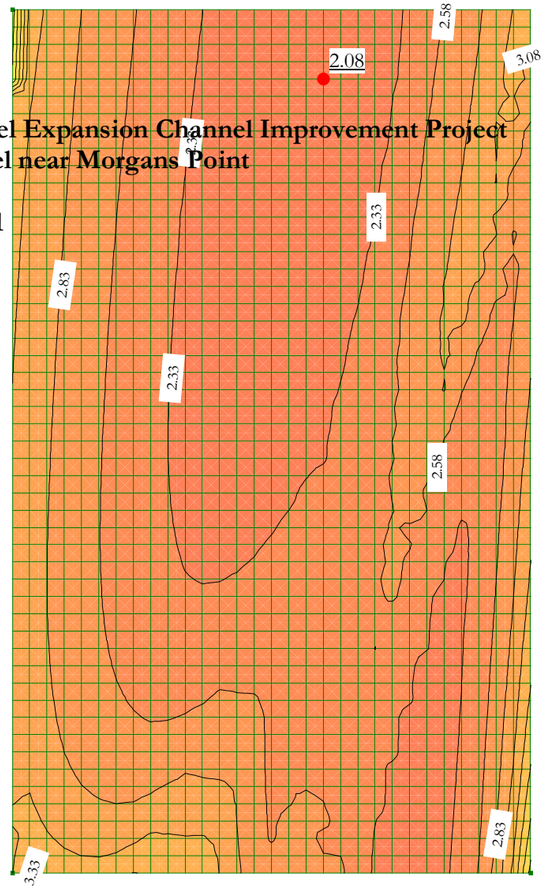



| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Bulkhead | 150 | |
| | Fat Clay 1 (Undrained) | 120 | 2,000 |
| | Fat Clay 2 (Undrained) | 110 | 340 |
| | Fat Clay 3 (Undrained) | 120 | 900 |
| | Fat Clay 4 (Undrained) | 110 | 1,200 |
| | Fat Clay 5 (Undrained) | 130 | 3,000 |
| | Fat Clay 6 (Undrained) | 130 | 3,000 |
| | Lean Clay 1 (Undrained) | 120 | 2,400 |
| | Lean Clay 2 (Undrained) | 110 | 660 |
| | Lean Clay 3 (Undrained) | 110 | 160 |
| | Lean Clay 4 (Undrained) | 110 | 1,200 |
| | Lean Clay 5 (Undrained) | 110 | 350 |
| | Lean Clay 6 (Undrained) | 130 | 2,800 |
| | Lean Clay 7 (Undrained) | 130 | 2,800 |

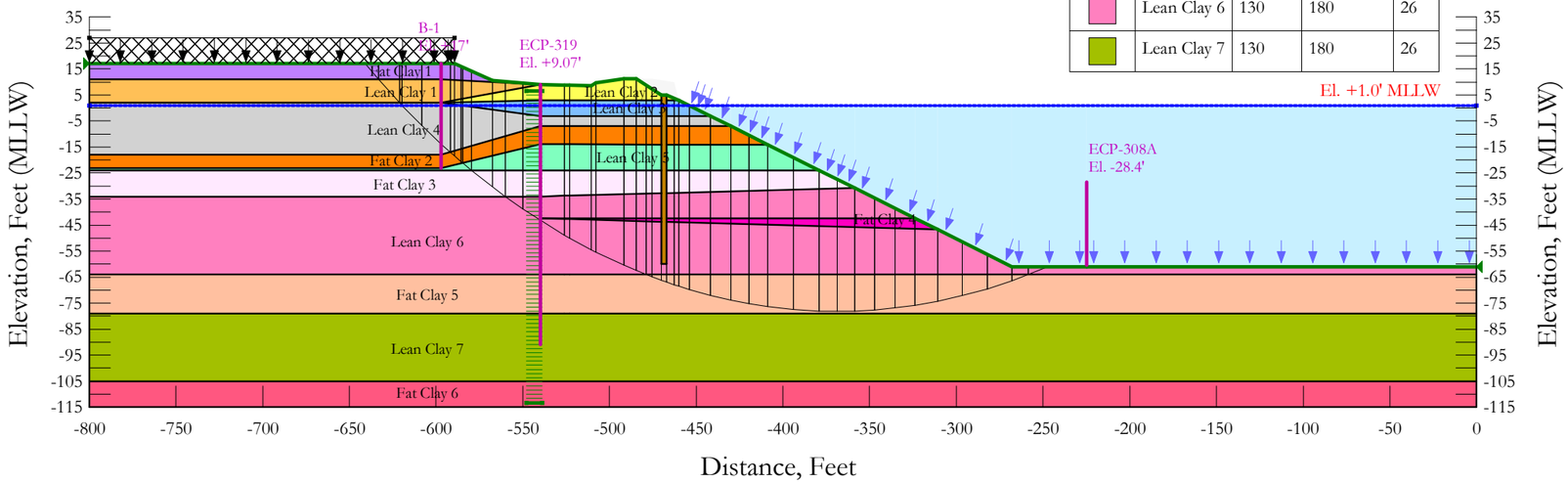


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Barbours Cut Ship Channel near Morgans Point**
**Boring: ECP-319**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term**
**Slip Surface: Circular**

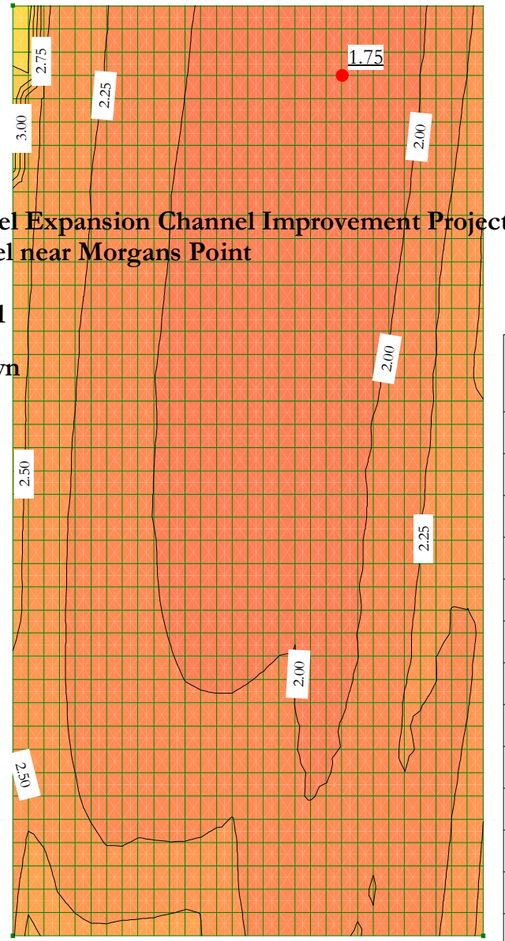



| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Bulkhead | 150 | | |
| | Fat Clay 1 | 120 | 160 | 22 |
| | Fat Clay 2 | 110 | 160 | 22 |
| | Fat Clay 3 | 120 | 160 | 22 |
| | Fat Clay 4 | 110 | 160 | 22 |
| | Fat Clay 5 | 130 | 160 | 22 |
| | Fat Clay 6 | 130 | 160 | 22 |
| | Lean Clay 1 | 120 | 180 | 26 |
| | Lean Clay 2 | 110 | 180 | 26 |
| | Lean Clay 3 | 110 | 180 | 26 |
| | Lean Clay 4 | 110 | 180 | 26 |
| | Lean Clay 5 | 110 | 180 | 26 |
| | Lean Clay 6 | 130 | 180 | 26 |
| | Lean Clay 7 | 130 | 180 | 26 |

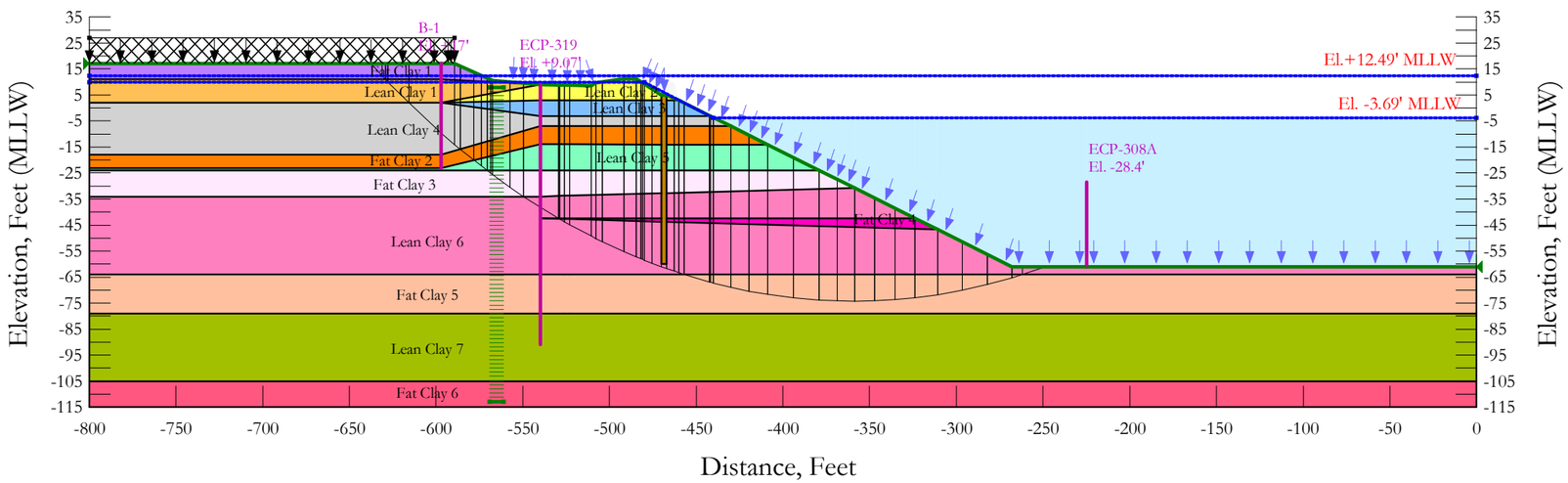


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Barbours Cut Ship Channel near Morgans Point**
**Boring: ECP-319**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Rapid Drawdown**
**Slip Surface: Circular**




| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) | Piezometric Line After Drawdown |
|---|---|---|---|---|---|---|---|
| | Bulkhead | 150 | | | | | 2 |
| | Fat Clay 1 | 120 | 160 | 22 | 161 | 21.9 | 2 |
| | Fat Clay 2 | 110 | 160 | 22 | 161 | 21.9 | 2 |
| | Fat Clay 3 | 120 | 160 | 22 | 161 | 21.9 | 2 |
| | Fat Clay 4 | 110 | 160 | 22 | 161 | 21.9 | 2 |
| | Fat Clay 5 | 130 | 160 | 22 | 161 | 21.9 | 2 |
| | Fat Clay 6 | 130 | 160 | 22 | 161 | 21.9 | 2 |
| | Lean Clay 1 | 120 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 2 | 110 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 3 | 110 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 4 | 110 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 5 | 110 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 6 | 130 | 180 | 26 | 310 | 16 | 2 |
| | Lean Clay 7 | 130 | 180 | 26 | 310 | 16 | 2 |



# BARBOURS CUT SHIP CHANNEL – SITE 2

PRELIMINARY

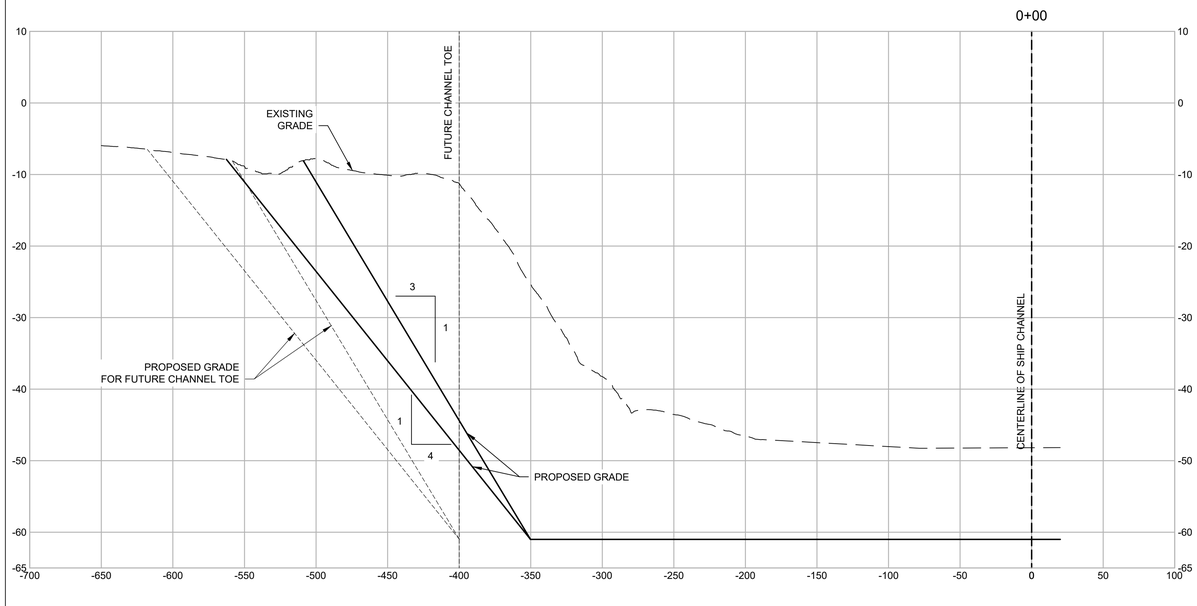


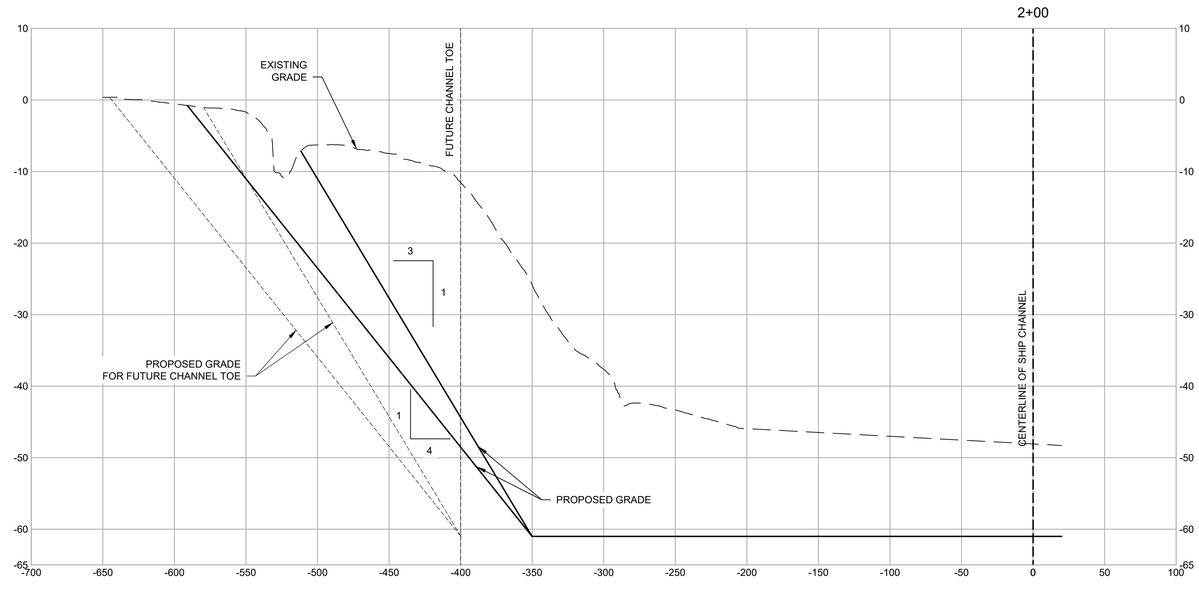

SCALE: 1"=100'

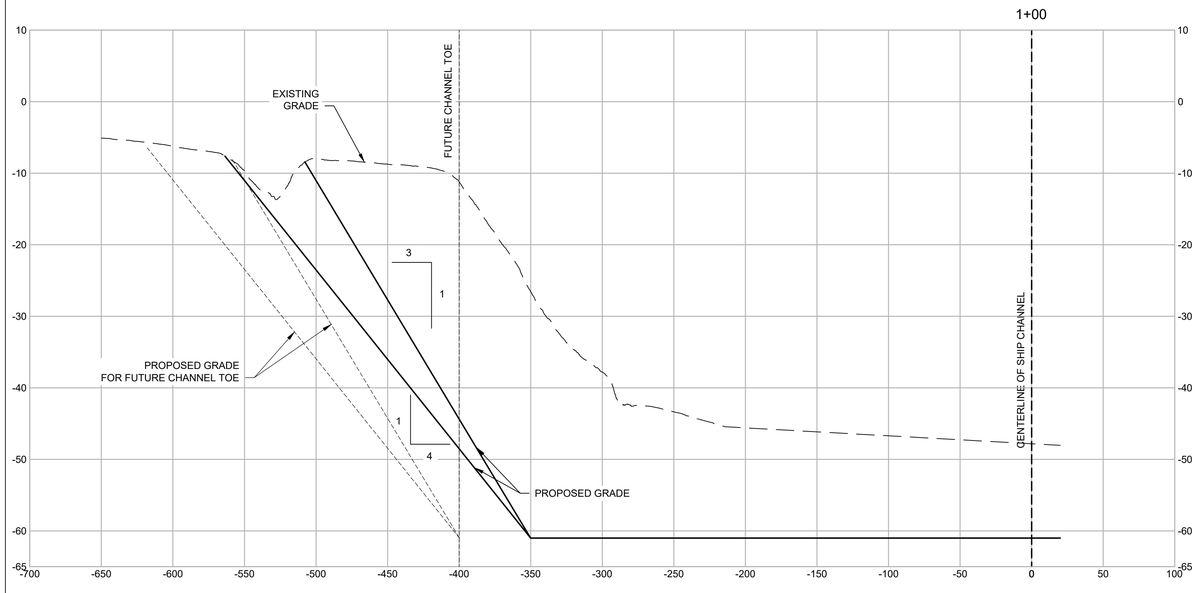
# MORGANS POINT/BARBOURS CUT 2 -BACKSLOPE

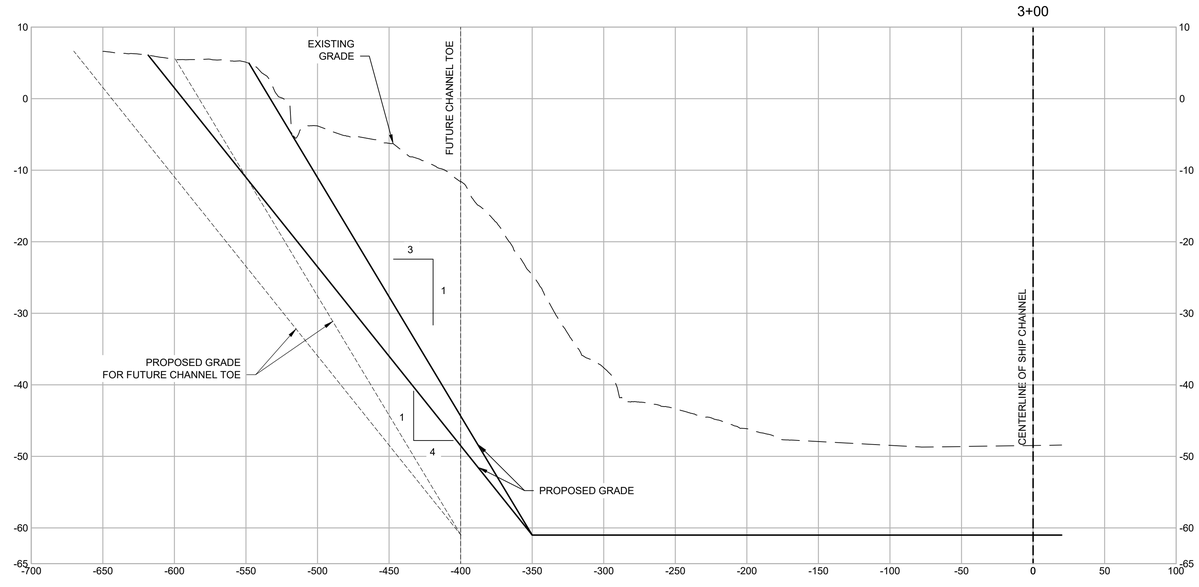
# PRELIMINARY

SCALE:
HORIZONTAL: 1"=50'
VERTICAL : 1"=10'



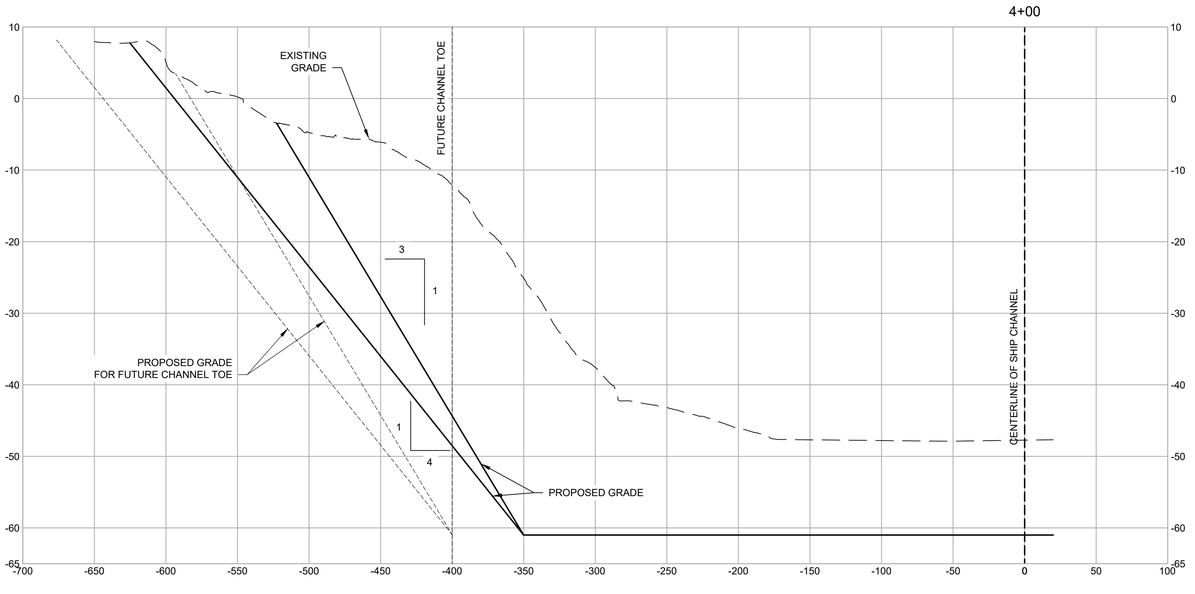



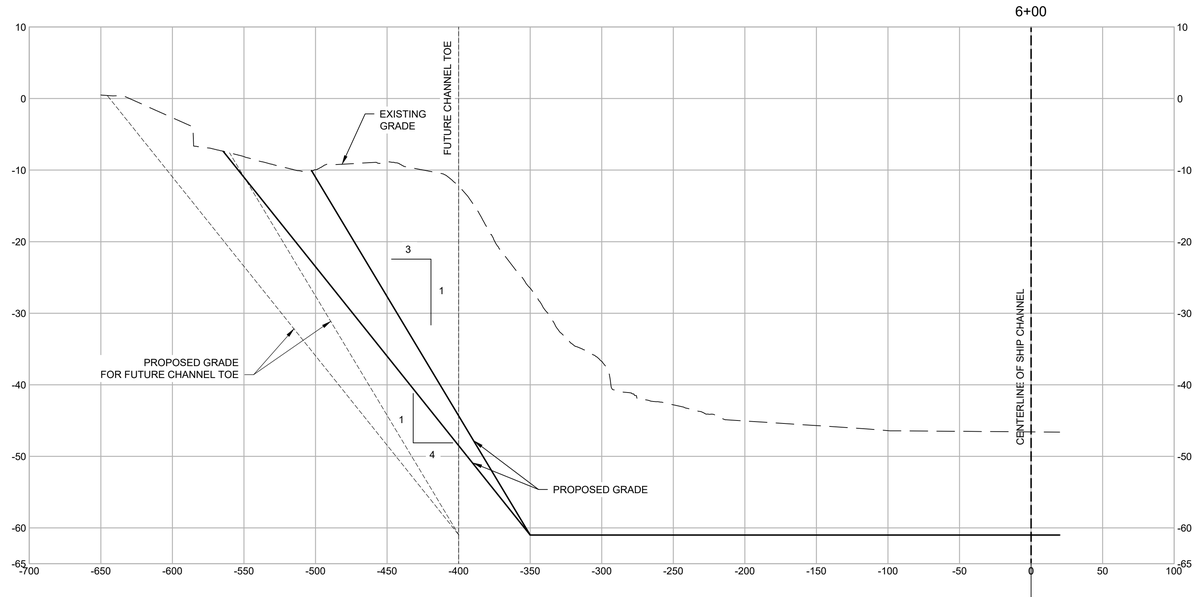



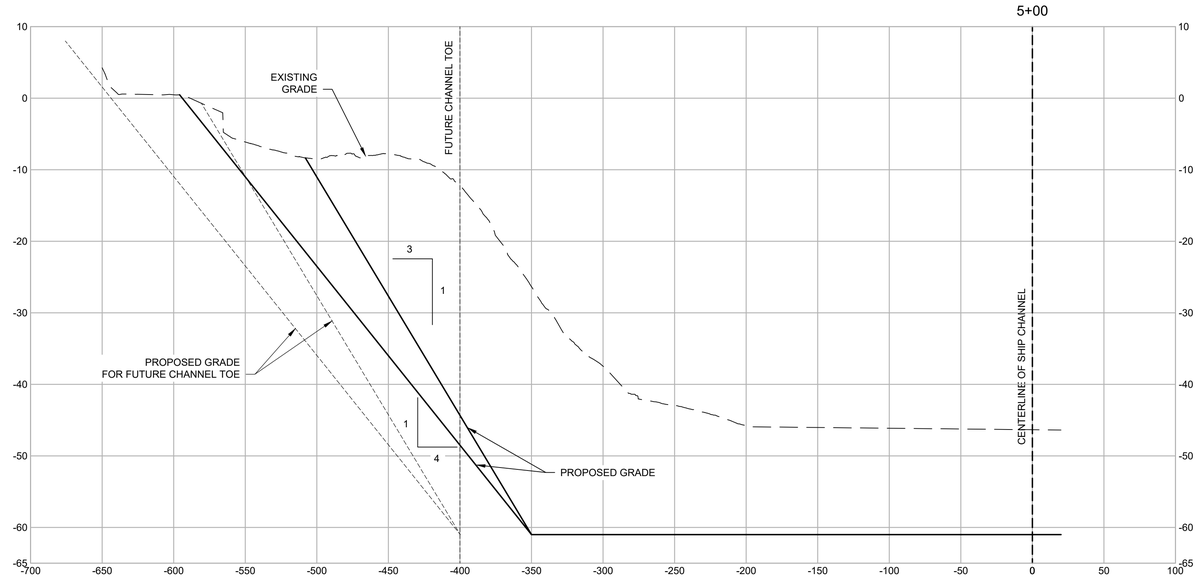



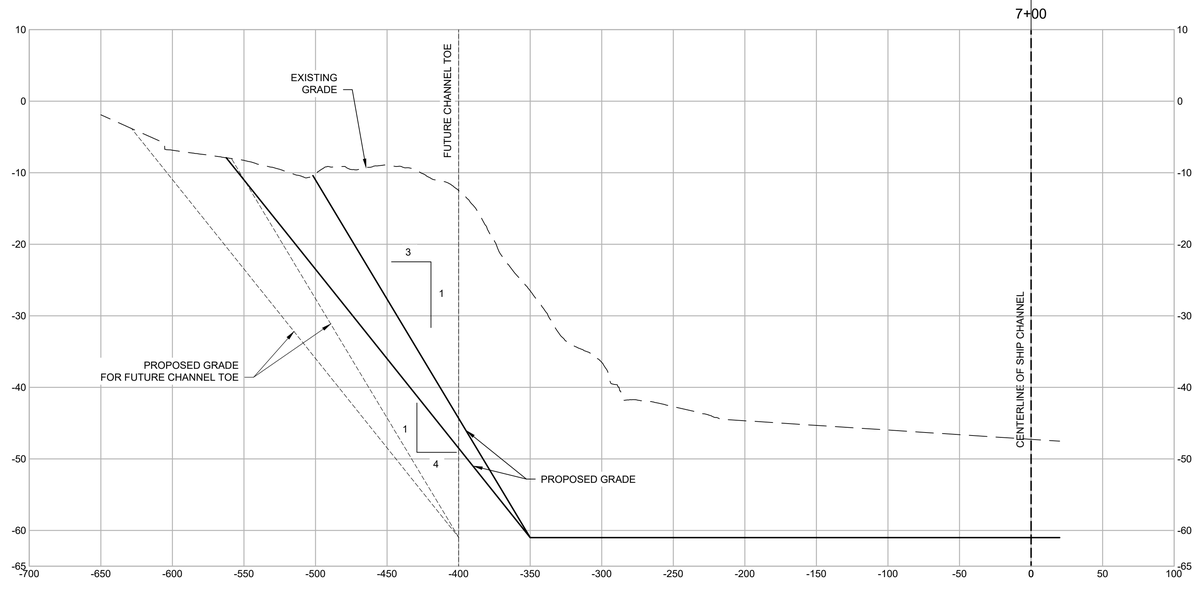
# PRELIMINARY

SCALE:
HORIZONTAL: 1"=50'
VERTICAL : 1"=10'



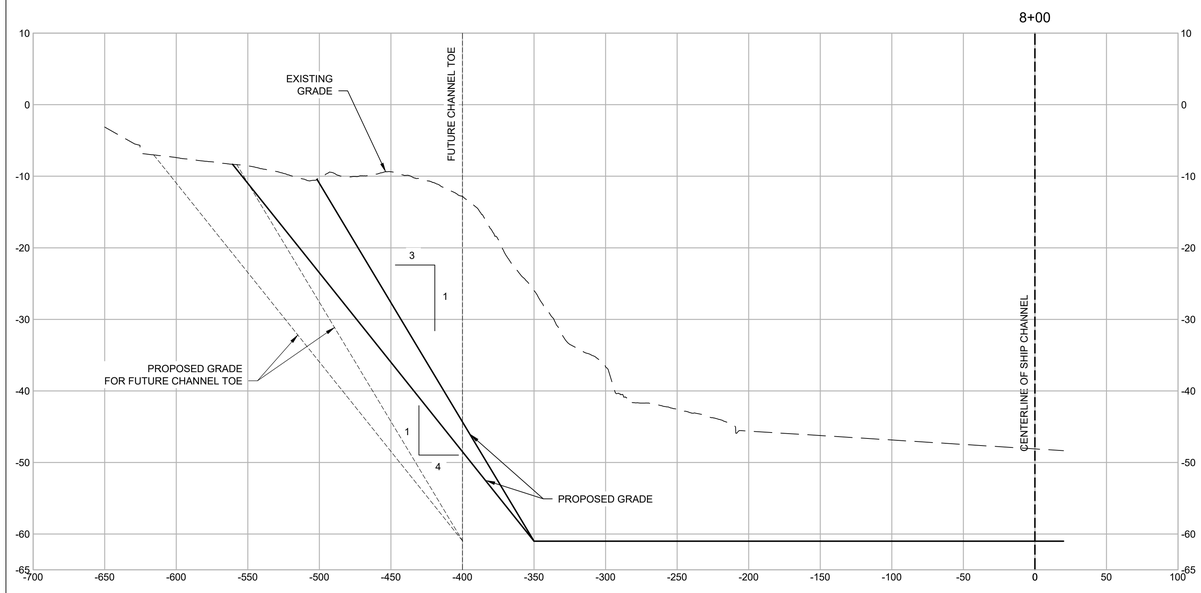



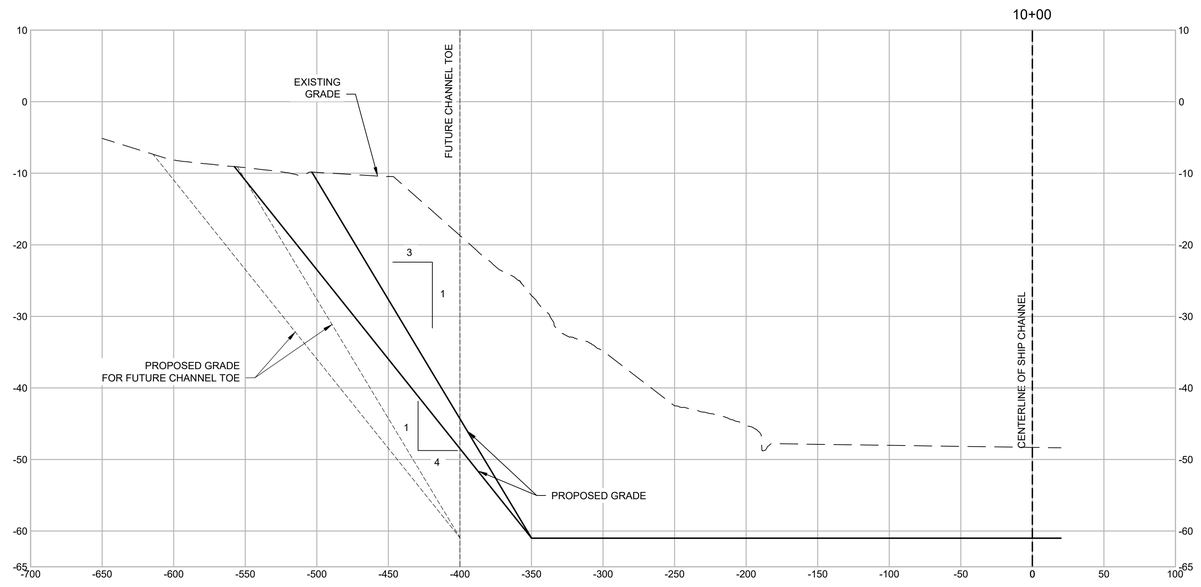



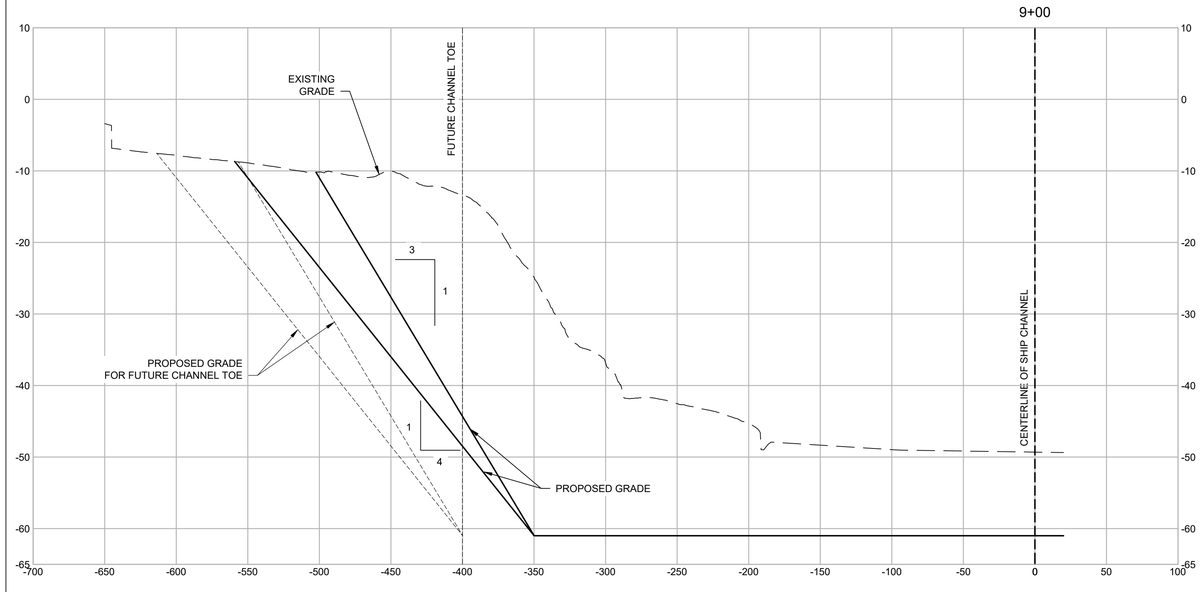



# PRELIMINARY

SCALE:
HORIZONTAL: 1"=50'
VERTICAL : 1"=10'

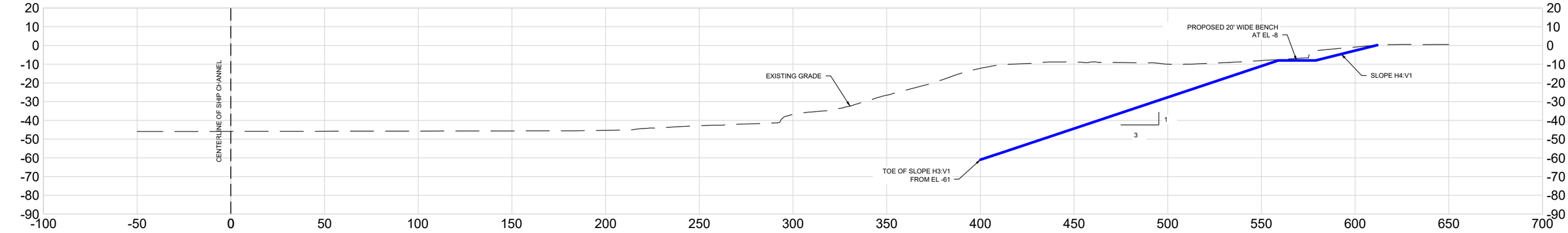


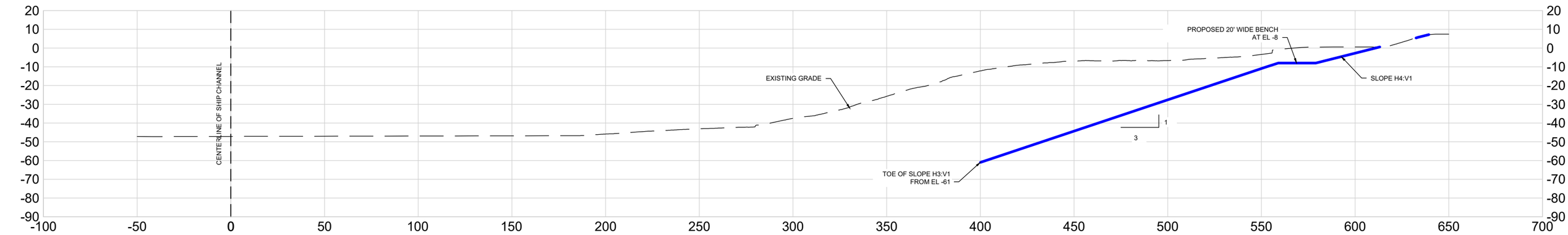



N
0
100'
200'
PROPOSED 20' WIDE BENCH AT EL -8
TOP OF SLOPE
H4:V1 TO EXISTING GRADE
TOE OF SLOPE H3:V1
FROM EL -61
1+000
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
3+000
SL-41
SL-43
SL-45
4
2
-10
-45
© 2020 MICROSOFT CORPORATION © 2020 DIGITALGLOBE ©CNES (2020) DISTRIBUTION AIRBUS DS
bing

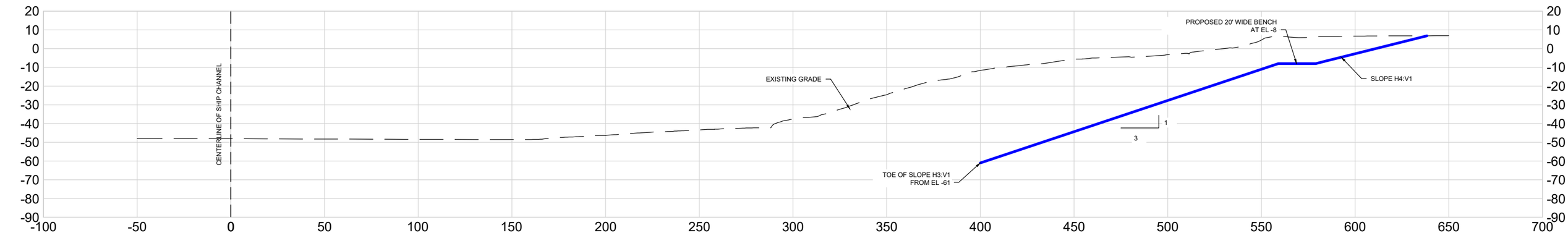
18+00




19+00 (OLD 3+00)




20+00




# BARBOURS CUT 2

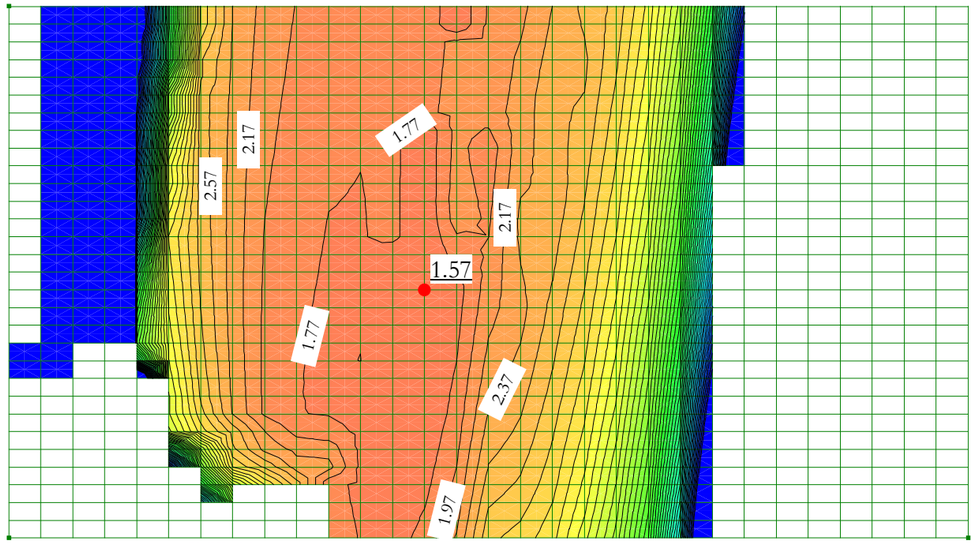
SCALE:
HORIZONTAL: 1"=50'
VERTICAL : 1"=50'

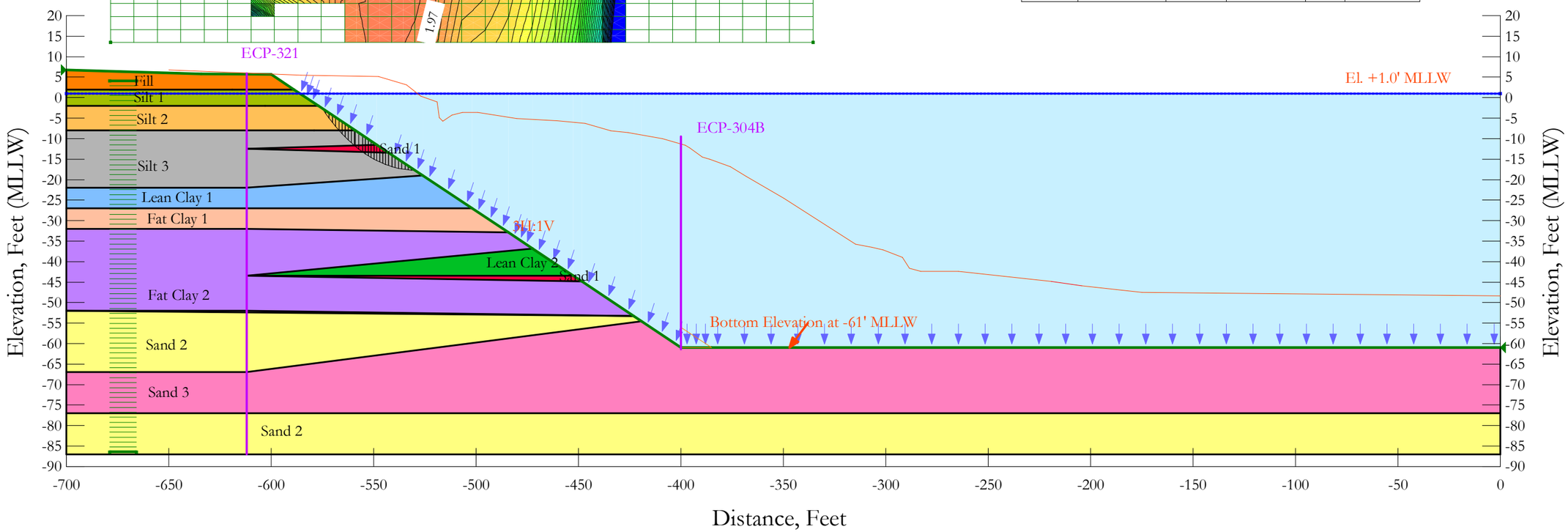
| Soil Parameters for Slope Stability Analyses – Barbours Cut Channel, Site 2 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Station** | **Soil Description** | **Elevation, Feet** | | **Total Unit Weight (γ), pcf** | **Short Term** | **Long Term** | | **Rapid Drawdown** | |
| | | **Top** | **Bottom** | | **Undrained Shear Strength, psf** | **Cohesion, psf** | **Friction Angle (ϕ'), degrees** | **Cohesion, psf** | **Friction Angle (ϕ'), degrees** |
| 19+00 (Boring ECP-321) | Fill | 6.8 | 2 | 115 | 2,500 | 100 | 25 | 150 | 20 |
| | Silt 1 | 2 | -2 | 110 | 0 | 0 | 33 | 0 | 33 |
| | Silt 2 | -2 | -8 | 110 | 0 | 0 | 31 | 0 | 31 |
| | Silt 3 | -8 | -22 | 130 | 0 | 0 | 26 | 0 | 26 |
| | Sand 1 | -11.5 | -13.4 | 110 | 0 | 0 | 27 | 0 | 27 |
| | Lean Clay 1 | -22 | -27 | 130 | 250 | 100 | 25 | 150 | 20 |
| | Fat Clay 1 | -27 | -32 | 130 | 250 | 85 | 23 | 260 | 11 |
| | Fat Clay 2 | -32 | -52 | 130 | 640 | 85 | 23 | 260 | 11 |
| | Lean Clay 2 | -36.8 | -43.4 | 120 | 1,100 | 100 | 25 | 150 | 20 |
| | Sand 2 | -52 | -67 | 120 | 0 | 0 | 34 | 0 | 34 |
| | Sand 3 | -67 | -77 | 120 | 0 | 0 | 28 | 0 | 28 |
| | Sand 2 | -77 | -87 | 115 | 0 | 0 | 34 | 0 | 34 |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: HSC Expansion near Barbours Cut**
**Site Station: 19+00 (Old Station 3+00), 800 Feet Channel Width**
**HVJ Project Number: HG1910092.2.1**

## Loading Condition: Short Term
## Slip Surface: Circular

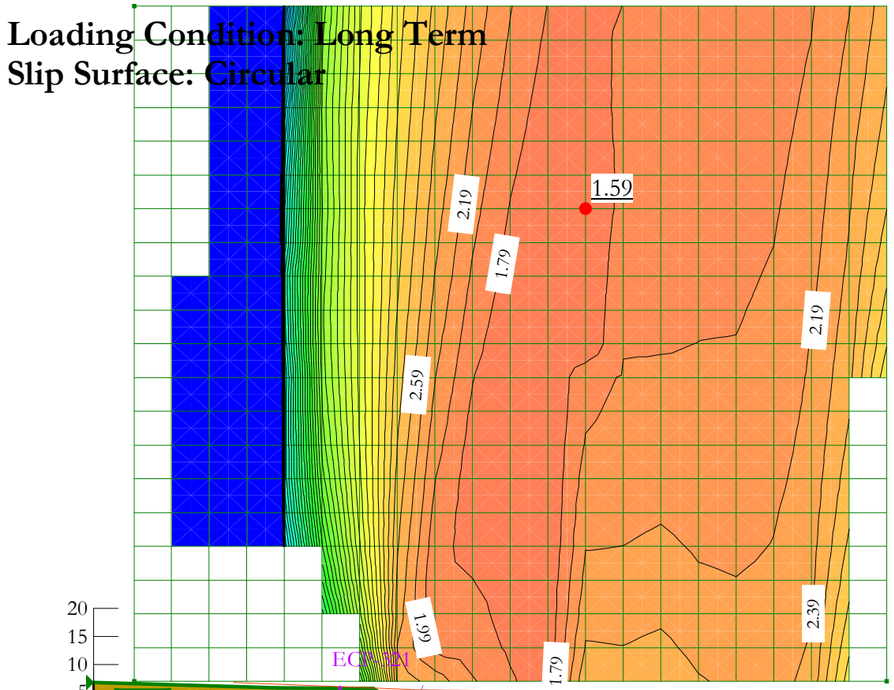
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Fat Clay 1 (Undrained) | 110 | | | 250 |
| | Fat Clay 2 (Undrained) | 115 | | | 640 |
| | Fill: Clay (Undrained) | 110 | | | 2,500 |
| | Lean Clay 1 (Undrained) | 110 | | | 250 |
| | Lean Clay 2 (Undrained) | 120 | | | 1,100 |
| | Sand 1 | 110 | 0 | 27 | |
| | Sand 2 | 120 | 0 | 34 | |
| | Sand 3 | 110 | 0 | 28 | |
| | Silt 1 | 110 | 0 | 33 | |
| | Silt 2 | 110 | 0 | 31 | |
| | Silt 3 | 110 | 0 | 26 | |



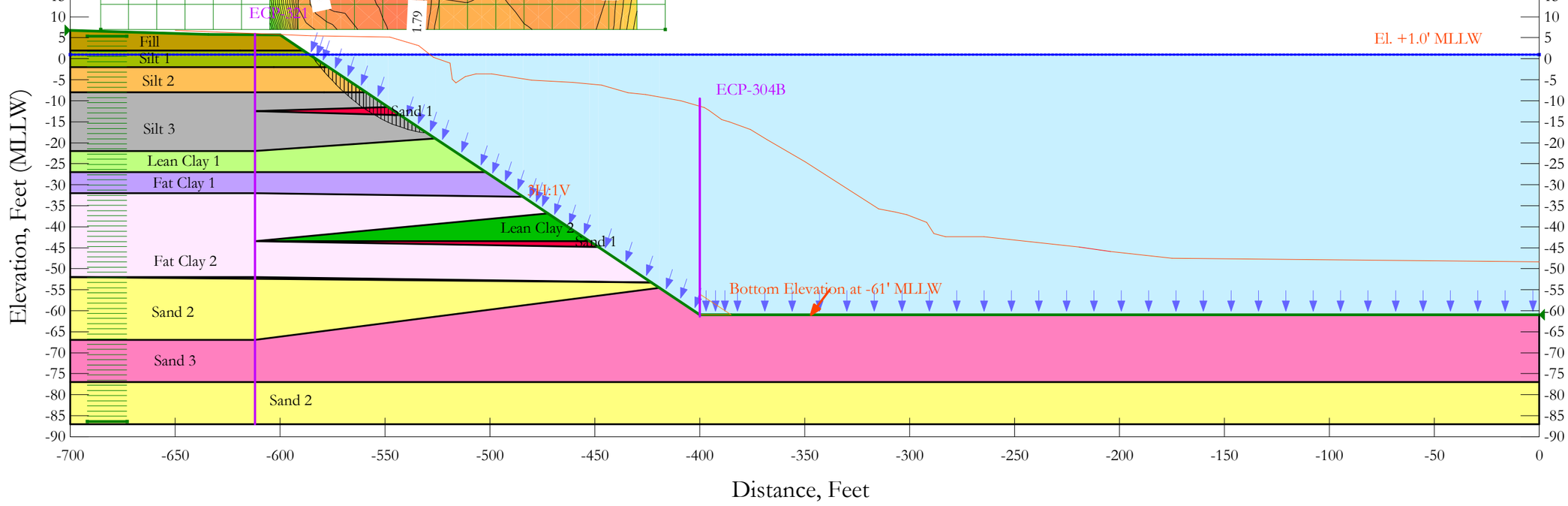



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: HSC Expansion near Barbours Cut**
**Site Station: 19+00 (Old Station 3+00), 800 Feet Channel Width**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term**
**Slip Surface: Circular**

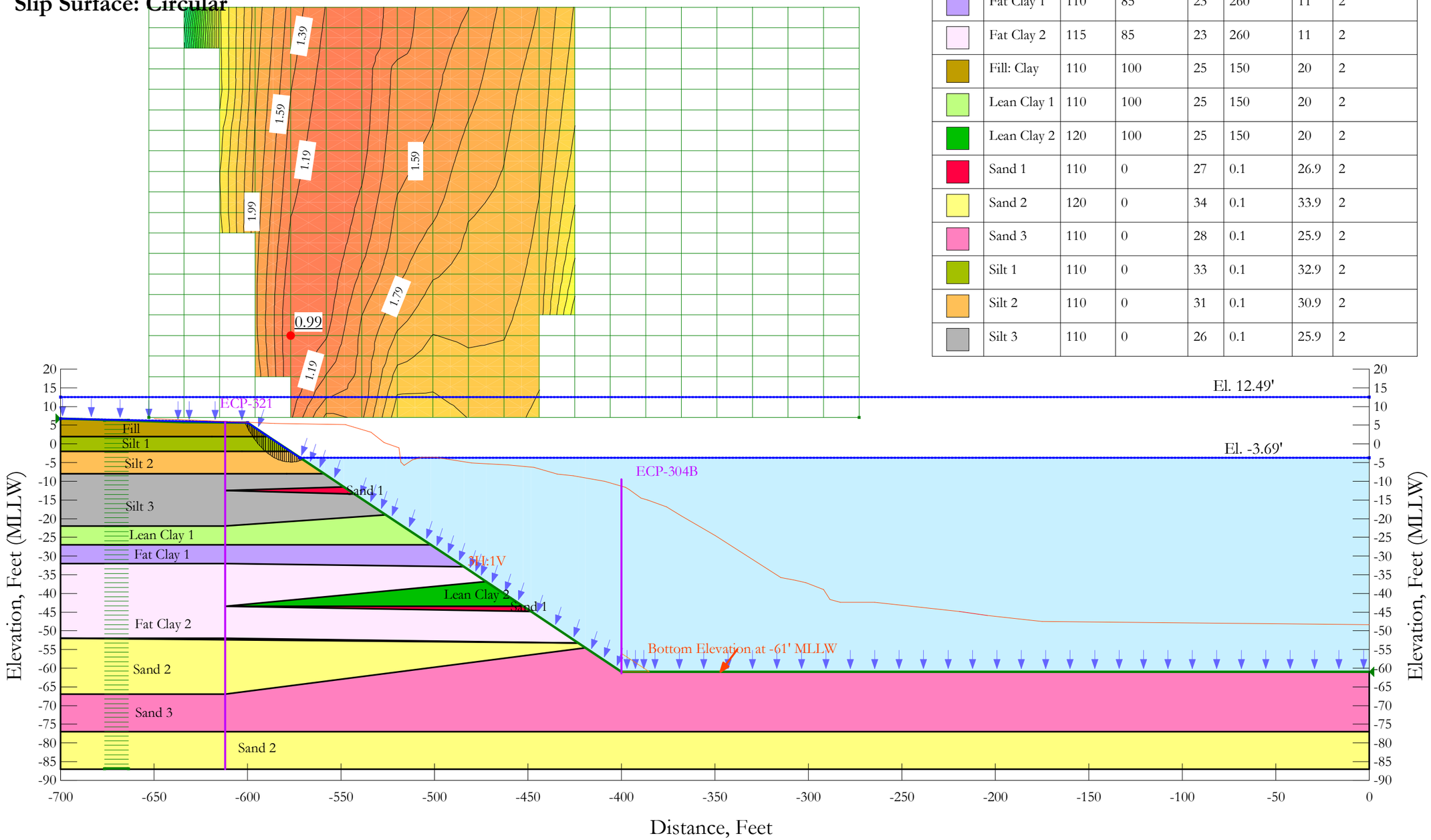



| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Fat Clay 1 | 110 | 85 | 23 |
| | Fat Clay 2 | 115 | 85 | 23 |
| | Fill: Clay | 110 | 100 | 25 |
| | Lean Clay 1 | 110 | 100 | 25 |
| | Lean Clay 2 | 120 | 100 | 25 |
| | Sand 1 | 110 | 0 | 27 |
| | Sand 2 | 120 | 0 | 34 |
| | Sand 3 | 110 | 0 | 28 |
| | Silt 1 | 110 | 0 | 33 |
| | Silt 2 | 110 | 0 | 31 |
| | Silt 3 | 110 | 0 | 26 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: HSC Expansion near Barbours Cut**
**Site Station: 19+00 (Old Station 3+00), 800 Feet Channel Width**
**HVJ Project Number: HG1910092.2.1**
**Loading Condition: Rapid Drawdown**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) | Piezometric Line After Drawdown |
|---|---|---|---|---|---|---|---|
| | Fat Clay 1 | 110 | 85 | 23 | 260 | 11 | 2 |
| | Fat Clay 2 | 115 | 85 | 23 | 260 | 11 | 2 |
| | Fill: Clay | 110 | 100 | 25 | 150 | 20 | 2 |
| | Lean Clay 1 | 110 | 100 | 25 | 150 | 20 | 2 |
| | Lean Clay 2 | 120 | 100 | 25 | 150 | 20 | 2 |
| | Sand 1 | 110 | 0 | 27 | 0.1 | 26.9 | 2 |
| | Sand 2 | 120 | 0 | 34 | 0.1 | 33.9 | 2 |
| | Sand 3 | 110 | 0 | 28 | 0.1 | 25.9 | 2 |
| | Silt 1 | 110 | 0 | 33 | 0.1 | 32.9 | 2 |
| | Silt 2 | 110 | 0 | 31 | 0.1 | 30.9 | 2 |
| | Silt 3 | 110 | 0 | 26 | 0.1 | 25.9 | 2 |

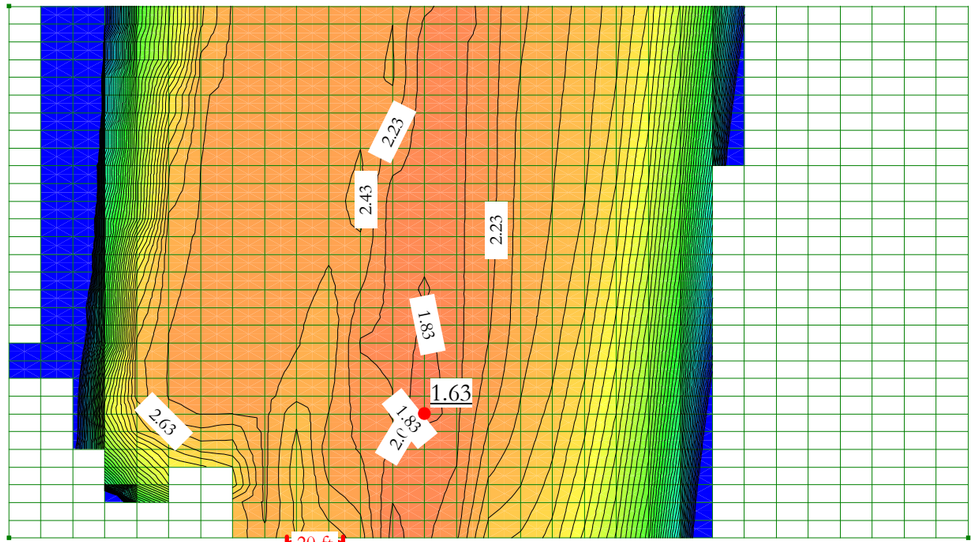


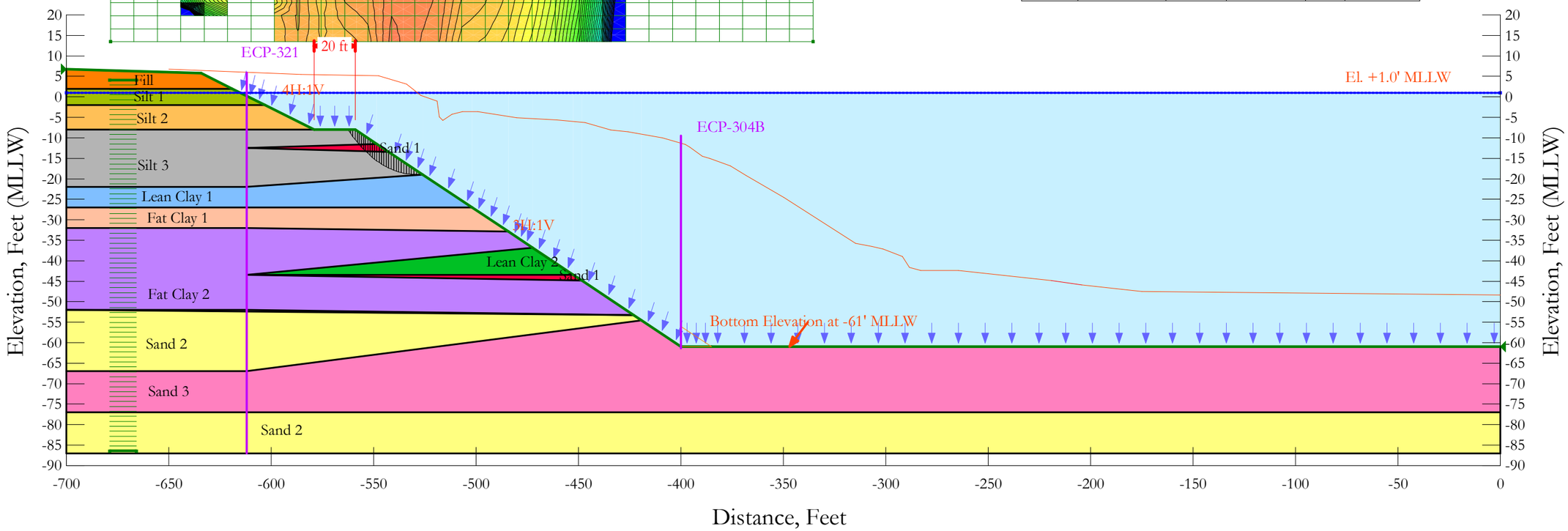
# SLOPE STABILITY ANALYSIS: RECOMMENDED SECTION AT BARBOURS CUT SHIP CHANNEL - SITE 2

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: HSC Expansion near Barbours Cut**
**Site Station: 19+00, 800 Feet Channel Width**
**HVJ Project Number: HG1910092.2.1**

## Loading Condition: Short Term
## Slip Surface: Circular

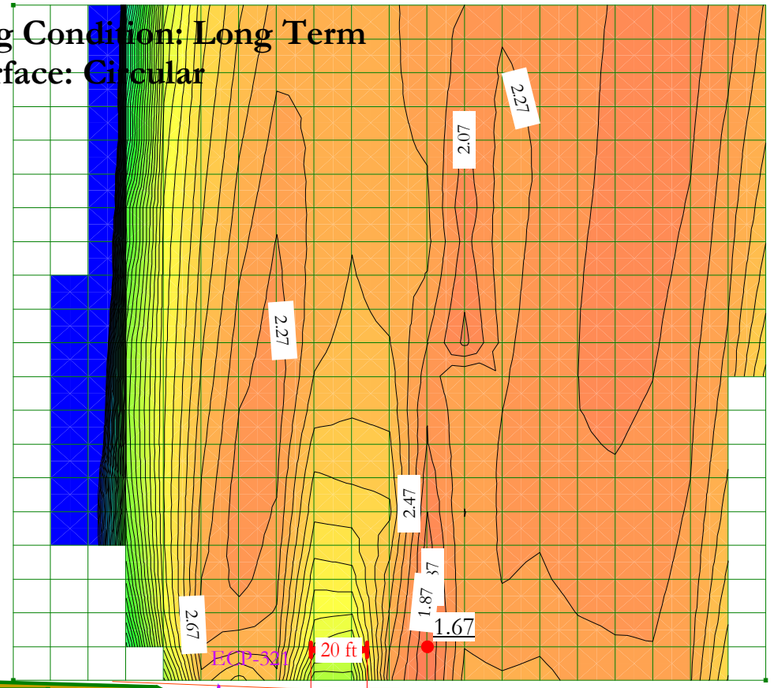
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Fat Clay 1 (Undrained) | 110 | | | 250 |
| | Fat Clay 2 (Undrained) | 115 | | | 640 |
| | Fill: Clay (Undrained) | 110 | | | 2,500 |
| | Lean Clay 1 (Undrained) | 110 | | | 250 |
| | Lean Clay 2 (Undrained) | 120 | | | 1,100 |
| | Sand 1 | 110 | 0 | 27 | |
| | Sand 2 | 120 | 0 | 34 | |
| | Sand 3 | 110 | 0 | 28 | |
| | Silt 1 | 110 | 0 | 33 | |
| | Silt 2 | 110 | 0 | 31 | |
| | Silt 3 | 110 | 0 | 26 | |



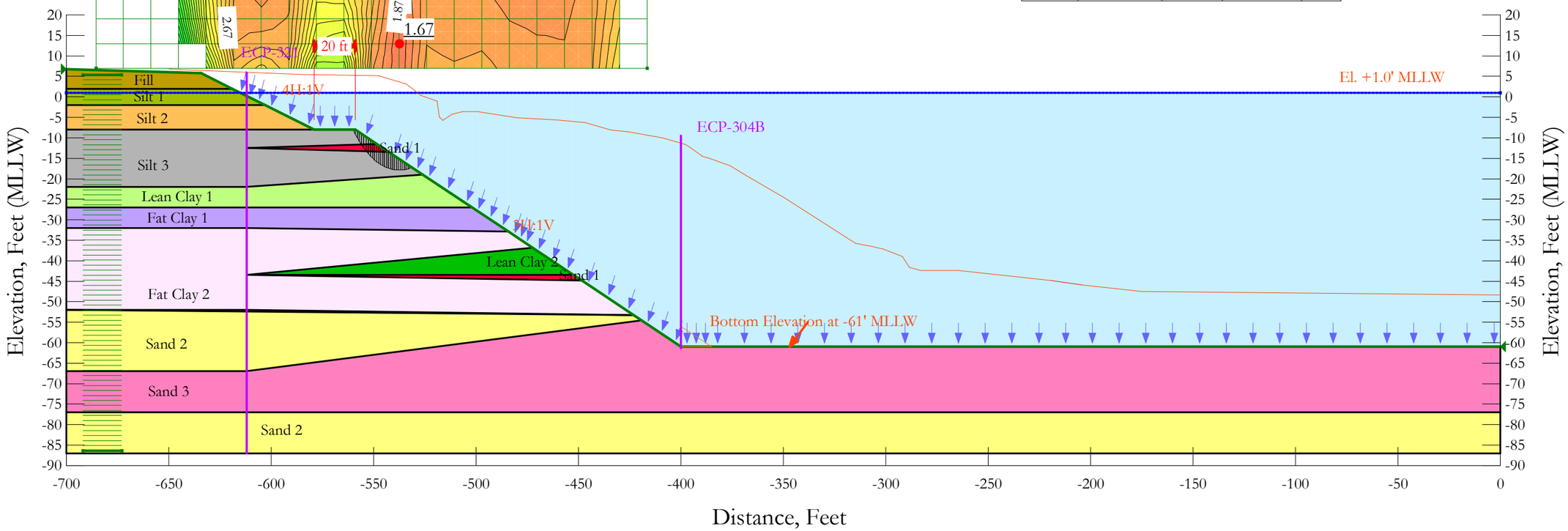



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: HSC Expansion near Barbours Cut**
**Site Station: 19+00, 800 Feet Channel Width**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term**
**Slip Surface: Circular**

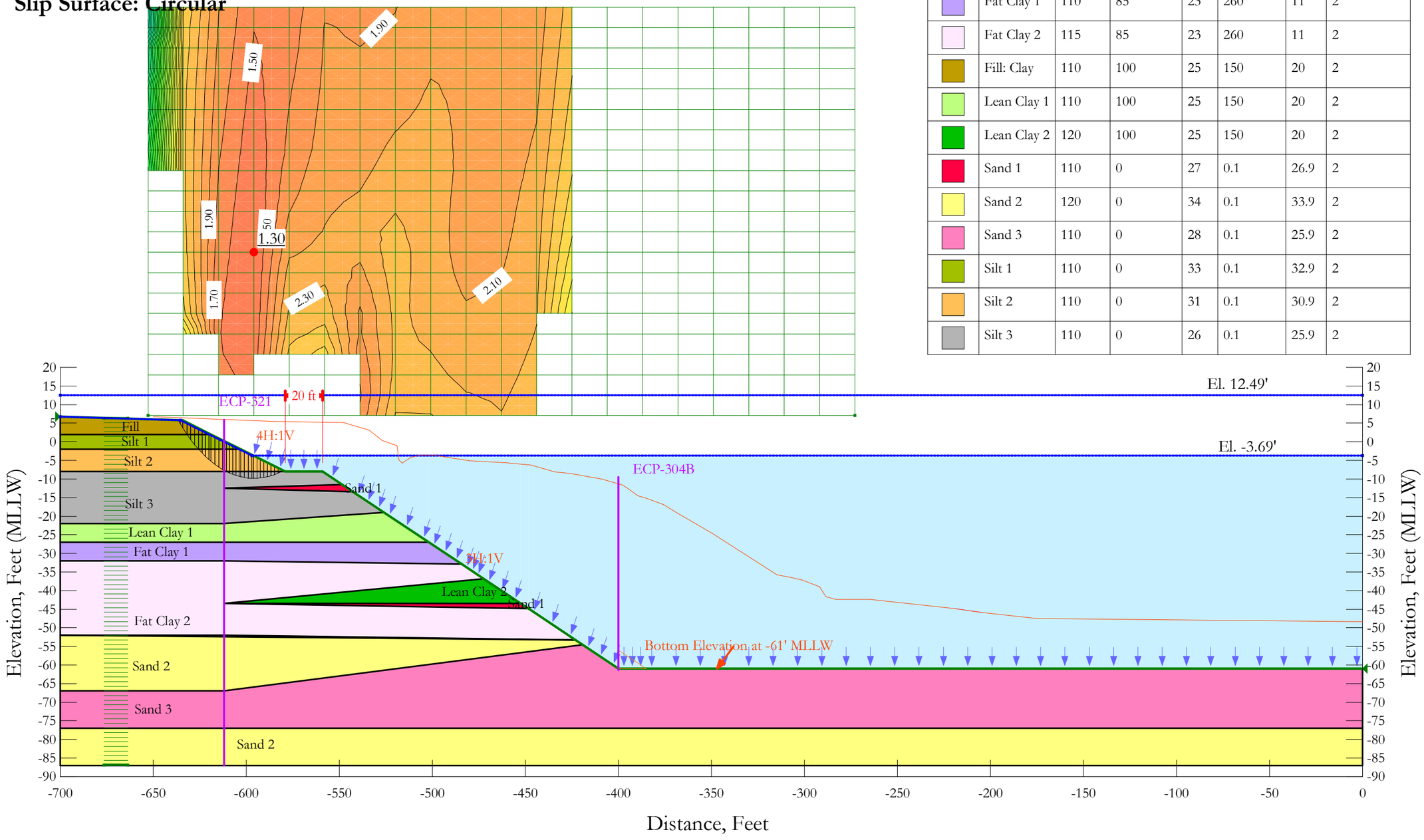



| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Fat Clay 1 | 110 | 85 | 23 |
| | Fat Clay 2 | 115 | 85 | 23 |
| | Fill: Clay | 110 | 100 | 25 |
| | Lean Clay 1 | 110 | 100 | 25 |
| | Lean Clay 2 | 120 | 100 | 25 |
| | Sand 1 | 110 | 0 | 27 |
| | Sand 2 | 120 | 0 | 34 |
| | Sand 3 | 110 | 0 | 28 |
| | Silt 1 | 110 | 0 | 33 |
| | Silt 2 | 110 | 0 | 31 |
| | Silt 3 | 110 | 0 | 26 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: HSC Expansion near Barbours Cut**
**Site Station: 19+00, 800 Feet Channel Width**
**HVJ Project Number: HG1910092.2.1**
**Loading Condition: Rapid Drawdown**
**Slip Surface: Circular**

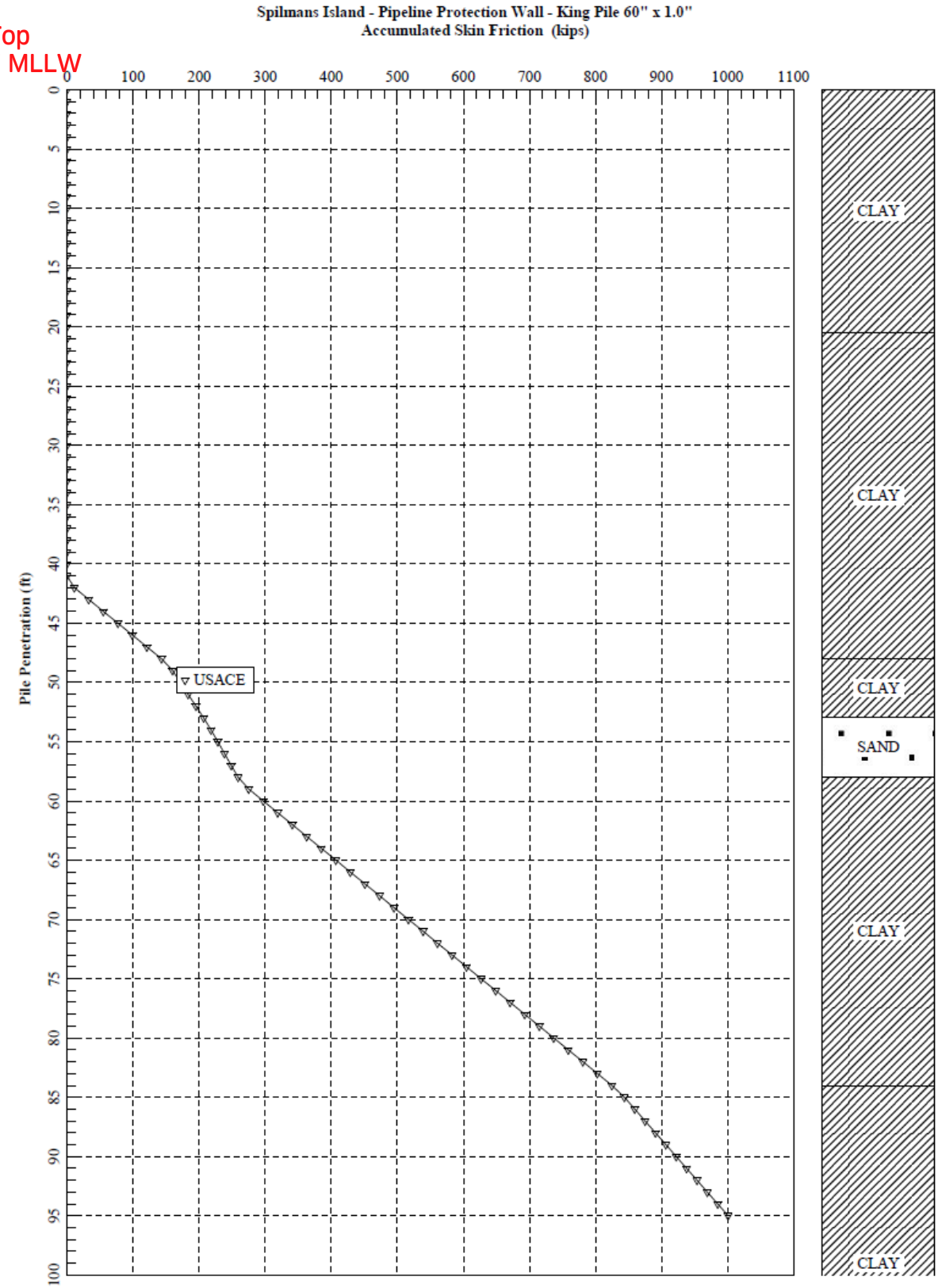
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) | Piezometric Line After Drawdown |
|---|---|---|---|---|---|---|---|
| | Fat Clay 1 | 110 | 85 | 23 | 260 | 11 | 2 |
| | Fat Clay 2 | 115 | 85 | 23 | 260 | 11 | 2 |
| | Fill: Clay | 110 | 100 | 25 | 150 | 20 | 2 |
| | Lean Clay 1 | 110 | 100 | 25 | 150 | 20 | 2 |
| | Lean Clay 2 | 120 | 100 | 25 | 150 | 20 | 2 |
| | Sand 1 | 110 | 0 | 27 | 0.1 | 26.9 | 2 |
| | Sand 2 | 120 | 0 | 34 | 0.1 | 33.9 | 2 |
| | Sand 3 | 110 | 0 | 28 | 0.1 | 25.9 | 2 |
| | Silt 1 | 110 | 0 | 33 | 0.1 | 32.9 | 2 |
| | Silt 2 | 110 | 0 | 31 | 0.1 | 30.9 | 2 |
| | Silt 3 | 110 | 0 | 26 | 0.1 | 25.9 | 2 |



# APPENDIX D

DRIVEN PILE AXIAL CAPACITY CURVES: CUTOFF WALL AND PPW

Pile Top
El. -6' MLLW




Notes:

* * Allowable axial tension capacity can be calculated by applying a factor of safety to the ultimate skin friction capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

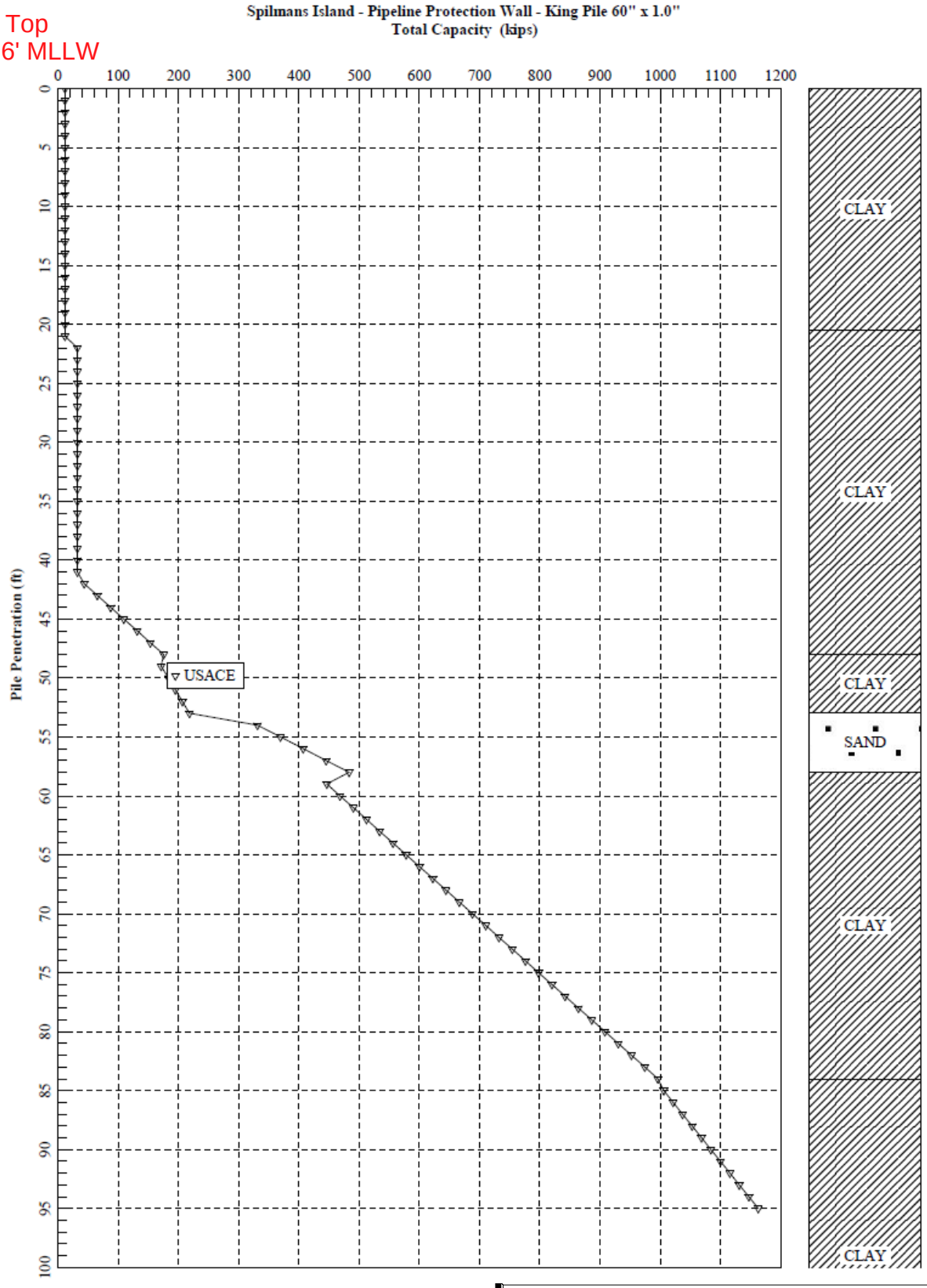

HVJ ASSOCIATES
6120 S. Dairy Ashford Road
Houston, Texas 77072-1010
281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE SKIN FRICTION CAPACITY
SPILMANS ISLAND – PIPELINE PROTECTION WALL - KING PILE
60" X 1.0" WT

| PROJECT NO.: HG1910092.2.1 | DRAWING NO.: PLATE D-1 |
|---|---|

Pile Top
El. -6' MLLW




Notes:

* Allowable axial compressive capacity can be calculated by applying a factor of safety to the total ultimate capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

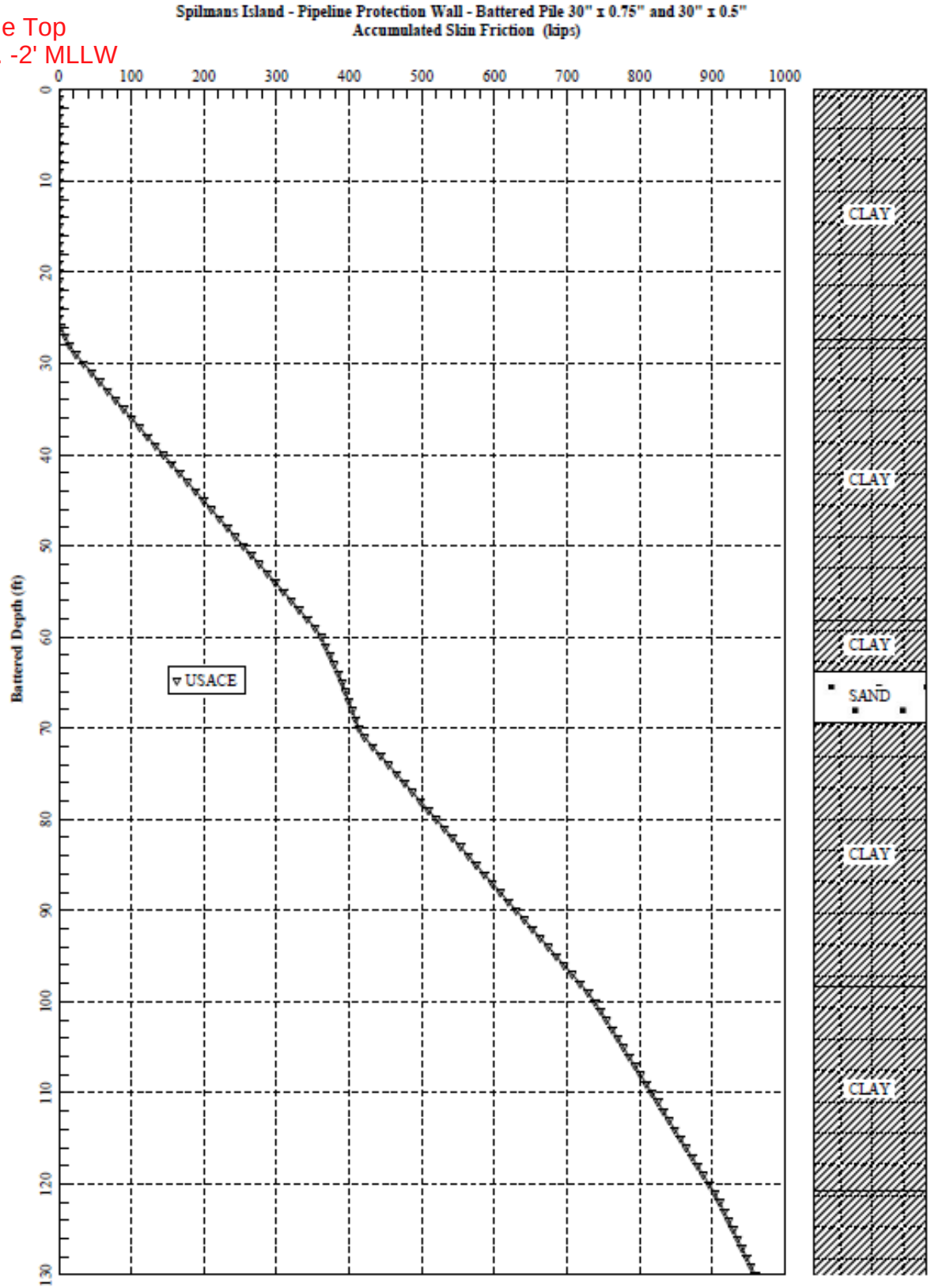

HVJ ASSOCIATES
6120 S. Dairy Ashford Road
Houston, Texas 77072-1010
281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE COMPRESSIVE CAPACITY
SPILMANS ISLAND – PIPELINE PROTECTION WALL - KING PILE
60" X 1.0" WT

| PROJECT NO.: HG1910092.2.1 | DRAWING NO.: PLATE D-2 |
|---|---|

Pile Top
El. -2' MLLW




Notes:

* * Allowable axial tension capacity can be calculated by applying a factor of safety to the ultimate skin friction capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

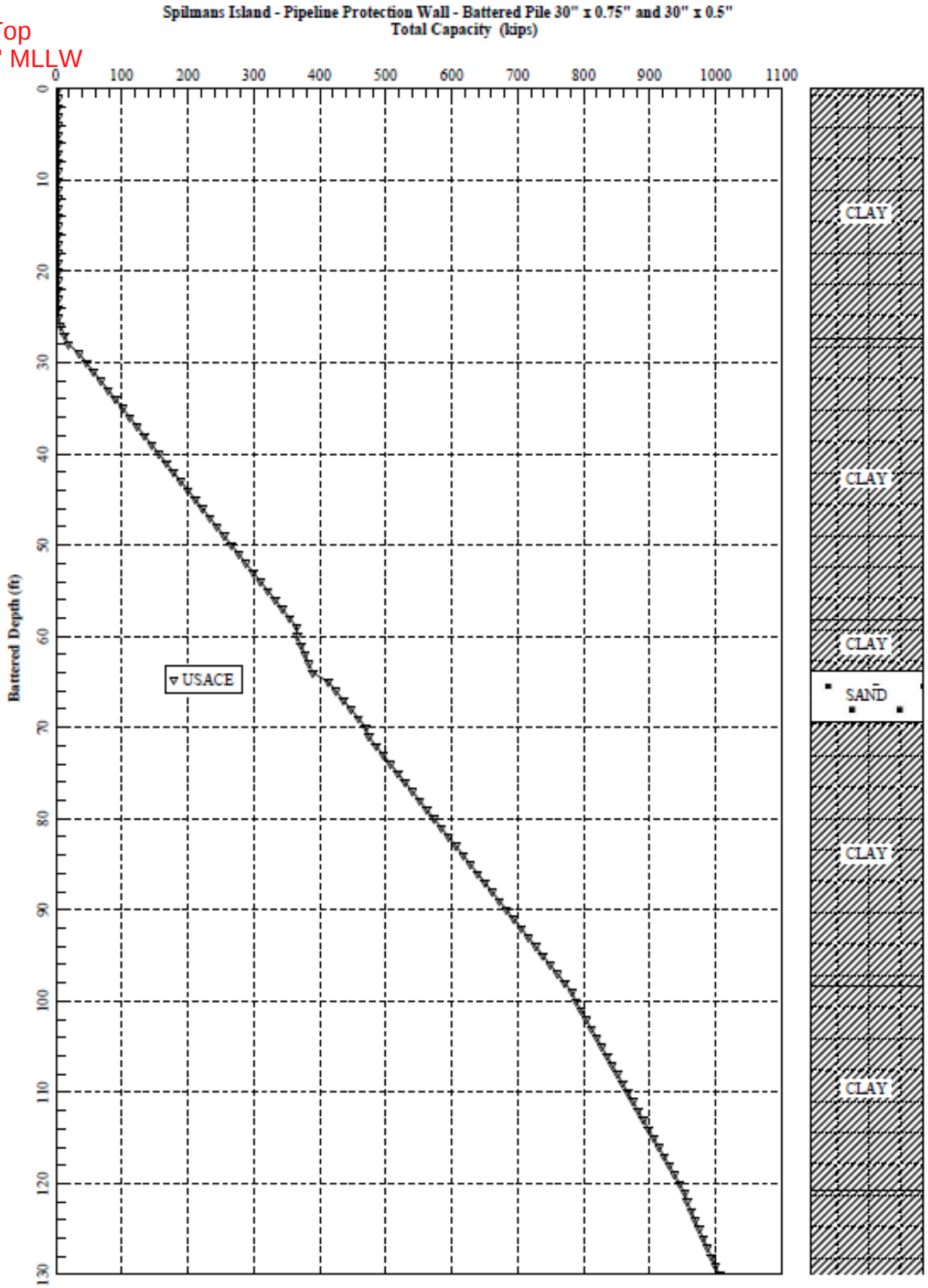

HVJ ASSOCIATES
6120 S. Dairy Ashford Road
Houston, Texas 77072-1010
281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE SKIN FRICTION CAPACITY
SPILMANS ISLAND – PIPELINE PROTECTION WALL –
BATTERED PILE 30" X 0.75" AND 30" X 0.5" WT

| PROJECT NO.: HG1910092.2.1 | DRAWING NO.: PLATE D-3 |
|---|---|

Pile Top
El. -2' MLLW




Notes:

* Allowable axial compressive capacity can be calculated by applying a factor of safety to the total ultimate capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

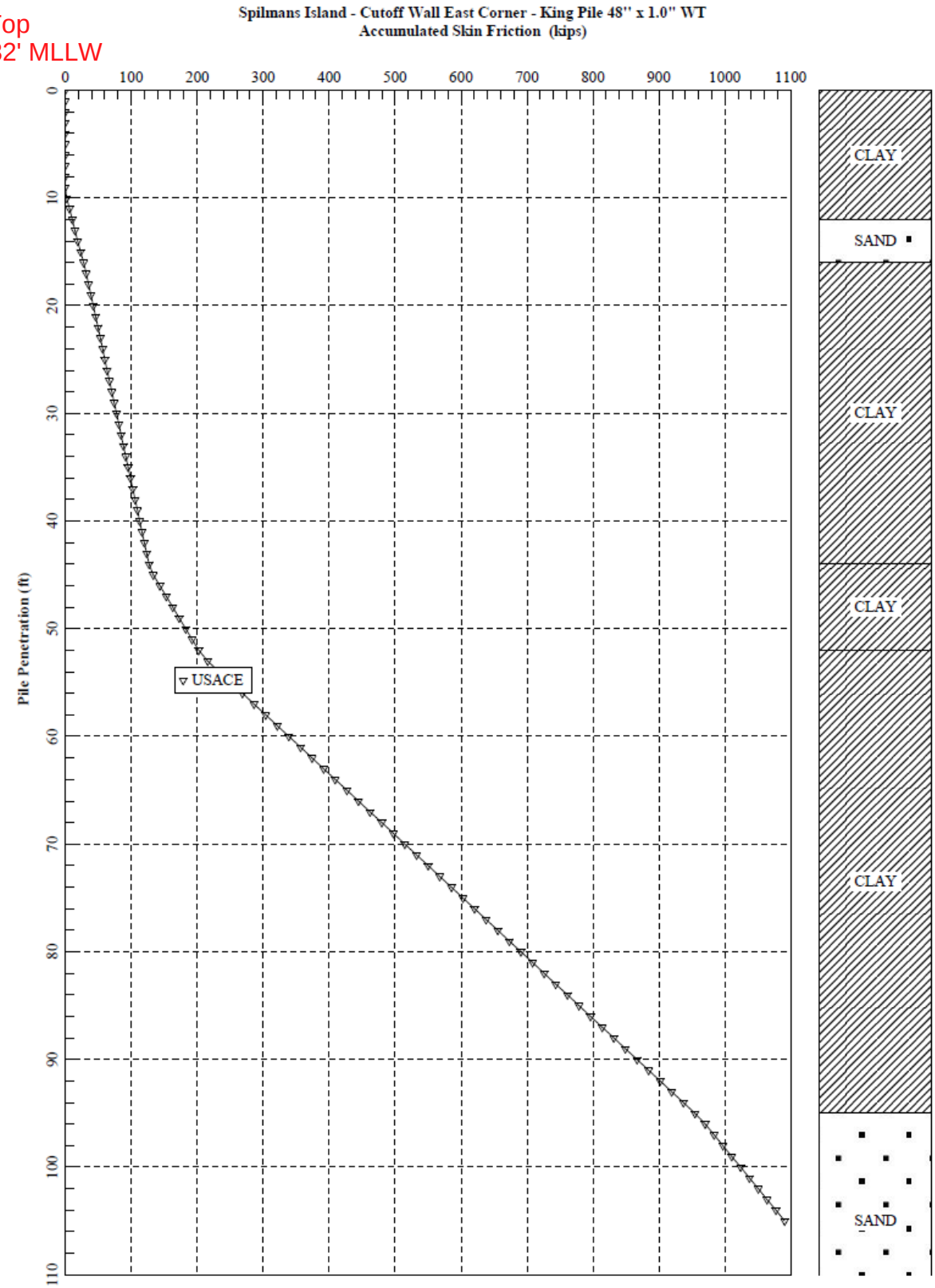

HVJ ASSOCIATES
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281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE COMPRESSIVE CAPACITY
SPILMANS ISLAND – PIPELINE PROTECTION WALL –
BATTERED PILE 30" X 0.75" AND 30" X 0.5" WT

| PROJECT NO.: HG1910092.2.1 | DRAWING NO.: PLATE D-4 |
|---|---|

Pile Top
El. +32' MLLW




Notes:

* * Allowable axial tension capacity can be calculated by applying a factor of safety to the ultimate skin friction capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

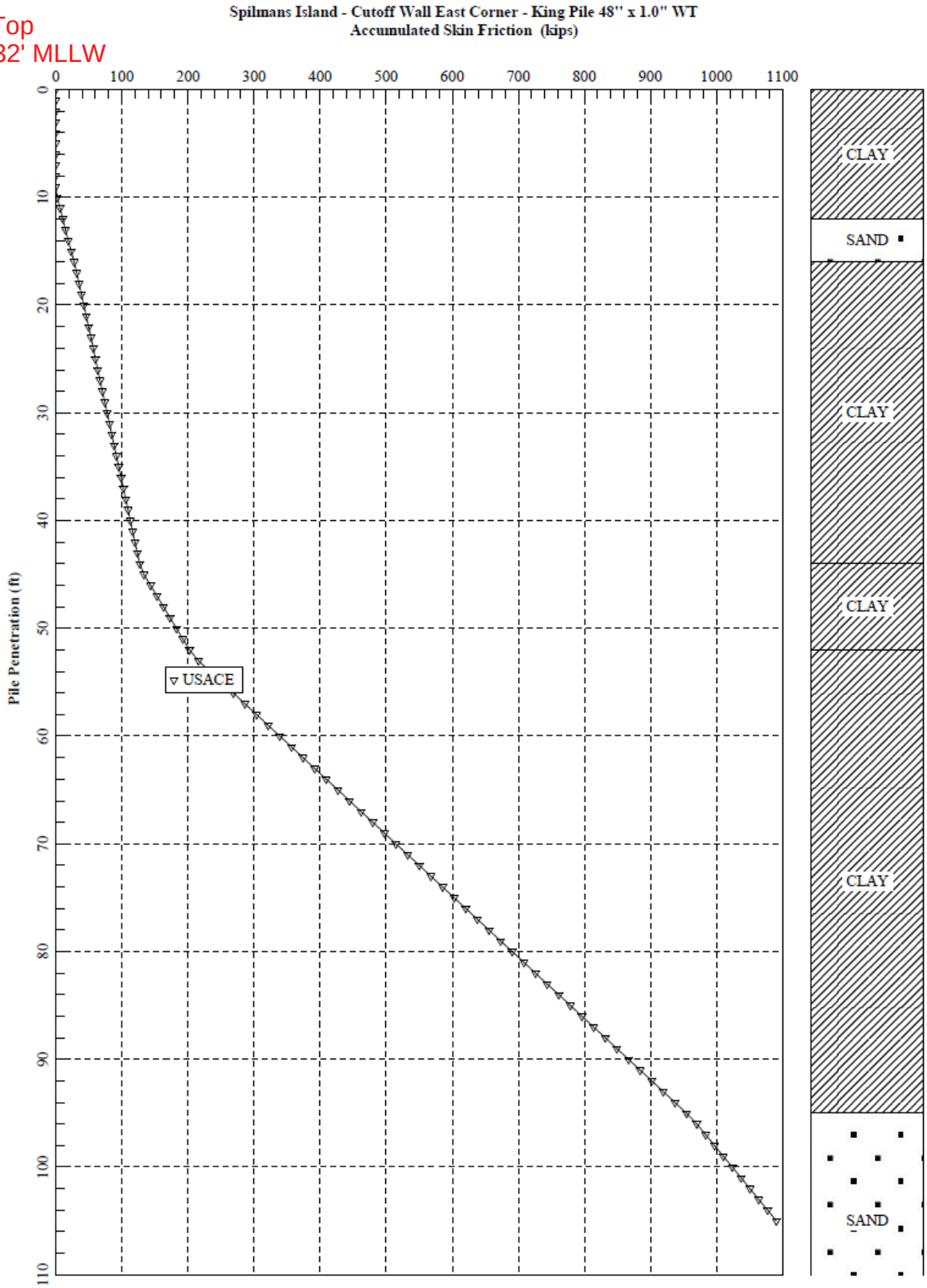

HVJ ASSOCIATES
6120 S. Dairy Ashford Road
Houston, Texas 77072-1010
281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE SKIN FRICTION CAPACITY
SPILMANS ISLAND - CUTOFF WALL EAST CORNER - KING PILE 48" X 1.0" WT

| PROJECT NO.: HG1910092.2.1 | DRAWING NO.: PLATE D-5 |
|---|---|

Pile Top
El. +32' MLLW




Notes:

* Allowable axial compressive capacity can be calculated by applying a factor of safety to the total ultimate capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

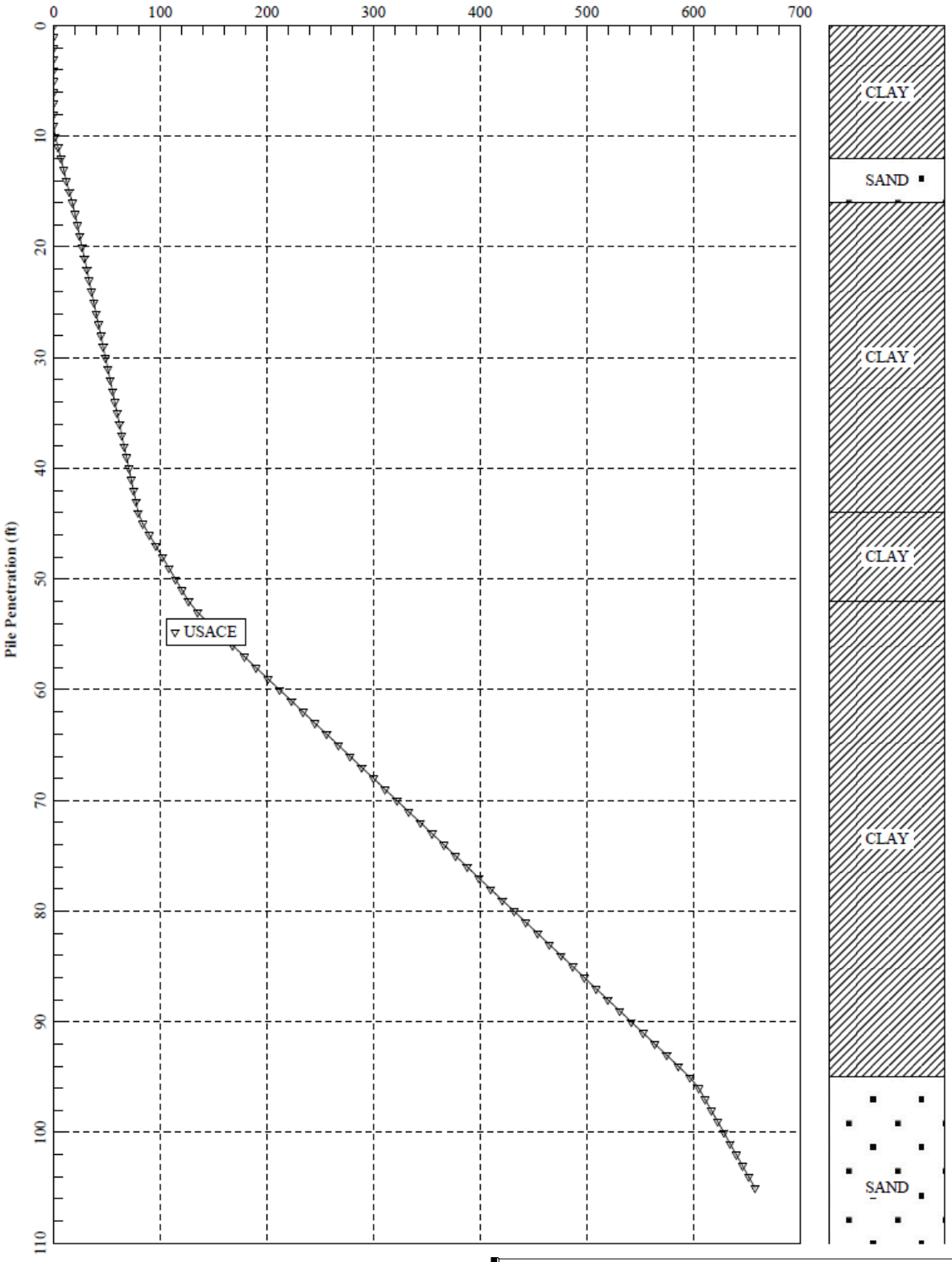

HVJ ASSOCIATES
6120 S. Dairy Ashford Road
Houston, Texas 77072-1010
281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE COMPRESSIVE CAPACITY
SPILMANS ISLAND - CUTOFF WALL EAST CORNER - KING PILE 48" X 1.0" WT

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE D-6 |

Pile Top
El. +32' MLLW




Notes:

* * Allowable axial tension capacity can be calculated by applying a factor of safety to the ultimate skin friction capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

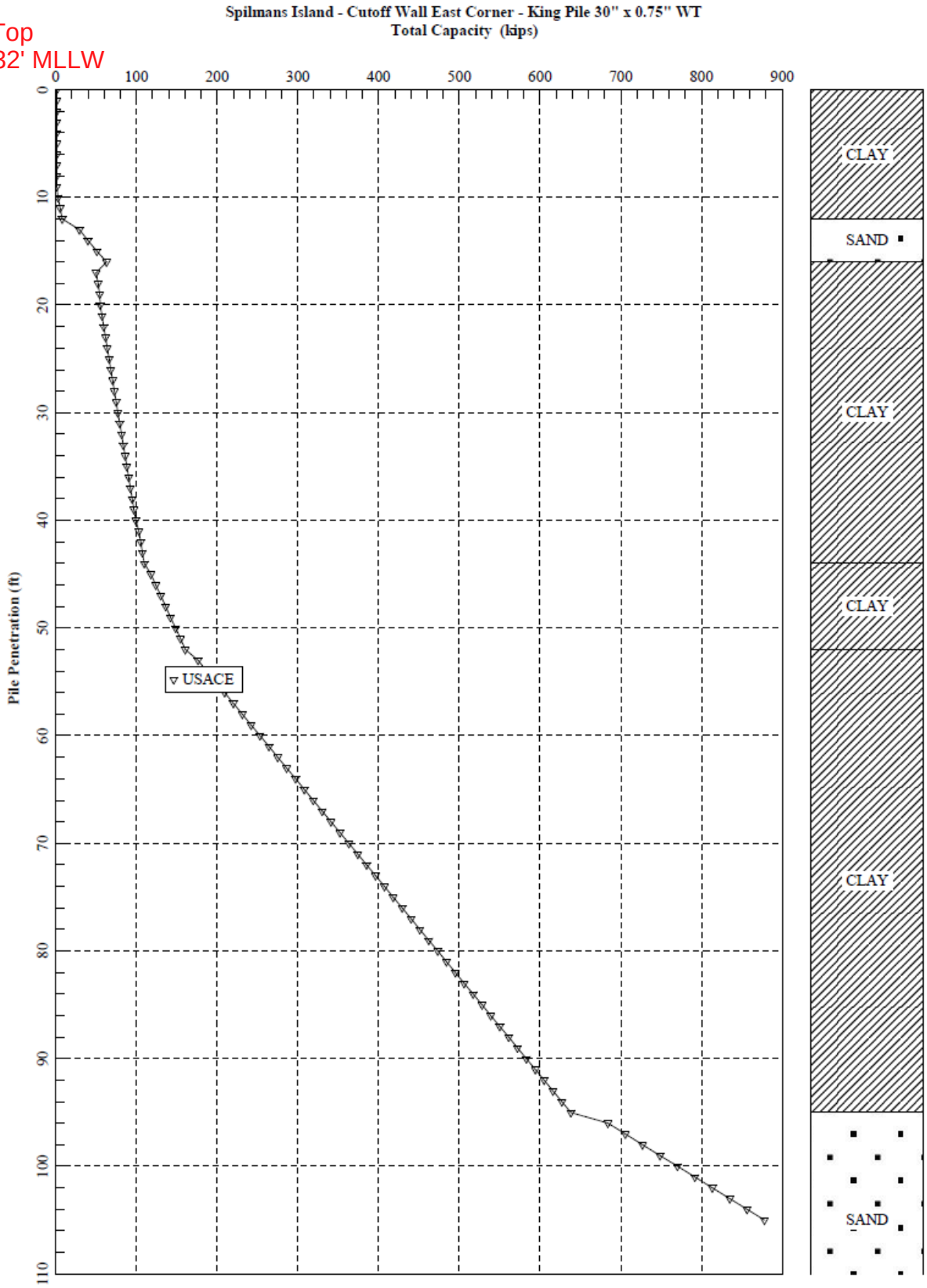

HVJ ASSOCIATES
6120 S. Dairy Ashford Road
Houston, Texas 77072-1010
281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE SKIN FRICTION CAPACITY
SPILMANS ISLAND - CUTOFF WALL EAST CORNER - KING PILE 30" X 0.75" WT

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE D-7 |

Pile Top
El. +32' MLLW




Notes:

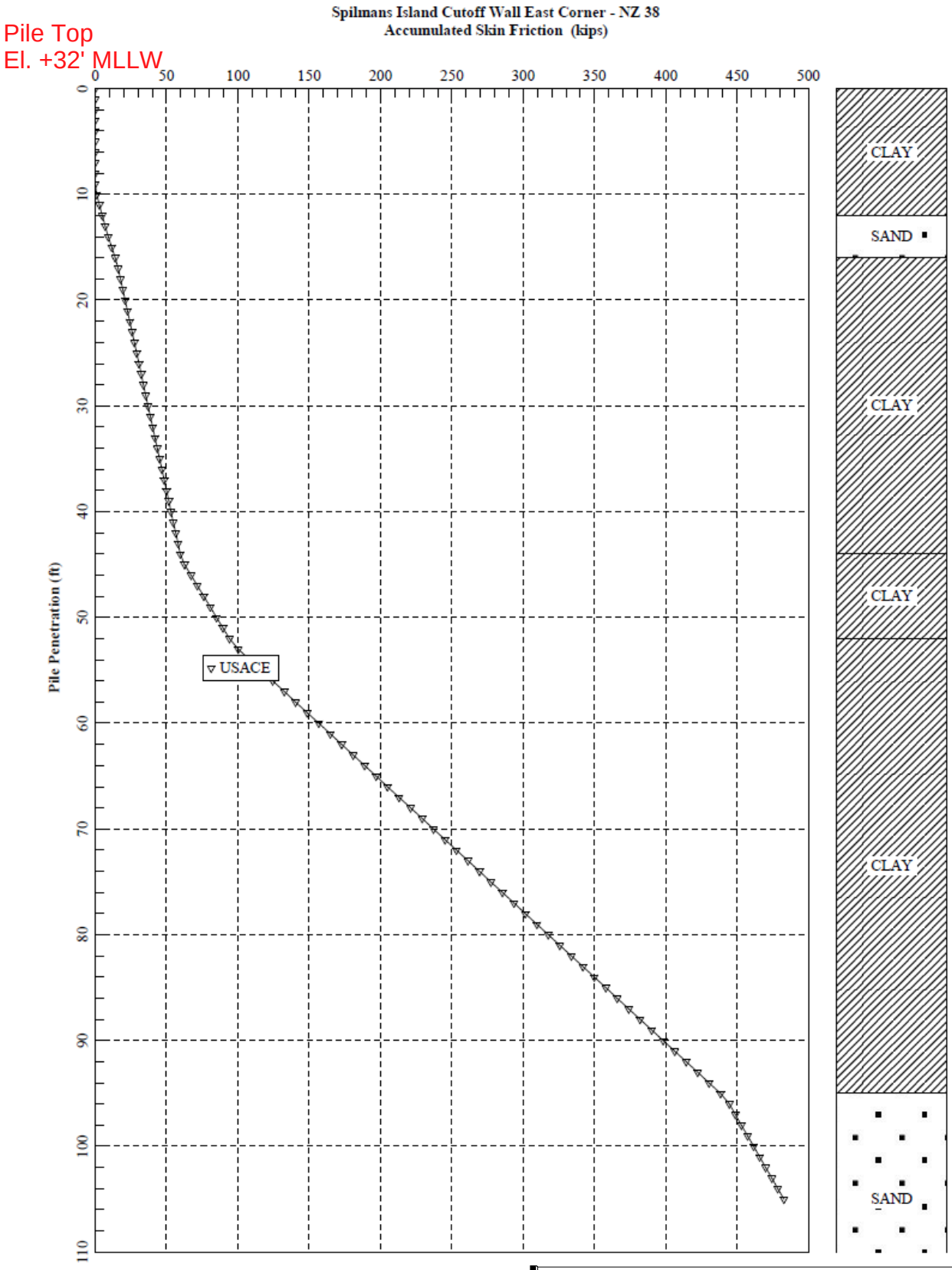
* Allowable axial compressive capacity can be calculated by applying a factor of safety to the total ultimate capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.


HVJ ASSOCIATES
6120 S. Dairy Ashford Road
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281.933.7388 Ph
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| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE COMPRESSIVE CAPACITY
SPILMANS ISLAND - CUTOFF WALL EAST CORNER - KING PILE 30" X 0.75" WT

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE D-8 |




Notes:

* * Allowable axial tension capacity can be calculated by applying a factor of safety to the ultimate skin friction capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

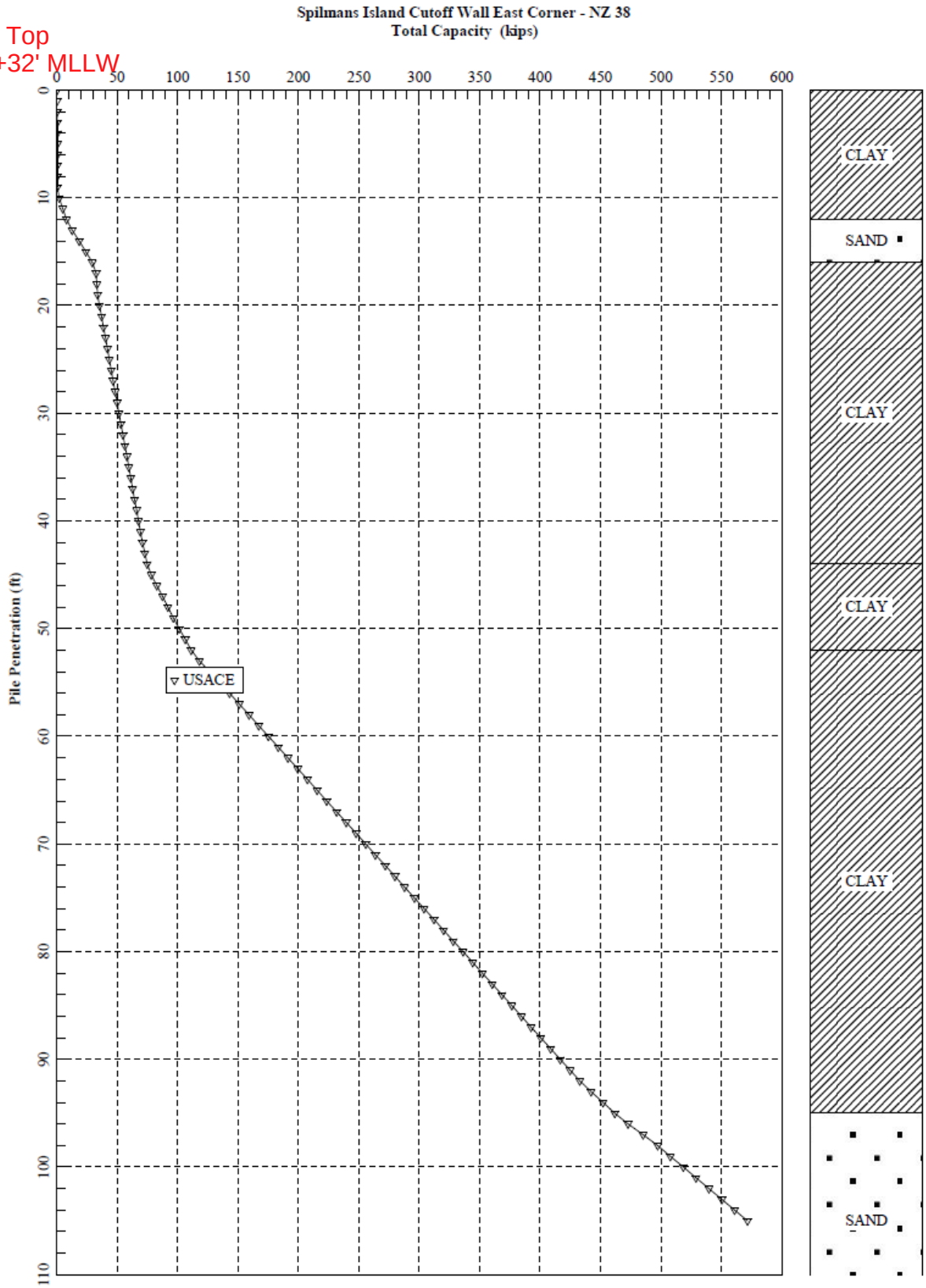

HVJ ASSOCIATES

6120 S. Dairy Ashford Road
Houston, Texas 77072-1010
281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE SKIN FRICTION CAPACITY
SPILMANS ISLAND - CUTOFF WALL EAST CORNER - SHEET PILE NZ 38

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE D-9 |




Notes:

* Allowable axial compressive capacity can be calculated by applying a factor of safety to the total ultimate capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

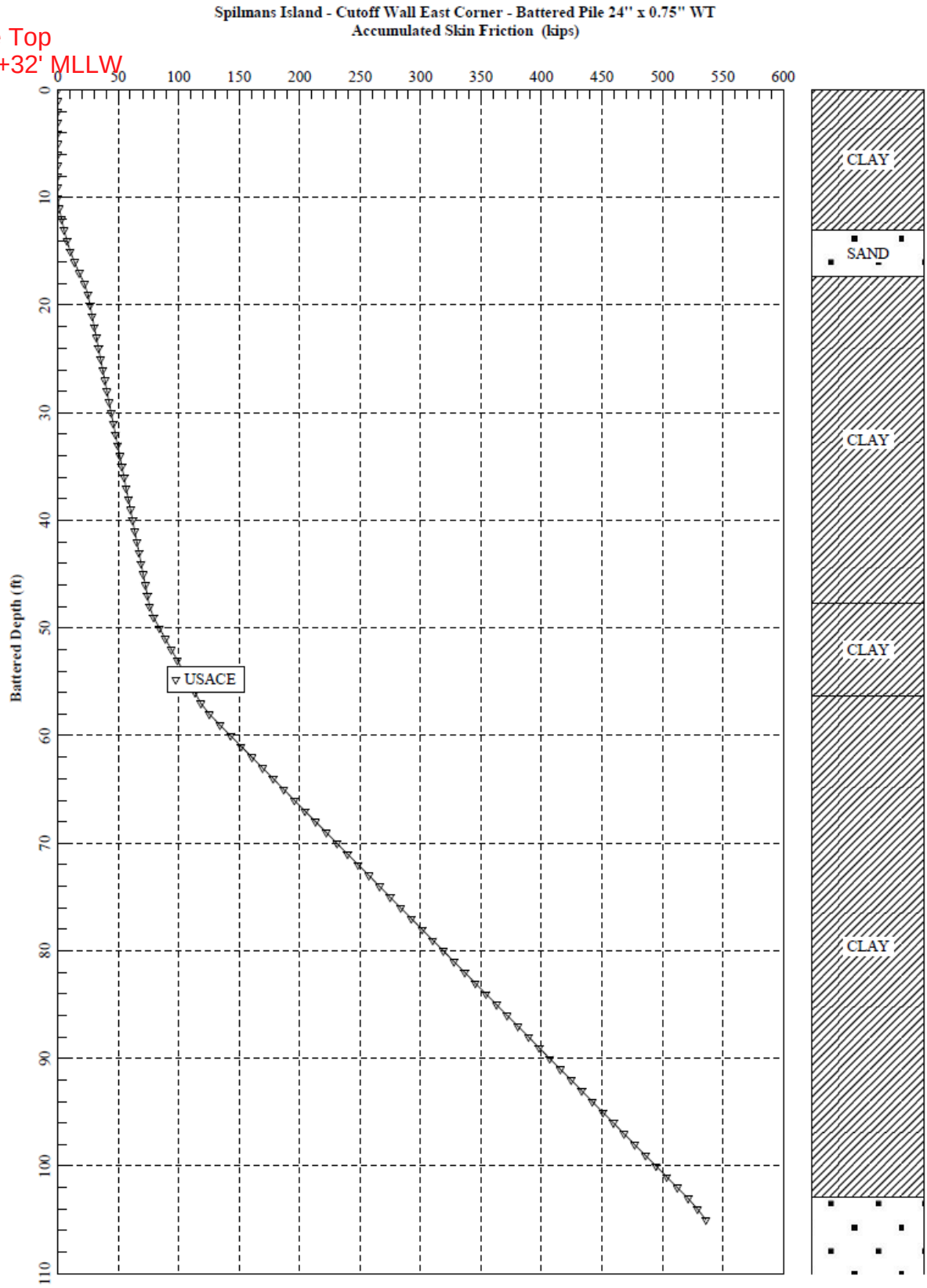

HVJ ASSOCIATES

6120 S. Dairy Ashford Road
Houston, Texas 77072-1010
281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE COMPRESSIVE CAPACITY
SPILMANS ISLAND - CUTOFF WALL EAST CORNER - SHEET PILE NZ 38

| PROJECT NO.: HG1910092.2.1 | DRAWING NO.: PLATE D-10 |
|---|---|




Notes:

* * Allowable axial tension capacity can be calculated by applying a factor of safety to the ultimate skin friction capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.


HVJ ASSOCIATES

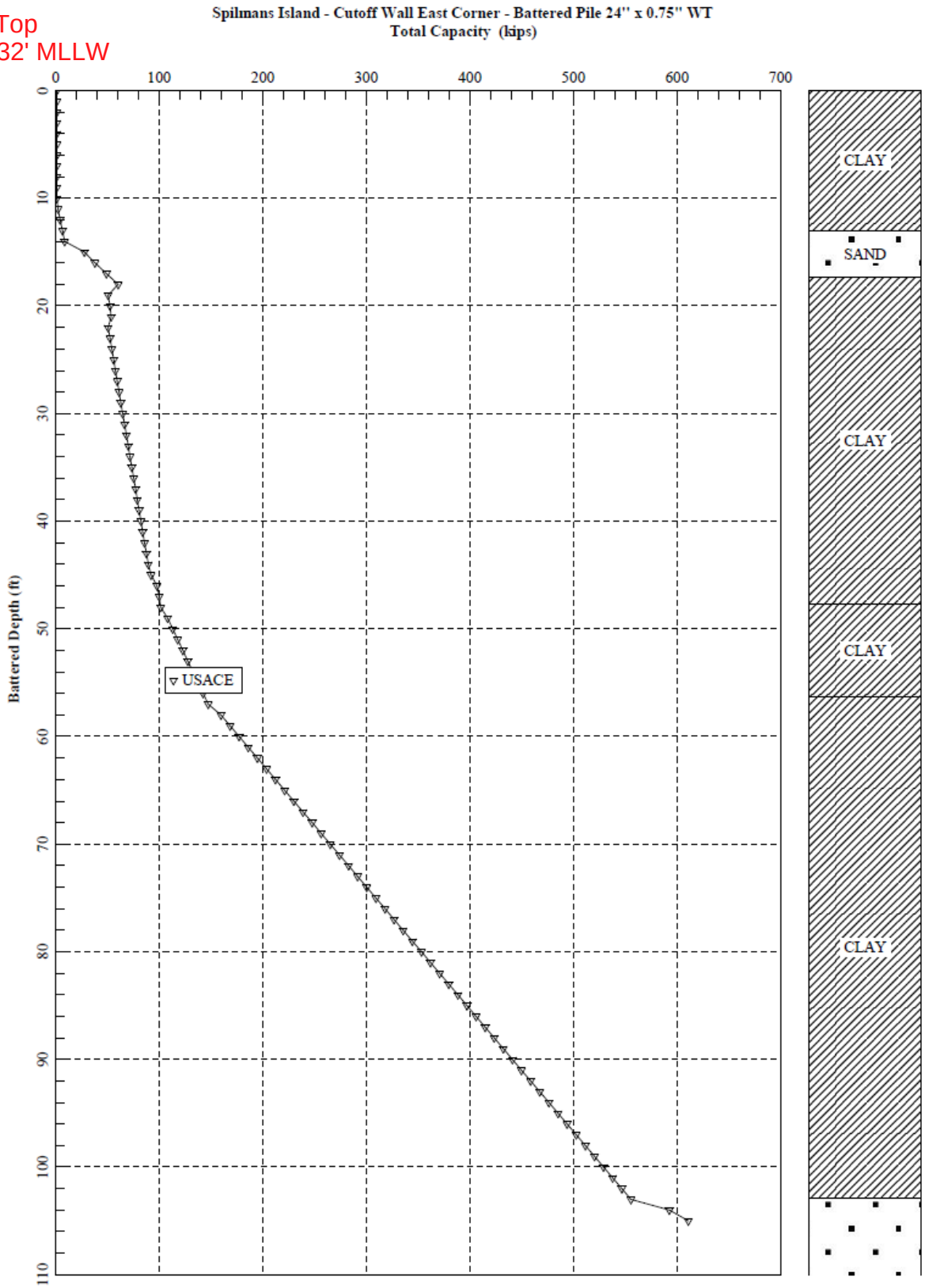
6120 S. Dairy Ashford Road
Houston, Texas 77072-1010
281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE SKIN FRICTION CAPACITY
SPILMANS ISLAND - CUTOFF WALL EAST CORNER –
BATTERED PILE 24" X 0.75" WT

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE D-11 |

Pile Top
El. +32' MLLW




Notes:

* Allowable axial compressive capacity can be calculated by applying a factor of safety to the total ultimate capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

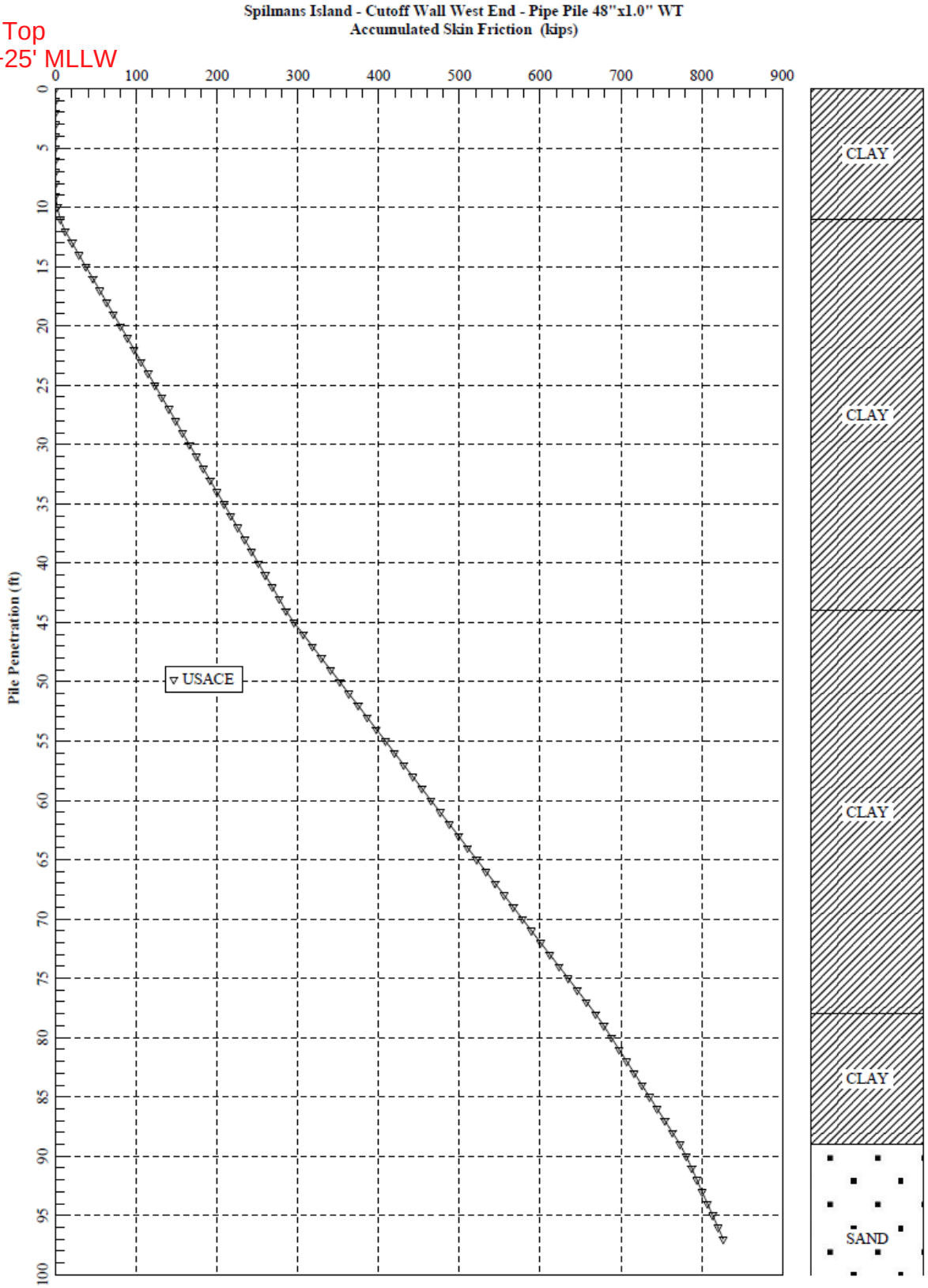

HVJ ASSOCIATES
6120 S. Dairy Ashford Road
Houston, Texas 77072-1010
281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE COMPRESSIVE CAPACITY
SPILMANS ISLAND - CUTOFF WALL EAST CORNER –
BATTERED PILE 24" X 0.75" WT

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE D-12 |

Pile Top
El. +25' MLLW




Notes:

* * Allowable axial tension capacity can be calculated by applying a factor of safety to the ultimate skin friction capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

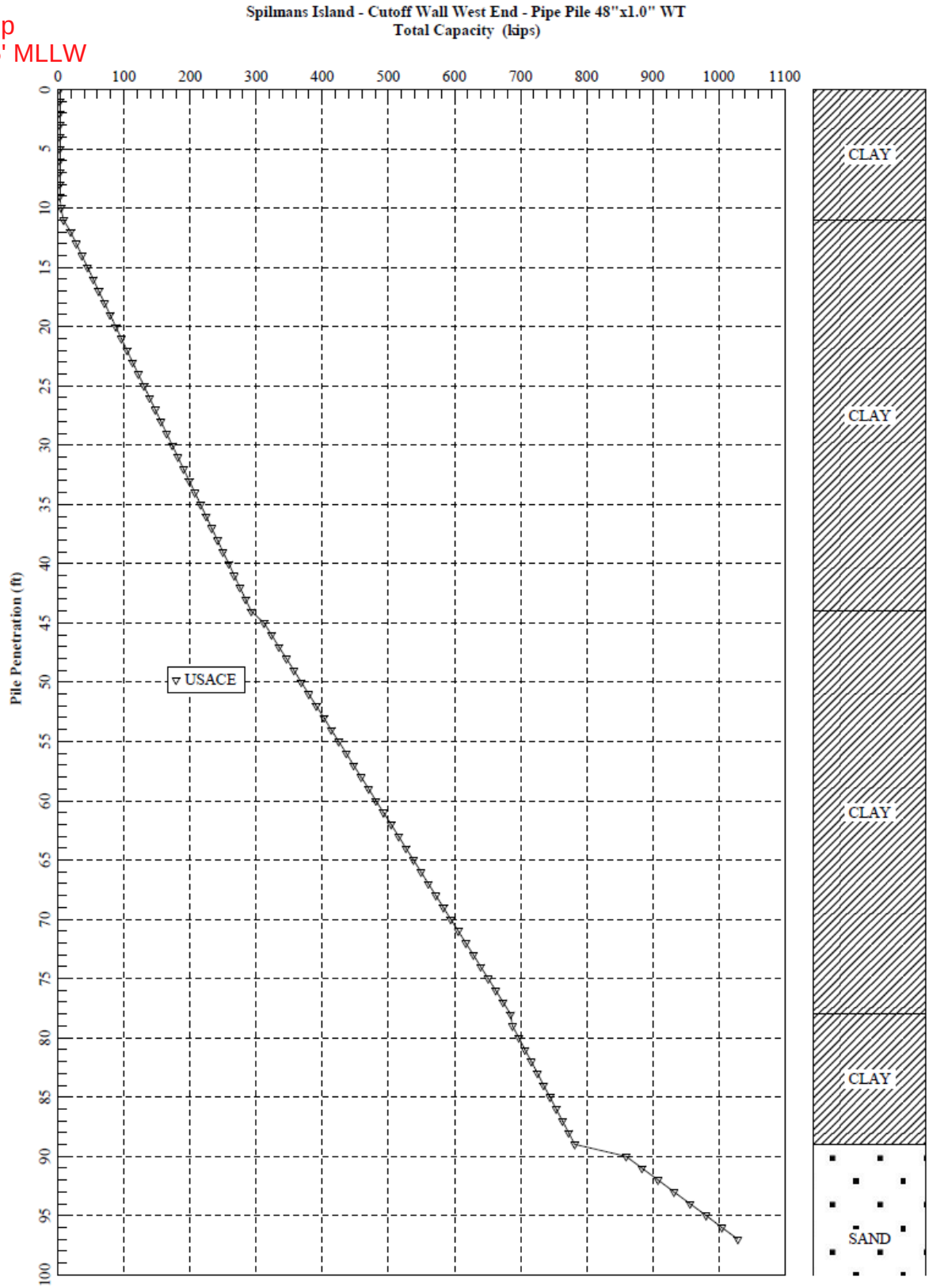

HVJ ASSOCIATES
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281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE SKIN FRICTION CAPACITY
SPILMANS ISLAND - CUTOFF WALL WEST END - KING PILE
48" X 1.0" WT

| PROJECT NO.: HG1910092.2.1 | DRAWING NO.: PLATE D-13 |
|---|---|

Pile Top
El. +25' MLLW




Notes:

* Allowable axial compressive capacity can be calculated by applying a factor of safety to the total ultimate capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

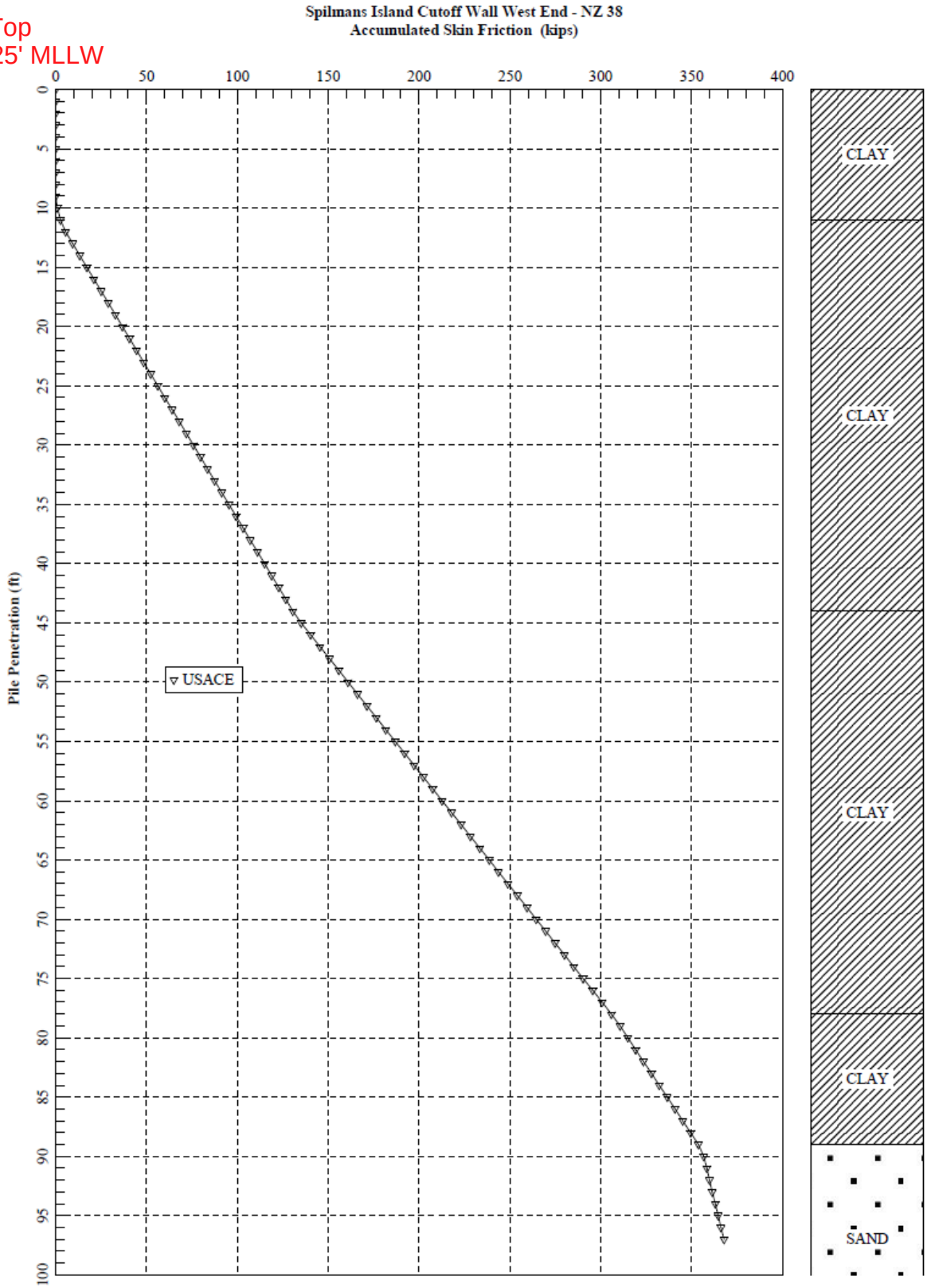

HVJ ASSOCIATES
6120 S. Dairy Ashford Road
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281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE COMPRESSIVE CAPACITY
SPILMANS ISLAND - CUTOFF WALL WEST END - KING PILE
48" X 1.0" WT

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE D-14 |

Pile Top
El. +25' MLLW




Notes:

* * Allowable axial tension capacity can be calculated by applying a factor of safety to the ultimate skin friction capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

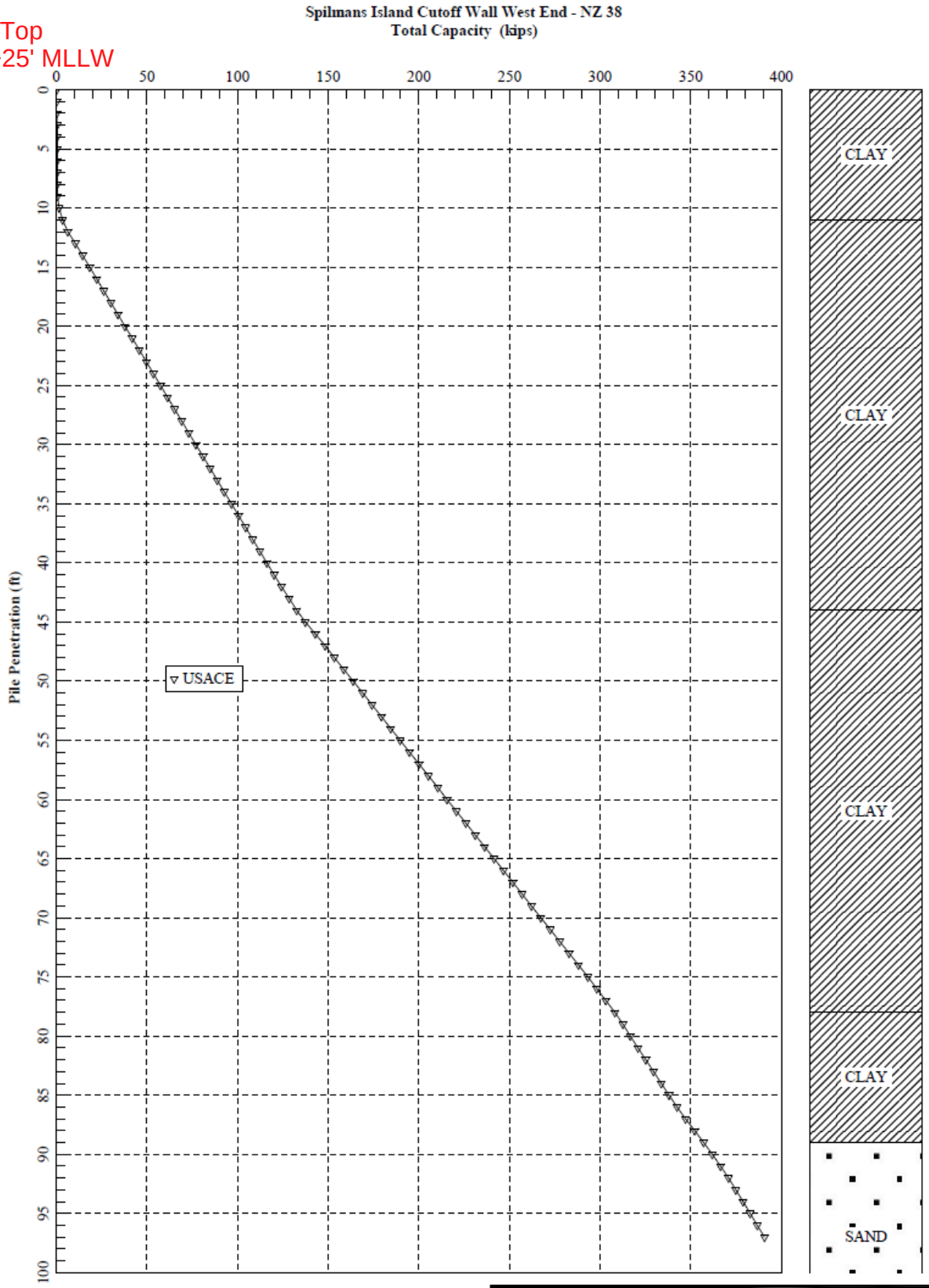

HVJ ASSOCIATES
6120 S. Dairy Ashford Road
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281.933.7388 Ph
281.933.7293 Fax


| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE SKIN FRICTION CAPACITY
SPILMANS ISLAND - CUTOFF WALL WEST END - SHEET PILE NZ 38

| PROJECT NO.: HG1910092.2.1 | DRAWING NO.: PLATE D-15 |
|---|---|

Pile Top
El. +25' MLLW




Notes:

* Allowable axial compressive capacity can be calculated by applying a factor of safety to the total ultimate capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.


HVJ ASSOCIATES
6120 S. Dairy Ashford Road
Houston, Texas 77072-1010
281.933.7388 Ph
281.933.7293 Fax

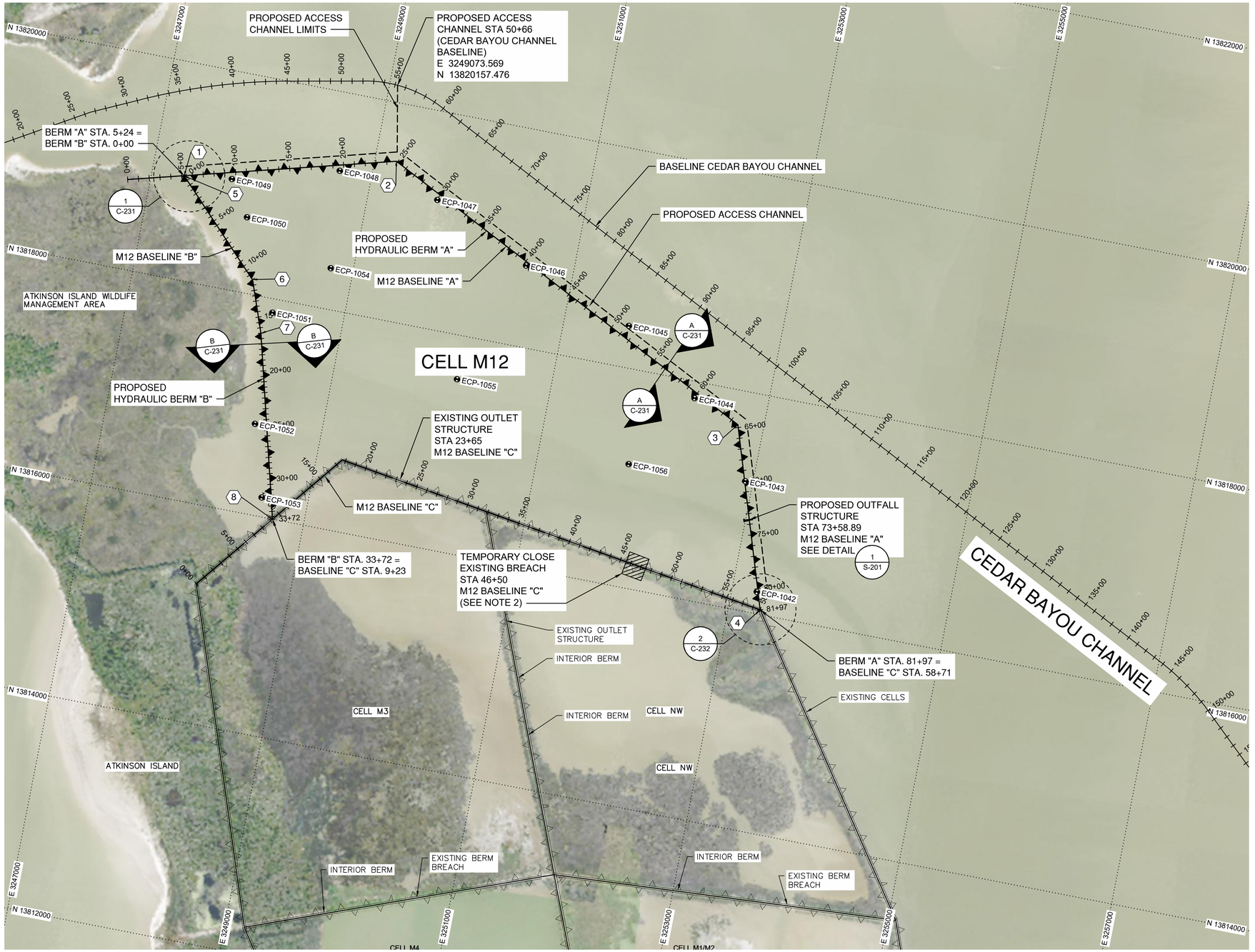

| DATE: 9/8/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE COMPRESSIVE CAPACITY
SPILMANS ISLAND - CUTOFF WALL WEST END - SHEET PILE NZ 38

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE D-16 |

# APPENDIX E

SLOPE STABILITY AND SETTLEMENT ANALYSIS:
CELL M12




# GENERAL NOTES

1. CONTRACTOR SHALL RECLAIM MATERIAL ON WEST SIDE OF BERM "B" PRIOR TO EXCAVATION OF THE EAST SIDE OF BERM DURING FINAL SHAPING AND GRADING.
2. CONTRACTOR SHALL TEMPORARILY CLOSE EXISTING BREACH.

M12 BENEFICIAL USE SITE GEOMETRY

| POINT | EASTING | NORTHING | DESC. |
|---|---|---|---|
| 1 | 3247298.8 | 13818959.1 | BERM "A" |
| 2 | 3249197.8 | 13819466.5 | BERM "A" |
| 3 | 3252761.6 | 13817683.5 | BERM "A" |
| 4 | 3253292.1 | 13816044.1 | BERM "A" |
| 5 | 3247298.8 | 13818959.1 | BERM "B" |
| 6 | 3248105.1 | 13818134.3 | BERM "B" |
| 7 | 3248274.1 | 13817667.6 | BERM "B" |
| 8 | 3248587.6 | 13817062.9 | BERM "B" |

A PLAN - M12 BENEFICIAL USE SITE - SITE PLAN

SCALE: 1"=500'

500 250 0 500 1000

PORT OF HOUSTON AUTHORITY

CONSULTANT:

DESIGN PREPARED BY:
HDR Engineering, INC
TBPELS Firm
Registration No. F-754

SEAL:

This Document Is Released For The Purpose Of Interim Review Under The Authority Of M. CAMERON PERRY, P.E., 94056 12/08/20. It Is Not To Be Used For Construction, Bidding, Or Permit Purposes.

95% REVIEW

APPROVED: DATE

PORT CONTRACT REPRESENTATIVE
MANAGING DIRECTOR – ENGINEERING DESIGN & SUPPORT

PROJECT TITLE:
**HOUSTON SHIP CHANNEL (HSC) EXPANSION CHANNEL IMPROVEMENT PROJECT (ECIP)**

**PROJECT 11 PACKAGE #7**

SHEET TITLE:
**SEGMENT 3 - BARBOURS CUT CHANNEL, DEMO, DREDGING AND BULKHEAD WALLS**

**PROPOSED SITE PLAN**

| REV | DATE | DESCRIPTION |
|---|---|---|
| A | 12/08/20 | 95% SUBMITTAL |

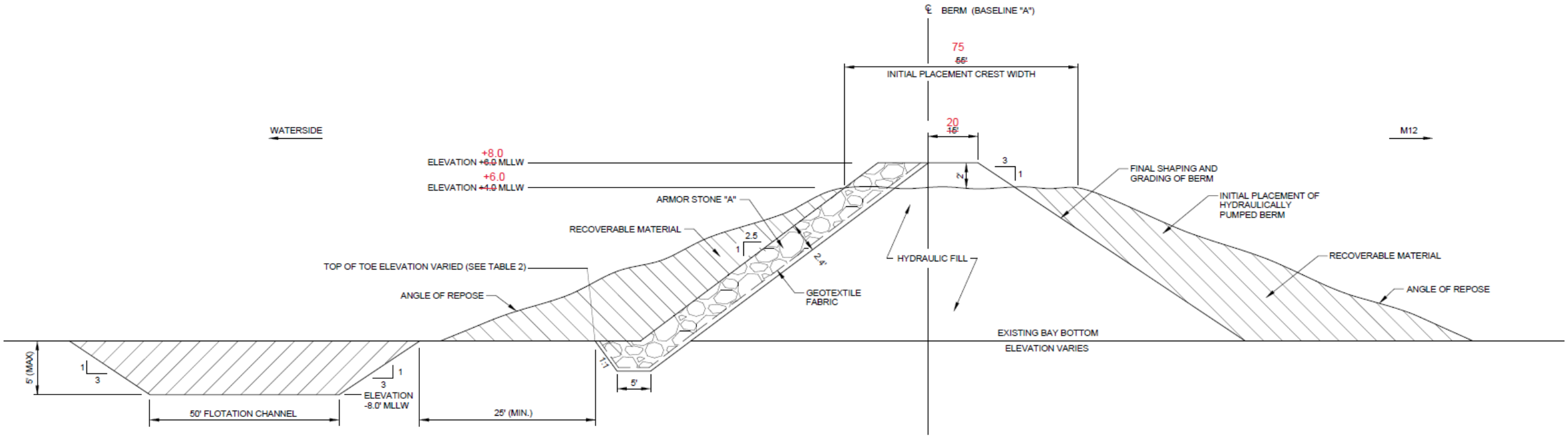
| | |
|---|---|
| DESIGNER: | C. PERRY |
| CADD: | J. HELM |
| CHECKER: | R. McPHERSON |
| DATE: | 12/08/2020 |
| SCALE: | 1" = 500' |

DRAWING NO.
C90-D13-P11-007

SHEET NO. C-202 | REV. NO. A

95% REVIEW

TIME: 11-20-20 – 12:41pm User: JEHEL DWG: C:\pwworking\central01\d1711938\C90-D13-P11-007_C-202.dwg




## TYPICAL SECTION - M12 BASLINE "A" - BENEFICIAL USE

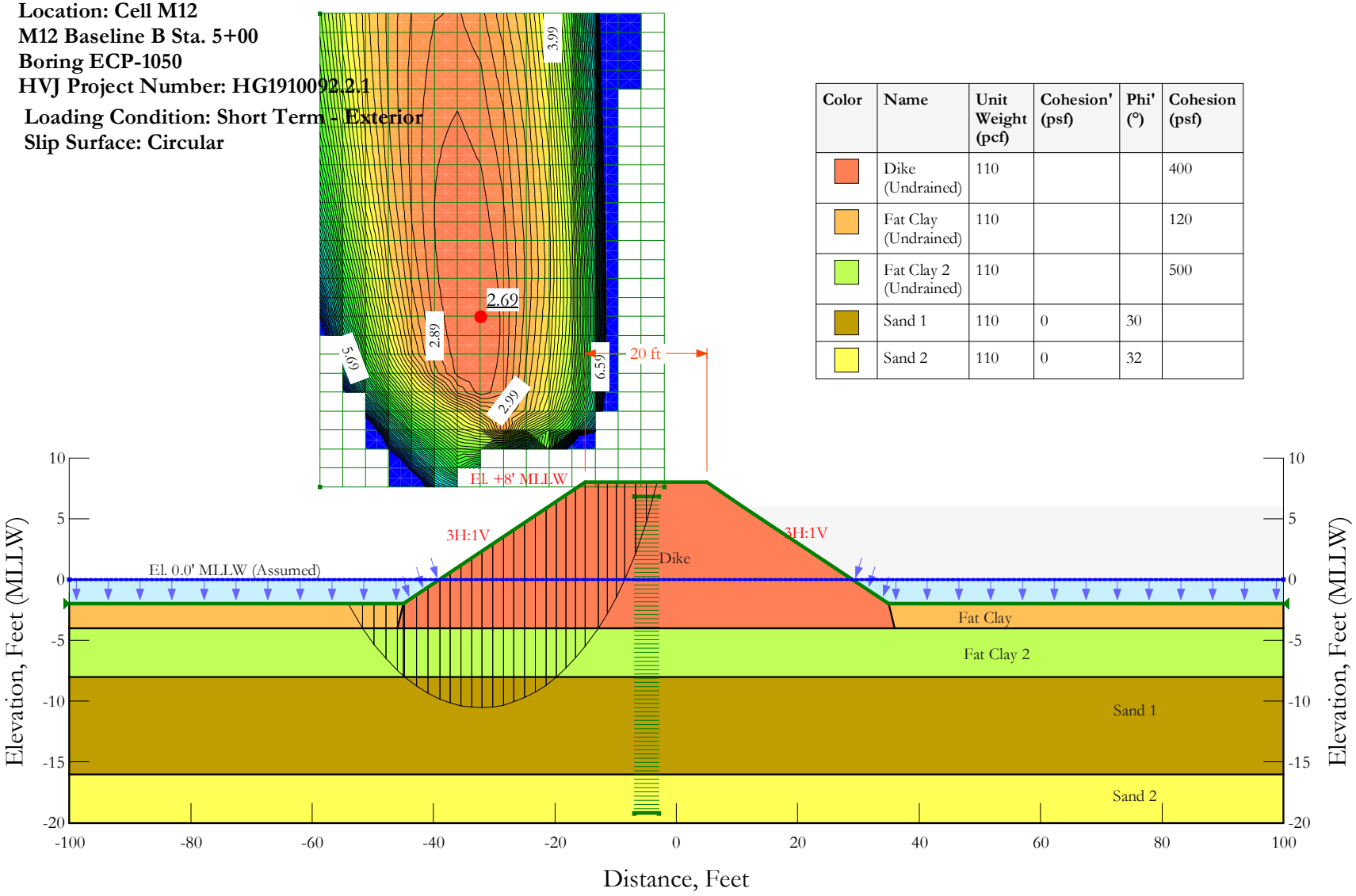
SCALE = NTS

A
C-203

BASELINE B is the same but no rock or flotation channel and 3H:1V interior and exterior slopes

| Soil Parameters for Slope Stability Analysis – Cell M12 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Boring Numbers** | **Soil Description** | **Elevation, Feet** | | **Total Unit Weight (γ), pcf** | **Short Term** | **Long Term/Rapid Drawdown** | | **Rapid Drawdown** | |
| | | **Top** | **Bottom** | | **Undrained Shear Strength, psf** | **Cohesion, psf** | **Friction Angle (ϕ'), degrees** | **Cohesion, psf** | **Friction Angle (ϕ'), degrees** |
| Baseline B Sta. 5+00 ECP-1050 | Fat Clay | -2.0 | -4.0 | 110 | 120 | 222 | 15 | 248 | 5 |
| | Sand | -8.0 | -16.0 | 110 | 0 | 0 | 30 | 0 | 30 |
| | Sand | -16.0 | -20.0 | 110 | 0 | 0 | 32 | 0 | 32 |
| Baseline B Sta. 30+00 ECP-1053 | Lean Clay | -1.7 | -3.7 | 110 | 50 | 21 | 24 | 25 | 10 |
| | Sand | -3.7 | -5.7 | 110 | 0 | 0 | 26 | 0 | 26 |
| | Sand | -5.7 | -20.0 | 110 | 0 | 0 | 30 | 0 | 30 |
| Baseline A Sta. 20+00 ECP-1048 | Sand | -2.8 | -12.8 | 110 | 0 | 0 | 26 | 0 | 26 |
| | Sand | -12.8 | -20 | 110 | 0 | 0 | 26 | 0 | 26 |
| Baseline A Sta. 30+00 ECP-1047 | Lean Clay | -3.6 | -9.6 | 110 | 50 | 21 | 24 | 25 | 10 |
| | Sand | -9.6 | -13.6 | 110 | 0 | 0 | 26 | 0 | 26 |
| | Fat Clay | -13.6 | -21.6 | 110 | 140 | 222 | 15 | 248 | 5 |
| | Sand | -21.6 | -30 | 110 | 0 | 0 | 26 | 0 | 26 |
| Baseline A Sta. 40+00 ECP-1046 | Sand | -3.7 | -15.7 | 110 | 0 | 0 | 26 | 0 | 26 |
| | Lean Clay | -15.7 | -19.7 | 110 | 140 | 21 | 24 | 25 | 10 |
| | Fat Clay | -19.7 | -25.7 | 110 | 200 | 222 | 15 | 248 | 5 |
| | Lean Clay | -25.7 | -35.0 | 110 | 750 | 21 | 24 | 25 | 10 |
| Baseline A Sta. 60+00 ECP-1044 | Sand | -3.8 | -17.8 | 110 | 0 | 0 | 26 | 0 | 26 |
| | Fat Clay | -17.8 | -36.8 | 110 | 145 to 300 at 8 psf/ft | 222 | 15 | 248 | 5 |
| | Sand | -36.8 | -40.0 | 110 | 0 | 0 | 28 | 0 | 28 |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 5+00**
**Boring ECP-1050**
**HVJ Project Number: HG1910092.2.1**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

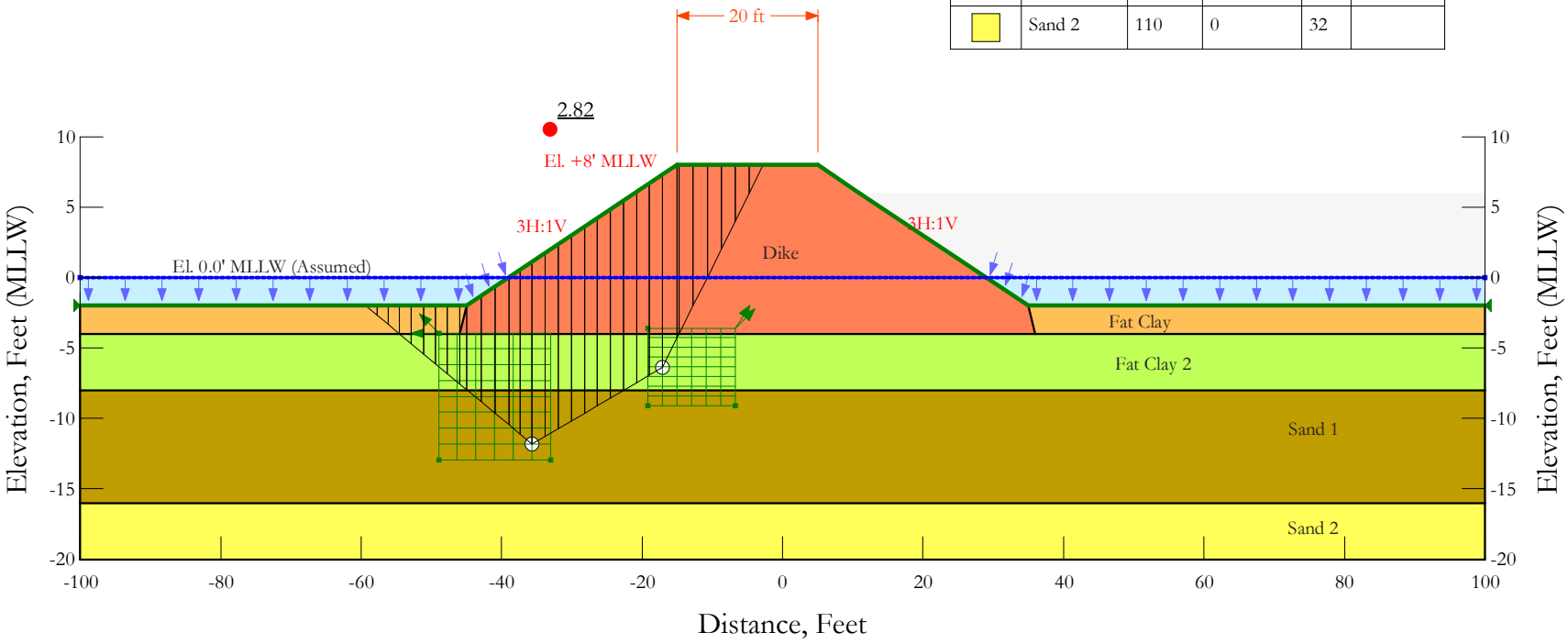



| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 120 |
| | Fat Clay 2 (Undrained) | 110 | | | 500 |
| | Sand 1 | 110 | 0 | 30 | |
| | Sand 2 | 110 | 0 | 32 | |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 5+00**
**Boring ECP-1050**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

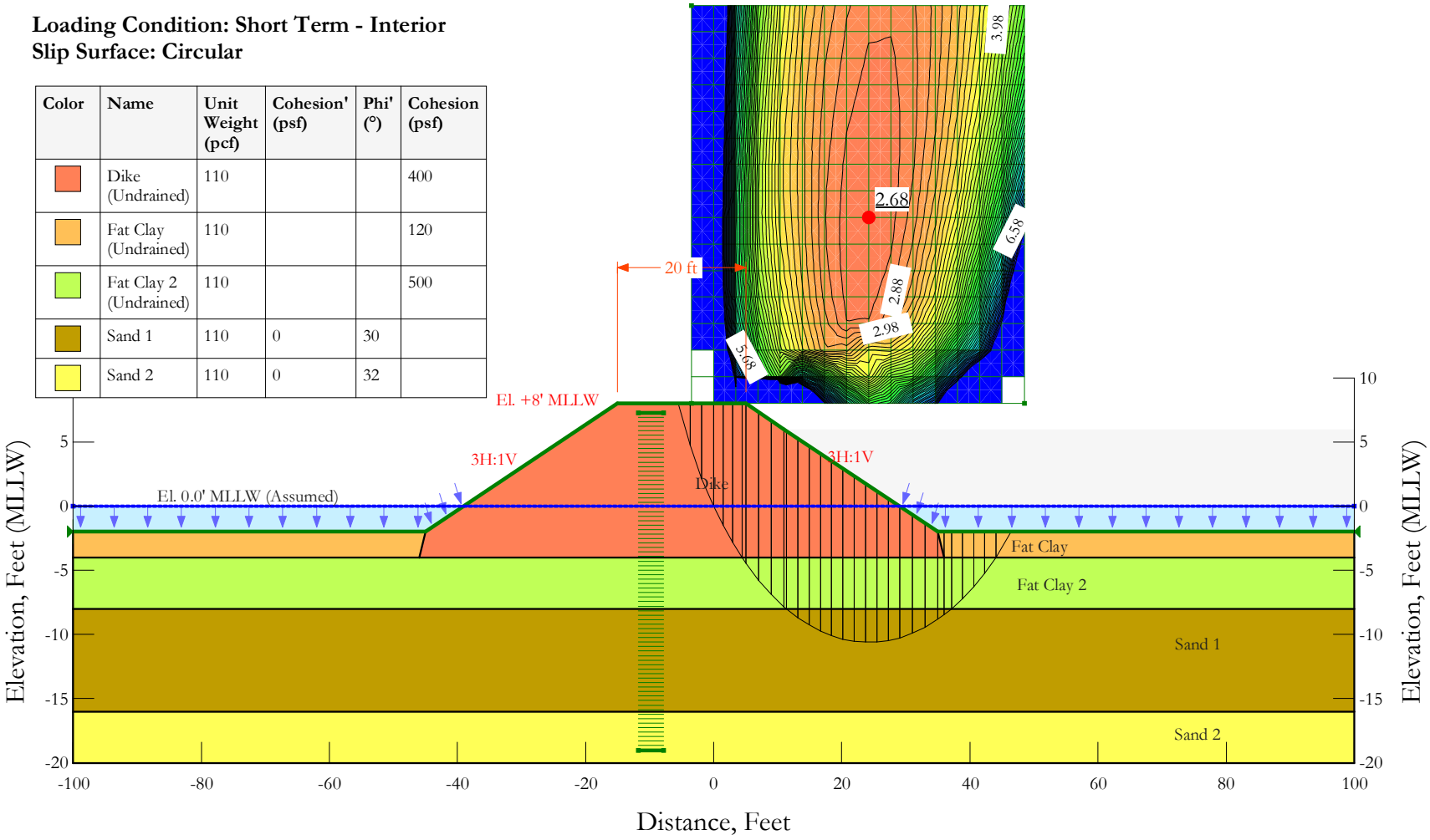
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 120 |
| | Fat Clay 2 (Undrained) | 110 | | | 500 |
| | Sand 1 | 110 | 0 | 30 | |
| | Sand 2 | 110 | 0 | 32 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 5+00**
**Boring ECP-1050**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

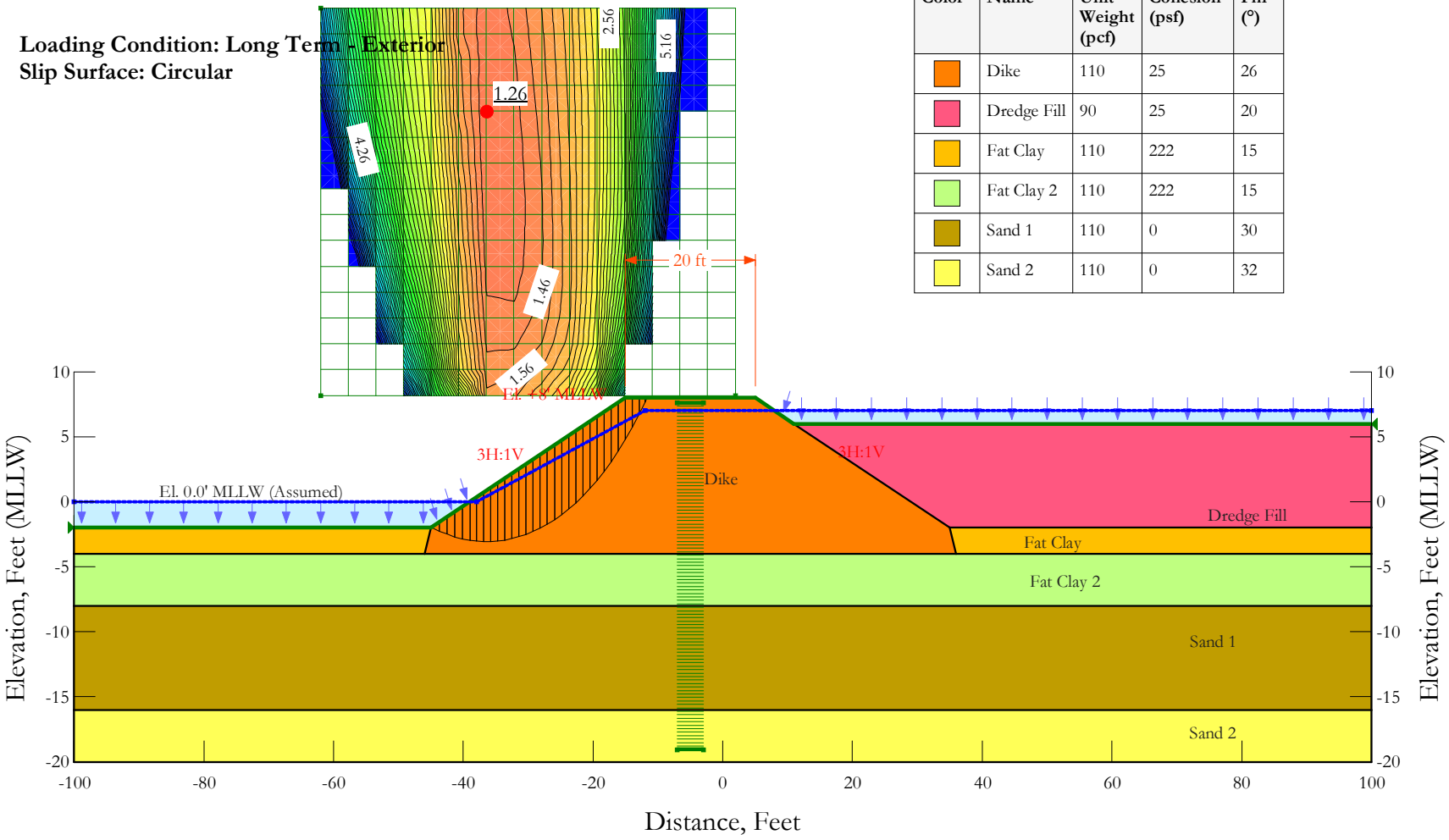
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 120 |
| | Fat Clay 2 (Undrained) | 110 | | | 500 |
| | Sand 1 | 110 | 0 | 30 | |
| | Sand 2 | 110 | 0 | 32 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 5+00**
**Boring ECP-1050**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**

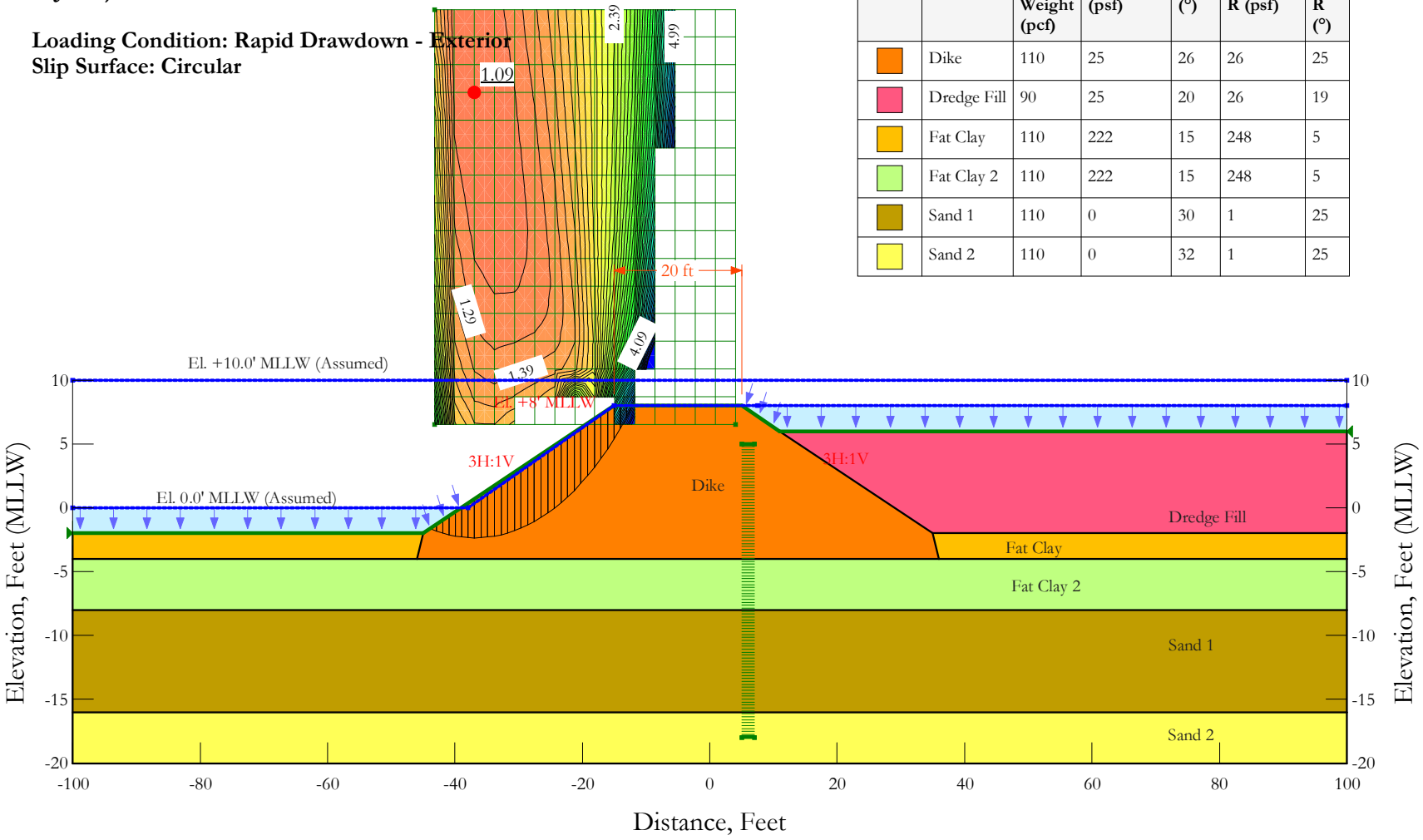
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay | 110 | 222 | 15 |
| | Fat Clay 2 | 110 | 222 | 15 |
| | Sand 1 | 110 | 0 | 30 |
| | Sand 2 | 110 | 0 | 32 |



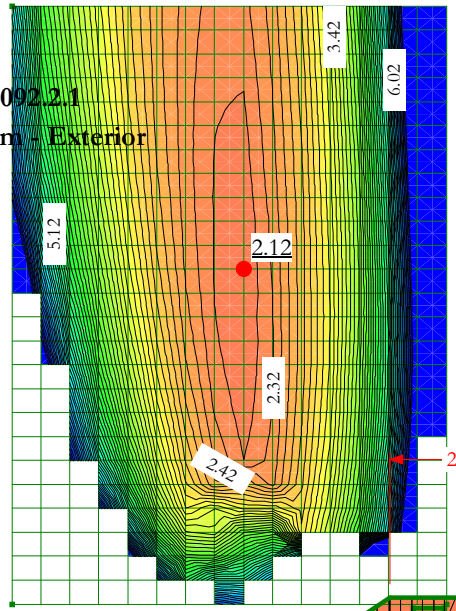
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 5+00**
**Boring ECP-1050**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**

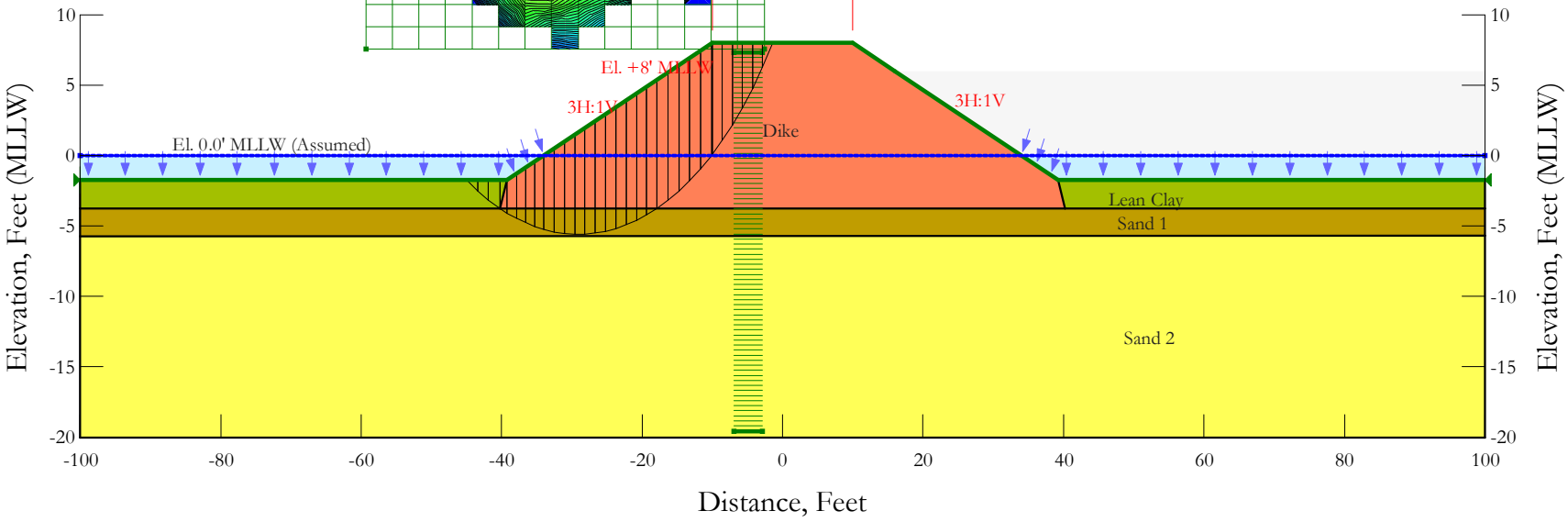
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Fat Clay | 110 | 222 | 15 | 248 | 5 |
| | Fat Clay 2 | 110 | 222 | 15 | 248 | 5 |
| | Sand 1 | 110 | 0 | 30 | 1 | 25 |
| | Sand 2 | 110 | 0 | 32 | 1 | 25 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 30+00**
**Boring ECP-1053**
**HVJ Project Number: HG1910092.2.1**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**



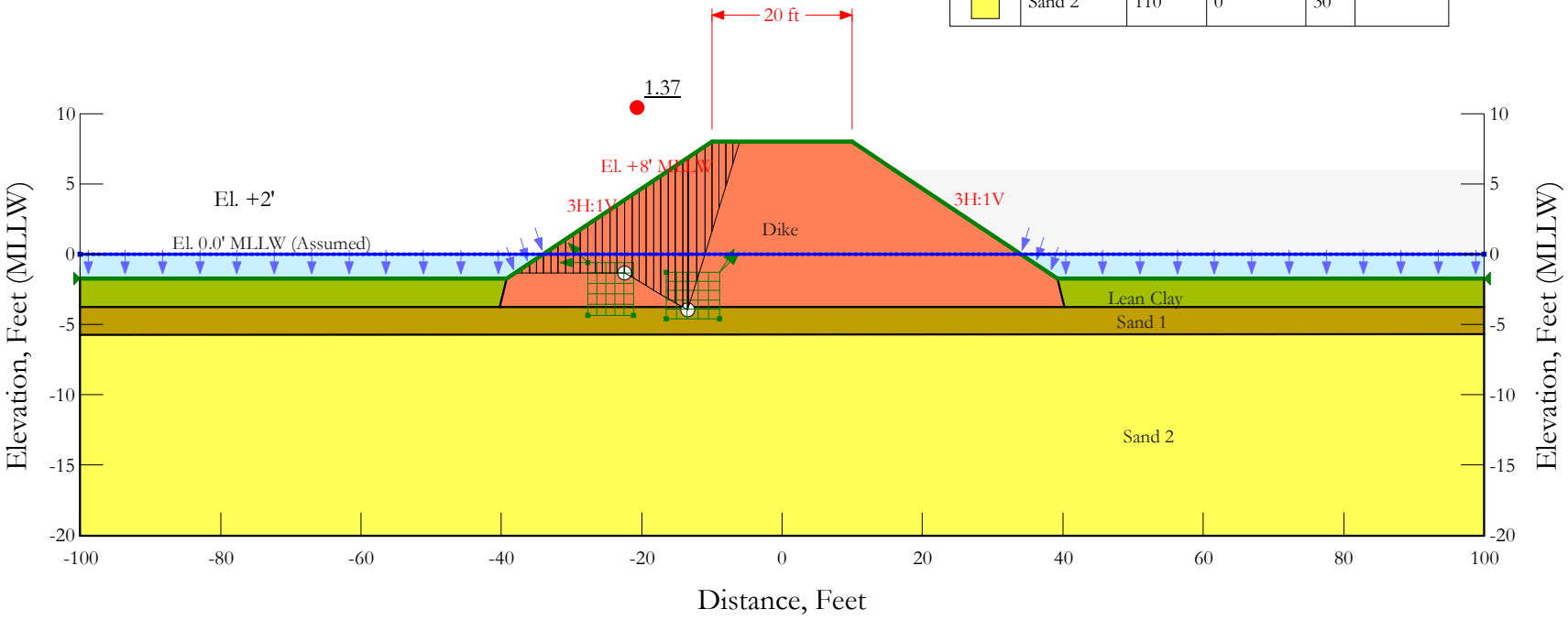

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 30 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 30+00**
**Boring ECP-1053**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

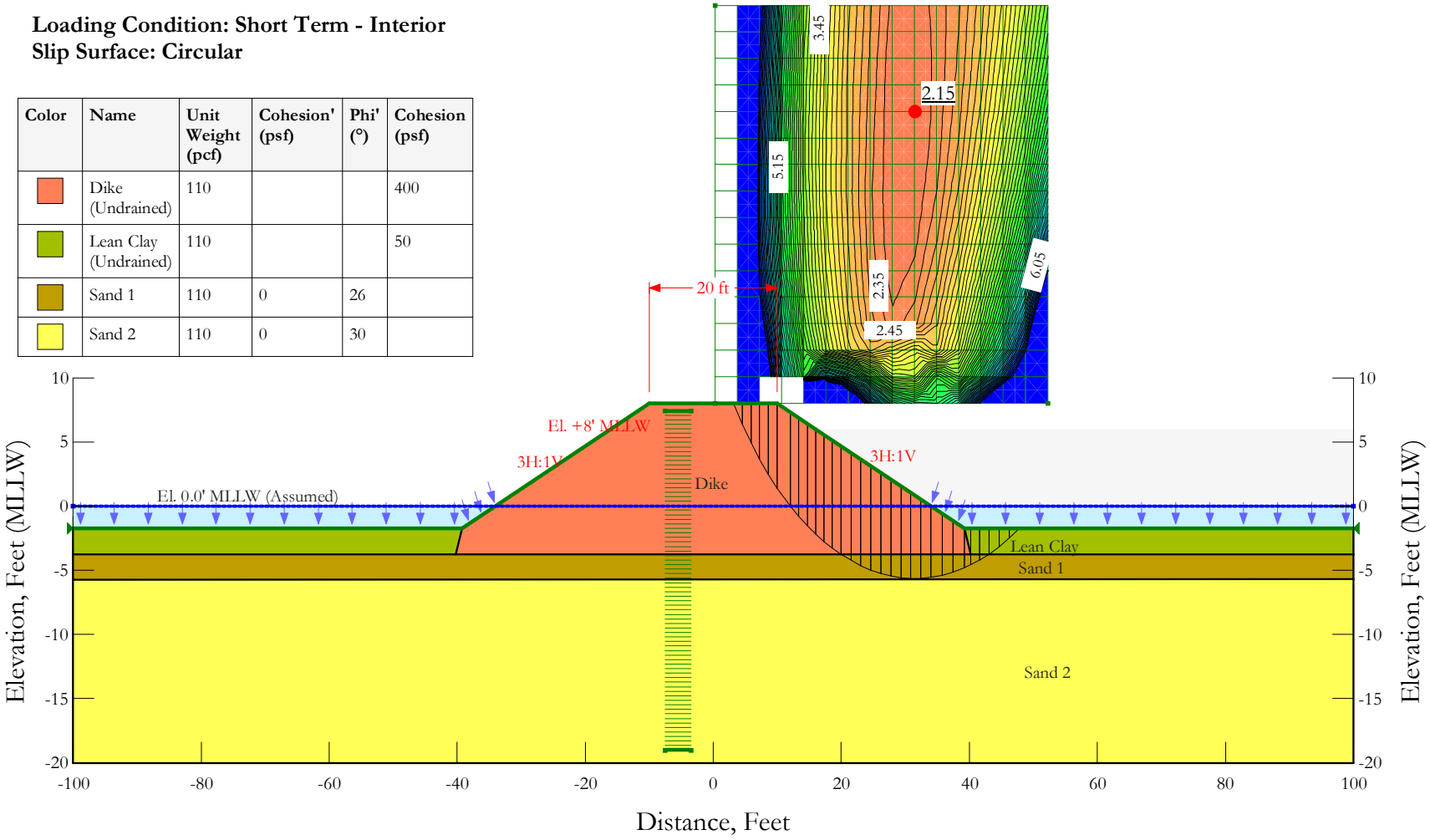
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 30 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 30+00**
**Boring ECP-1053**
**HVJ Project Number: HG1910092.2.1**

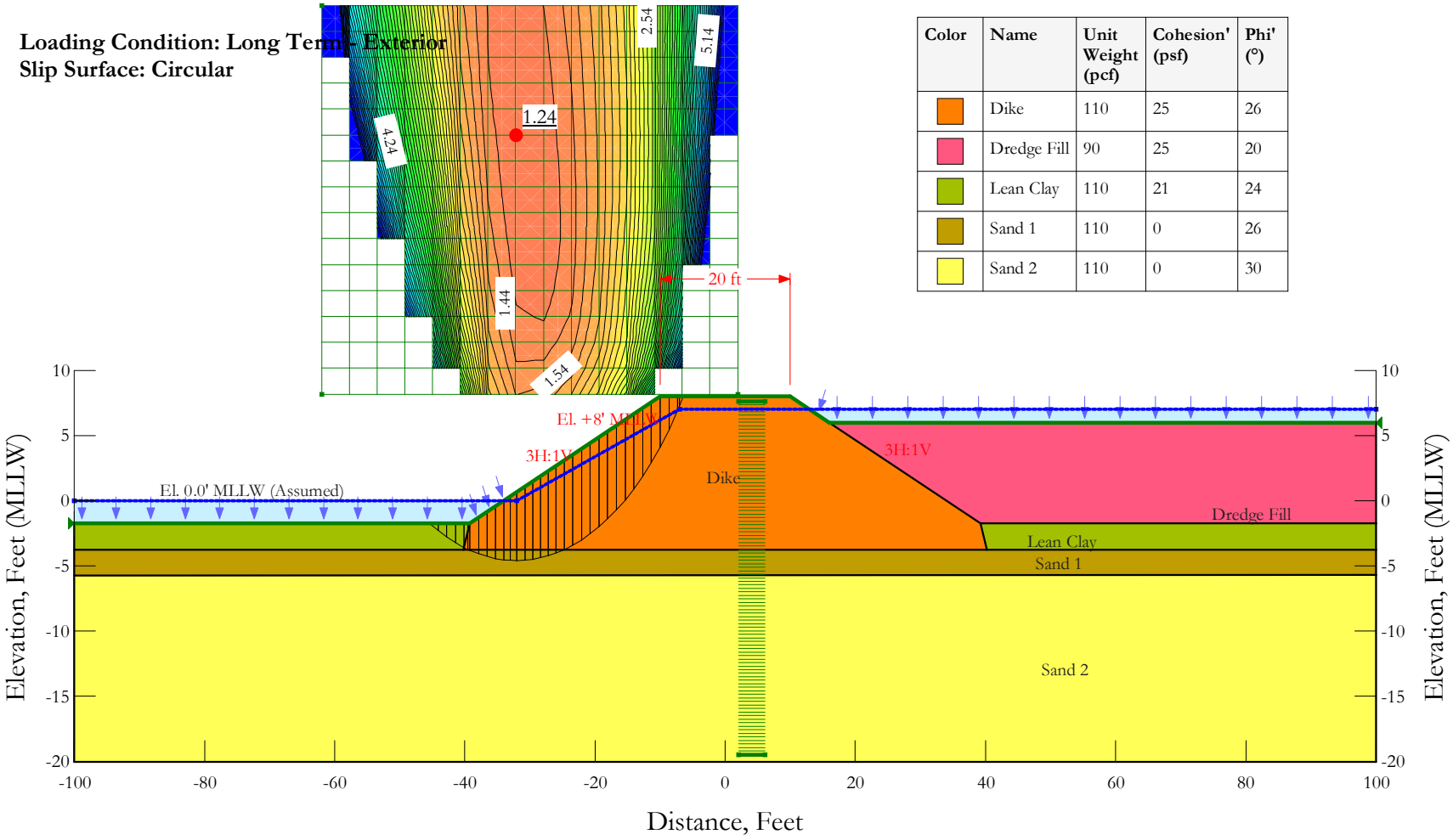
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 30 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 30+00**
**Boring ECP-1053**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**

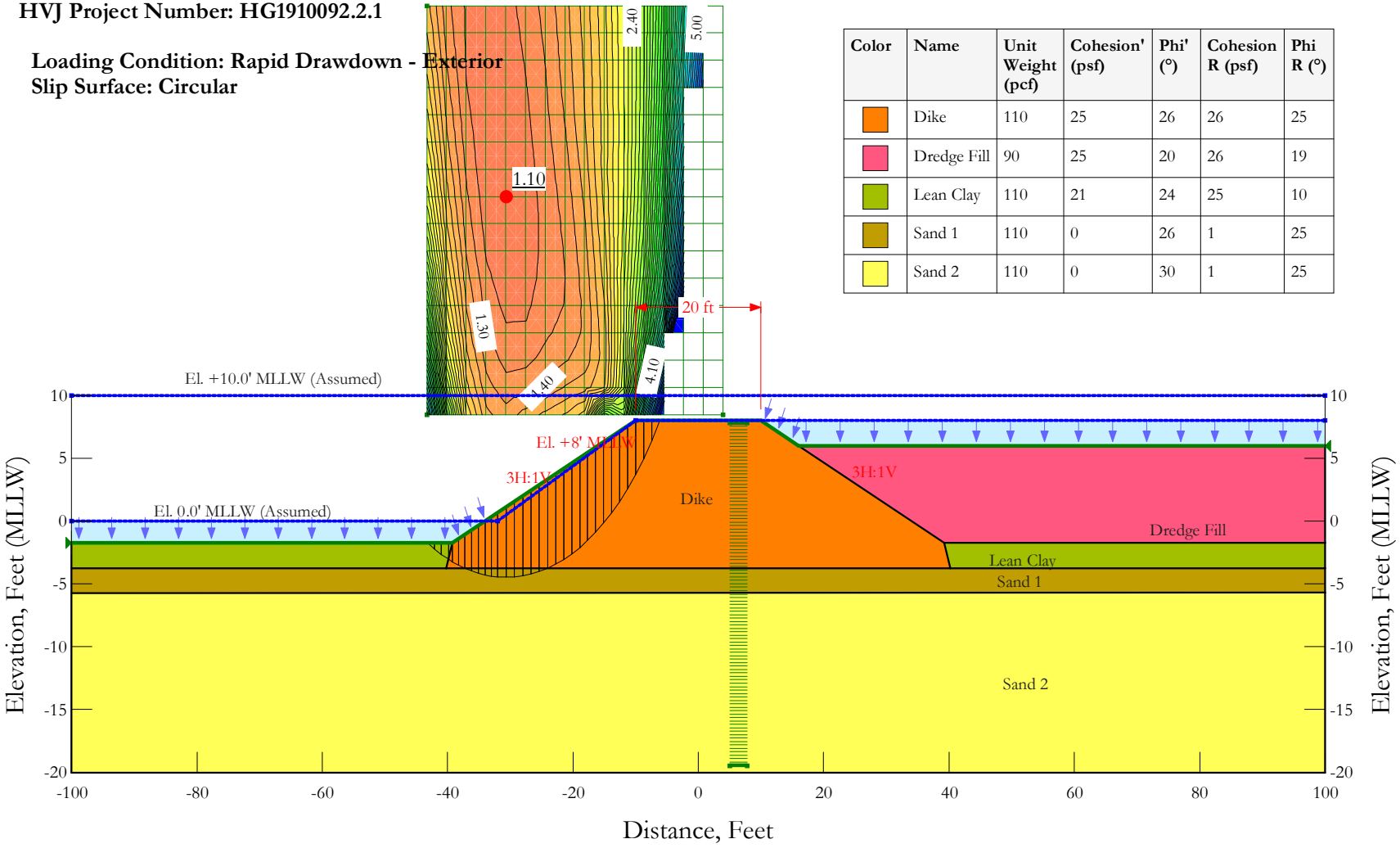



| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Lean Clay | 110 | 21 | 24 |
| | Sand 1 | 110 | 0 | 26 |
| | Sand 2 | 110 | 0 | 30 |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 30+00**
**Boring ECP-1053**
**HVJ Project Number: HG1910092.2.1**

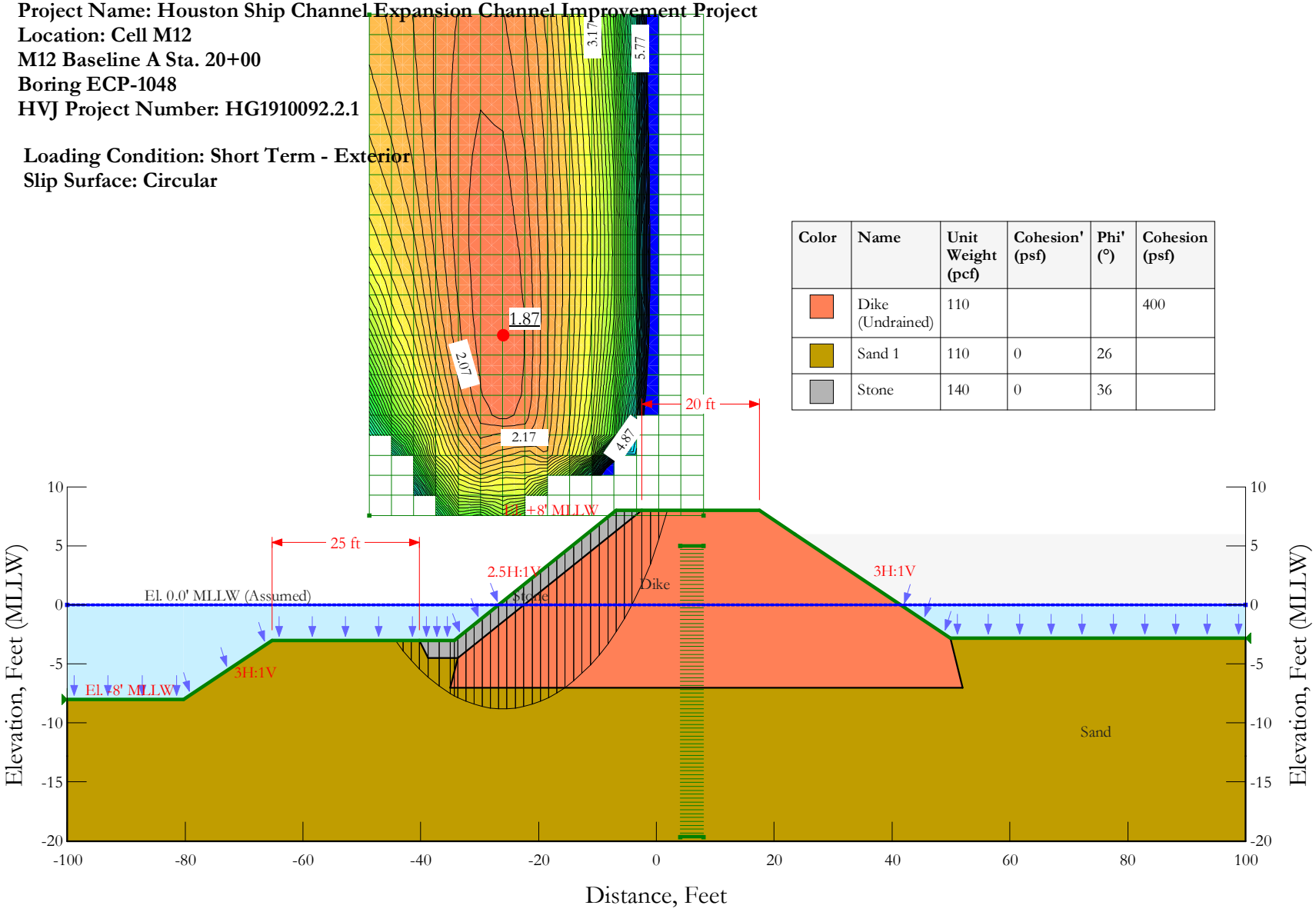
**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Lean Clay | 110 | 21 | 24 | 25 | 10 |
| | Sand 1 | 110 | 0 | 26 | 1 | 25 |
| | Sand 2 | 110 | 0 | 30 | 1 | 25 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 20+00**
**Boring ECP-1048**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

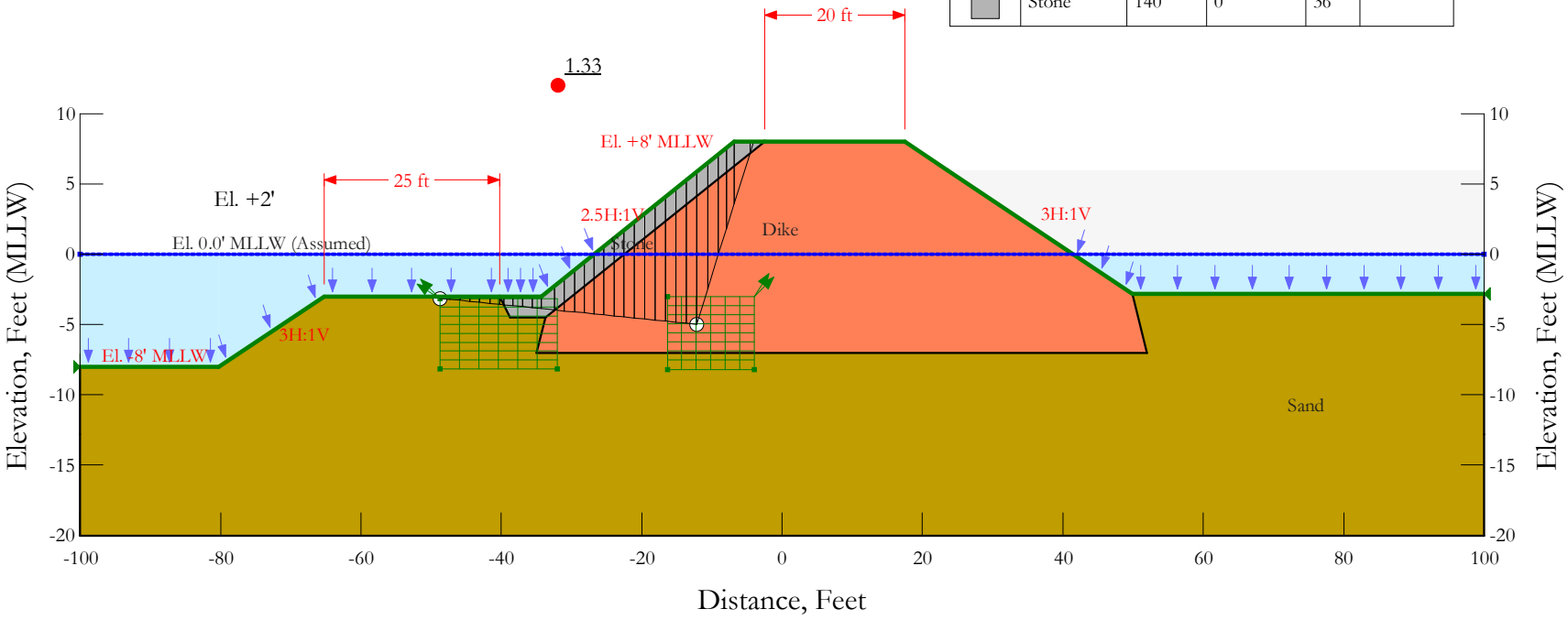



| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 20+00**
**Boring ECP-1048**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

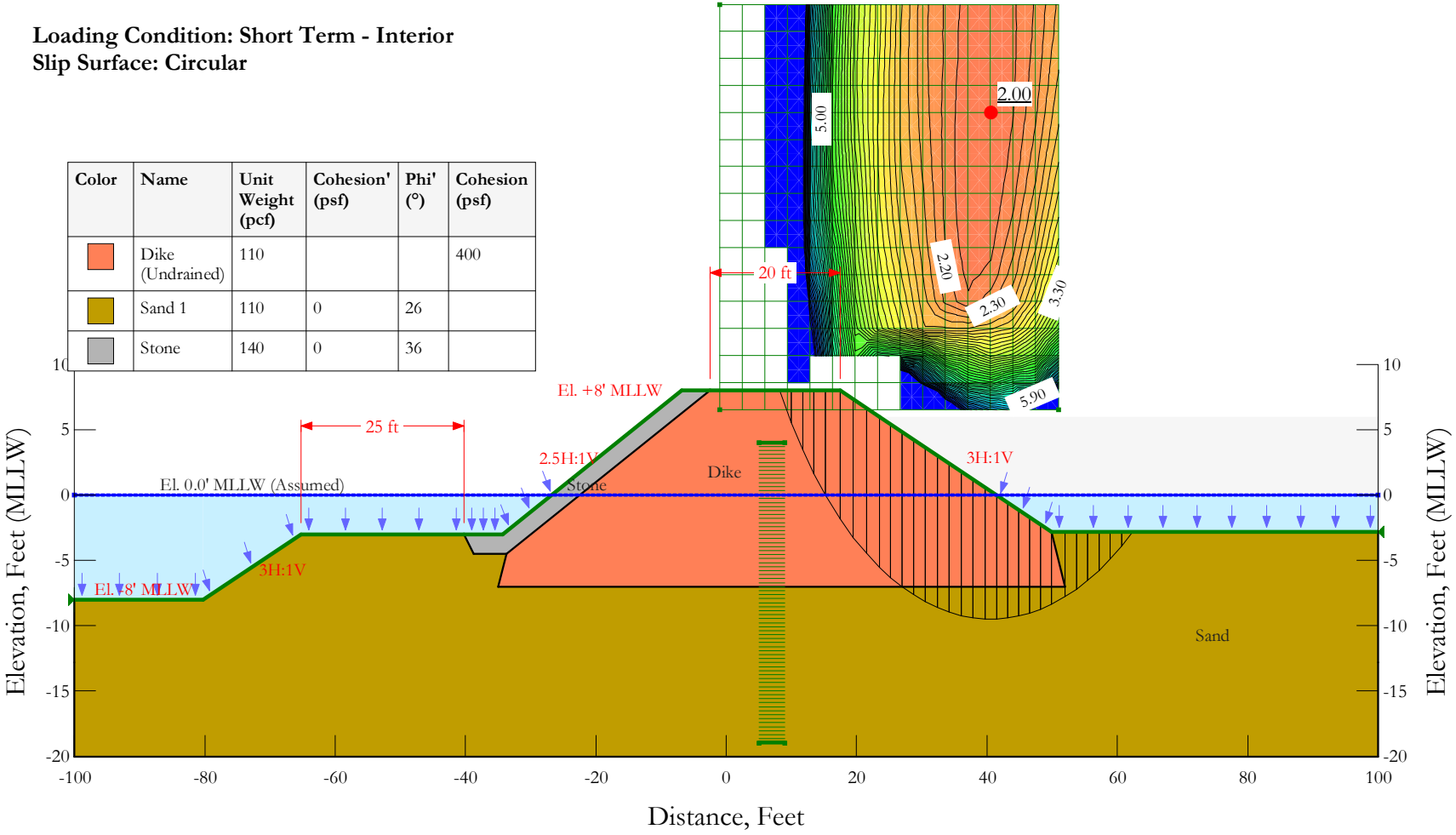
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 20+00**
**Boring ECP-1048**
**HVJ Project Number: HG1910092.2.1**

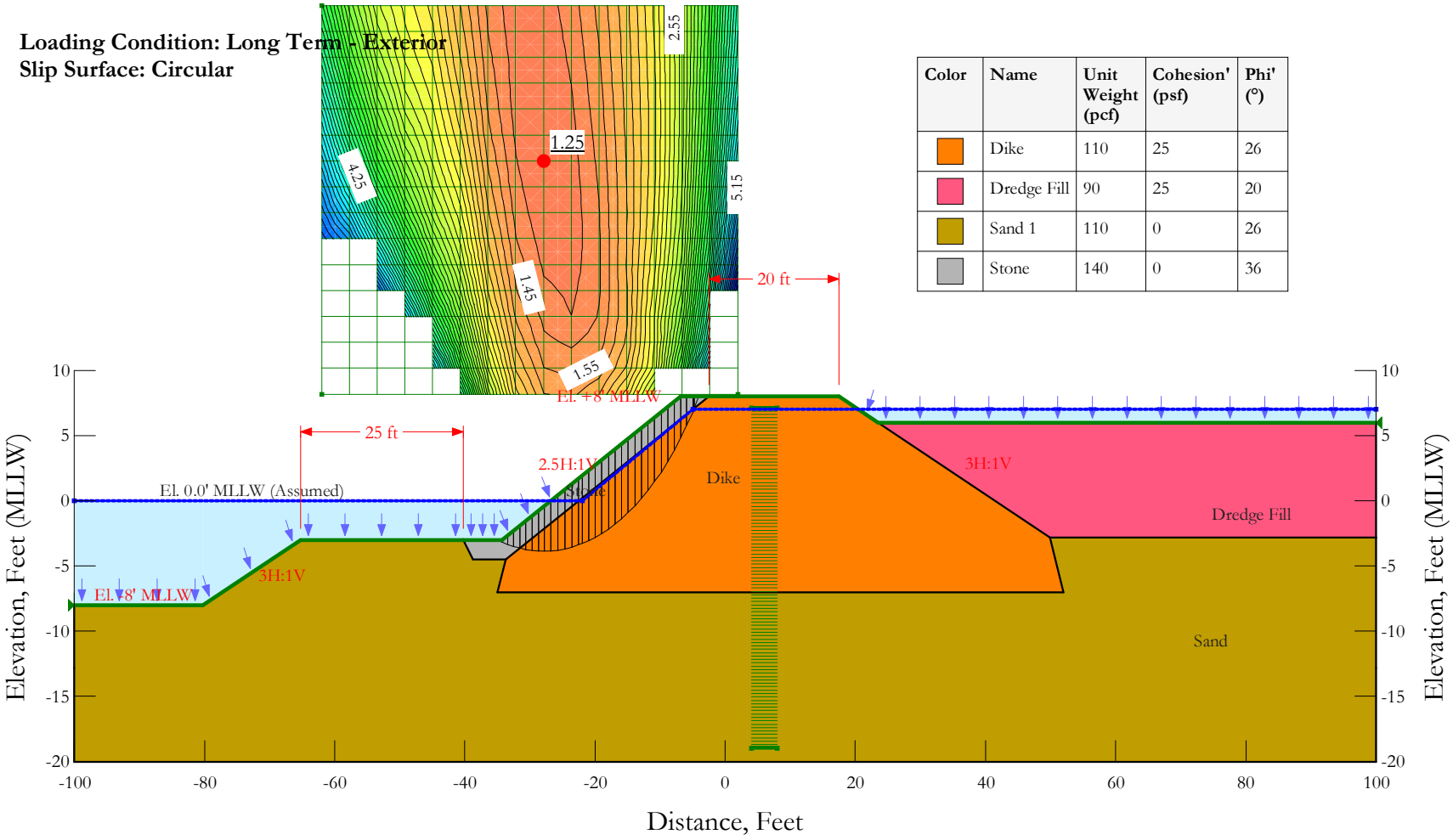
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 20+00**
**Boring ECP-1048**
**HVJ Project Number: HG1910092.2.1**

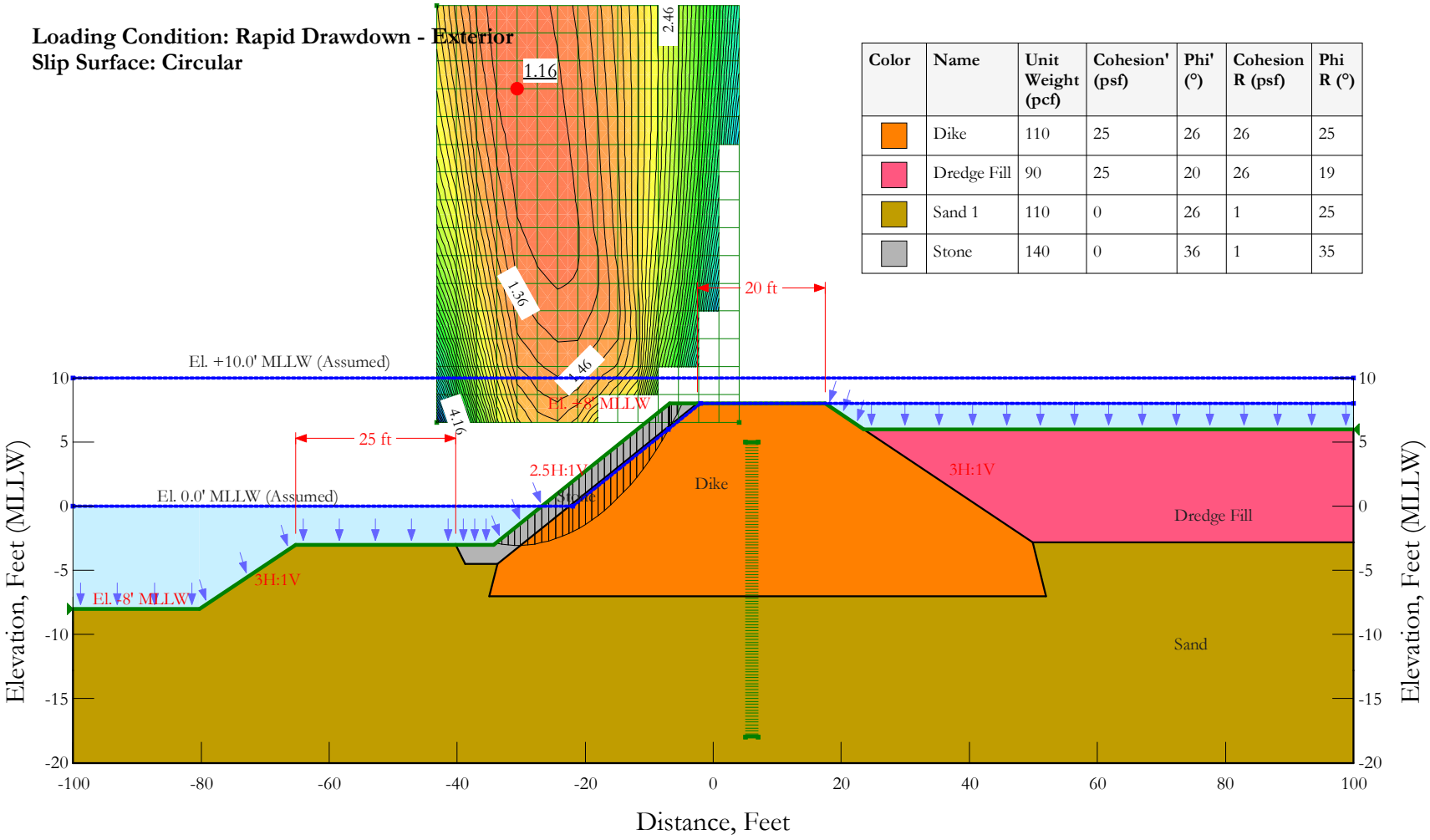
**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**




| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Sand 1 | 110 | 0 | 26 |
| | Stone | 140 | 0 | 36 |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 20+00**
**Boring ECP-1048**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**

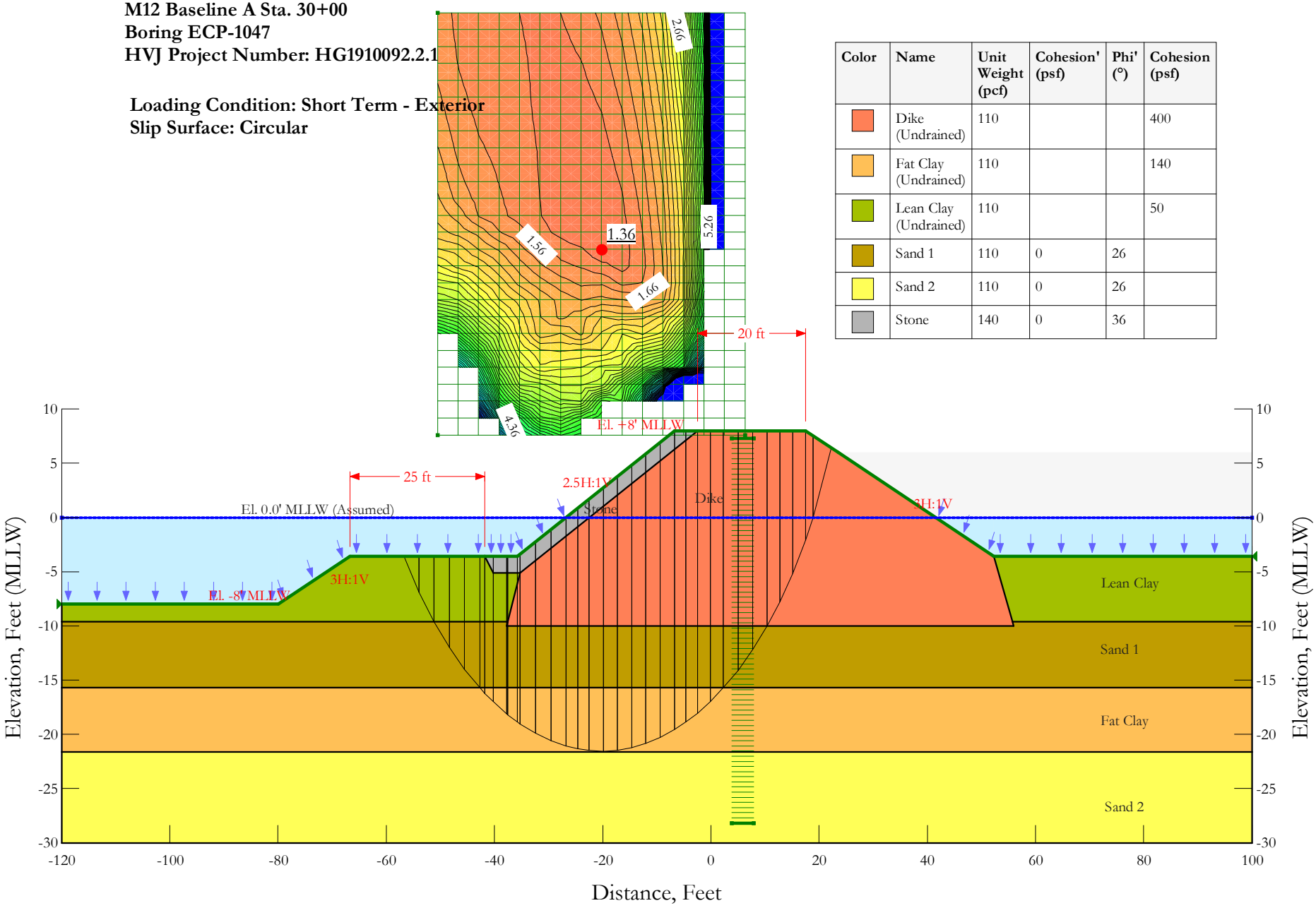



| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Sand 1 | 110 | 0 | 26 | 1 | 25 |
| | Stone | 140 | 0 | 36 | 1 | 35 |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 30+00**
**Boring ECP-1047**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

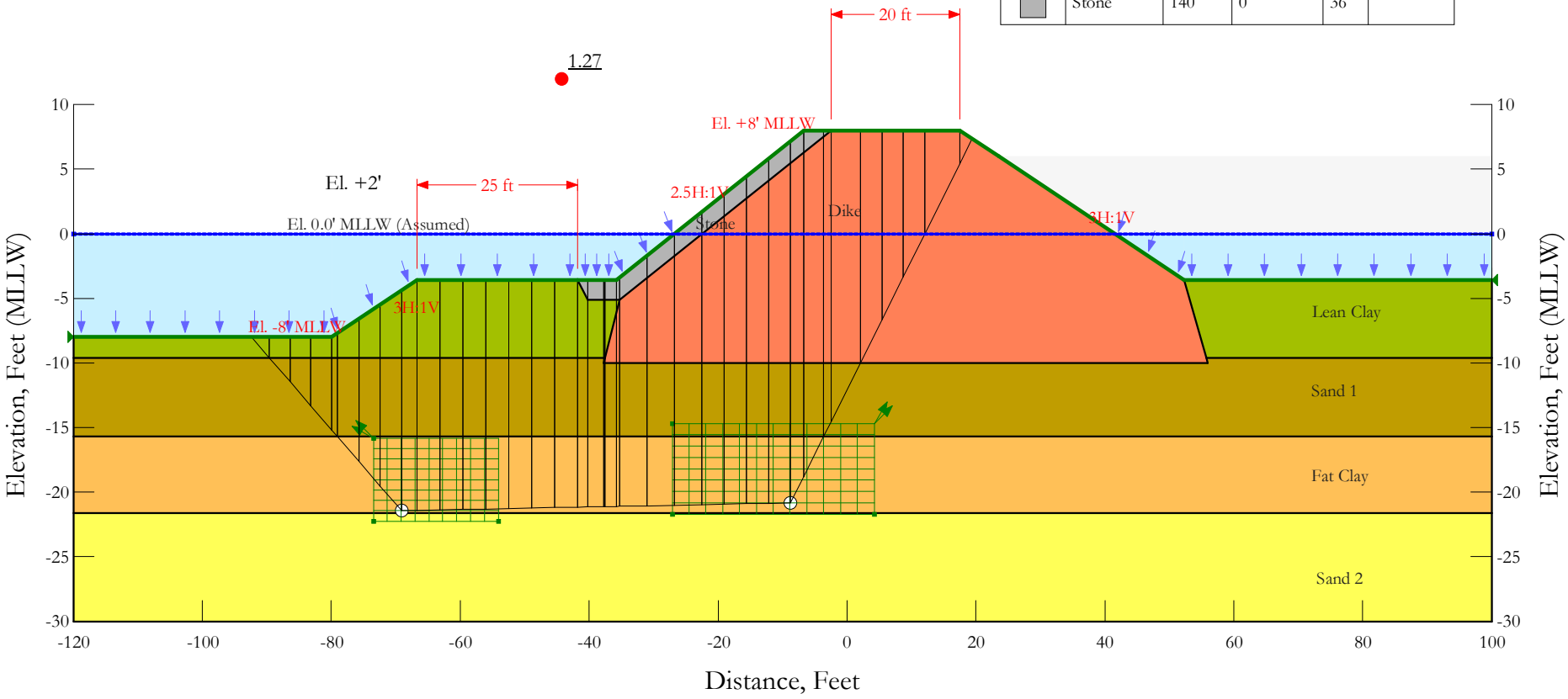
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 140 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 30+00**
**Boring ECP-1047**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

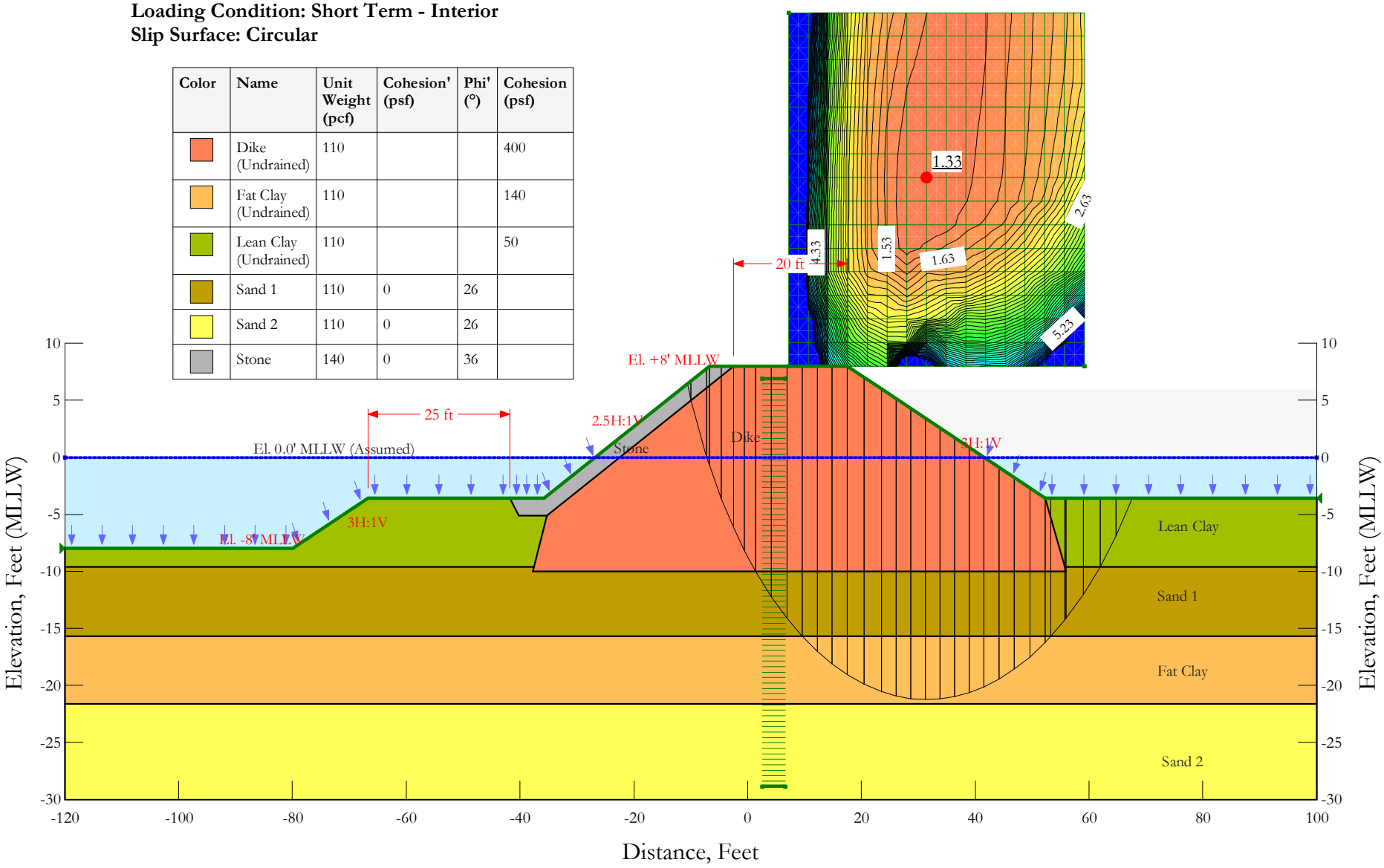
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 140 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 30+00**
**Boring ECP-1047**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

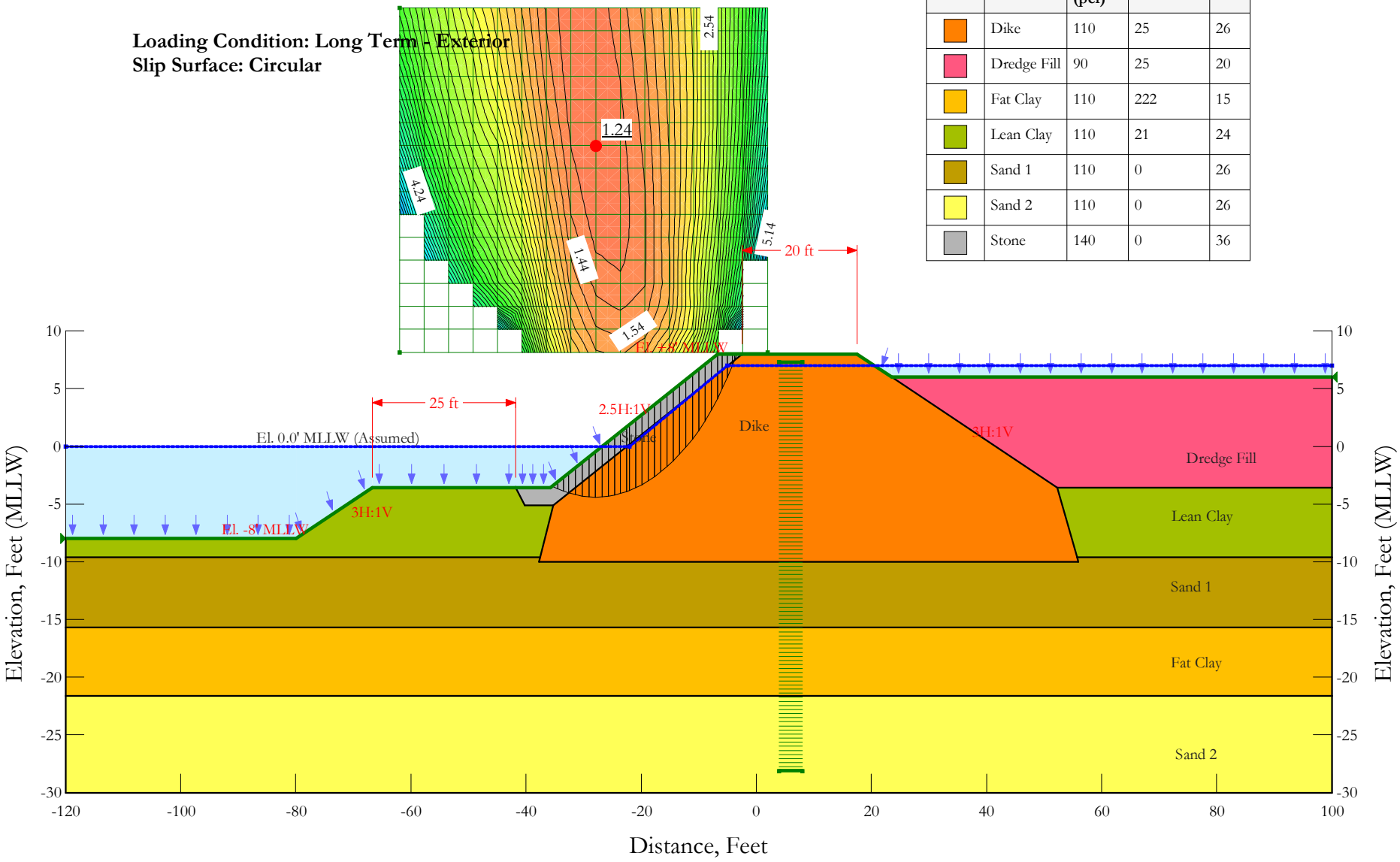
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 140 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 30+00**
**Boring ECP-1047**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**

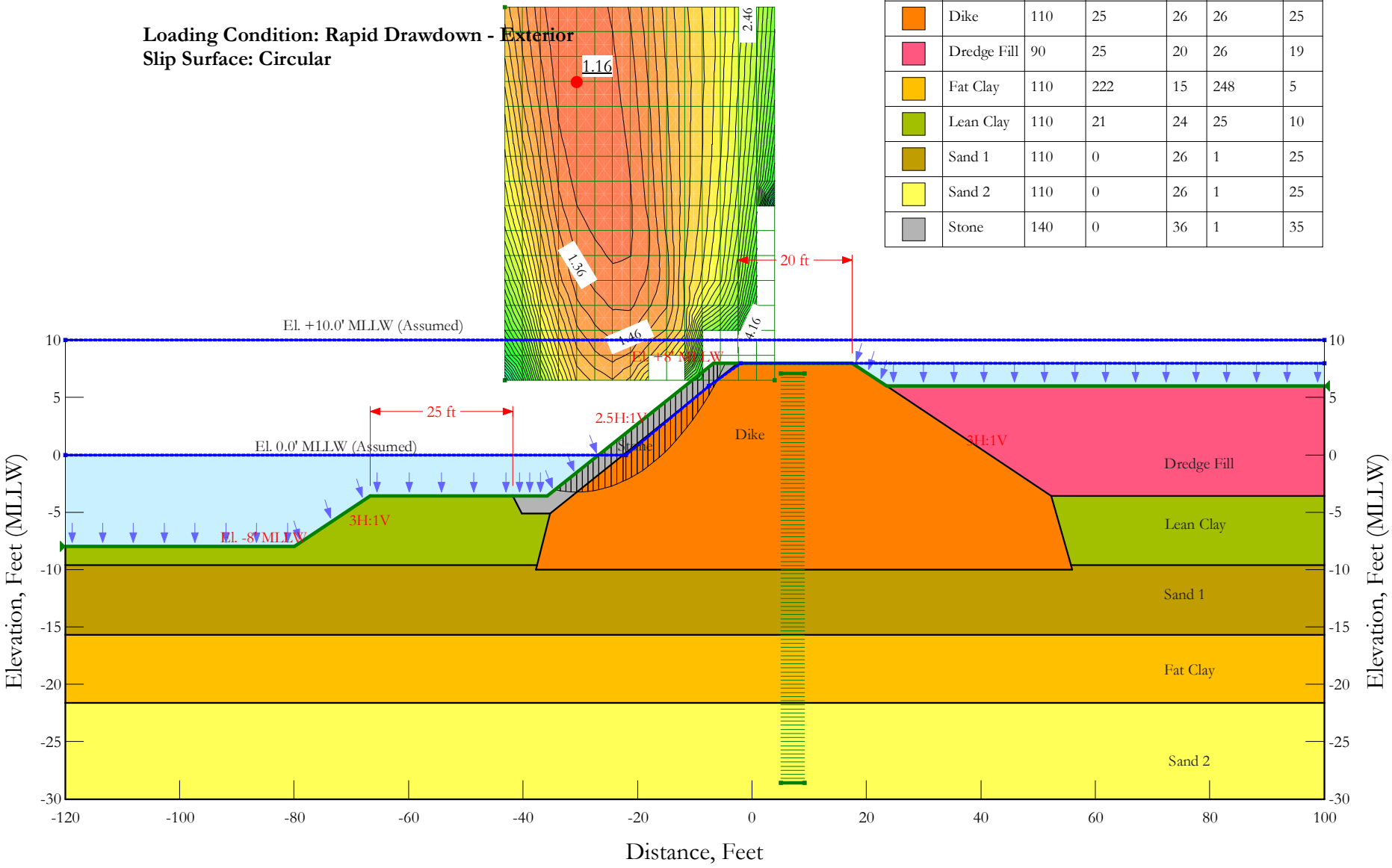
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay | 110 | 222 | 15 |
| | Lean Clay | 110 | 21 | 24 |
| | Sand 1 | 110 | 0 | 26 |
| | Sand 2 | 110 | 0 | 26 |
| | Stone | 140 | 0 | 36 |



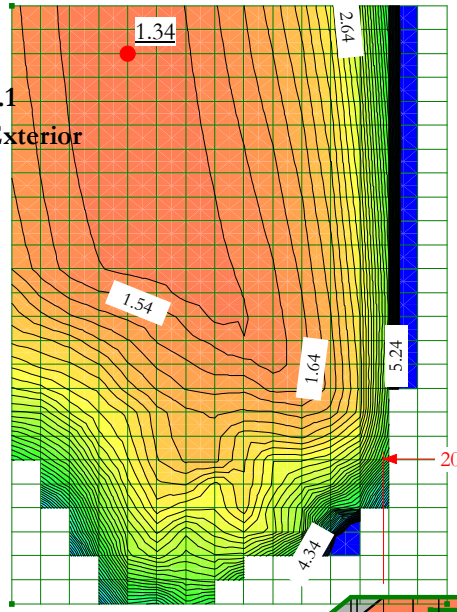
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 30+00**
**Boring ECP-1047**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**

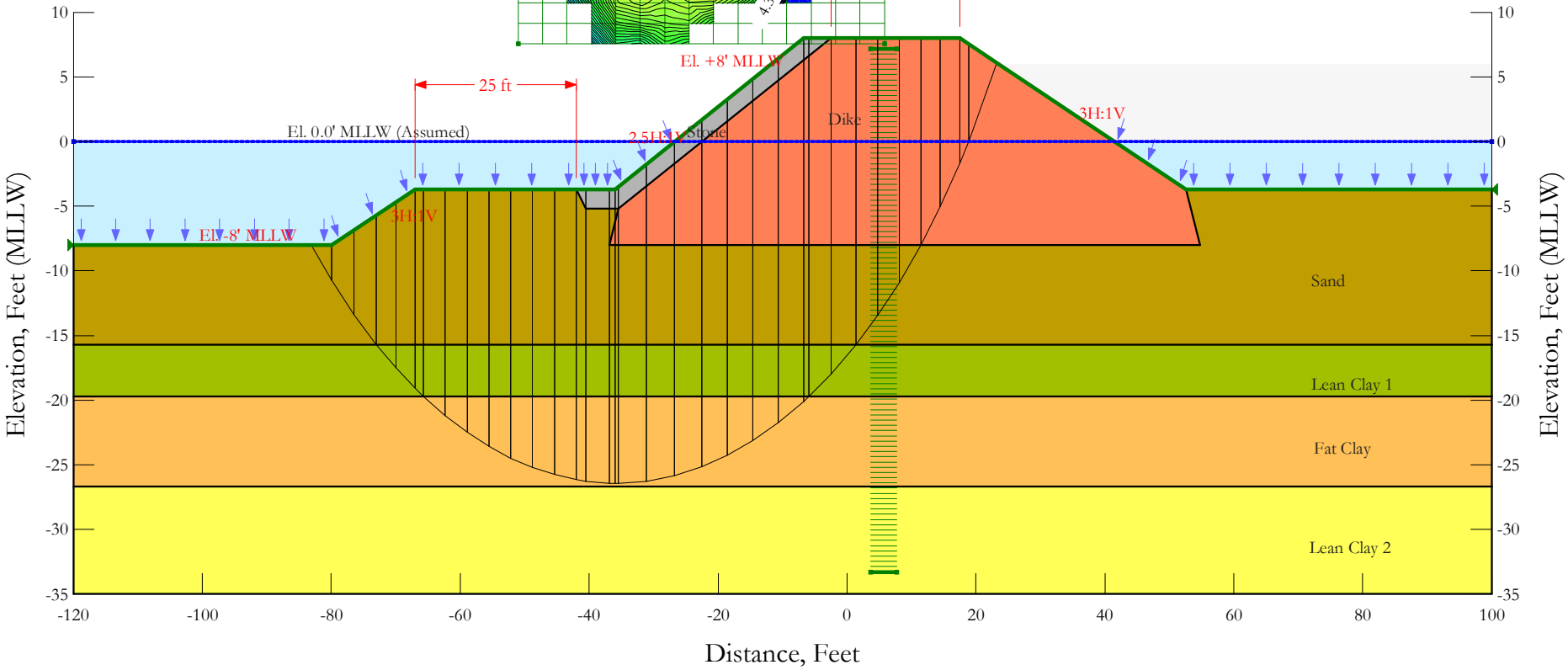
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Fat Clay | 110 | 222 | 15 | 248 | 5 |
| | Lean Clay | 110 | 21 | 24 | 25 | 10 |
| | Sand 1 | 110 | 0 | 26 | 1 | 25 |
| | Sand 2 | 110 | 0 | 26 | 1 | 25 |
| | Stone | 140 | 0 | 36 | 1 | 35 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 40+00**
**Boring ECP-1046**
**HVJ Project Number: HG1910092.2.1**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**



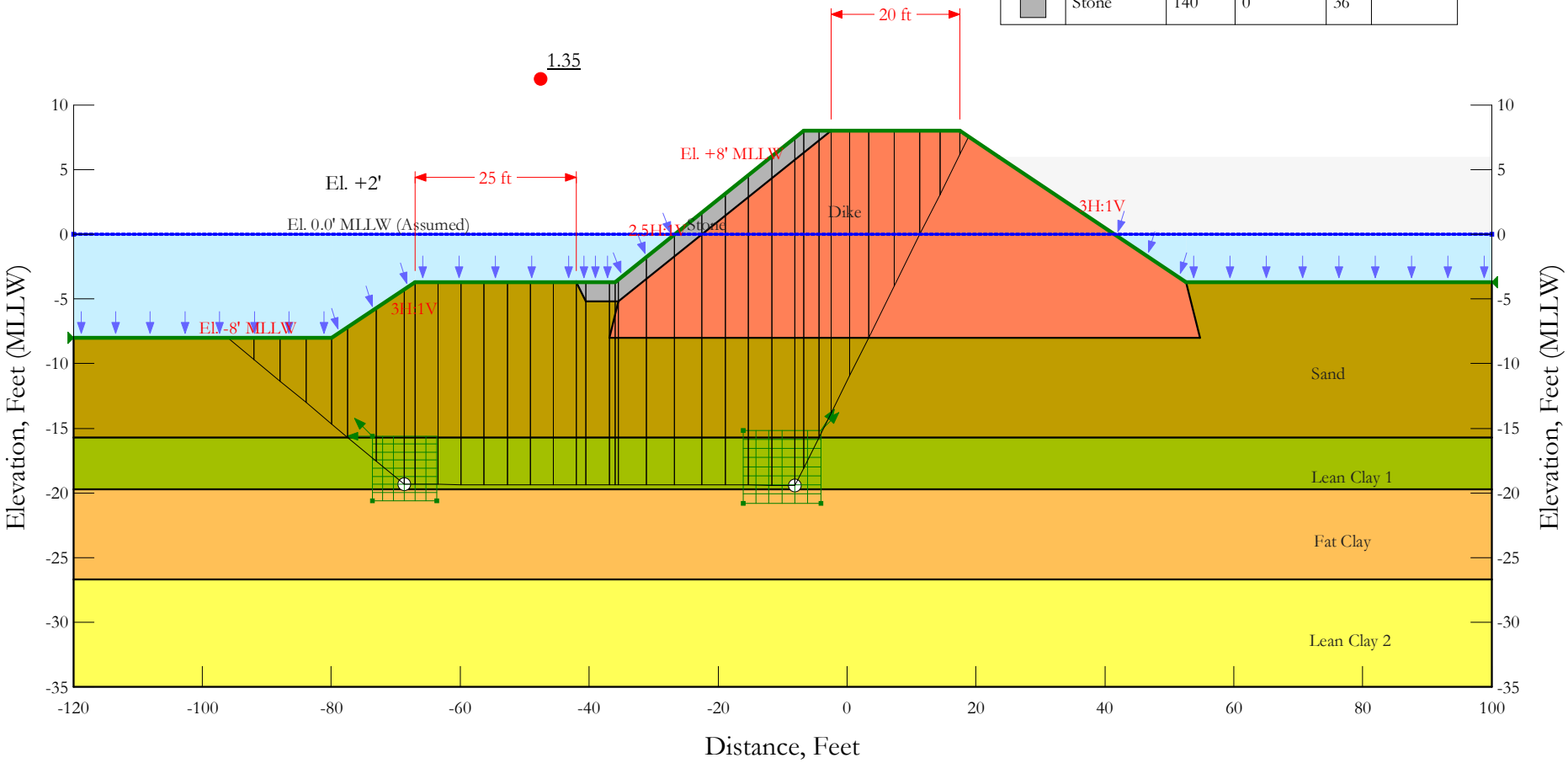

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 200 |
| | Lean Clay 1 (Undrained) | 110 | | | 140 |
| | Lean Clay 2 (Undrained) | 110 | | | 750 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 40+00**
**Boring ECP-1046**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

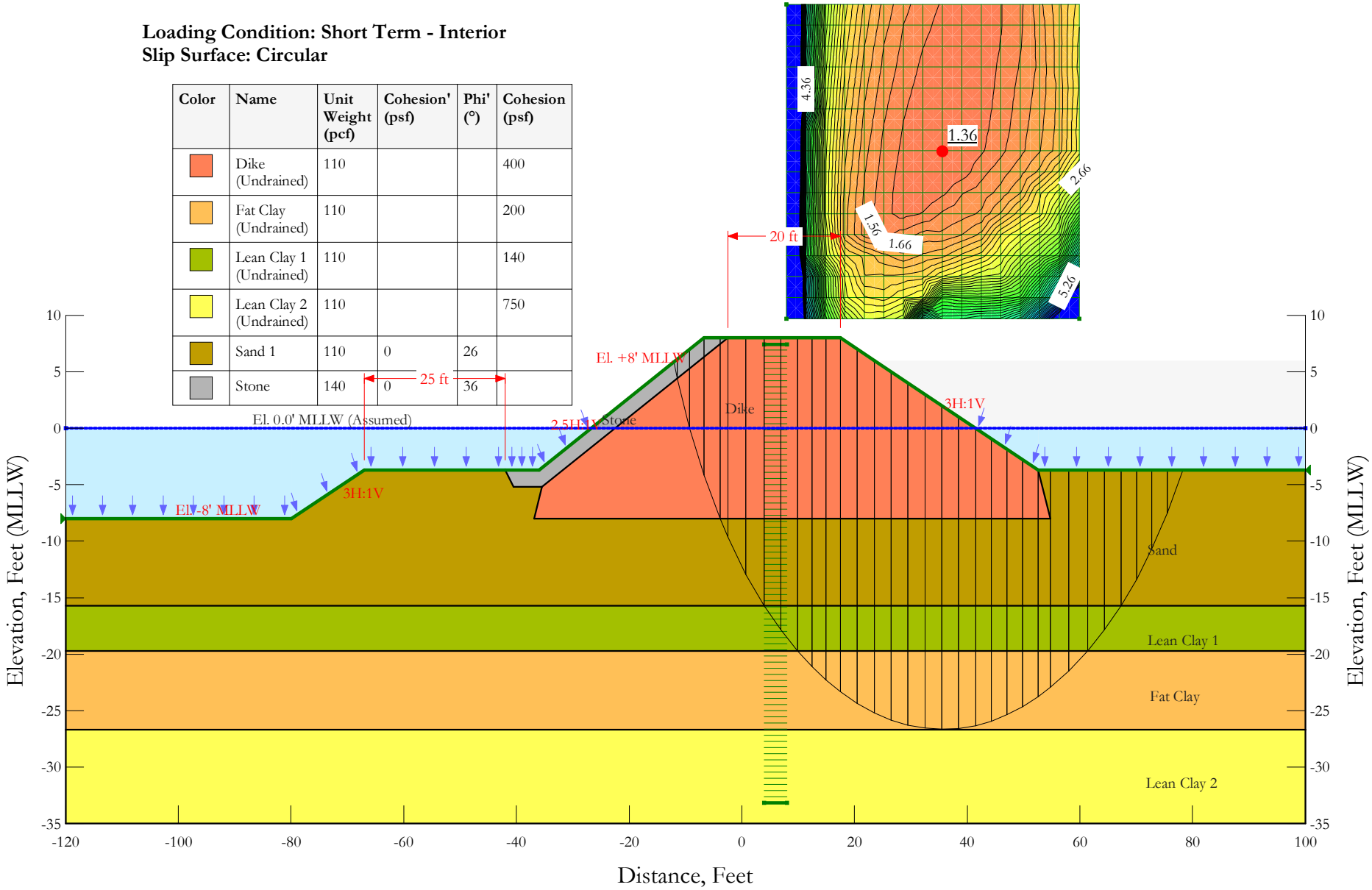
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 200 |
| | Lean Clay 1 (Undrained) | 110 | | | 140 |
| | Lean Clay 2 (Undrained) | 110 | | | 750 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 40+00**
**Boring ECP-1046**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

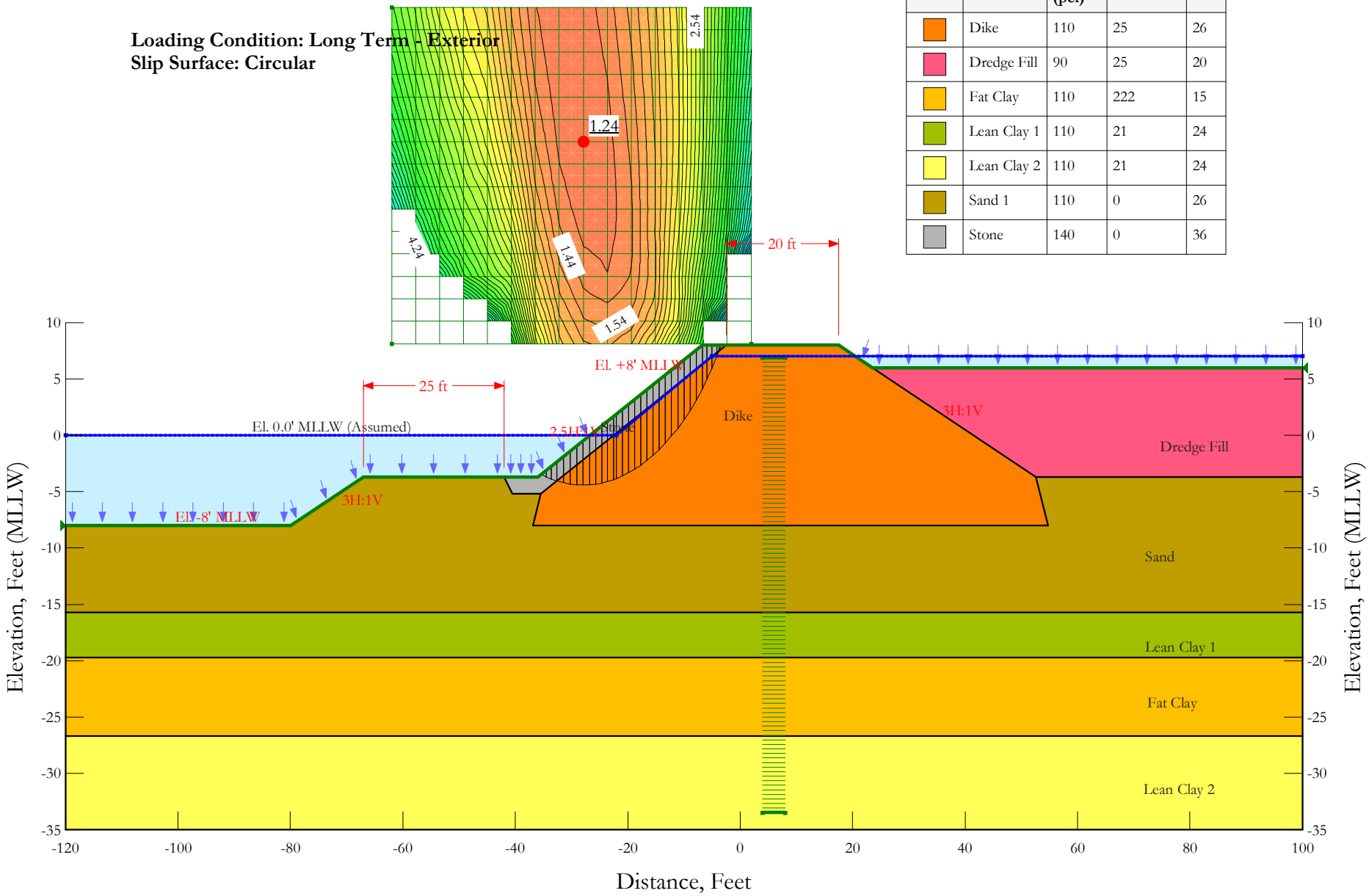
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 200 |
| | Lean Clay 1 (Undrained) | 110 | | | 140 |
| | Lean Clay 2 (Undrained) | 110 | | | 750 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 40+00**
**Boring ECP-1046**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**

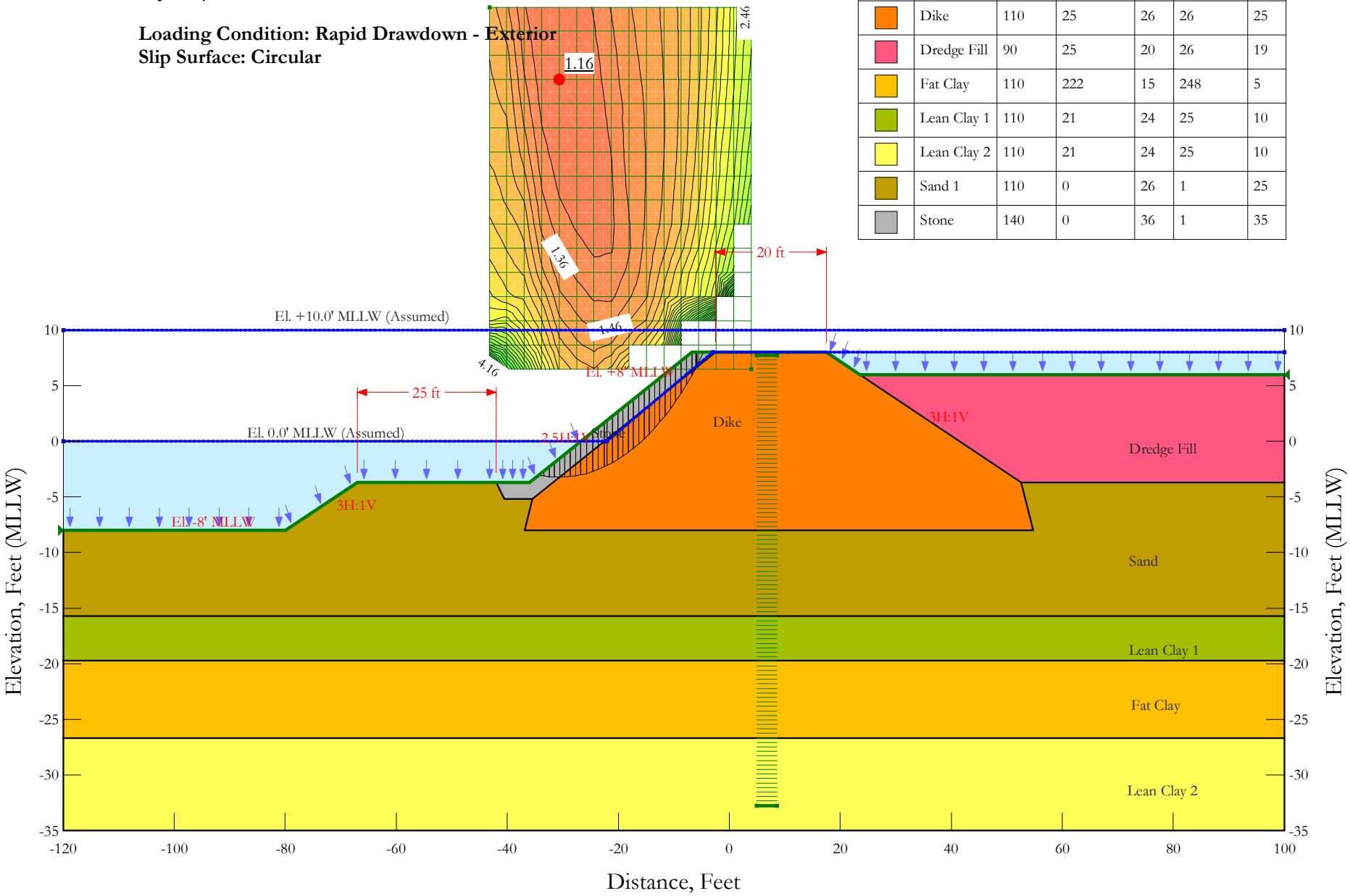
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay | 110 | 222 | 15 |
| | Lean Clay 1 | 110 | 21 | 24 |
| | Lean Clay 2 | 110 | 21 | 24 |
| | Sand 1 | 110 | 0 | 26 |
| | Stone | 140 | 0 | 36 |



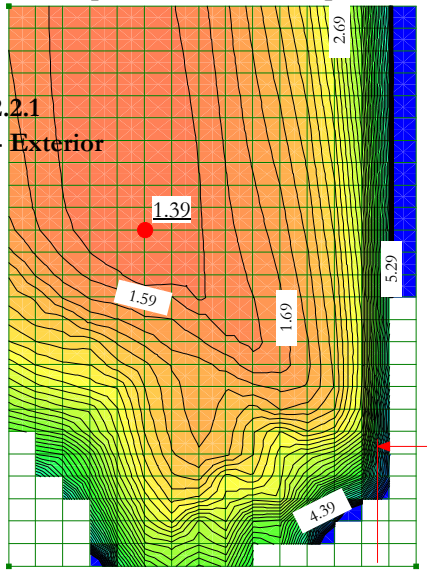
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 40+00**
**Boring ECP-1046**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**

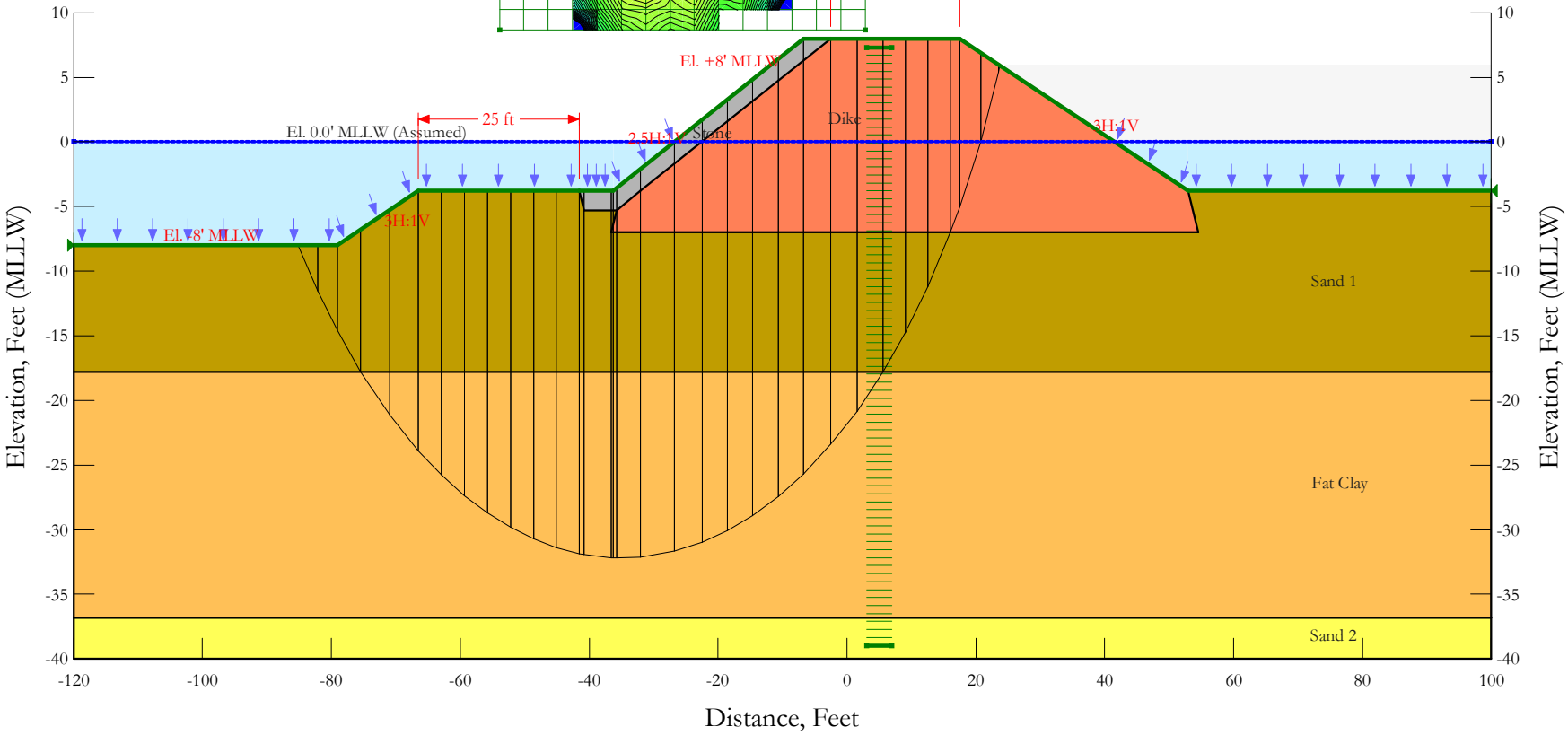
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Fat Clay | 110 | 222 | 15 | 248 | 5 |
| | Lean Clay 1 | 110 | 21 | 24 | 25 | 10 |
| | Lean Clay 2 | 110 | 21 | 24 | 25 | 10 |
| | Sand 1 | 110 | 0 | 26 | 1 | 25 |
| | Stone | 140 | 0 | 36 | 1 | 35 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 60+00**
**Boring ECP-1044**
**HVJ Project Number: HG1910092.2.1**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**



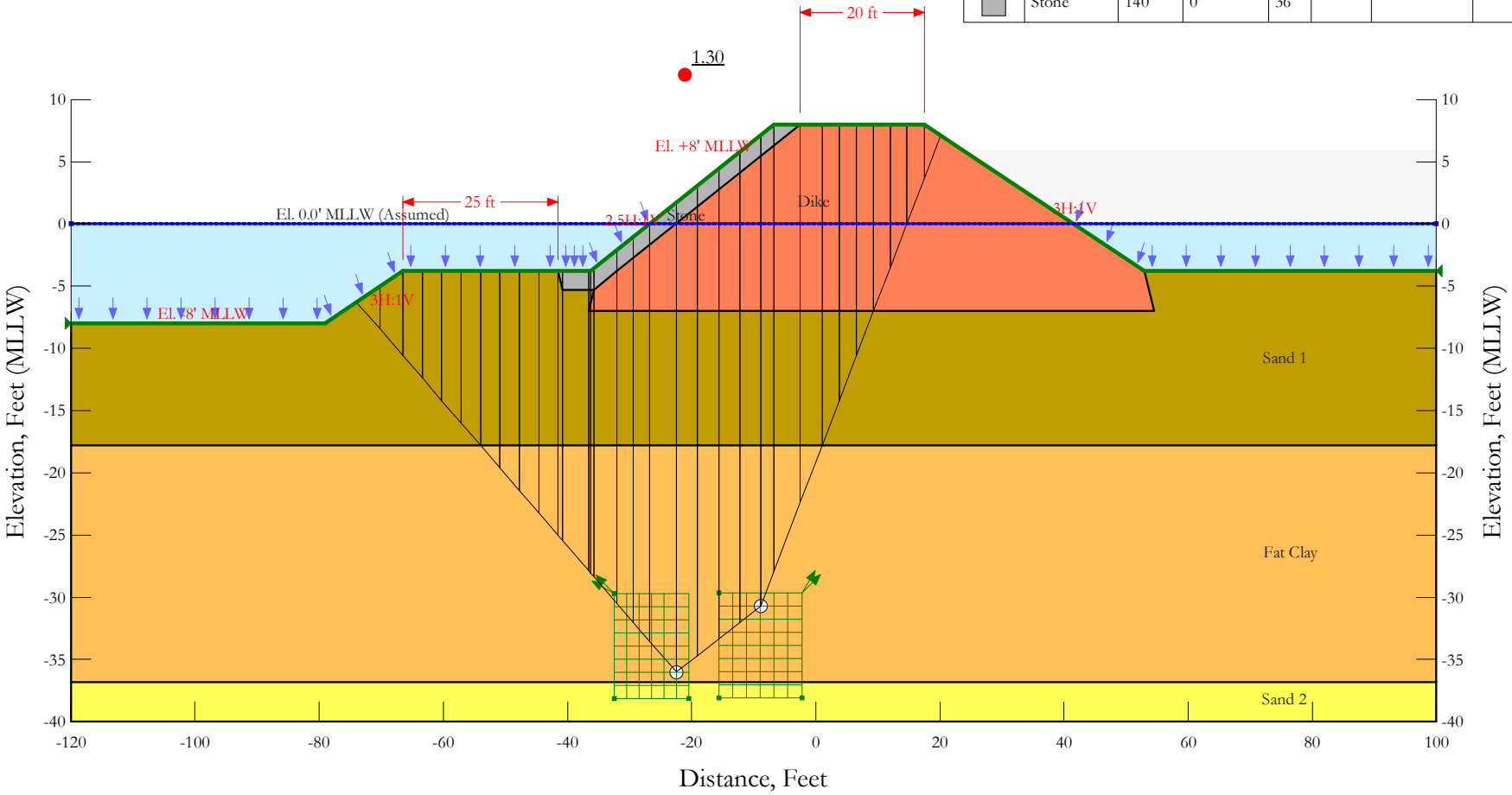

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | C-Top of Layer (psf) | C-Rate of Change ((lbf/ft²)/ft) | C-Maximum (psf) | Cohesion (psf) |
|---|---|---|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 145 | 8 | 300 | |
| | Sand 1 | 110 | 0 | 26 | | | | |
| | Sand 2 | 110 | 0 | 28 | | | | |
| | Stone | 140 | 0 | 36 | | | | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 60+00**
**Boring ECP-1044**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

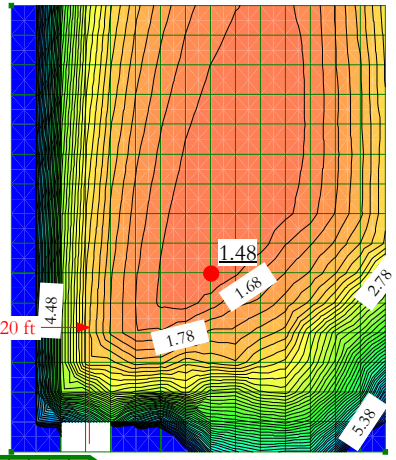
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | C-Top of Layer (psf) | C-Rate of Change ((lbf/ft²)/ft) | C-Maximum (psf) | Cohesion (psf) |
|---|---|---|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 145 | 8 | 300 | |
| | Sand 1 | 110 | 0 | 26 | | | | |
| | Sand 2 | 110 | 0 | 28 | | | | |
| | Stone | 140 | 0 | 36 | | | | |

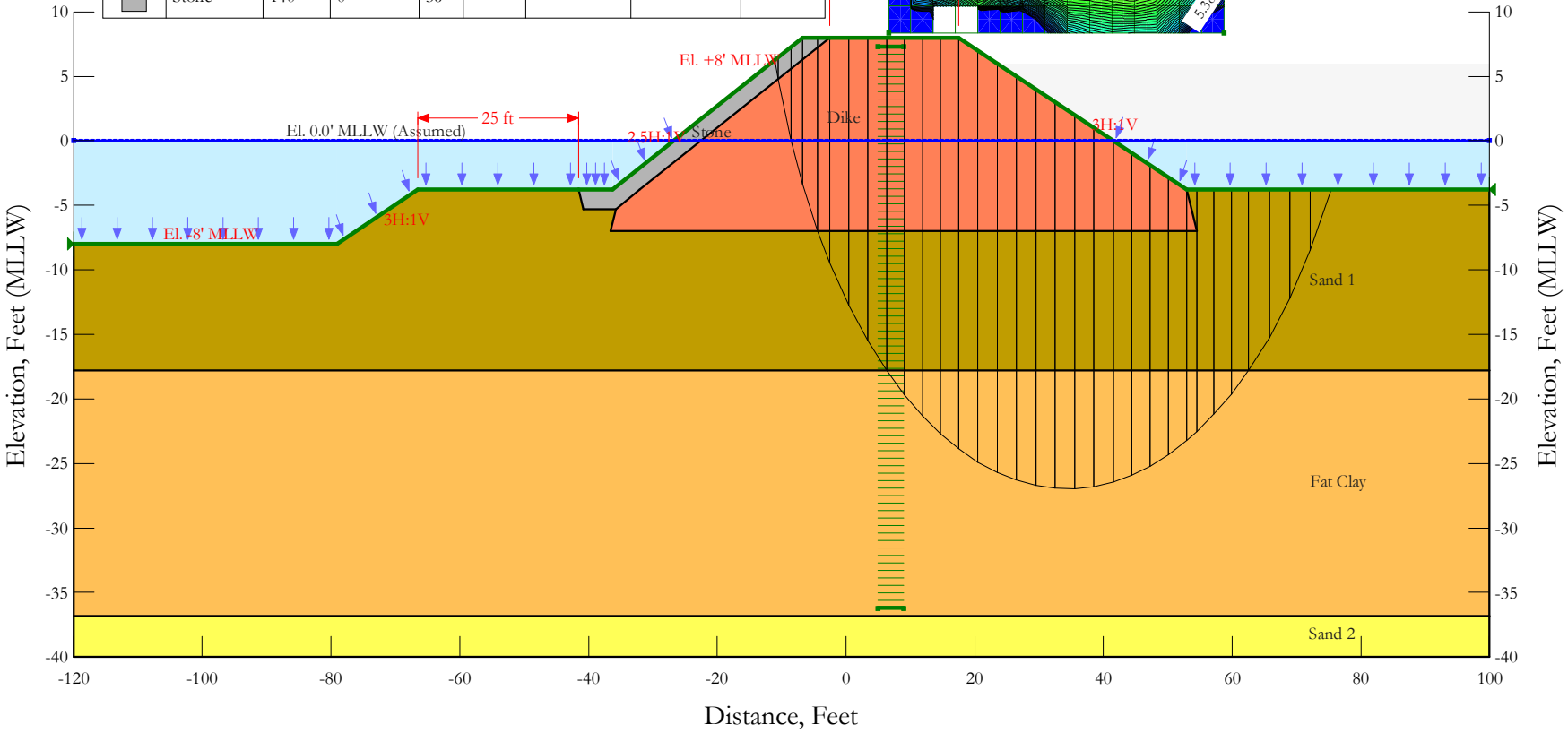


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 60+00**
**Boring ECP-1044**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | C-Top of Layer (psf) | C-Rate of Change ((lbf/ft²)/ft) | C-Maximum (psf) | Cohesion (psf) |
|---|---|---|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 145 | 8 | 300 | |
| | Sand 1 | 110 | 0 | 26 | | | | |
| | Sand 2 | 110 | 0 | 28 | | | | |
| | Stone | 140 | 0 | 36 | | | | |

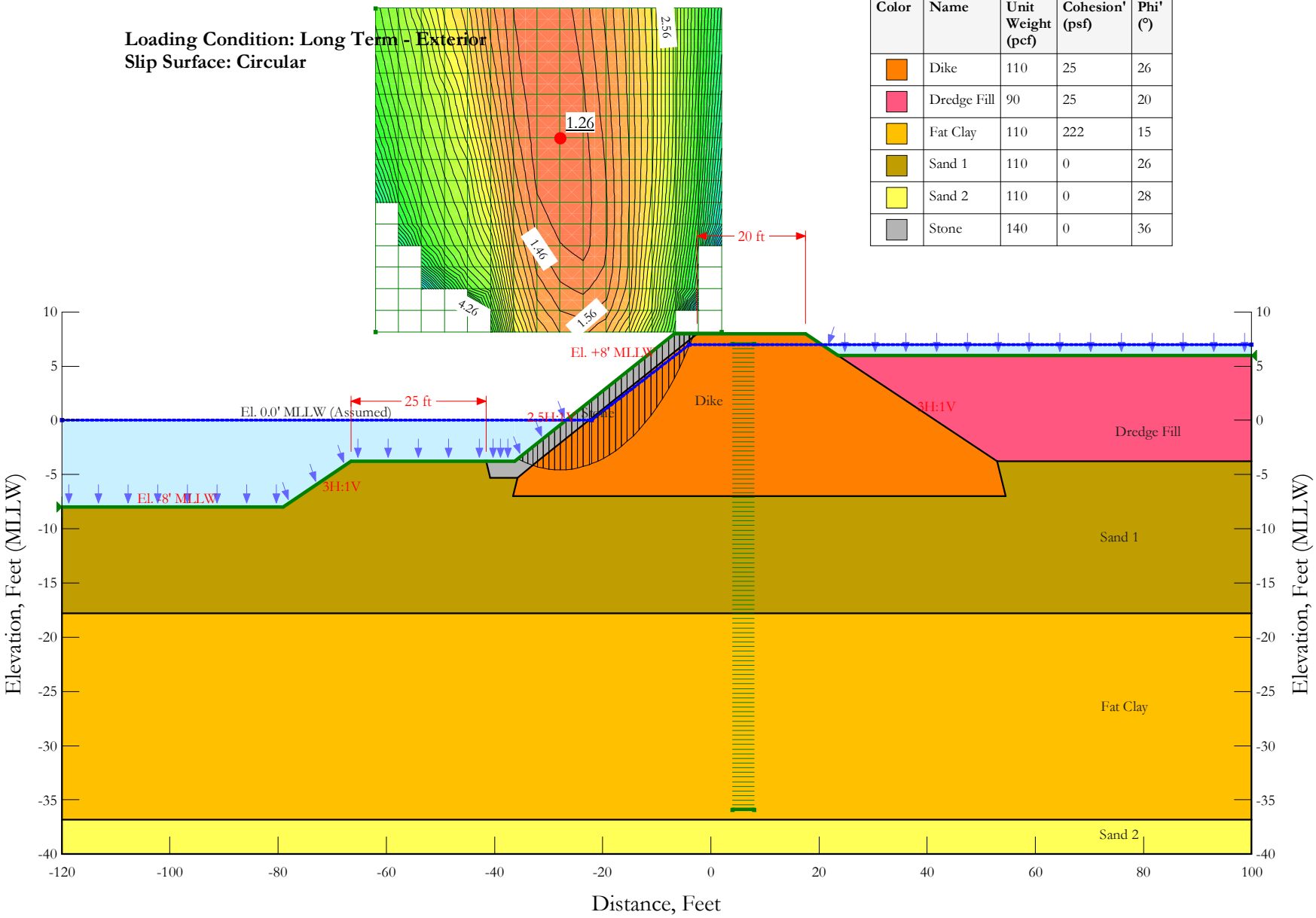


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 60+00**
**Boring ECP-1044**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**

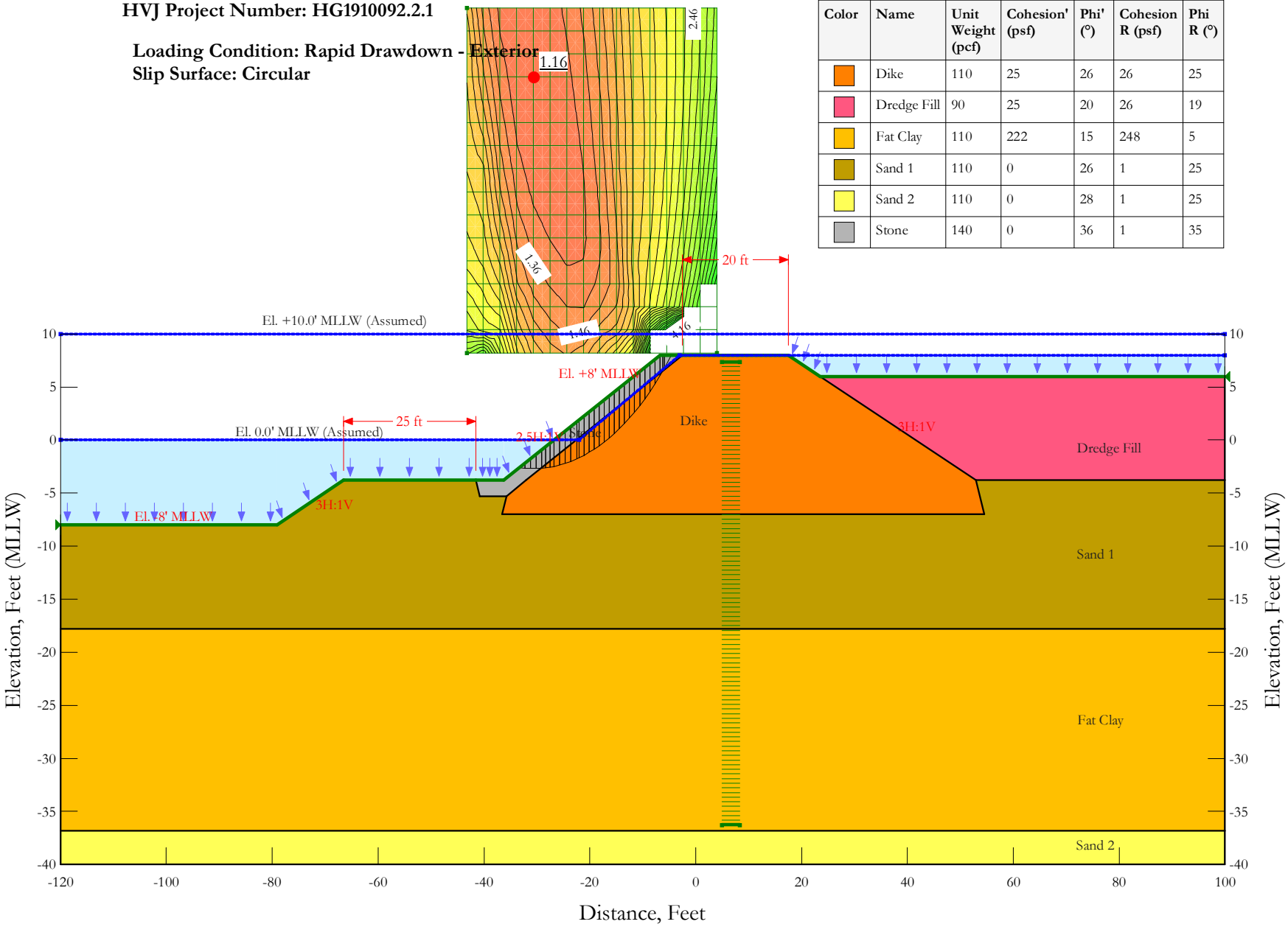
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay | 110 | 222 | 15 |
| | Sand 1 | 110 | 0 | 26 |
| | Sand 2 | 110 | 0 | 28 |
| | Stone | 140 | 0 | 36 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 60+00**
**Boring ECP-1044**
**HVJ Project Number: HG1910092.2.1**

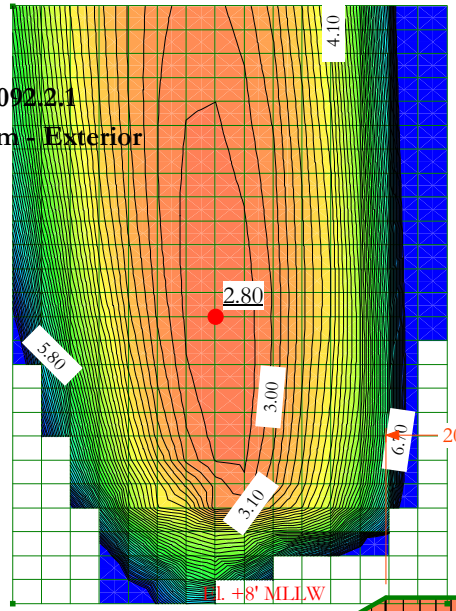
**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Fat Clay | 110 | 222 | 15 | 248 | 5 |
| | Sand 1 | 110 | 0 | 26 | 1 | 25 |
| | Sand 2 | 110 | 0 | 28 | 1 | 25 |
| | Stone | 140 | 0 | 36 | 1 | 35 |

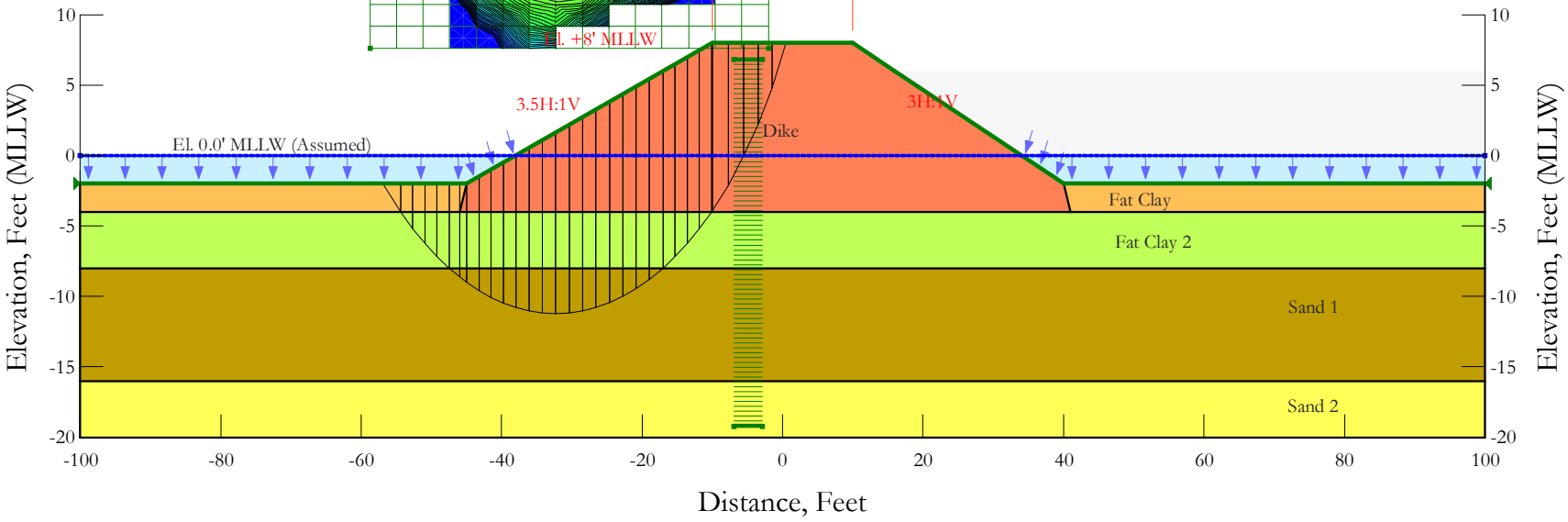


# SLOPE STABILITY ANALYSIS: RECOMMENDED SECTION AT CELL M12

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 5+00**
**Boring ECP-1050**
**HVJ Project Number: HG19100922.1**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**



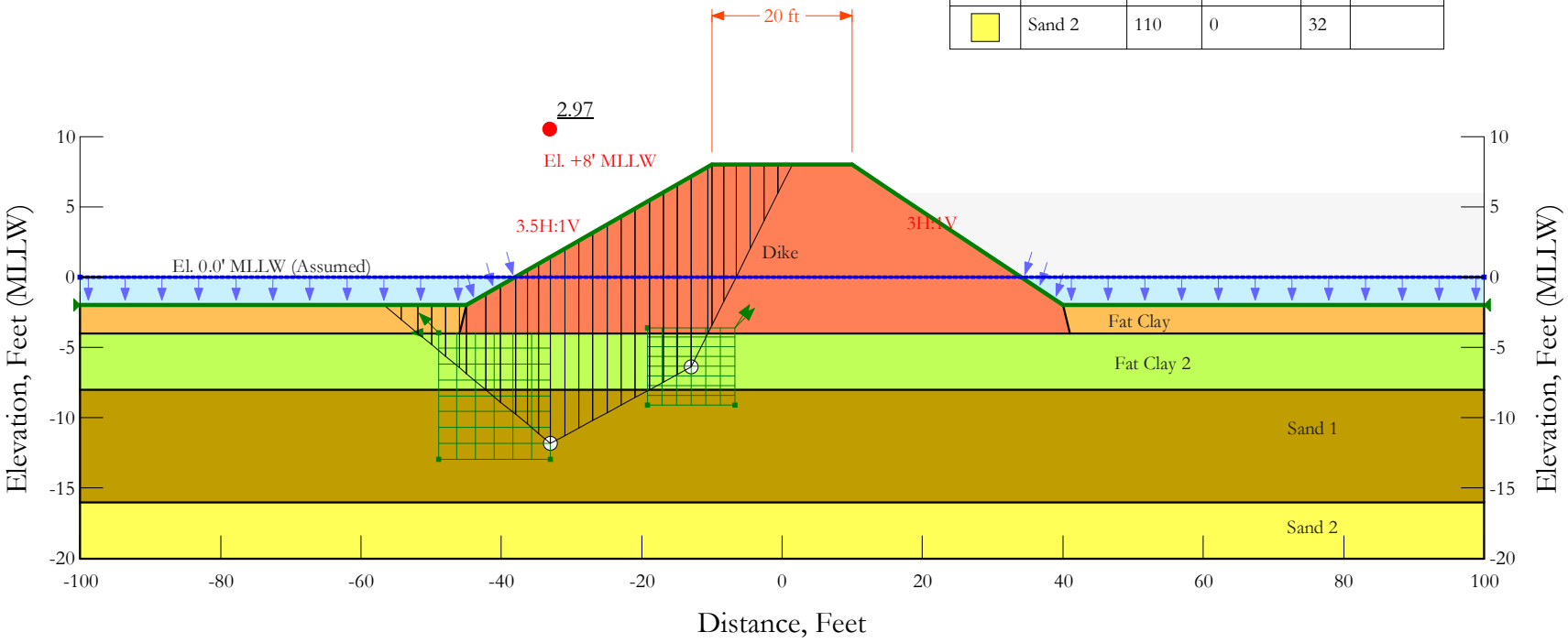

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 120 |
| | Fat Clay 2 (Undrained) | 110 | | | 500 |
| | Sand 1 | 110 | 0 | 30 | |
| | Sand 2 | 110 | 0 | 32 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 5+00**
**Boring ECP-1050**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

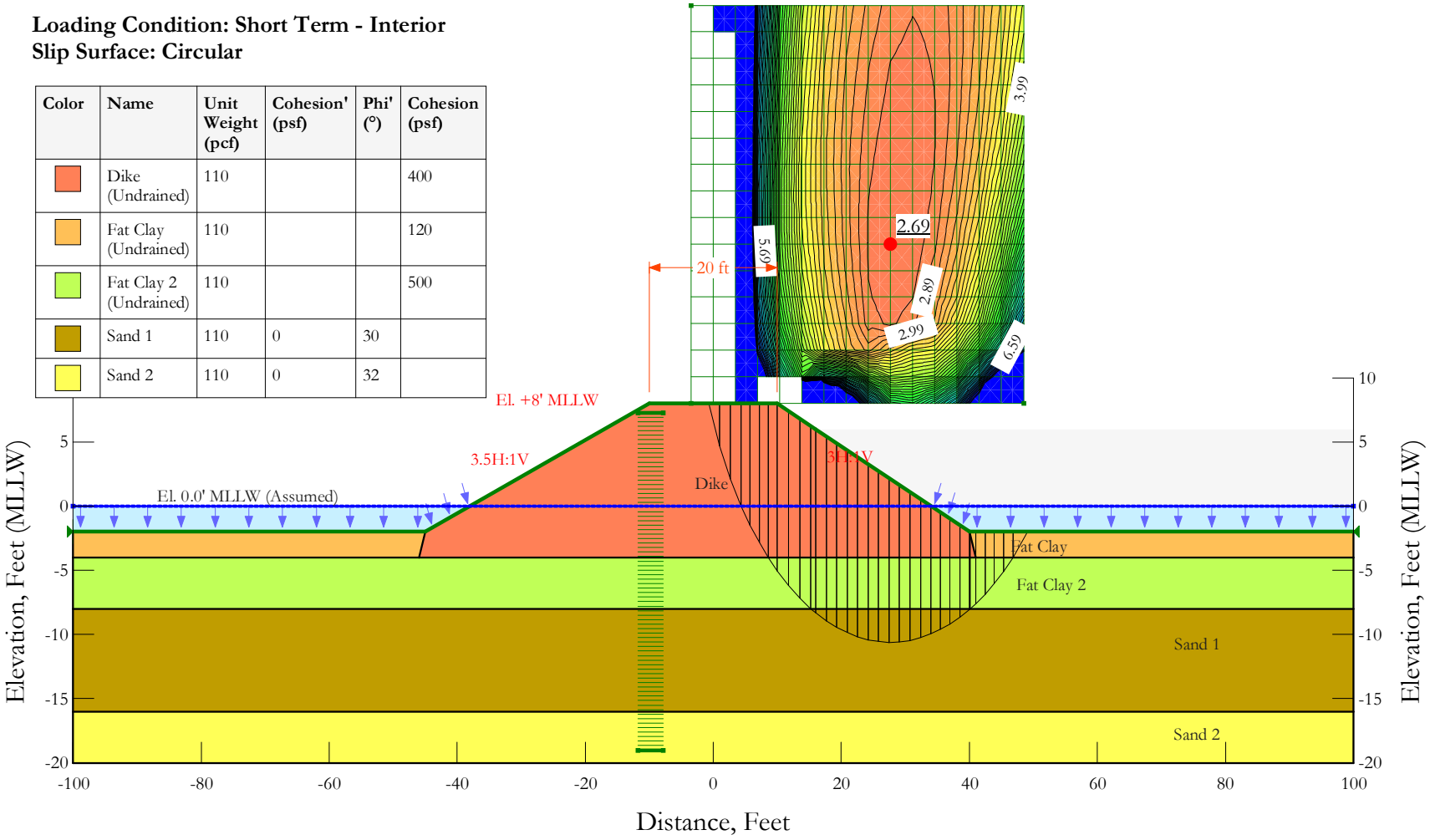
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 120 |
| | Fat Clay 2 (Undrained) | 110 | | | 500 |
| | Sand 1 | 110 | 0 | 30 | |
| | Sand 2 | 110 | 0 | 32 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 5+00**
**Boring ECP-1050**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

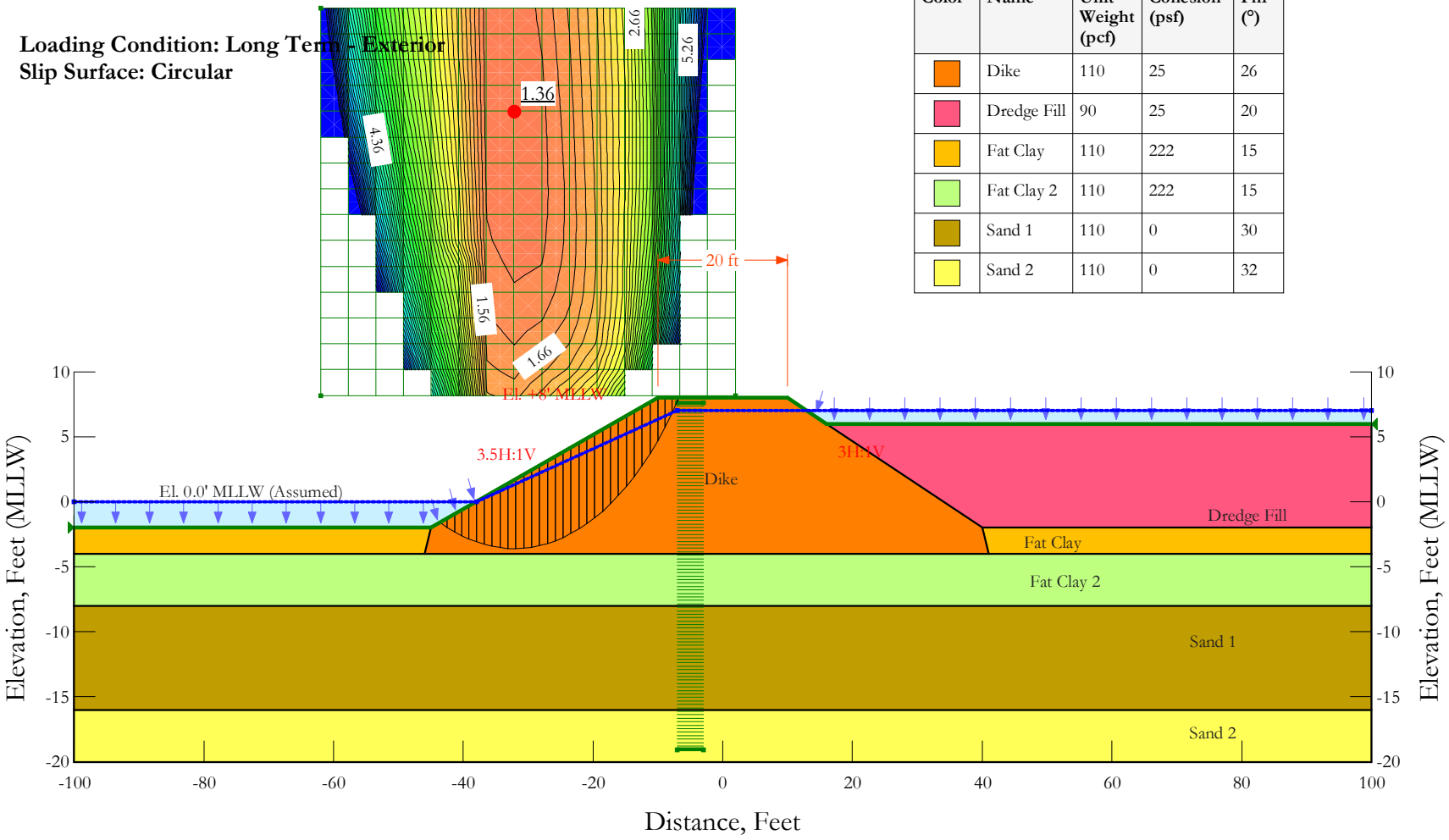
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 120 |
| | Fat Clay 2 (Undrained) | 110 | | | 500 |
| | Sand 1 | 110 | 0 | 30 | |
| | Sand 2 | 110 | 0 | 32 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 5+00**
**Boring ECP-1050**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**

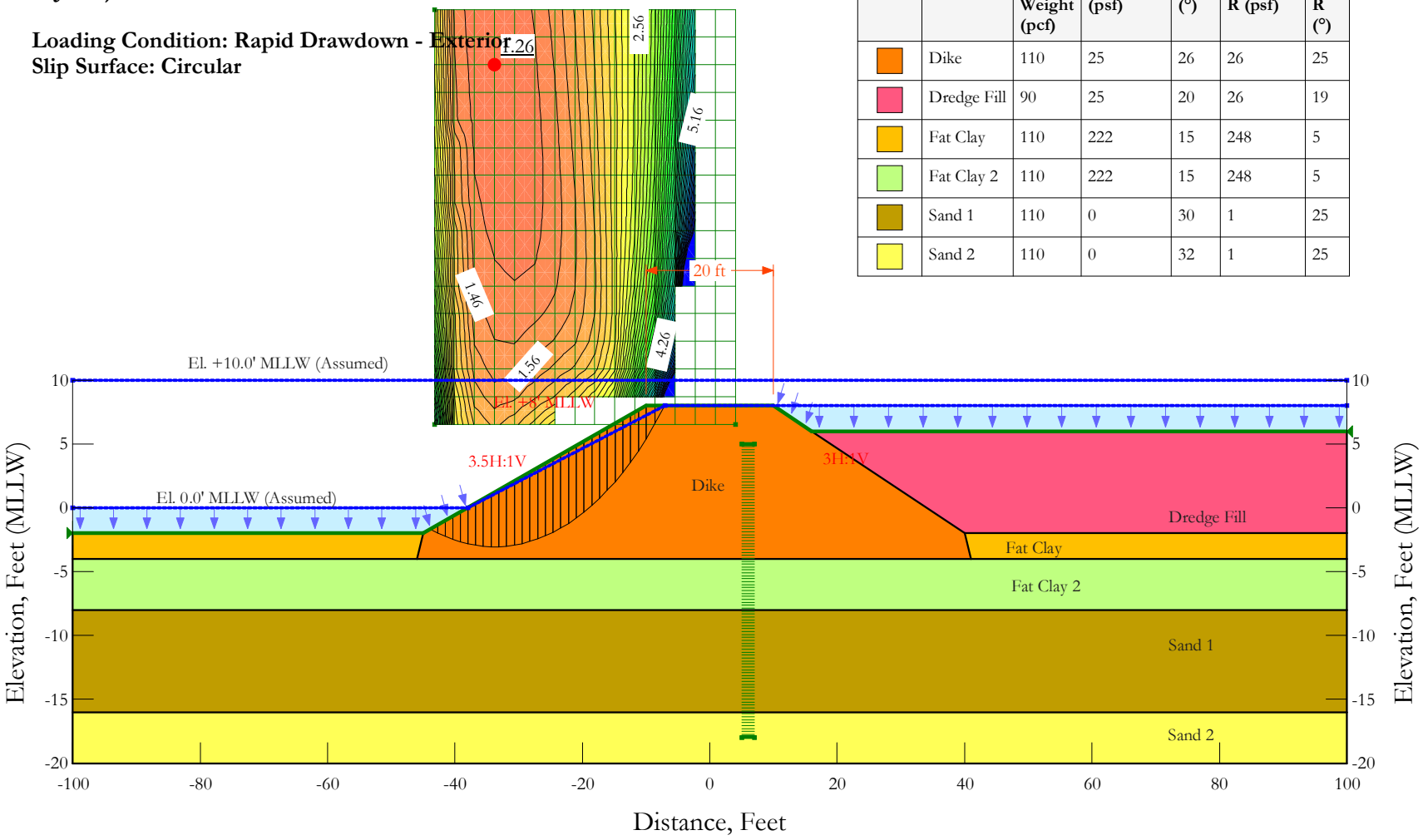
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay | 110 | 222 | 15 |
| | Fat Clay 2 | 110 | 222 | 15 |
| | Sand 1 | 110 | 0 | 30 |
| | Sand 2 | 110 | 0 | 32 |



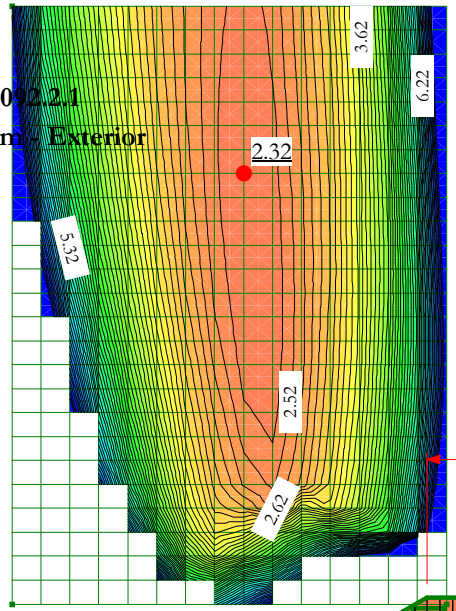
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 5+00**
**Boring ECP-1050**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**

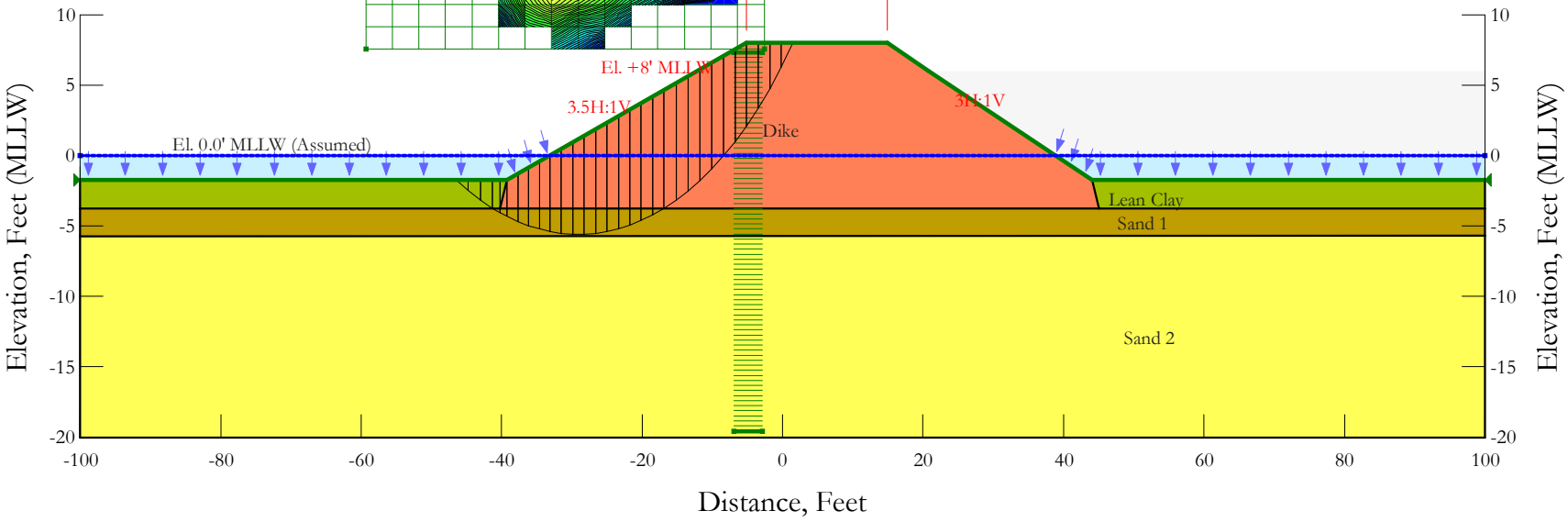
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Fat Clay | 110 | 222 | 15 | 248 | 5 |
| | Fat Clay 2 | 110 | 222 | 15 | 248 | 5 |
| | Sand 1 | 110 | 0 | 30 | 1 | 25 |
| | Sand 2 | 110 | 0 | 32 | 1 | 25 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 30+00**
**Boring ECP-1053**
**HVJ Project Number: HG191009**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**



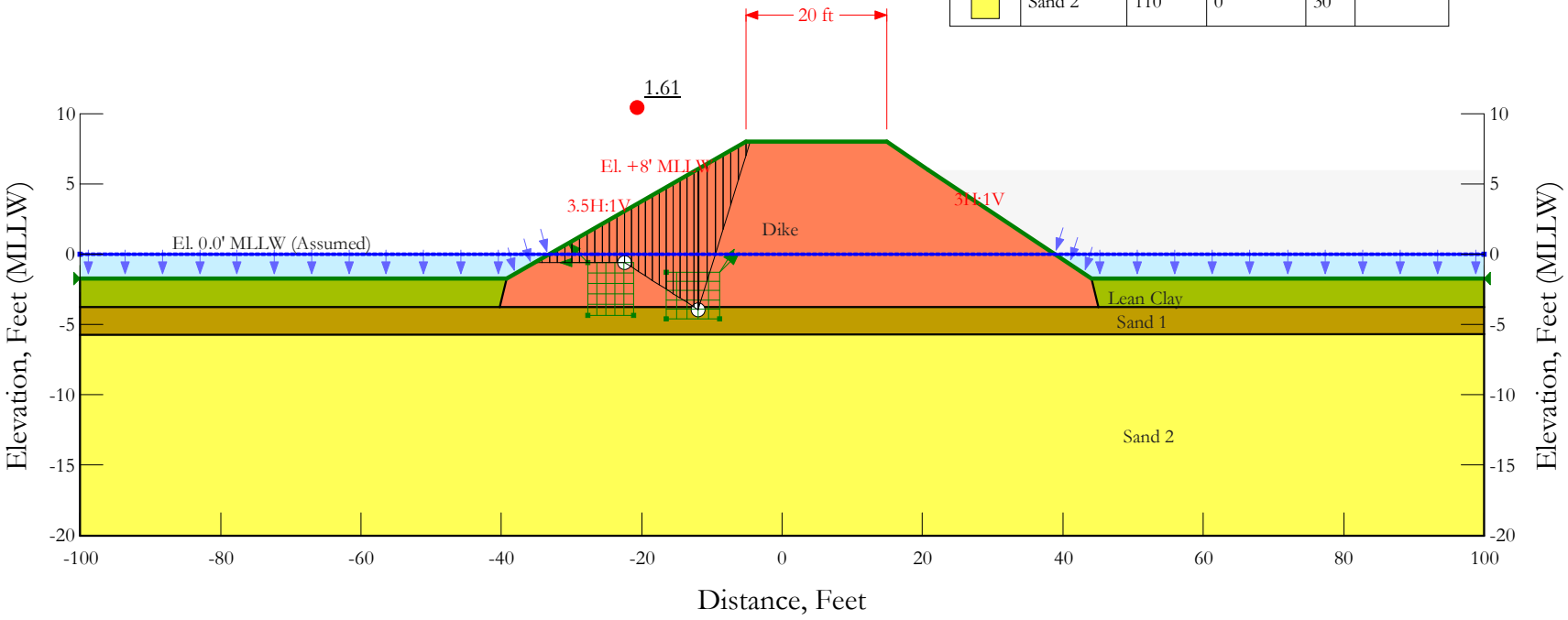

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 30 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 30+00**
**Boring ECP-1053**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

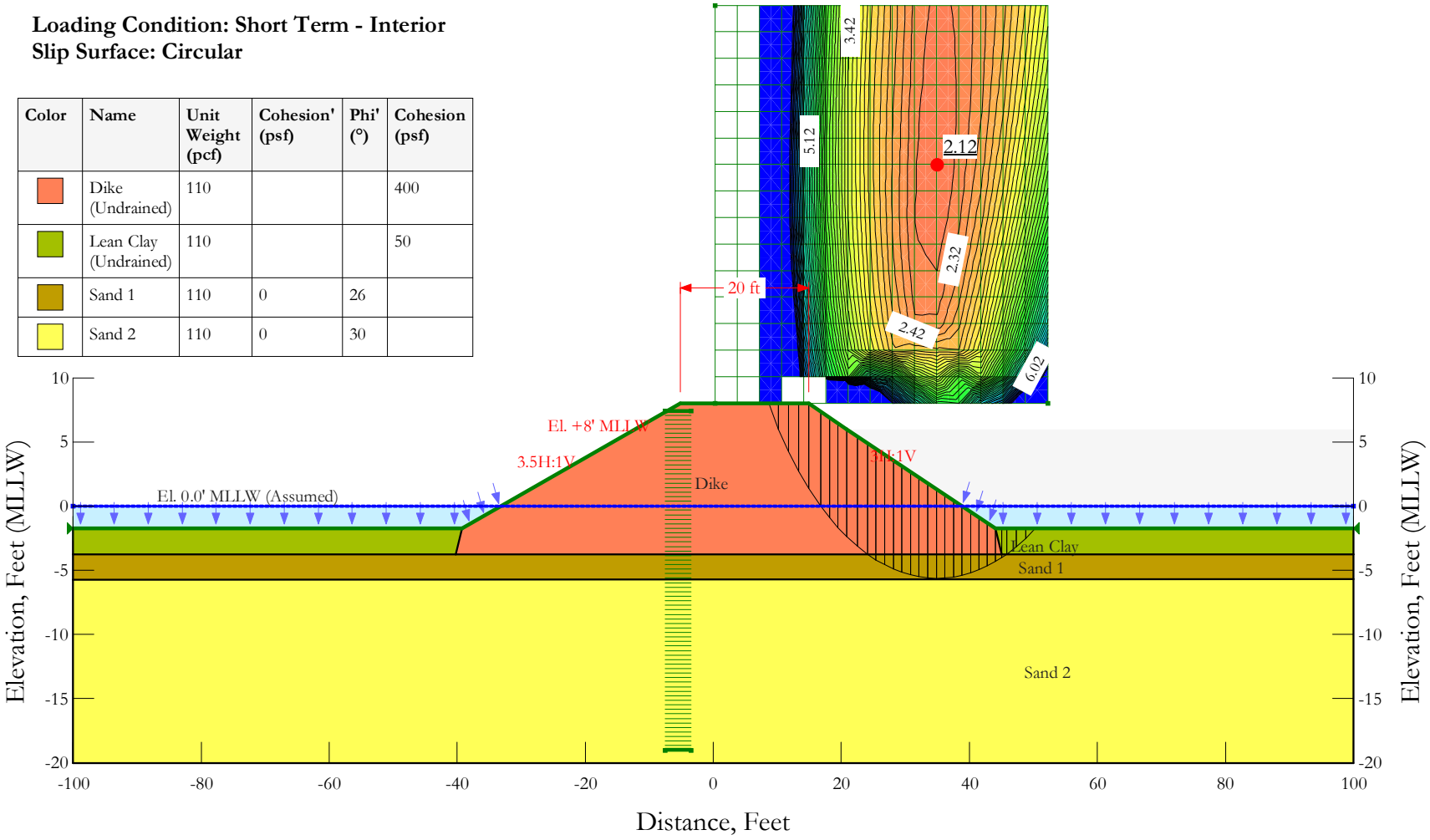
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 30 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 30+00**
**Boring ECP-1053**
**HVJ Project Number: HG1910092.2.1**

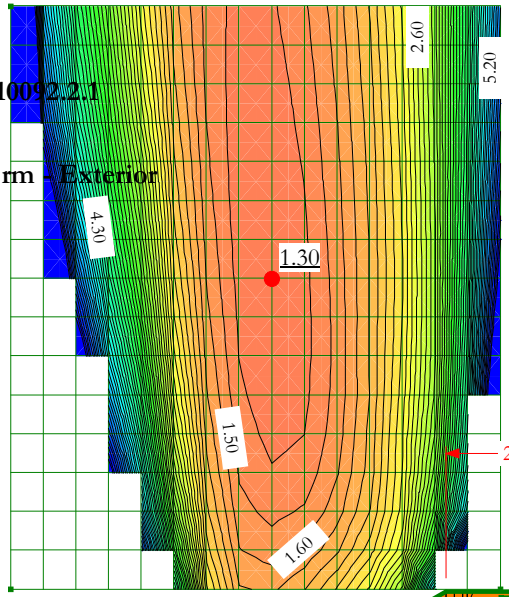
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 30 | |

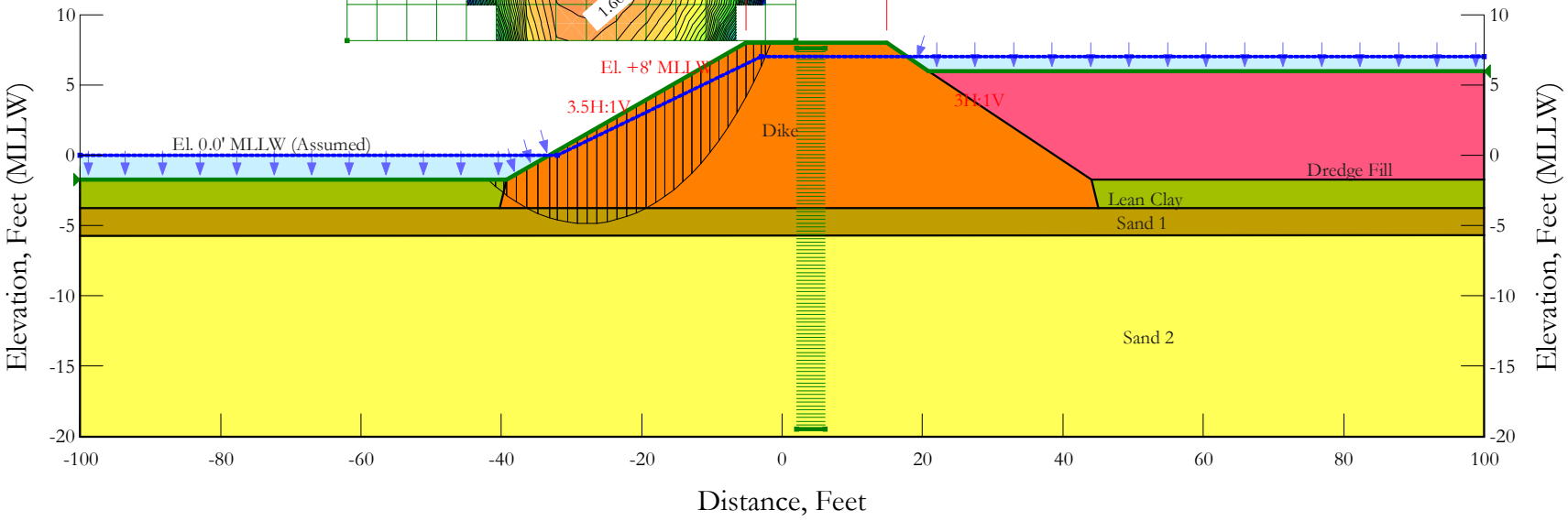


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 30+00**
**Boring ECP-1053**
**HVJ Project Number: HG191009**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**



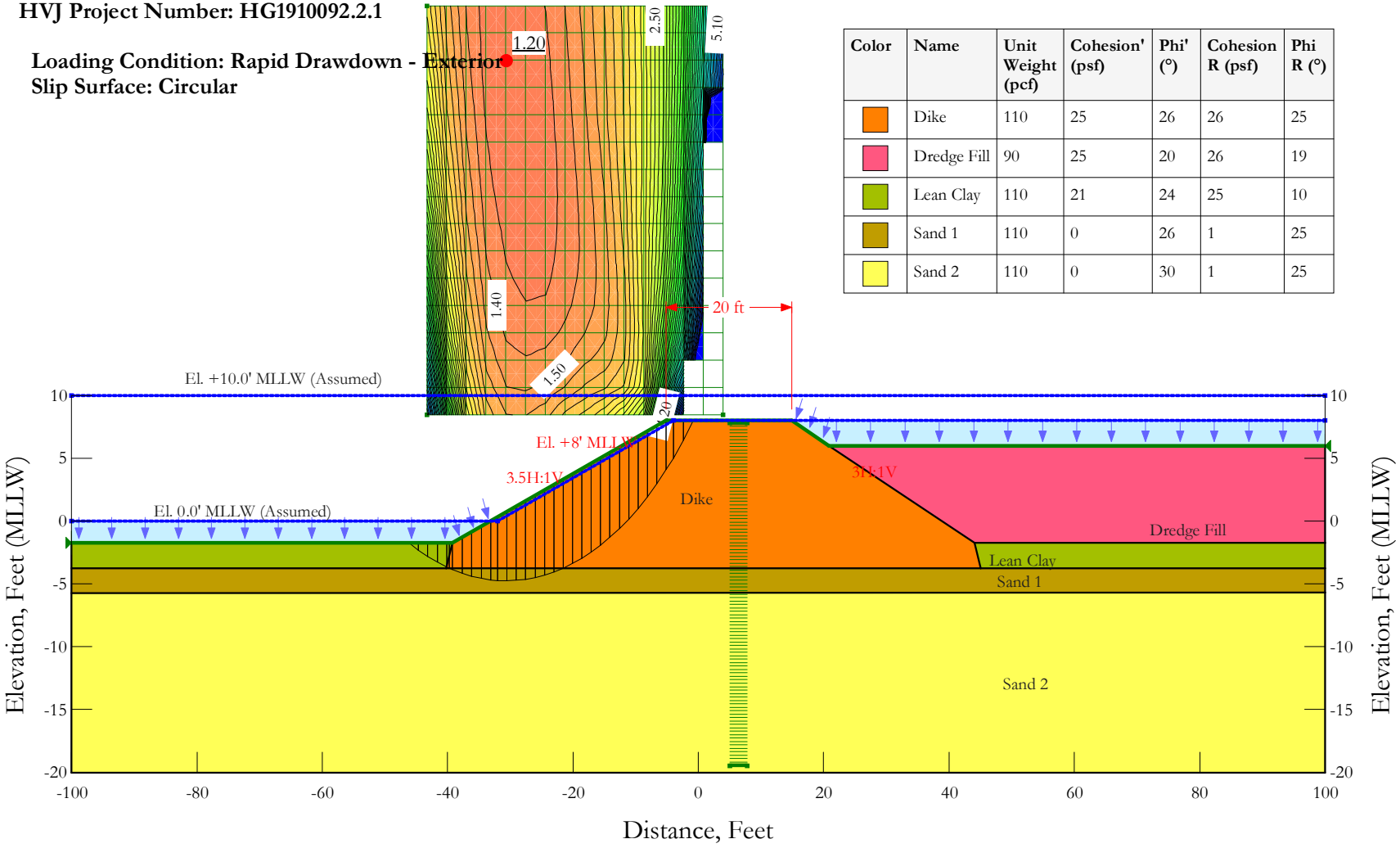

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Lean Clay | 110 | 21 | 24 |
| | Sand 1 | 110 | 0 | 26 |
| | Sand 2 | 110 | 0 | 30 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline B Sta. 30+00**
**Boring ECP-1053**
**HVJ Project Number: HG1910092.2.1**

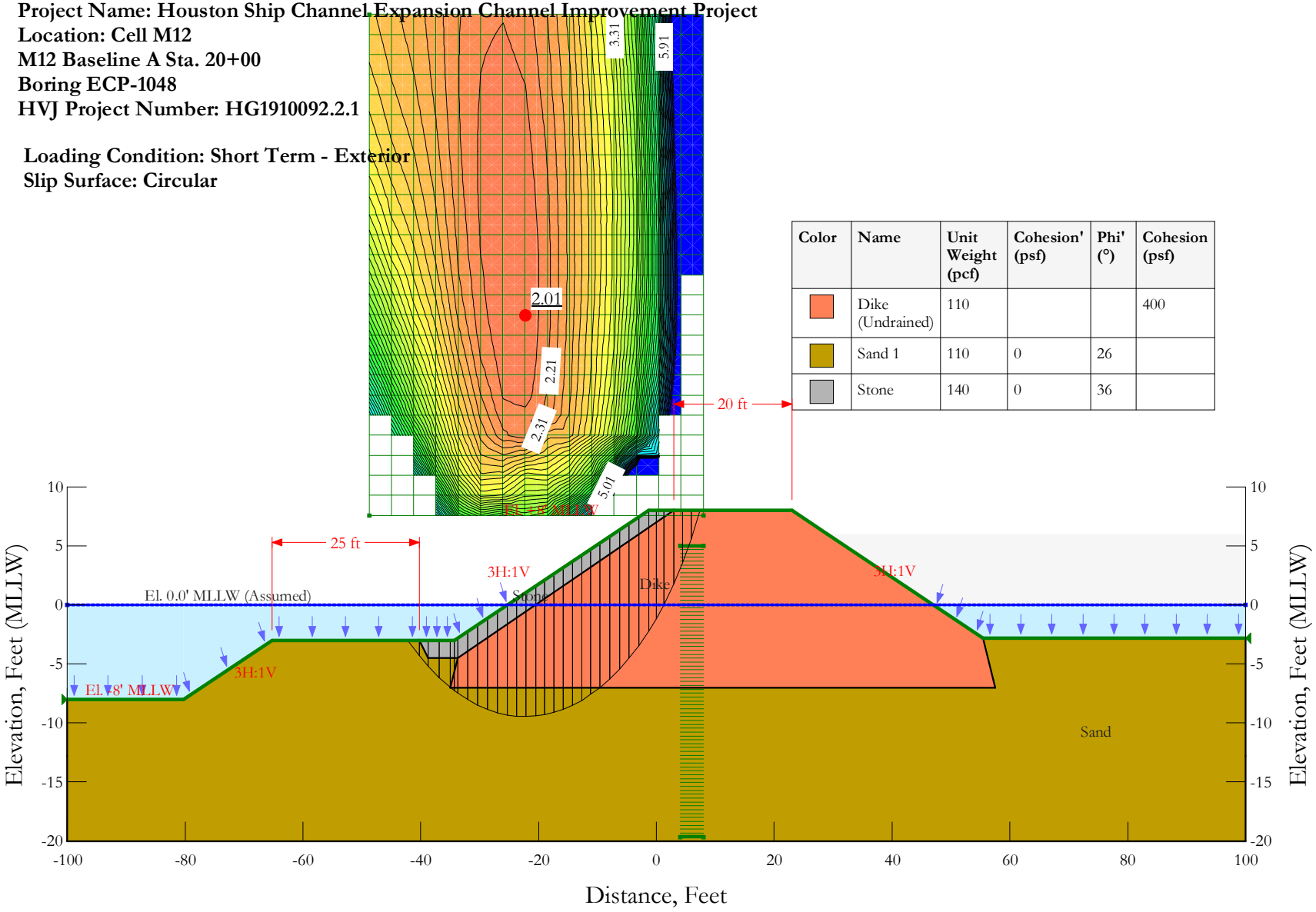
**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Lean Clay | 110 | 21 | 24 | 25 | 10 |
| | Sand 1 | 110 | 0 | 26 | 1 | 25 |
| | Sand 2 | 110 | 0 | 30 | 1 | 25 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 20+00**
**Boring ECP-1048**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

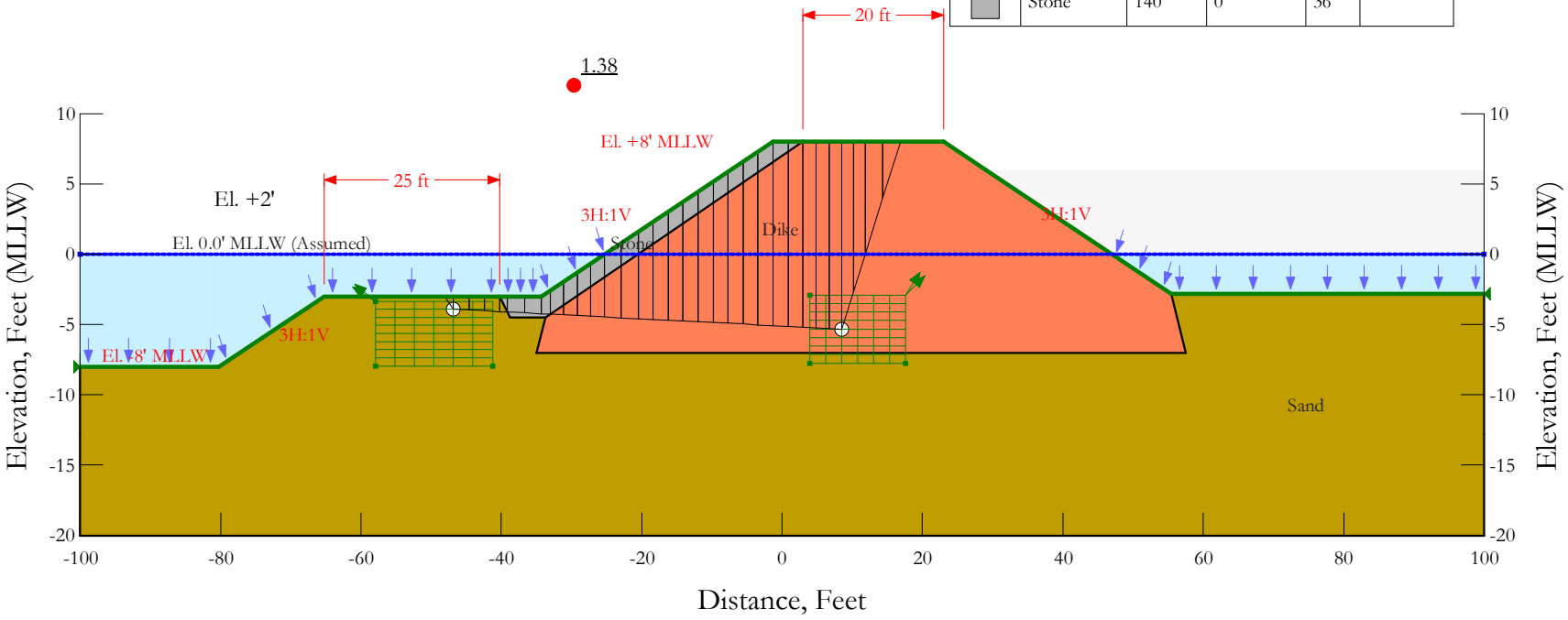



| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 20+00**
**Boring ECP-1048**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

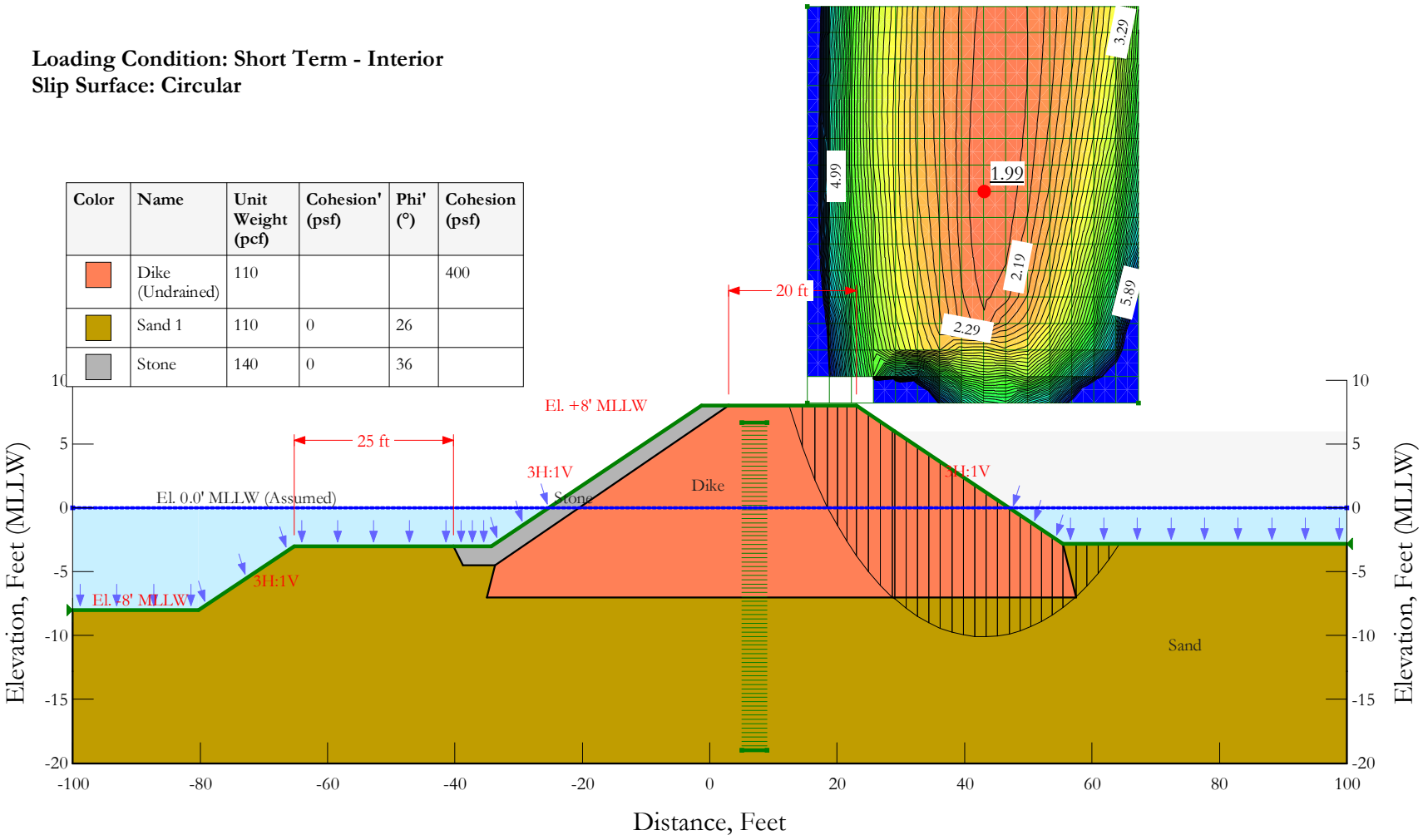
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 20+00**
**Boring ECP-1048**
**HVJ Project Number: HG1910092.2.1**

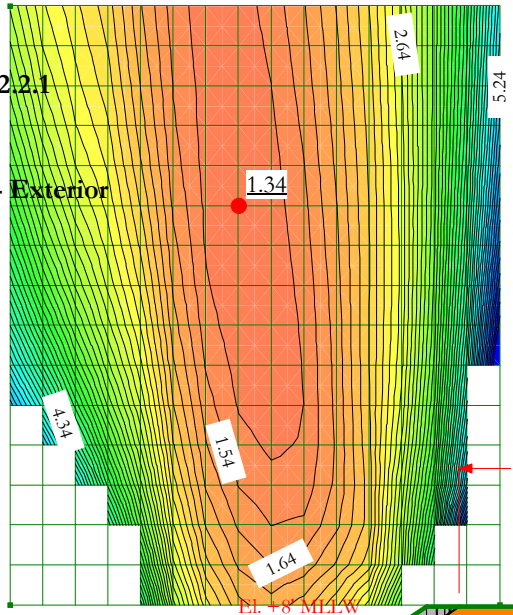
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |

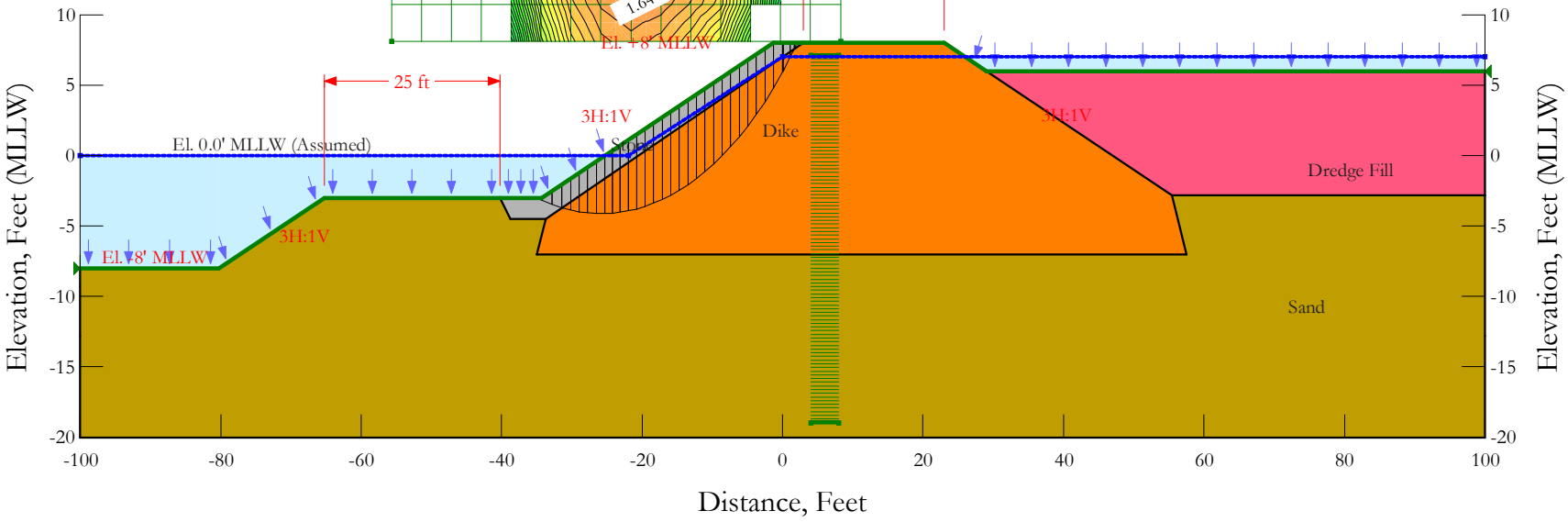


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 20+00**
**Boring ECP-1048**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**

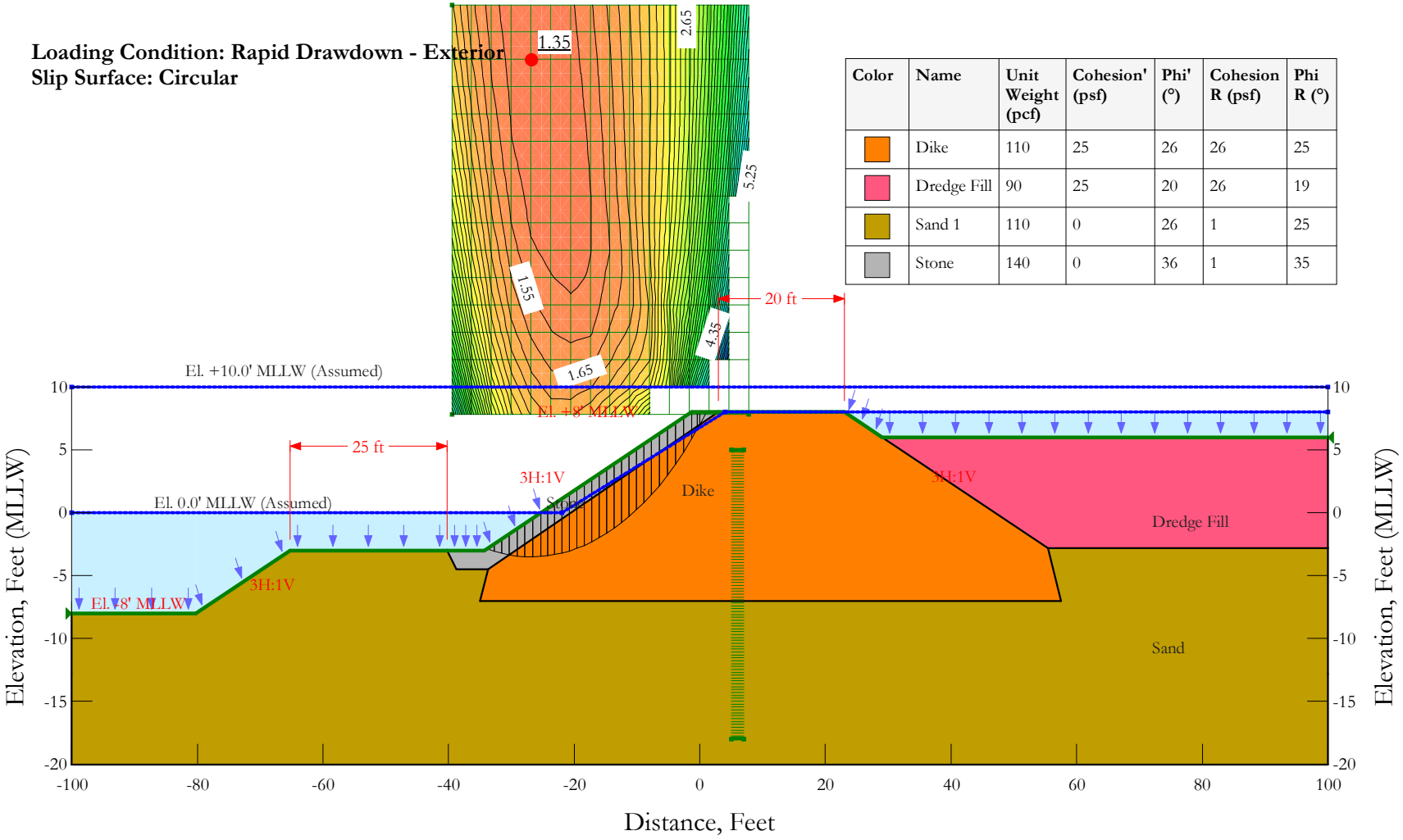



| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Sand 1 | 110 | 0 | 26 |
| | Stone | 140 | 0 | 36 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 20+00**
**Boring ECP-1048**
**HVJ Project Number: HG1910092.2.1**

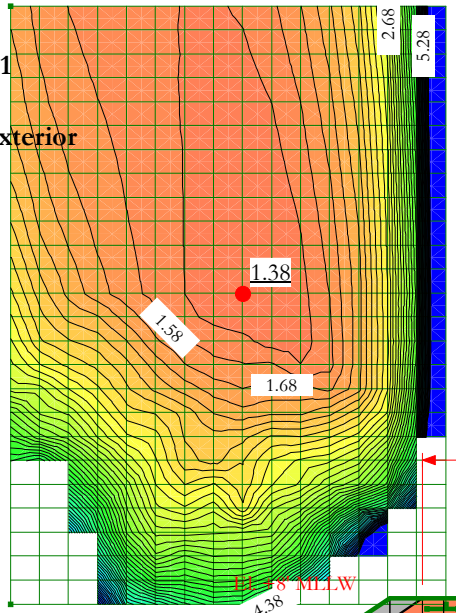
**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**



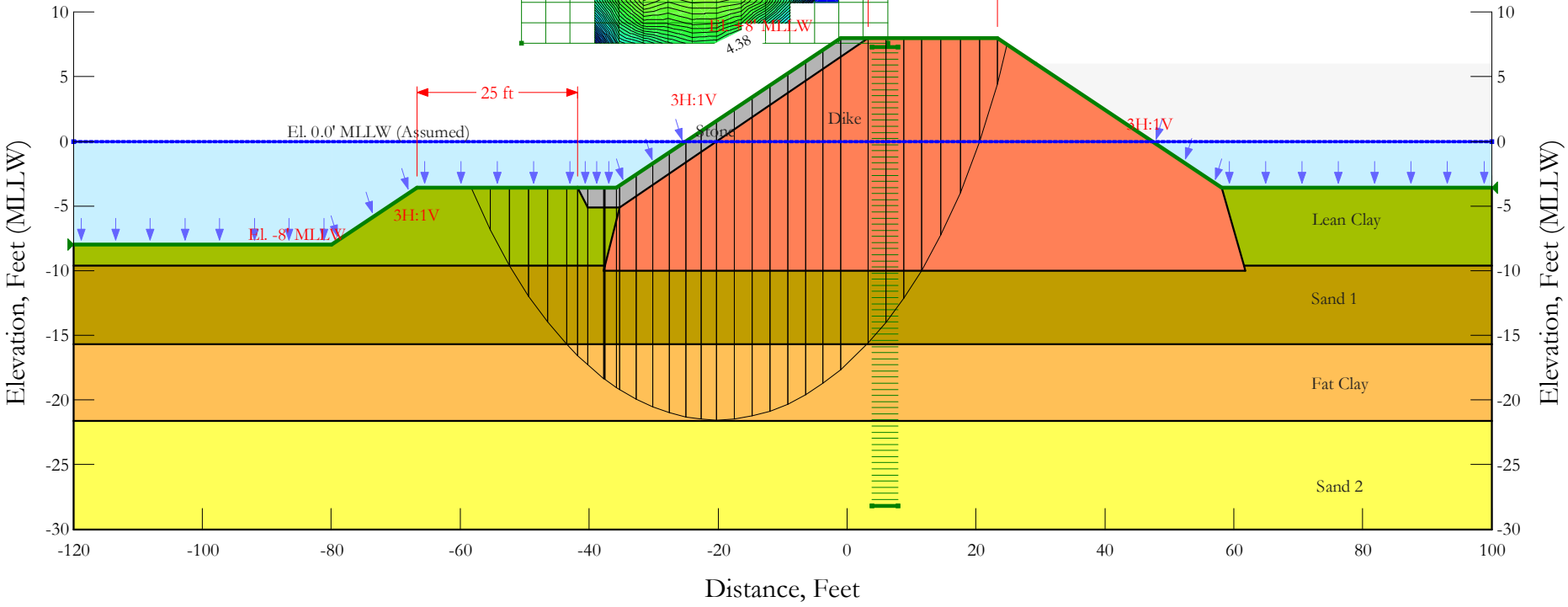

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Sand 1 | 110 | 0 | 26 | 1 | 25 |
| | Stone | 140 | 0 | 36 | 1 | 35 |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 30+00**
**Boring ECP-1047**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**



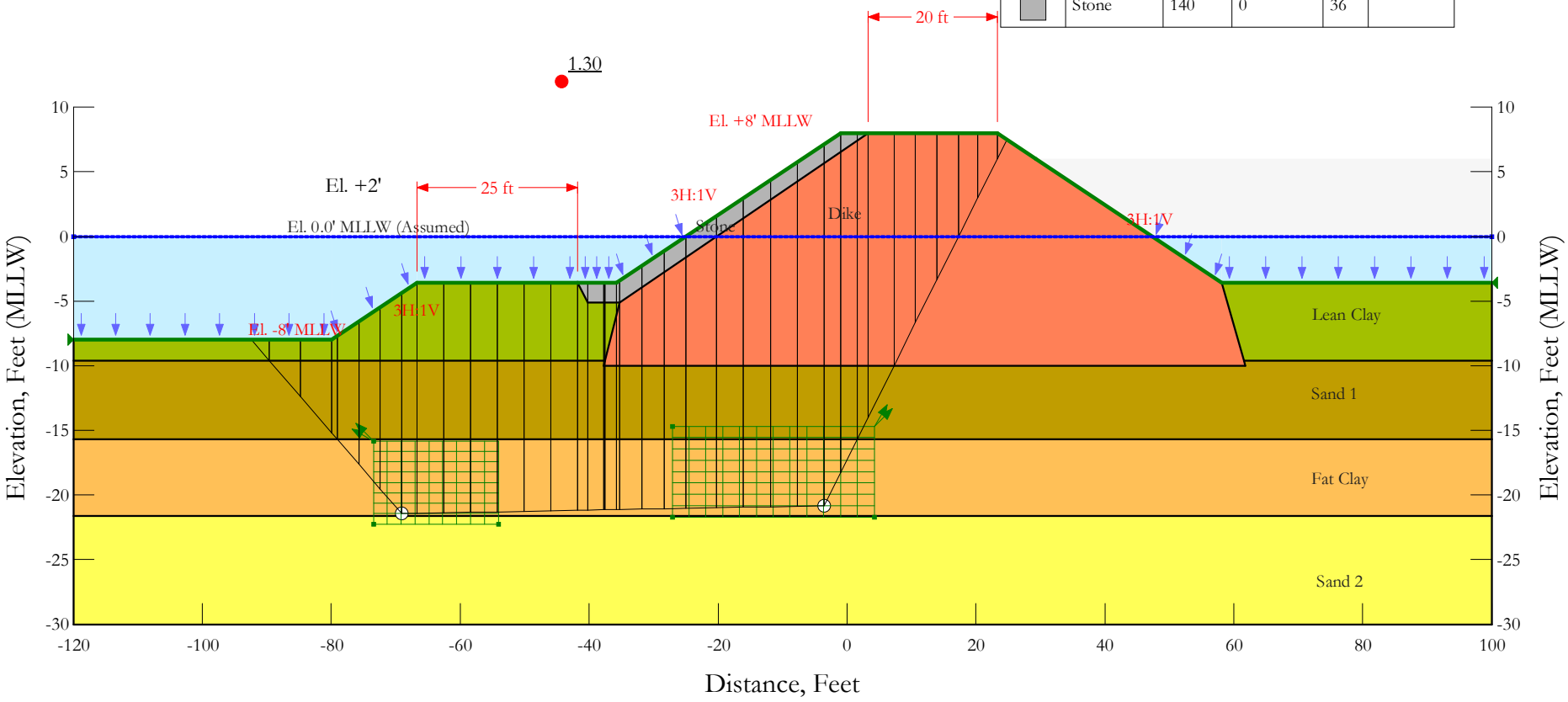

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 140 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 30+00**
**Boring ECP-1047**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

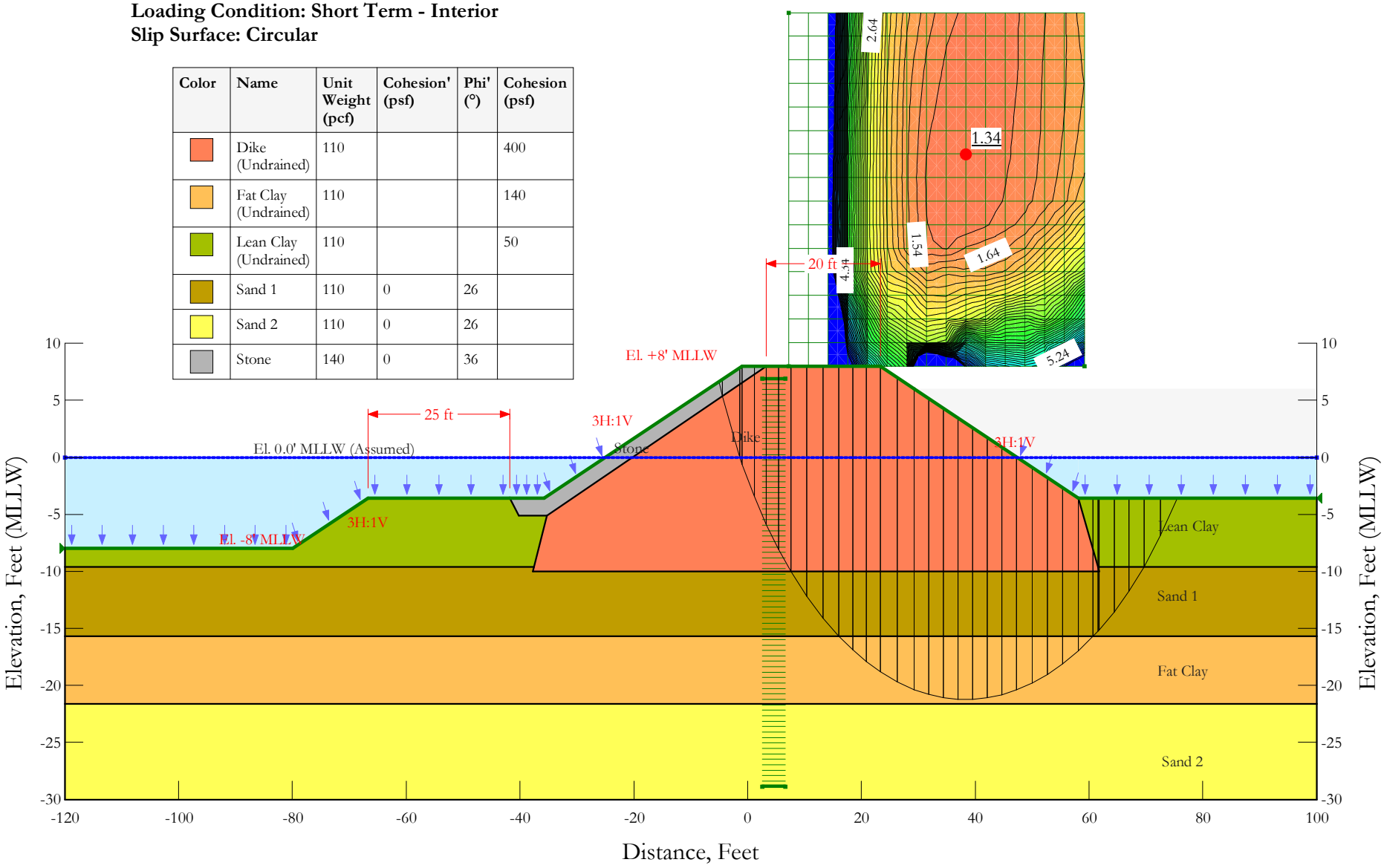
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 140 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 30+00**
**Boring ECP-1047**
**HVJ Project Number: HG1910092.2.1**

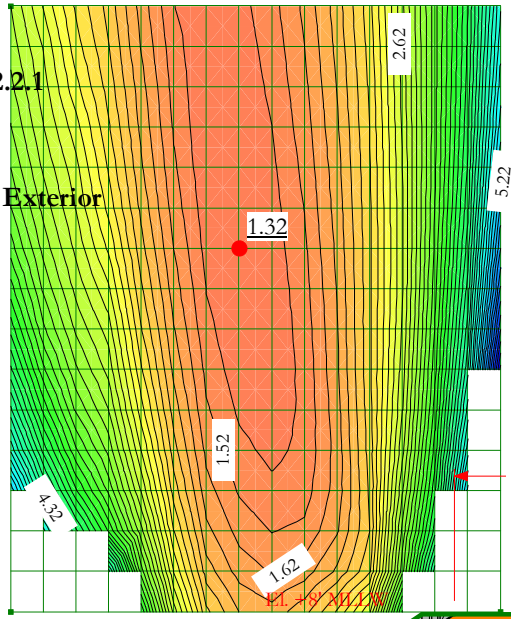
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 140 |
| | Lean Clay (Undrained) | 110 | | | 50 |
| | Sand 1 | 110 | 0 | 26 | |
| | Sand 2 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |

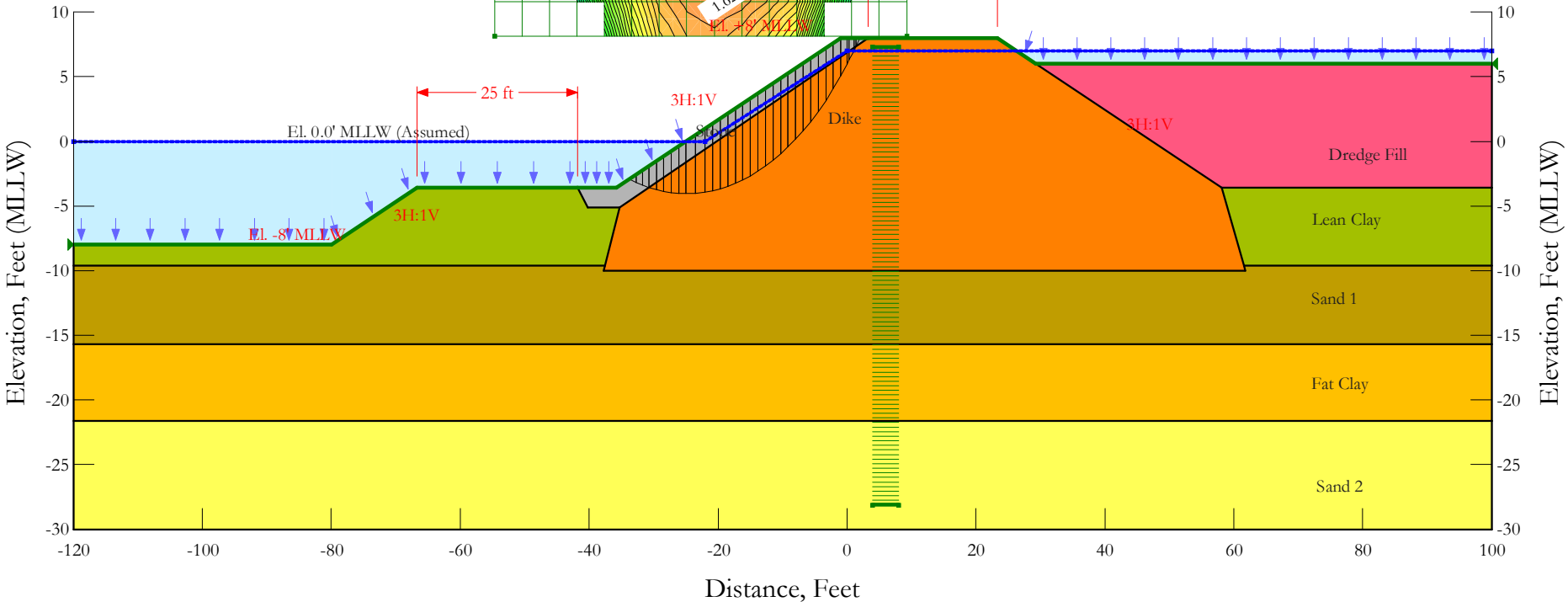


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 30+00**
**Boring ECP-1047**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**



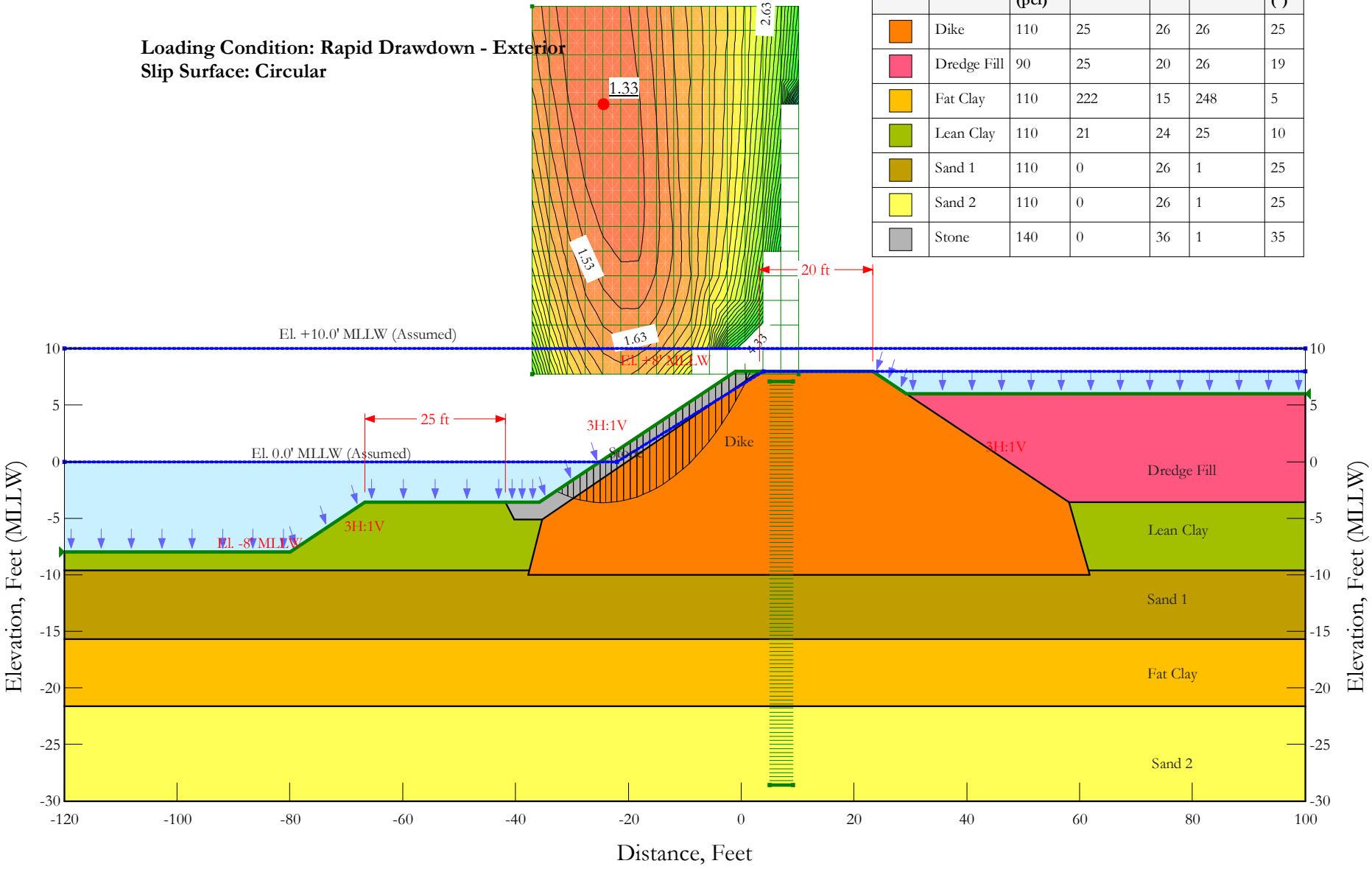

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay | 110 | 222 | 15 |
| | Lean Clay | 110 | 21 | 24 |
| | Sand 1 | 110 | 0 | 26 |
| | Sand 2 | 110 | 0 | 26 |
| | Stone | 140 | 0 | 36 |



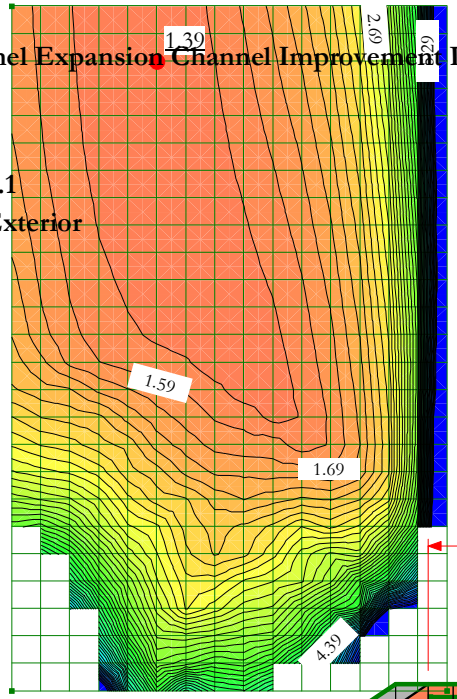
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 30+00**
**Boring ECP-1047**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**

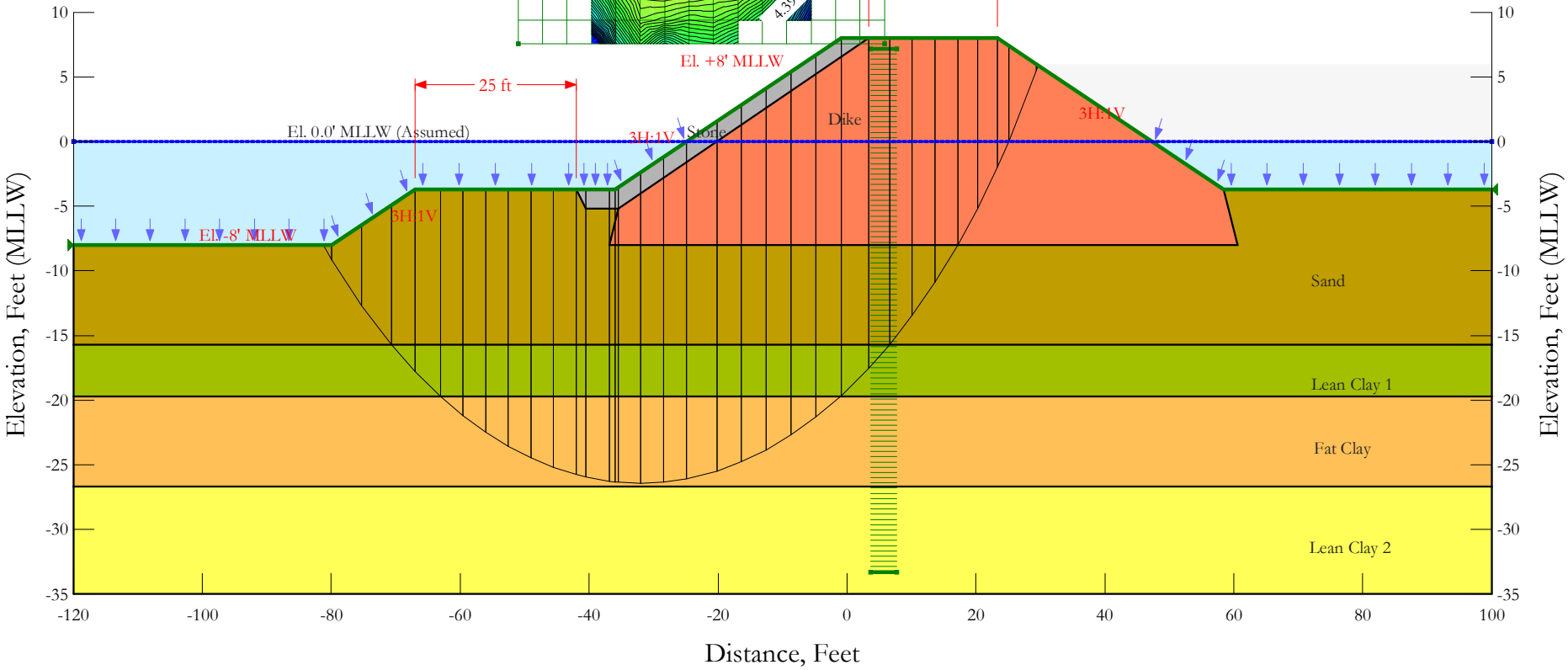
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Fat Clay | 110 | 222 | 15 | 248 | 5 |
| | Lean Clay | 110 | 21 | 24 | 25 | 10 |
| | Sand 1 | 110 | 0 | 26 | 1 | 25 |
| | Sand 2 | 110 | 0 | 26 | 1 | 25 |
| | Stone | 140 | 0 | 36 | 1 | 35 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 40+00**
**Boring ECP-1046**
**HVJ Project Number: HG1910092.2.1**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**



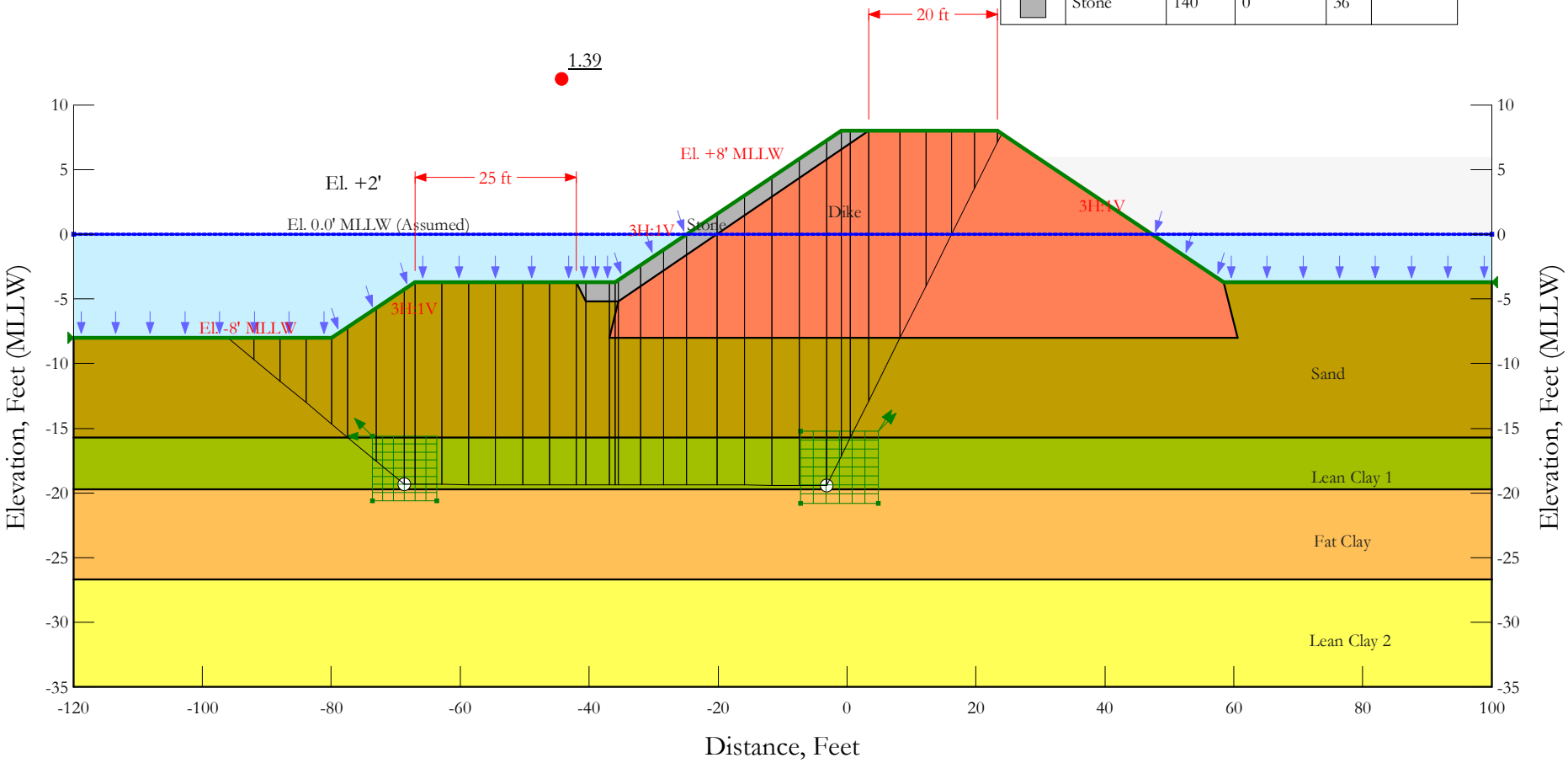

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 200 |
| | Lean Clay 1 (Undrained) | 110 | | | 140 |
| | Lean Clay 2 (Undrained) | 110 | | | 750 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 40+00**
**Boring ECP-1046**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

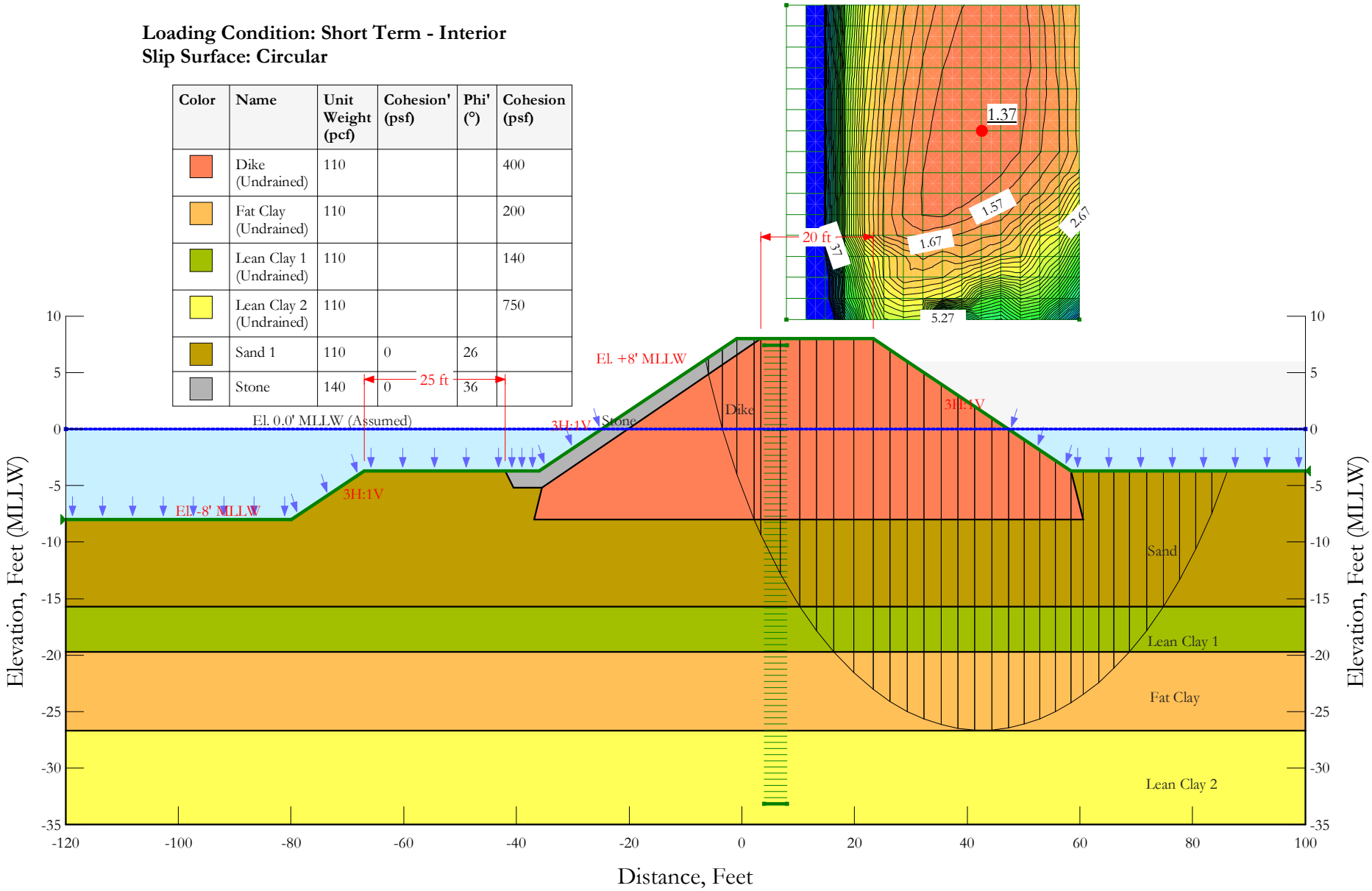
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 200 |
| | Lean Clay 1 (Undrained) | 110 | | | 140 |
| | Lean Clay 2 (Undrained) | 110 | | | 750 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 40+00**
**Boring ECP-1046**
**HVJ Project Number: HG1910092.2.1**

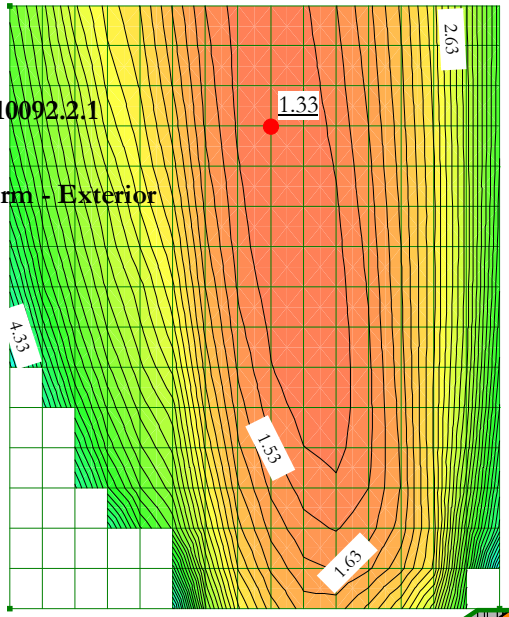
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 200 |
| | Lean Clay 1 (Undrained) | 110 | | | 140 |
| | Lean Clay 2 (Undrained) | 110 | | | 750 |
| | Sand 1 | 110 | 0 | 26 | |
| | Stone | 140 | 0 | 36 | |

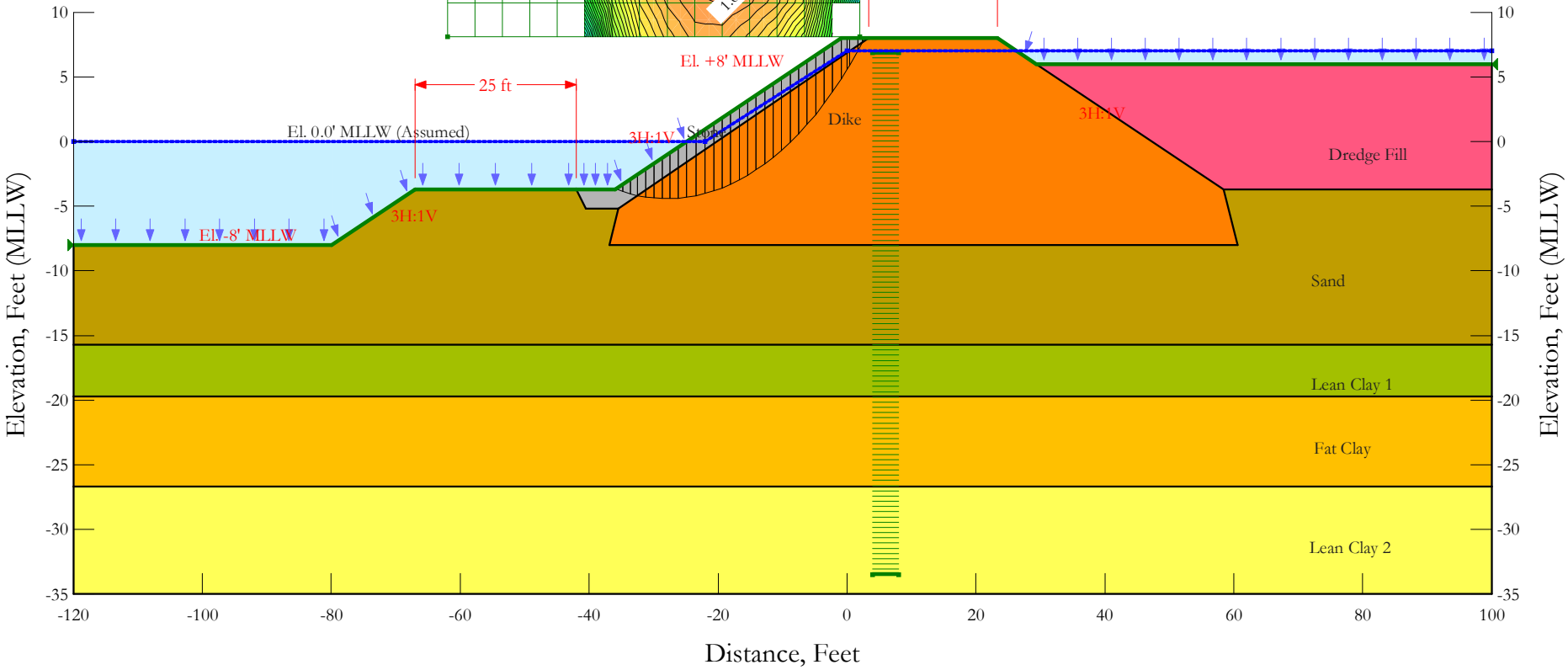


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 40+00**
**Boring ECP-1046**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**



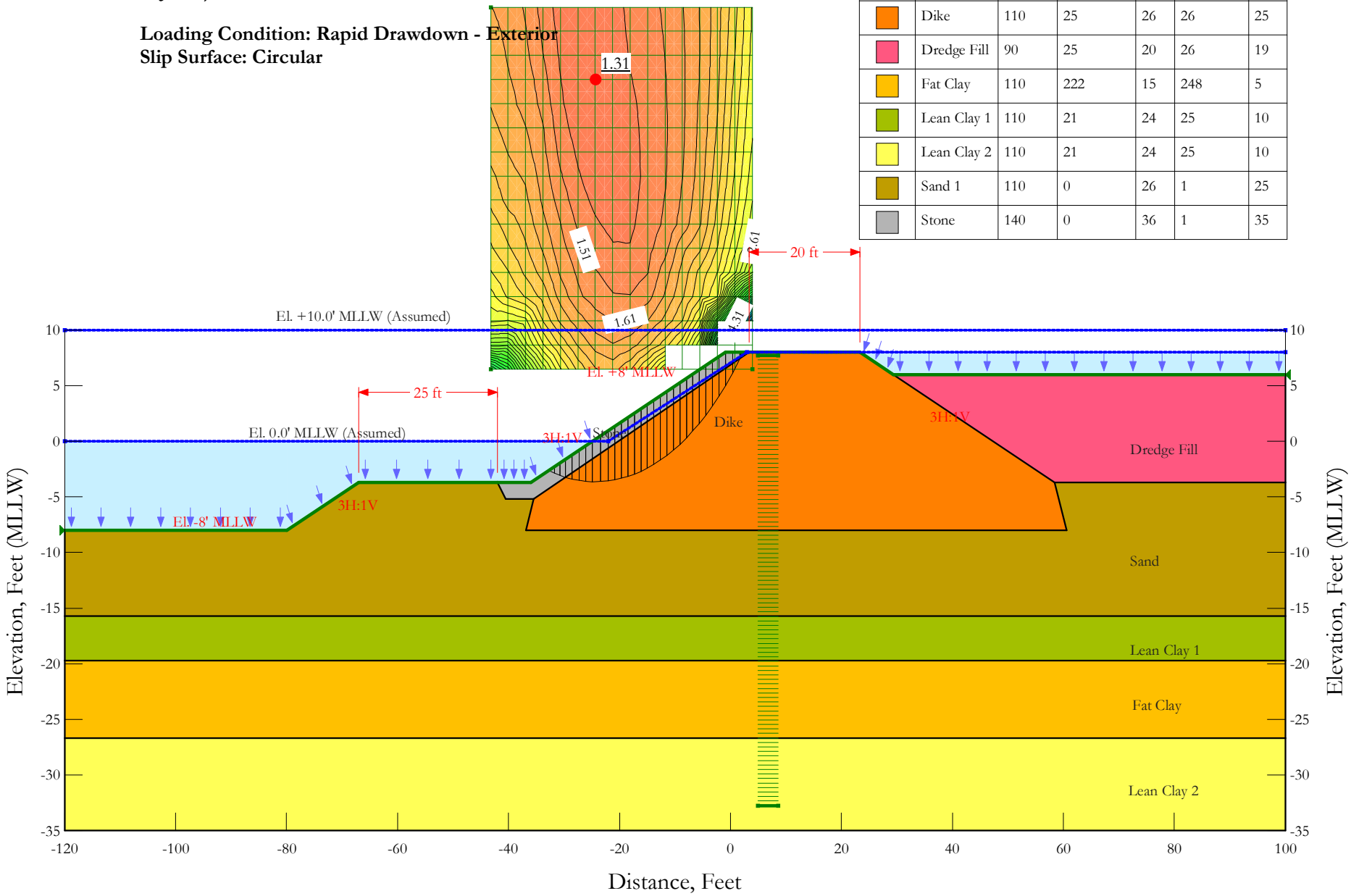

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay | 110 | 222 | 15 |
| | Lean Clay 1 | 110 | 21 | 24 |
| | Lean Clay 2 | 110 | 21 | 24 |
| | Sand 1 | 110 | 0 | 26 |
| | Stone | 140 | 0 | 36 |



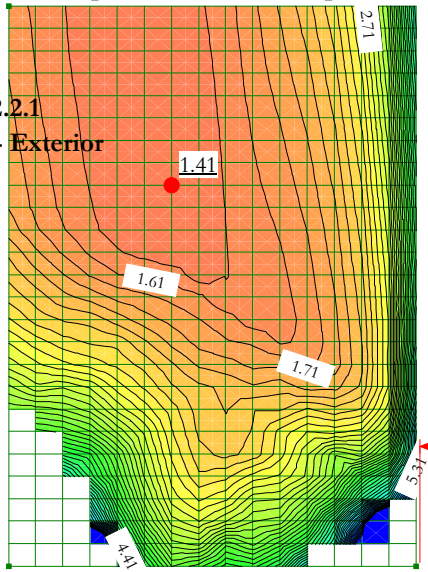
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 40+00**
**Boring ECP-1046**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**

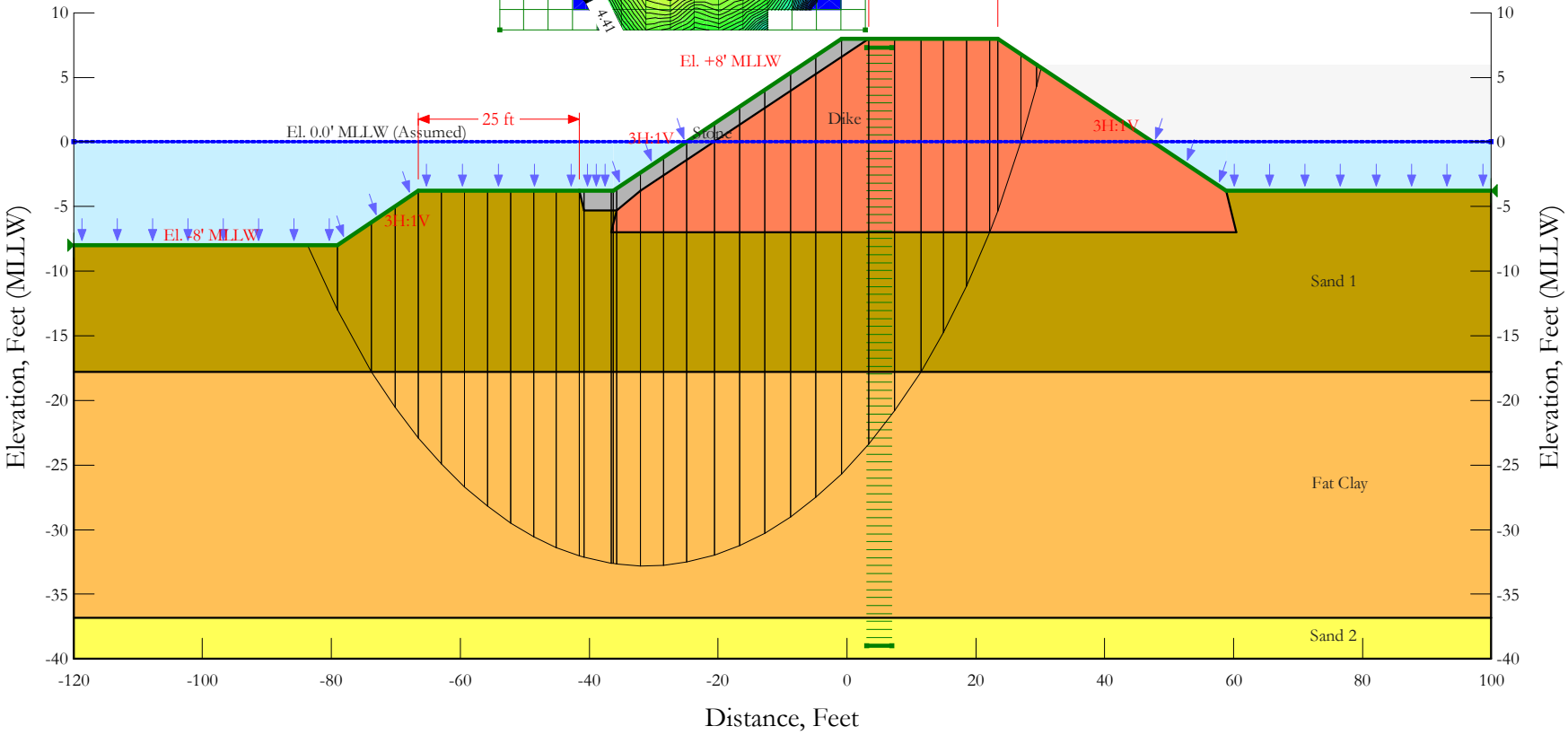
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Fat Clay | 110 | 222 | 15 | 248 | 5 |
| | Lean Clay 1 | 110 | 21 | 24 | 25 | 10 |
| | Lean Clay 2 | 110 | 21 | 24 | 25 | 10 |
| | Sand 1 | 110 | 0 | 26 | 1 | 25 |
| | Stone | 140 | 0 | 36 | 1 | 35 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 60+00**
**Boring ECP-1044**
**HVJ Project Number: HG1910092.2.1**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**



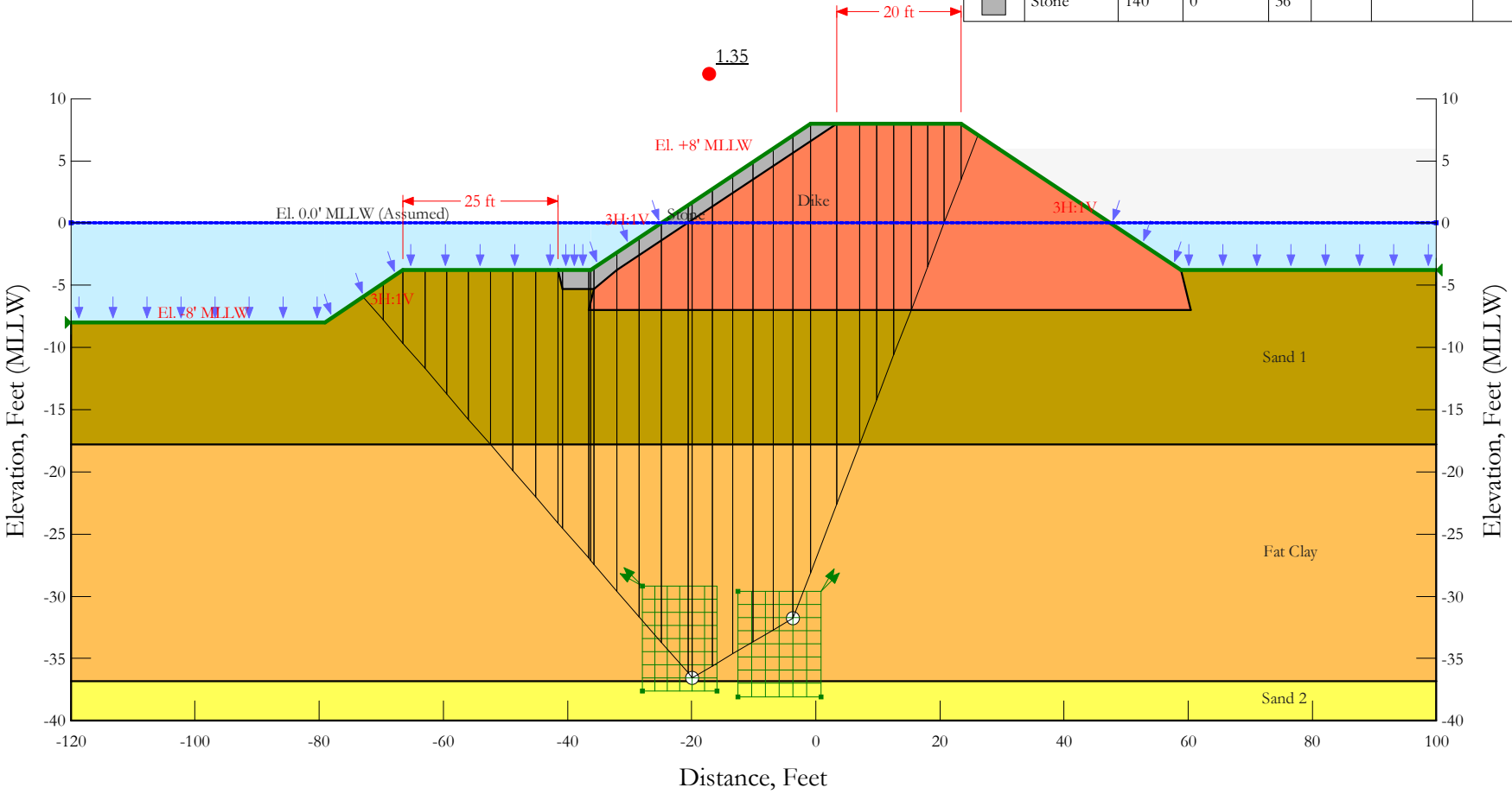

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | C-Top of Layer (psf) | C-Rate of Change ((lbf/ft²)/ft) | C-Maximum (psf) | Cohesion (psf) |
|---|---|---|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 145 | 8 | 300 | |
| | Sand 1 | 110 | 0 | 26 | | | | |
| | Sand 2 | 110 | 0 | 28 | | | | |
| | Stone | 140 | 0 | 36 | | | | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 60+00**
**Boring ECP-1044**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

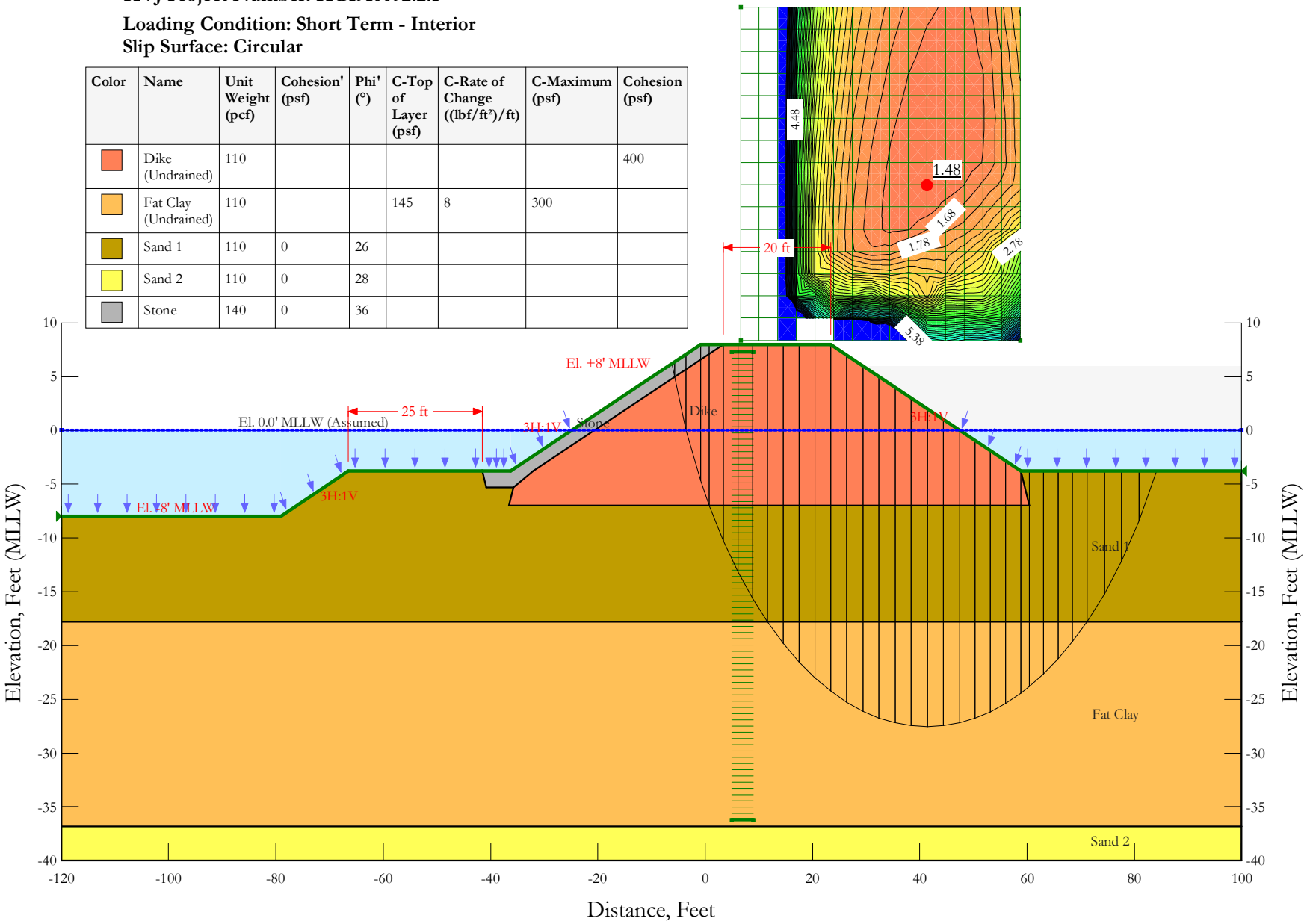
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | C-Top of Layer (psf) | C-Rate of Change ((lbf/ft²)/ft) | C-Maximum (psf) | Cohesion (psf) |
|---|---|---|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 145 | 8 | 300 | |
| | Sand 1 | 110 | 0 | 26 | | | | |
| | Sand 2 | 110 | 0 | 28 | | | | |
| | Stone | 140 | 0 | 36 | | | | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 60+00**
**Boring ECP-1044**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

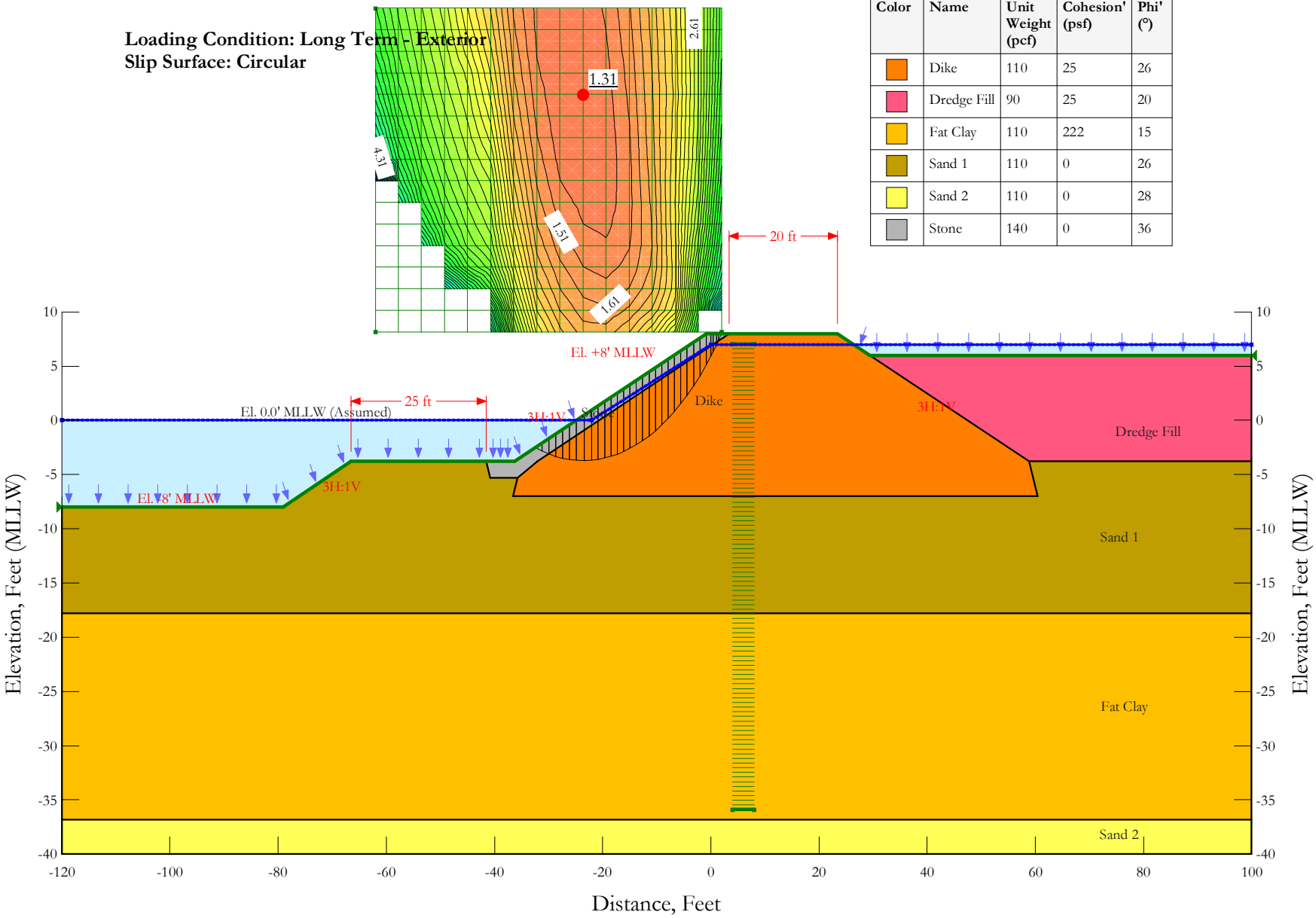
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | C-Top of Layer (psf) | C-Rate of Change ((lbf/ft²)/ft) | C-Maximum (psf) | Cohesion (psf) |
|---|---|---|---|---|---|---|---|---|
| | Dike (Undrained) | 110 | | | | | | 400 |
| | Fat Clay (Undrained) | 110 | | | 145 | 8 | 300 | |
| | Sand 1 | 110 | 0 | 26 | | | | |
| | Sand 2 | 110 | 0 | 28 | | | | |
| | Stone | 140 | 0 | 36 | | | | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 60+00**
**Boring ECP-1044**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**

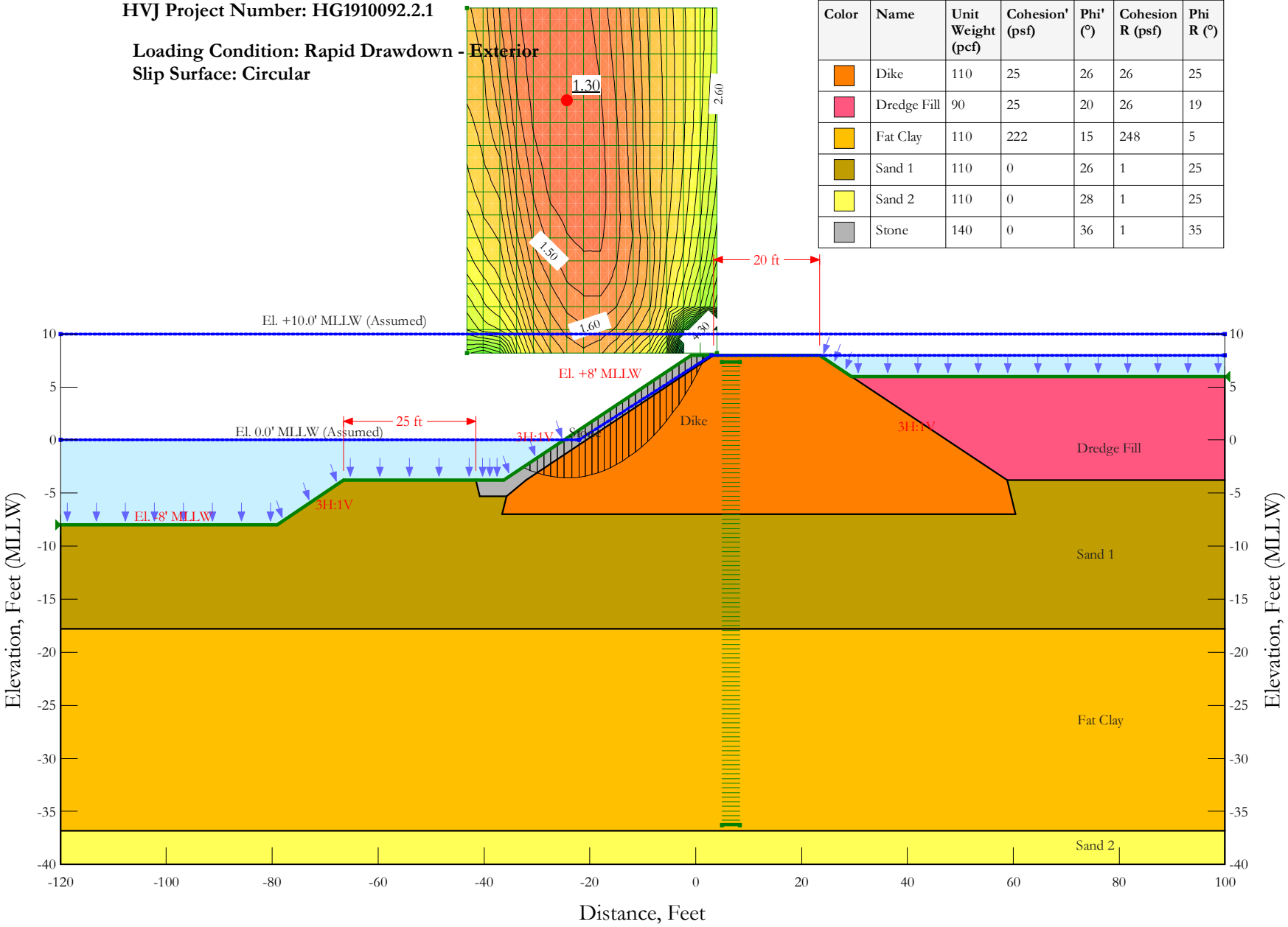
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 110 | 25 | 26 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay | 110 | 222 | 15 |
| | Sand 1 | 110 | 0 | 26 |
| | Sand 2 | 110 | 0 | 28 |
| | Stone | 140 | 0 | 36 |



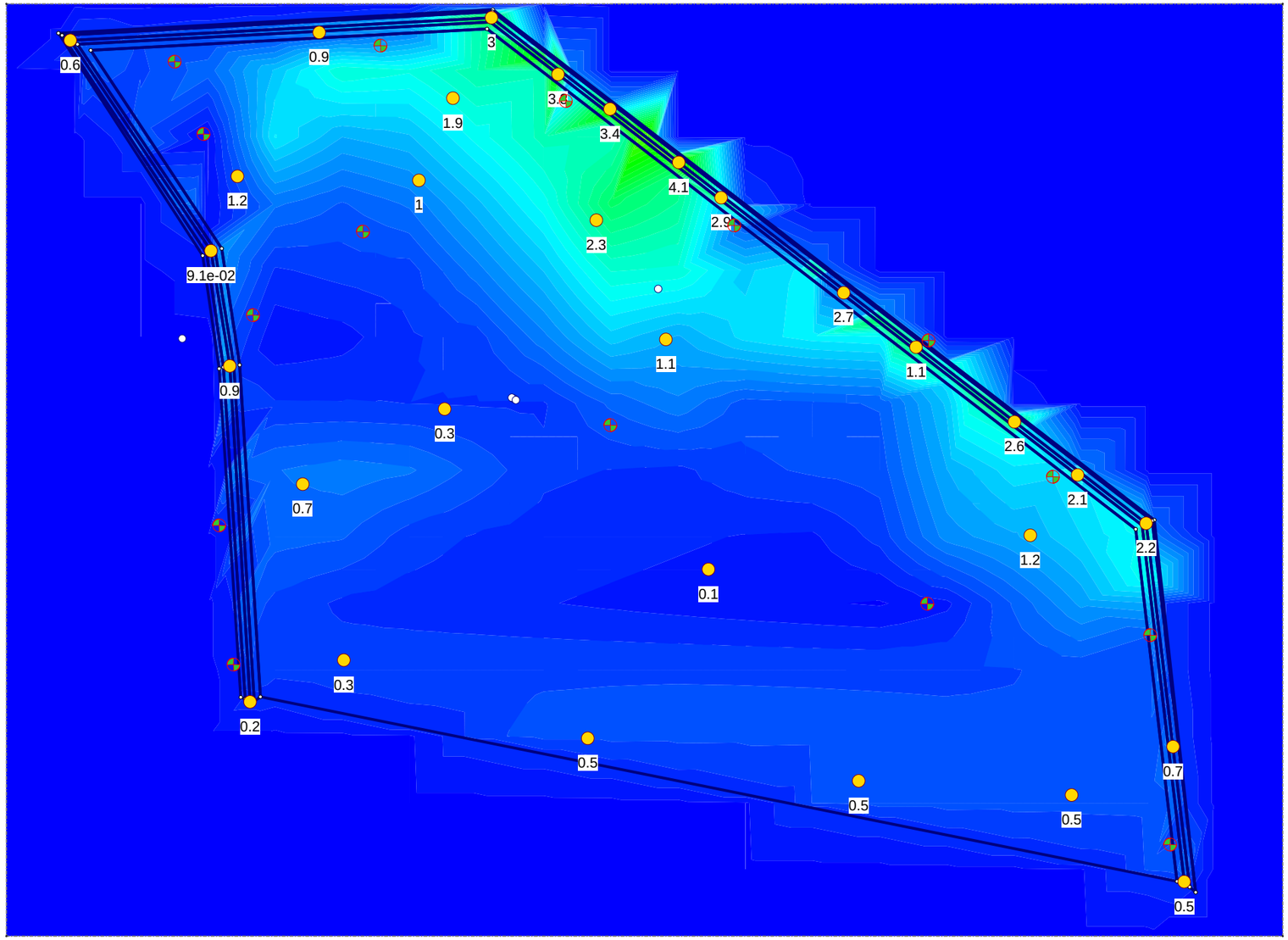
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: Cell M12**
**M12 Baseline A Sta. 60+00**
**Boring ECP-1044**
**HVJ Project Number: HG1910092.2.1**

**Loading Condition: Rapid Drawdown - Exterior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) | Cohesion R (psf) | Phi R (°) |
|---|---|---|---|---|---|---|
| | Dike | 110 | 25 | 26 | 26 | 25 |
| | Dredge Fill | 90 | 25 | 20 | 26 | 19 |
| | Fat Clay | 110 | 222 | 15 | 248 | 5 |
| | Sand 1 | 110 | 0 | 26 | 1 | 25 |
| | Sand 2 | 110 | 0 | 28 | 1 | 25 |
| | Stone | 140 | 0 | 36 | 1 | 35 |



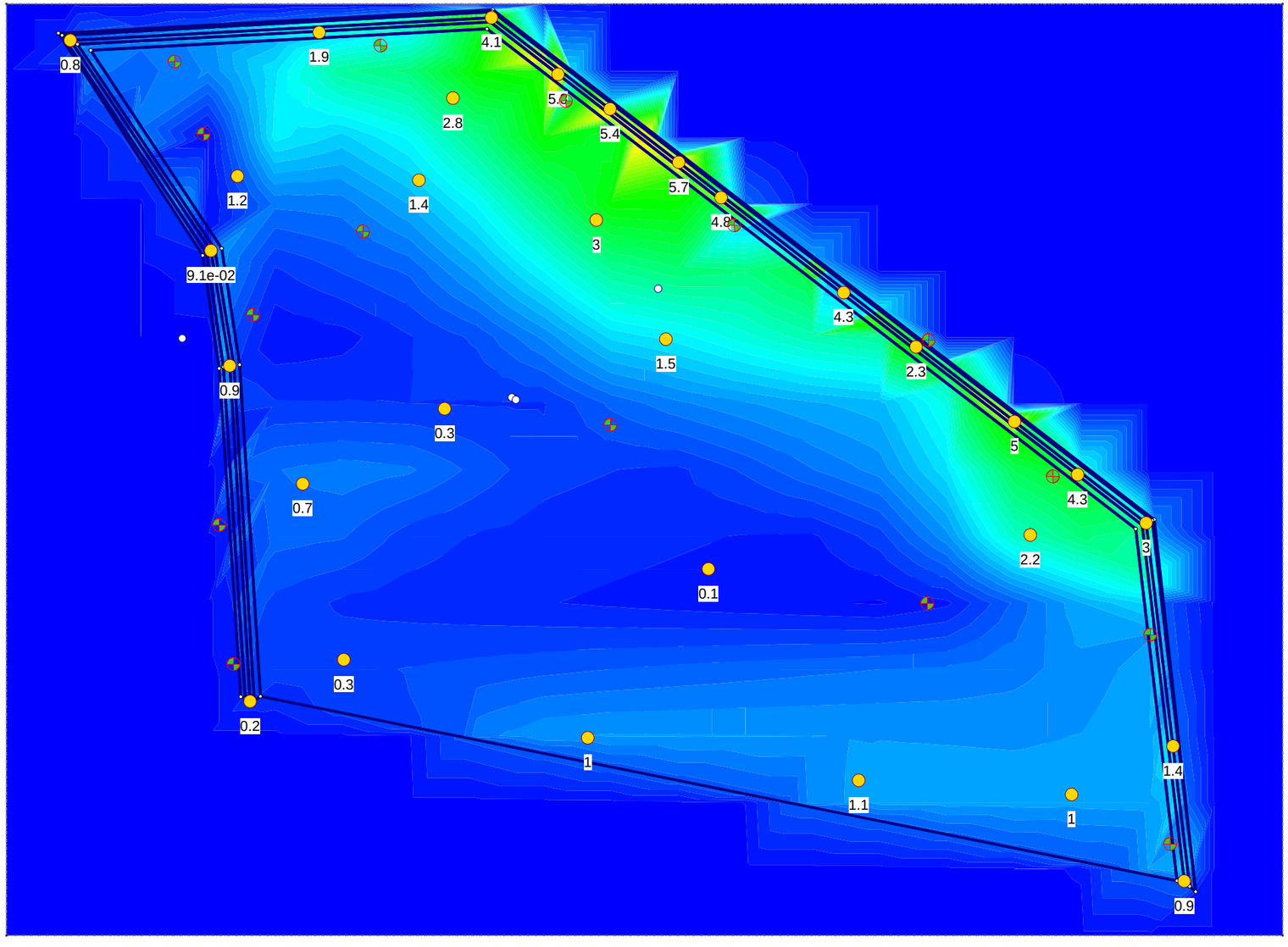
Project: Cell M12
Project No.HG1910092.1.1
Consolidation Settlement Analysis
Settlement occurred after 1 year
Proposed Fill Elevation at +8' MLLW




| | | | |
|---|---|---|---|
| HVJ ASSOCIATES | *Project* | Cell M12 | |
| | *Analysis Description* | Settlement | |
| | *Drawn By* | NK | *Company* HVJ Associates, Inc. |
| | *Date* | 1/31/2020, 4:34:32 PM | *File Name* Cell M12.s3z |

SETTLE3 5.006

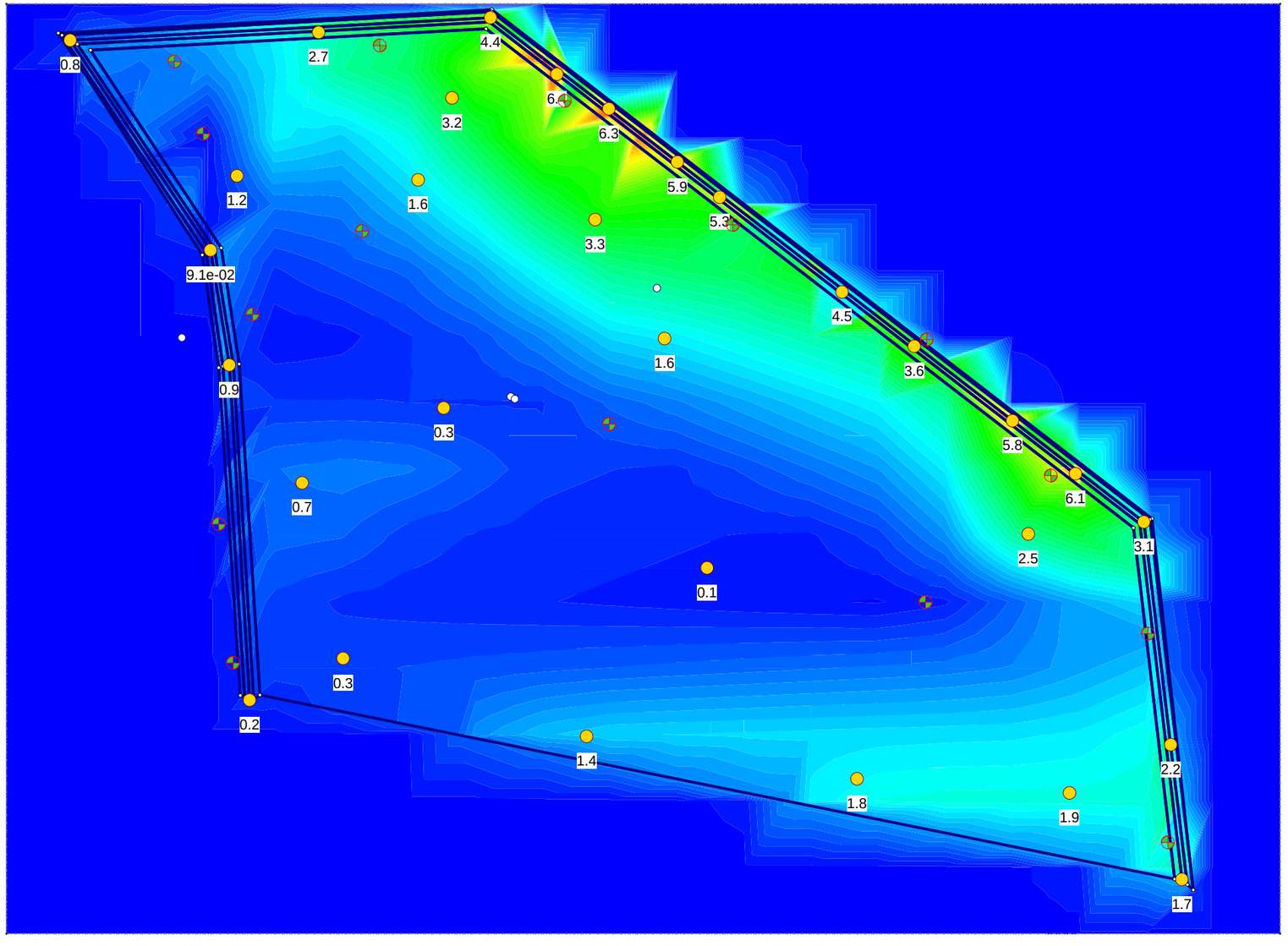
Project: Cell M12
Project No.HG1910092.1.1
Consolidation Settlement Analysis
Settlement occurred after 5 years
Proposed Fill Elevation at +8' MLLW




| | | | |
|---|---|---|---|
| HVJ ASSOCIATES | *Project* | Cell M12 | |
| | *Analysis Description* | Settlement | |
| | *Drawn By* | NK | *Company* HVJ Associates, Inc. |
| | *Date* | 1/31/2020, 4:34:32 PM | *File Name* Cell M12.s3z |

SETTLE3 5.006

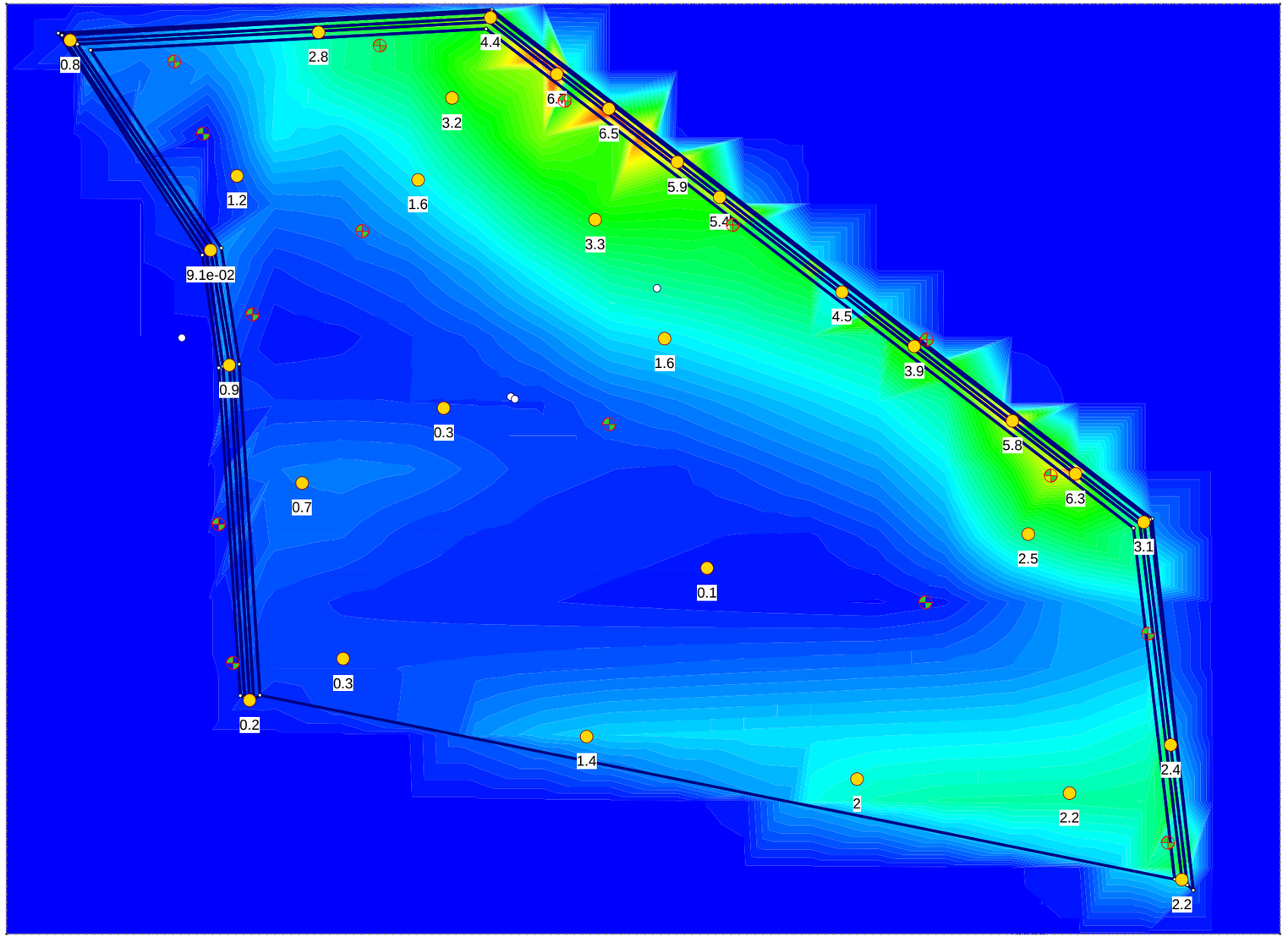
Project: Cell M12
Project No.HG1910092.1.1
Consolidation Settlement Analysis
Settlement occurred after 20 years
Proposed Fill Elevation at +8' MLLW




| | | | |
|---|---|---|---|
| HVJ ASSOCIATES | *Project* | Cell M12 | |
| | *Analysis Description* | Settlement | |
| | *Drawn By* | NK | *Company* HVJ Associates, Inc. |
| | *Date* | 1/31/2020, 4:34:32 PM | *File Name* Cell M12.s3z |

SETTLE3 5.006

Project: Cell M12
Project No.HG1910092.1.1
Consolidation Settlement Analysis
Settlement occurred after 50 years
Proposed Fill Elevation at +8' MLLW




| | | | |
|---|---|---|---|
| HVJ ASSOCIATES | *Project* | Cell M12 | |
| | *Analysis Description* | Settlement | |
| | *Drawn By* NK | *Company* | HVJ Associates, Inc. |
| | *Date* 1/31/2020, 4:34:32 PM | *File Name* | Cell M12.s3z |

SETTLE3 5.006

# Settle3 Analysis Information
# Cell M12

## Project Settings

| | |
|---|---|
| Document Name | Cell M12 |
| Project Title | Cell M12 |
| Analysis | Settlement |
| Author | NK |
| Company | HVJ Associates, Inc. |
| Date Created | 1/31/2020, 4:34:32 PM |
| Stress Computation Method | Boussinesq |
| Time-dependent Consolidation Analysis | |
| Time Units | years |
| Permeability Units | feet/year |
| Minimum settlement ratio for subgrade modulus | 0.9 |

Use average properties to calculate layered stresses

Improve consolidation accuracy

Ignore negative effective stresses in settlement calculations

## Stage Settings

| Stage # | Name | Time [years] |
|---|---|---|
| 1 | Stage 1 | 0 |
| 2 | Stage 2 | 1 |
| 3 | Stage 3 | 5 |
| 4 | Stage 4 | 20 |
| 5 | Stage 5 | 50 |

## Loads

### 1. Polygonal Load: "Middle Load"

| | |
|---|---|
| Label | Middle Load |
| Load Type | Flexible |
| Area of Load | 227868 $ft^2$ |
| Depth | 9.6 ft |
| Installation Stage | Stage 1 = 0 y |

**Coordinates and Load**

| X [ft] | Y [ft] | Load Magnitude [ksf] |
|---|---|---|
| -24.482 | -70.738 | 0.47 |
| -4.29 | -67.754 | 0.47 |
| -105.224 | 1573.42 | 0.45 |
| -196.606 | 2135.37 | 0.45 |
| -866.357 | 3133.85 | 0.48 |
| 1146.05 | 3242.74 | 0.52 |
| 4323.64 | 790.278 | 0.51 |
| 4529.19 | -947.162 | 0.49 |
| 4554.64 | -971.817 | 0.49 |
| 4342.95 | 799.6 | 0.51 |
| 1152.2 | 3264.05 | 0.52 |
| -901.084 | 3153.25 | 0.48 |
| -215.874 | 2127.37 | 0.45 |
| -123.934 | 1566.52 | 0.45 |

## 2. Polygonal Load: "Polygonal Load 1"

| | |
|---|---|
| Label | Polygonal Load 1 |
| Load Type | Flexible |
| Area of Load | 371820 $ft^2$ |
| Depth | 9.6 ft |
| Installation Stage | Stage 1 = 0 y |

### Coordinates and Load

| X [ft] | Y [ft] | Load Magnitude [ksf] |
|---|---|---|
| 25.143 | -44.964 | 0.31 |
| -75.17 | 1571.73 | 0.31 |
| -163.612 | 2139.14 | 0.31 |
| -801.8 | 3104.77 | 0.31 |
| 1130.44 | 3209.18 | 0.31 |
| 4291.94 | 771.46 | 0.31 |
| 4493.82 | -944.639 | 0.31 |
| 4529.19 | -947.162 | 0.49 |
| 4323.64 | 790.278 | 0.52 |
| 1146.05 | 3242.74 | 0.52 |
| -866.357 | 3133.85 | 0.48 |
| -196.606 | 2135.37 | 0.45 |
| -105.224 | 1573.42 | 0.45 |
| -4.29 | -67.754 | 0.47 |

## 3. Polygonal Load: "Polygonal Load 4"

| | |
|---|---|
| Label | Polygonal Load 4 |
| Load Type | Flexible |
| Area of Load | 73061 $ft^2$ |
| Depth | 9.6 ft |
| Installation Stage | Stage 1 = 0 y |

### Coordinates and Load

| X [ft] | Y [ft] | Load Magnitude [ksf] |
|---|---|---|
| 4382.91 | 816.648 | 0.02 |
| 1158.51 | 3303.52 | 0.06 |
| -959.032 | 3188.61 | 0.02 |
| -941.136 | 3177.96 | 0.24 |
| 1155.99 | 3292.93 | 0.49 |
| 4372.35 | 812.61 | 0.5 |
| 4584.72 | -998.057 | 0 |

### 4. Polygonal Load: "Polygonal Load 3"

| | |
|---|---|
| Label | Polygonal Load 3 |
| Load Type | Flexible |
| Area of Load | 305597 $ft^2$ |
| Depth | 9.6 ft |
| Installation Stage | Stage 1 = 0 y |

**Coordinates and Load**

| X [ft] | Y [ft] | Load Magnitude [ksf] |
|---|---|---|
| -24.482 | -70.738 | 0.47 |
| -123.934 | 1566.52 | 0.45 |
| -215.874 | 2127.37 | 0.45 |
| -901.084 | 3153.25 | 0.48 |
| 1152.2 | 3264.05 | 0.53 |
| 4342.95 | 799.6 | 0.51 |
| 4554.64 | -971.817 | 0.2 |
| 4584.72 | -998.057 | 0.49 |
| 4372.35 | 812.61 | 0.49 |
| 1155.99 | 3292.93 | 0.49 |
| -941.136 | 3177.96 | 0.47 |
| -236.582 | 2113.91 | 0.45 |
| -155.334 | 1561.25 | 0.45 |
| -48.77 | -55.825 | 0.45 |

### 5. Polygonal Load: "Polygonal Load 5"

| | |
|---|---|
| Label | Polygonal Load 5 |
| Load Type | Flexible |
| Area of Load | 65962.3 $ft^2$ |
| Depth | 9.6 ft |
| Installation Stage | Stage 1 = 0 y |

**Coordinates and Load**

| X [ft] | Y [ft] | Load Magnitude [ksf] |
|---|---|---|
| -941.136 | 3177.96 | 0.24 |
| -959.032 | 3188.61 | 0.02 |
| -256.272 | 2104.96 | 0.04 |
| -176.19 | 1554.01 | 0.04 |
| -70.926 | -47.303 | 0.04 |
| -48.77 | -55.825 | 0.47 |
| -155.334 | 1561.25 | 0.45 |
| -236.582 | 2113.91 | 0.45 |

### 6. Polygonal Load: "Polygonal Load 6"

| | |
|---|---|
| Label | Polygonal Load 6 |
| Load Type | Flexible |
| Area of Load | 1.26721e+07 $ft^2$ |
| Depth | 5.64 ft |
| Installation Stage | Stage 1 = 0 y |

**Coordinates and Load**

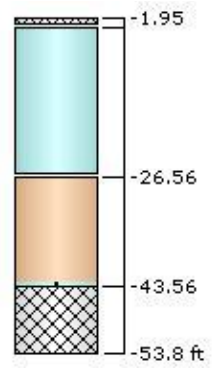
| X [ft] | Y [ft] | Load Magnitude [ksf] |
|---|---|---|
| 25.143 | -44.964 | 0.31 |
| 4493.82 | -944.639 | 0.31 |
| 4291.94 | 771.46 | 0.31 |
| 1130.44 | 3209.18 | 0.31 |
| -801.8 | 3104.77 | 0.31 |
| -163.612 | 2139.14 | 0.31 |
| -75.17 | 1571.73 | 0.31 |

## *Soil Layers*

Ground Surface Drained: Yes

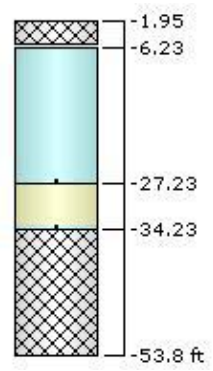
### ECP-1042: (4461.34, -766.397)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 23 | 3.56 | No |
| 2 | Fat Clay (1) | 17 | 26.56 | No |
| 3 | Fat Clay (2) | 0 | 43.56 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 43.56 | No |
| 5 | Lean Clay (1) | 0 | 43.56 | No |
| 6 | Lean Clay (2) | 0 | 43.56 | Yes |
| 7 | Fat Clay (1) | 0 | 43.56 | No |
| 8 | Lean Clay (1) | 0 | 43.56 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 43.56 | No |



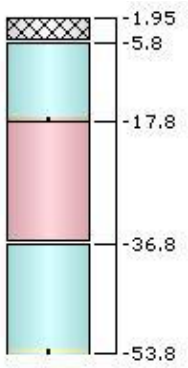

## ECP-1043: (4364.03, 254.345)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 21 | 6.23 | No |
| 2 | Fat Clay (1) | 0 | 27.23 | No |
| 3 | Fat Clay (2) | 0 | 27.23 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 27.23 | No |
| 5 | Lean Clay (1) | 7 | 27.23 | No |
| 6 | Lean Clay (2) | 0 | 34.23 | Yes |
| 7 | Fat Clay (1) | 0 | 34.23 | No |
| 8 | Lean Clay (1) | 0 | 34.23 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 34.23 | No |



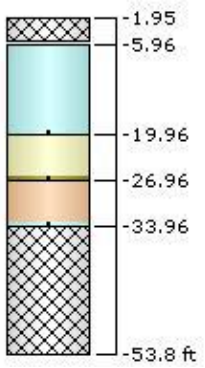

## ECP-1044: (3889.98, 1025.64)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 12 | 5.8 | No |
| 2 | Fat Clay (1) | 0 | 17.8 | No |
| 3 | Fat Clay (2) | 19 | 17.8 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 17 | 36.8 | No |
| 5 | Lean Clay (1) | 0 | 53.8 | No |
| 6 | Lean Clay (2) | 0 | 53.8 | Yes |
| 7 | Fat Clay (1) | 0 | 53.8 | No |
| 8 | Lean Clay (1) | 0 | 53.8 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 53.8 | No |



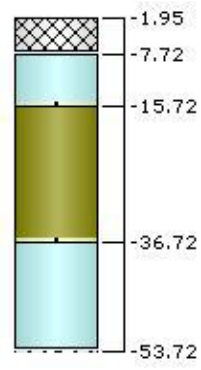

## ECP-1045: (3283.43, 1690.56)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 14 | 5.96 | No |
| 2 | Fat Clay (1) | 0 | 19.96 | No |
| 3 | Fat Clay (2) | 0 | 19.96 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 19.96 | No |
| 5 | Lean Clay (1) | 7 | 19.96 | No |
| 6 | Lean Clay (2) | 0 | 26.96 | Yes |
| 7 | Fat Clay (1) | 7 | 26.96 | No |
| 8 | Lean Clay (1) | 0 | 33.96 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 33.96 | No |



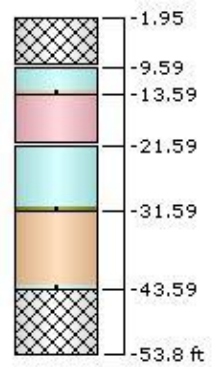

## ECP-1046: (2336.63, 2250.42)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 8 | 7.72 | No |
| 2 | Fat Clay (1) | 0 | 15.72 | No |
| 3 | Fat Clay (2) | 0 | 15.72 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 15.72 | No |
| 5 | Lean Clay (1) | 0 | 15.72 | No |
| 6 | Lean Clay (2) | 21 | 15.72 | Yes |
| 7 | Fat Clay (1) | 0 | 36.72 | No |
| 8 | Lean Clay (1) | 0 | 36.72 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 17 | 36.72 | No |



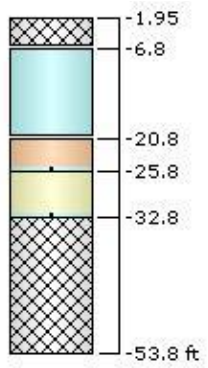

## ECP-1047: (1514.91, 2856.84)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 4 | 9.59 | No |
| 2 | Fat Clay (1) | 0 | 13.59 | No |
| 3 | Fat Clay (2) | 8 | 13.59 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 10 | 21.59 | No |
| 5 | Lean Clay (1) | 0 | 31.59 | No |
| 6 | Lean Clay (2) | 0 | 31.59 | Yes |
| 7 | Fat Clay (1) | 12 | 31.59 | No |
| 8 | Lean Clay (1) | 0 | 43.59 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 43.59 | No |



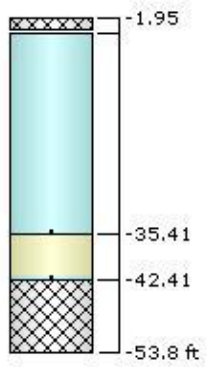

## ECP-1048: (611.575, 3126.64)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 14 | 6.8 | No |
| 2 | Fat Clay (1) | 5 | 20.8 | No |
| 3 | Fat Clay (2) | 0 | 25.8 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 25.8 | No |
| 5 | Lean Clay (1) | 7 | 25.8 | No |
| 6 | Lean Clay (2) | 0 | 32.8 | Yes |
| 7 | Fat Clay (1) | 0 | 32.8 | No |
| 8 | Lean Clay (1) | 0 | 32.8 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 32.8 | No |



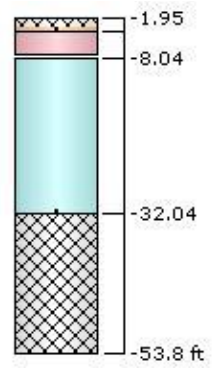

## ECP-1049: (-391.511, 3048.52)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 31 | 4.41 | No |
| 2 | Fat Clay (1) | 0 | 35.41 | No |
| 3 | Fat Clay (2) | 0 | 35.41 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 35.41 | No |
| 5 | Lean Clay (1) | 7 | 35.41 | No |
| 6 | Lean Clay (2) | 0 | 42.41 | Yes |
| 7 | Fat Clay (1) | 0 | 42.41 | No |
| 8 | Lean Clay (1) | 0 | 42.41 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 42.41 | No |



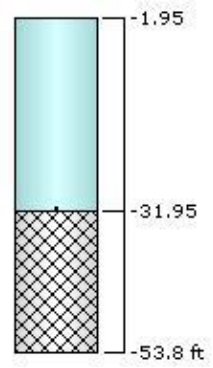

## ECP-1050: (-251.244, 2696.71)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 4.04 | No |
| 2 | Fat Clay (1) | 0 | 4.04 | No |
| 3 | Fat Clay (2) | 4 | 4.04 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 24 | 8.04 | No |
| 5 | Lean Clay (1) | 0 | 32.04 | No |
| 6 | Lean Clay (2) | 0 | 32.04 | Yes |
| 7 | Fat Clay (1) | 0 | 32.04 | No |
| 8 | Lean Clay (1) | 0 | 32.04 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 32.04 | No |



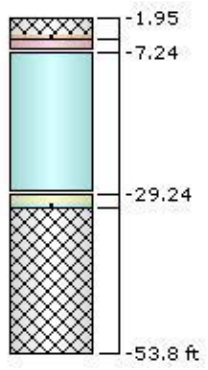

## ECP-1051: (-10.146, 1813.92)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 30 | 1.95 | No |
| 2 | Fat Clay (1) | 0 | 31.95 | No |
| 3 | Fat Clay (2) | 0 | 31.95 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 31.95 | No |
| 5 | Lean Clay (1) | 0 | 31.95 | No |
| 6 | Lean Clay (2) | 0 | 31.95 | Yes |
| 7 | Fat Clay (1) | 0 | 31.95 | No |
| 8 | Lean Clay (1) | 0 | 31.95 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 31.95 | No |



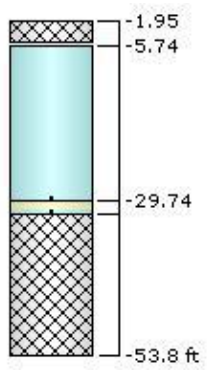

## ECP-1052: (-174.958, 789.243)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 5.24 | No |
| 2 | Fat Clay (1) | 0 | 5.24 | No |
| 3 | Fat Clay (2) | 2 | 5.24 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 22 | 7.24 | No |
| 5 | Lean Clay (1) | 2 | 29.24 | No |
| 6 | Lean Clay (2) | 0 | 31.24 | Yes |
| 7 | Fat Clay (1) | 0 | 31.24 | No |
| 8 | Lean Clay (1) | 0 | 31.24 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 31.24 | No |



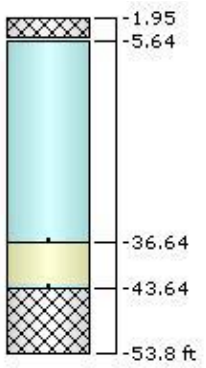

## ECP-1053: (-104.632, 111.287)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 24 | 5.74 | No |
| 2 | Fat Clay (1) | 0 | 29.74 | No |
| 3 | Fat Clay (2) | 0 | 29.74 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 29.74 | No |
| 5 | Lean Clay (1) | 2 | 29.74 | No |
| 6 | Lean Clay (2) | 0 | 31.74 | Yes |
| 7 | Fat Clay (1) | 0 | 31.74 | No |
| 8 | Lean Clay (1) | 0 | 31.74 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 31.74 | No |



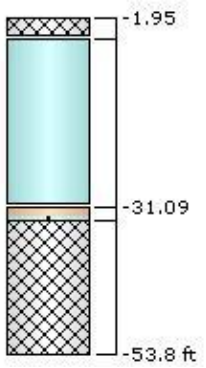

## ECP-1054: (525.968, 2220.72)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 31 | 5.64 | No |
| 2 | Fat Clay (1) | 0 | 36.64 | No |
| 3 | Fat Clay (2) | 0 | 36.64 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 36.64 | No |
| 5 | Lean Clay (1) | 7 | 36.64 | No |
| 6 | Lean Clay (2) | 0 | 43.64 | Yes |
| 7 | Fat Clay (1) | 0 | 43.64 | No |
| 8 | Lean Clay (1) | 0 | 43.64 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 43.64 | No |



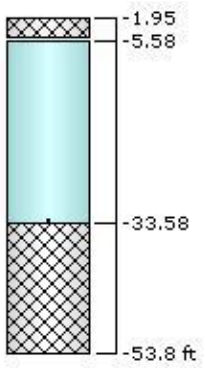

## ECP-1055: (1731.74, 1277.58)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 26 | 5.09 | No |
| 2 | Fat Clay (1) | 2 | 31.09 | No |
| 3 | Fat Clay (2) | 0 | 33.09 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 33.09 | No |
| 5 | Lean Clay (1) | 0 | 33.09 | No |
| 6 | Lean Clay (2) | 0 | 33.09 | Yes |
| 7 | Fat Clay (1) | 0 | 33.09 | No |
| 8 | Lean Clay (1) | 0 | 33.09 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 33.09 | No |




## ECP-1056: (3276.84, 407.938)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Clayey/Silty Clayey Sand/Silty Sand | 28 | 5.58 | No |
| 2 | Fat Clay (1) | 0 | 33.58 | No |
| 3 | Fat Clay (2) | 0 | 33.58 | Yes |
| 4 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 33.58 | No |
| 5 | Lean Clay (1) | 0 | 33.58 | No |
| 6 | Lean Clay (2) | 0 | 33.58 | Yes |
| 7 | Fat Clay (1) | 0 | 33.58 | No |
| 8 | Lean Clay (1) | 0 | 33.58 | No |
| 9 | Clayey/Silty Clayey Sand/Silty Sand | 0 | 33.58 | No |


-1.95
-5.58
-33.58
-53.8 ft

## Soil Properties

| Property | Lean Clay (1) | Fat Clay (1) | Clayey/Silty Clayey Sand/Silty Sand | Fat Clay (2) |
|---|---|---|---|---|
| Color | | | | |
| Unit Weight [kips/ft$^3$] | 0.12 | 0.111 | 0.12 | 0.111 |
| Saturated Unit Weight [kips/ft$^3$] | 0.12 | 0.111 | 0.12 | 0.111 |
| K0 | 1 | 1 | 1 | 1 |
| | | | | |
| Primary Consolidation | Enabled | Enabled | Disabled | Enabled |
| Material Type | Non-Linear | Non-Linear | | Non-Linear |
| Cc | 0.249 | 0.419 | - | 0.419 |
| Cr | 0.012 | 0.042 | - | 0.042 |
| e0 | 0.911 | 1.14 | - | 1.14 |
| Pc [ksf] | 0.84 | 0.64 | - | 0.64 |
| Cv [ft$^2$/y] | 9.6 | 4.1 | - | 4.1 |
| Cvr [ft$^2$/y] | 9.6 | 4.1 | - | 4.1 |
| B-bar | 1 | 1 | - | 1 |
| | | | | |
| Undrained Su A [kips/ft2] | 0 | 0 | 0 | 0 |
| Undrained Su S | 0.2 | 0.2 | 0.2 | 0.2 |
| Undrained Su m | 0.8 | 0.8 | 0.8 | 0.8 |
| Piezo Line ID | 1 | 1 | 1 | 1 |

| Property | Lean Clay (2) |
|---|---|
| Color | |
| Unit Weight [kips/ft$^3$] | 0.12 |
| Saturated Unit Weight [kips/ft$^3$] | 0.12 |
| K0 | 1 |
| | |
| Primary Consolidation | Enabled |
| Material Type | Non-Linear |
| Cc | 0.249 |
| Cr | 0.012 |
| e0 | 0.911 |
| Pc [ksf] | 0.84 |
| Cv [ft$^2$/y] | 9.6 |
| Cvr [ft$^2$/y] | 9.6 |
| B-bar | 1 |
| | |
| Undrained Su A [kips/ft2] | 0 |
| Undrained Su S | 0.2 |
| Undrained Su m | 0.8 |
| Piezo Line ID | 1 |

# Groundwater

| | |
|---|---|
| Groundwater method | Piezometric Lines |
| Water Unit Weight | 0.0624 kips/ft$^3$ |

## Piezometric Line Entities

| ID | Depth (ft) |
|---|---|
| 1 | -0 ft |

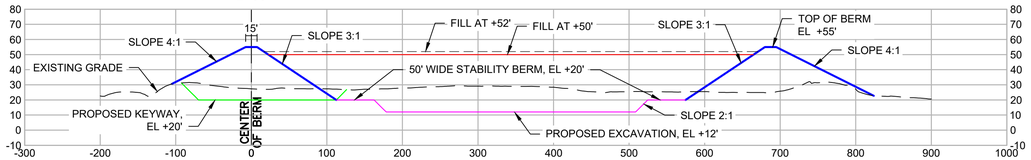
# APPENDIX F

SLOPE STABILITY AND SETTLEMENT ANALYSIS :
E2 CLINTON PA

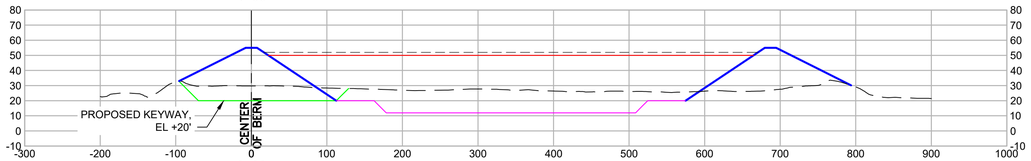

SL-233
SL-232
SL-231
SL-230
SL-229
SL-228
SL-227
SL-226
SL-225
SL-224
SL-223
SL-222
SL-221
SL-220
SL-219
SL-226
SL-242
SL-239
SL-240
SL-286
SL-288
SL-288A
30+00
28+00
26+00
24+00
22+00
20+00
18+00
16+00
14+00
12+00
10+00
8+00
6+00
4+00
2+00
80+00
78+00
73+50
65+50
32+50
PROPERTY LINE
PROPERTY LINE
PROPERTY LINE
WIRE FENCE
WIRE FENCE
ROAD FRONT FOR PROPOSED
N

SCALE
HORIZONTAL: 1"=100'
VERTICAL: 1"=50'

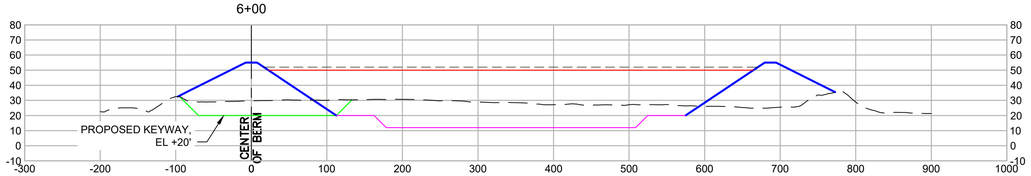
2+00



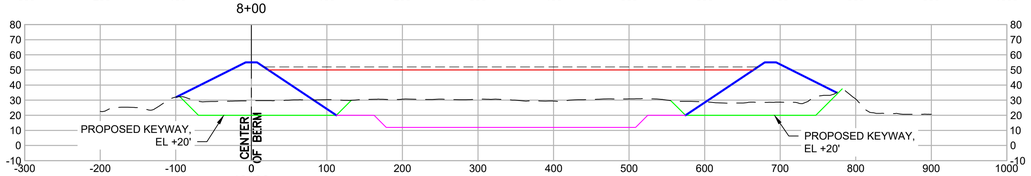

4+00



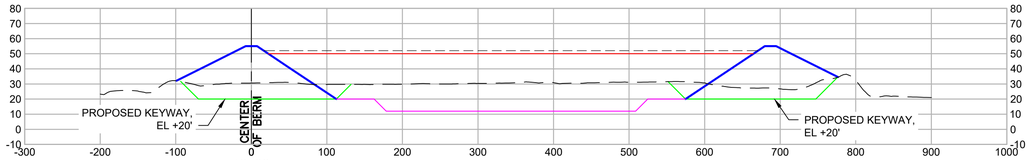

6+00



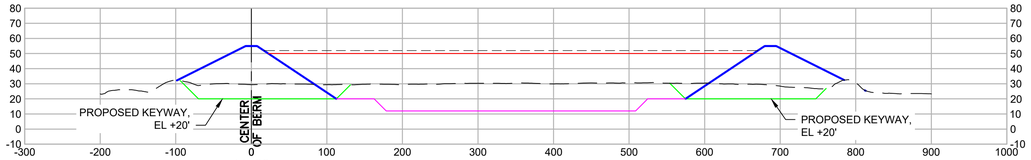

8+00



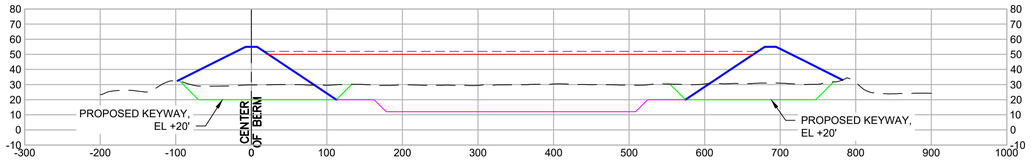

10+00



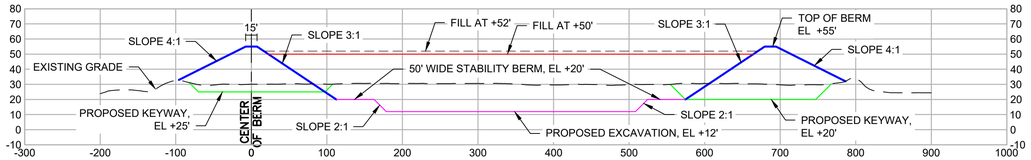

12+00



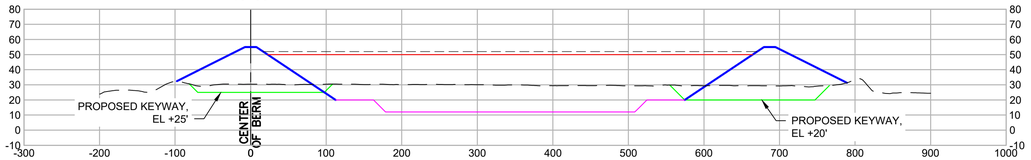

14+00



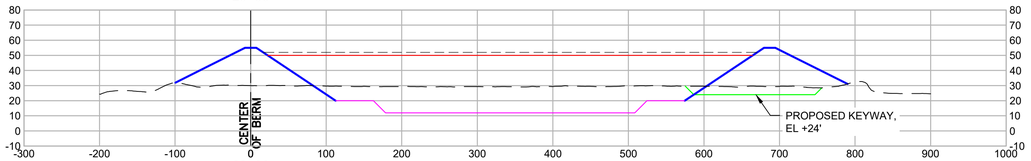

16+00



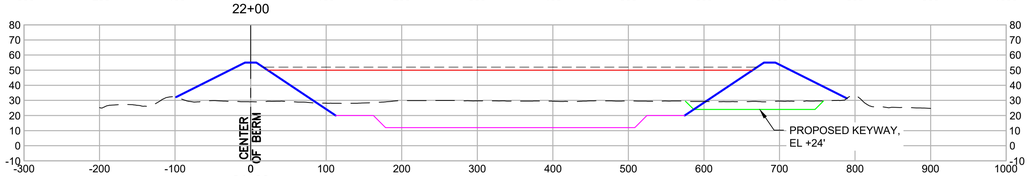

18+00



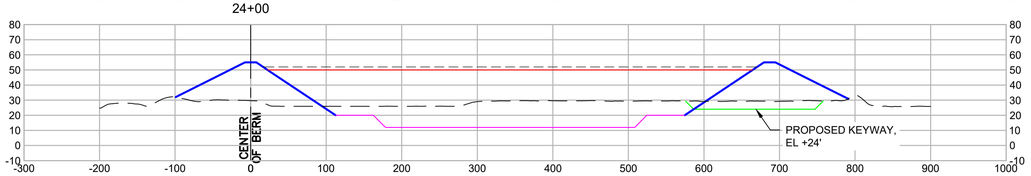

20+00



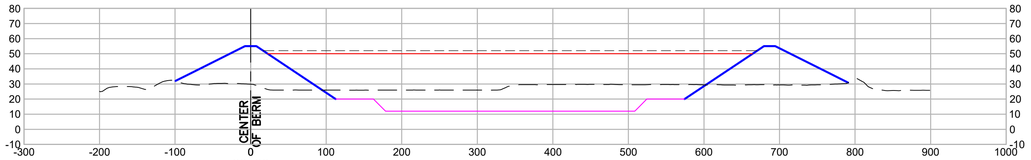

22+00



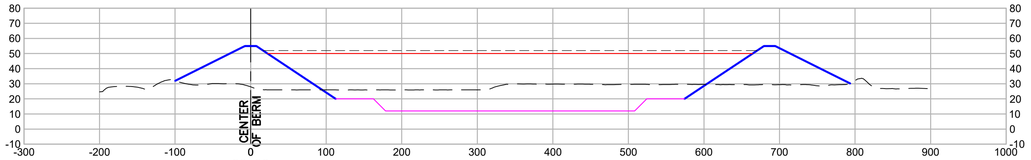

24+00



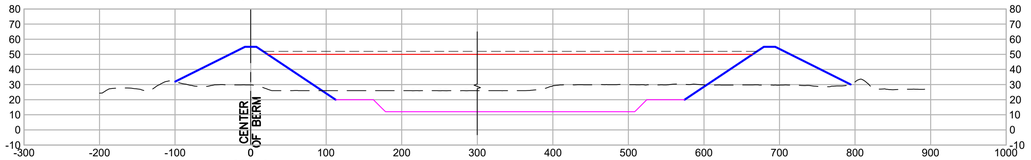

26+00



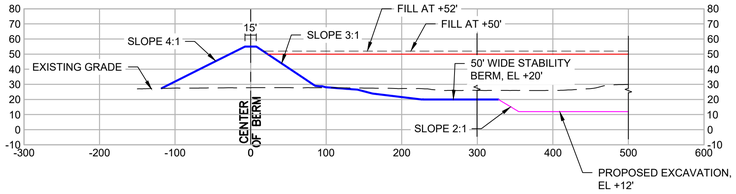

28+00



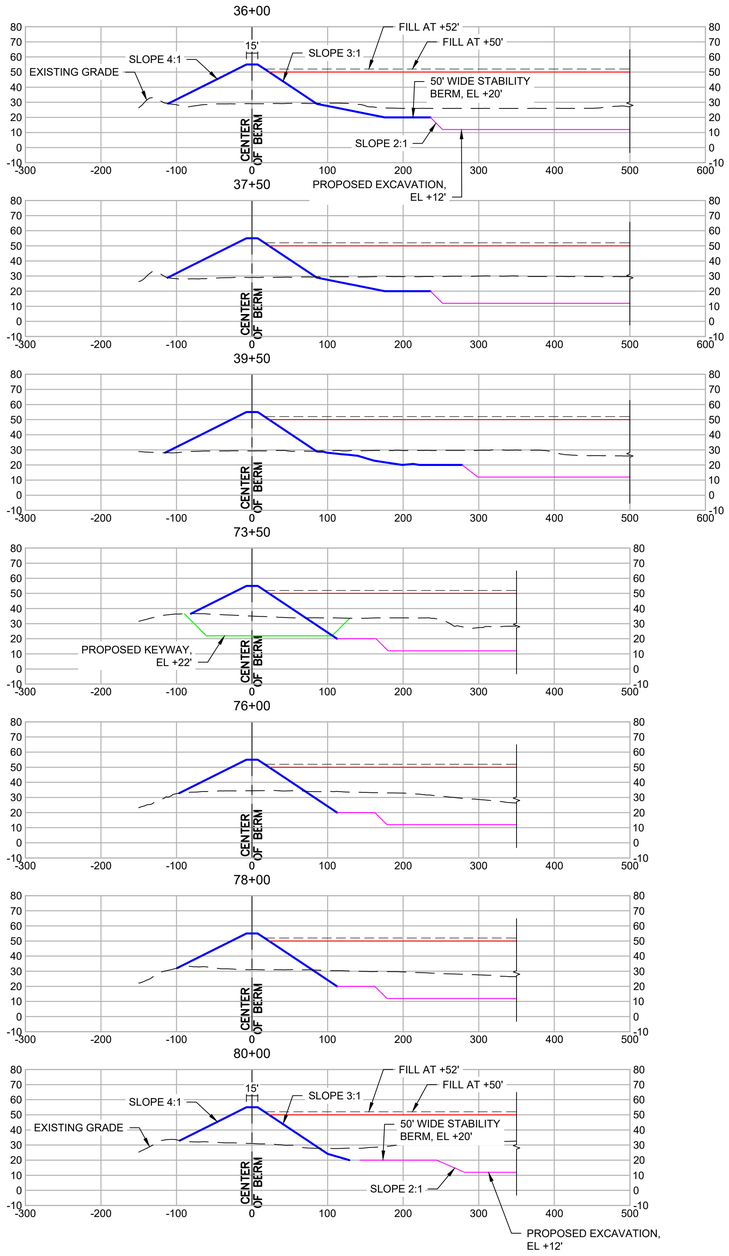

30+00




33+00



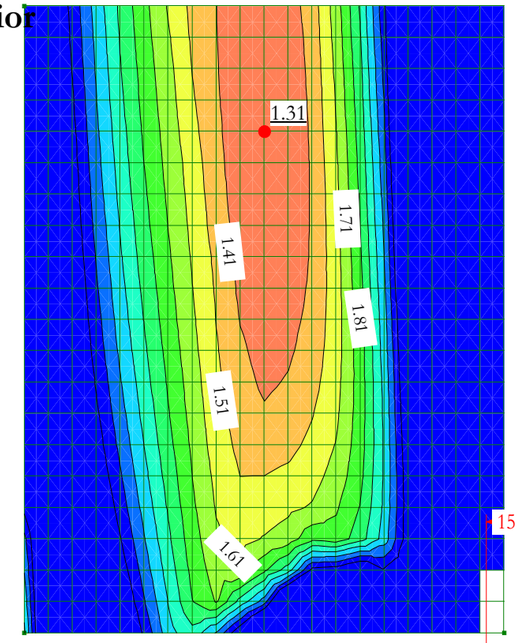
SCALE
HORIZONTAL: 1"=100'
VERTICAL: 1"=50'



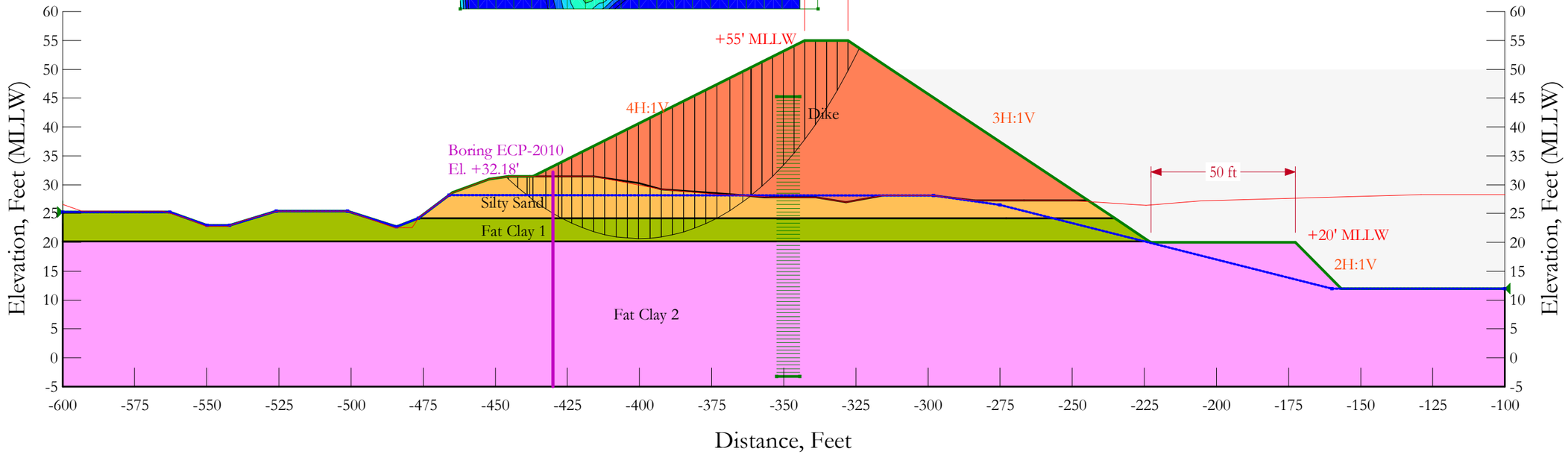
| Soil Parameters for Slope Stability Analyses – E2 Clinton Placement Area | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Section Profile (Soil Conditions)** | **Soil Description** | **Elevation, Feet** | | **Total Unit Weight (γ), pcf** | **Short Term** | **Long Term** | |
| | | **Top** | **Bottom** | | **Undrained Shear Strength, psf** | **Cohesion, psf** | **Friction Angle (ϕ'), degrees** |
| Sta. 0+50 (Boring ECP-2010) | Sand | 31.5 | 24.2 | 100 | 0 | 0 | 26 |
| | Fat Clay 1 | 24.2 | 20.2 | 110 | 200 | 185 | 23 |
| | Fat Clay 2 | 20.2 | -5 | 125 | 2,000 | 185 | 23 |
| Sta. 20+00 (Boring ECP-2013) | Fat Clay | 30.6 | 28.6 | 110 | 660 | 185 | 23 |
| | Silty Clay | 28.6 | 22.6 | 125 | 1,080 | 230 | 27 |
| | Fat Clay | 22.6 | 7.6 | 125 | 1,680 | 185 | 23 |
| | Lean Clay | 7.6 | -5 | 130 | 2,600 | 230 | 27 |
| Sta. 37+50 (Boring ECP-2003) | Fat Clay 1 | 29.5 | 20.4 | 120 | 800 | 185 | 23 |
| | Lean Clay 1 | 20.4 | 8.4 | 130 | 2,800 | 230 | 27 |
| | Fat Clay 2 | 8.4 | 3.4 | 125 | 3,000 | 185 | 23 |
| | Lean Clay 2 | 3.4 | -5 | 130 | 2,800 | 230 | 27 |
| Sta. 45+50 (Boring ECP-2004) | Lean Clay 1 | 29.6 | 23.6 | 115 | 580 | 230 | 27 |
| | Fat Clay | 23.6 | 13.6 | 125 | 1,880 | 185 | 23 |
| | Lean Clay 2 | 13.6 | -5 | 130 | 2,900 | 230 | 27 |
| Sta. 54+50 (Boring ECP-2005) | Fat Clay 1 | 34.3 | 27.6 | 110 | 1,000 | 185 | 23 |
| | Lean Clay 1 | 27.6 | 23.6 | 110 | 120 | 230 | 27 |
| | Fat Clay 2 | 23.6 | 19.6 | 110 | 160 | 185 | 23 |
| | Fat Clay 3 | 19.6 | 15.6 | 130 | 2,000 | 185 | 23 |
| | Lean Clay 2 | 15.6 | -5 | 130 | 2,700 | 230 | 27 |
| Sta. 62+68 (Boring ECP-2006) | Lean Clay 1 | 27.3 | 23.3 | 110 | 340 | 230 | 27 |
| | Lean Clay 2 | 23.3 | 17.3 | 125 | 1,040 | 230 | 27 |
| | Fat Clay | 17.3 | 13.3 | 130 | 2,340 | 185 | 23 |
| | Lean Clay 3 | 13.3 | -5 | 130 | 2,340 | 230 | 27 |
| Sta. 78+00 (Boring ECP-2008) | Sand | 30.1 | 24.1 | 110 | 0 | 0 | 31 |
| | Fat Clay | 24.1 | 10.1 | 130 | 1,800 | 185 | 23 |
| | Lean Clay | 10.1 | -5 | 130 | 3,000 | 230 | 27 |

# SLOPE STABILITY ANALYSIS: PROPOSED SLOPE

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 0+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2010**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

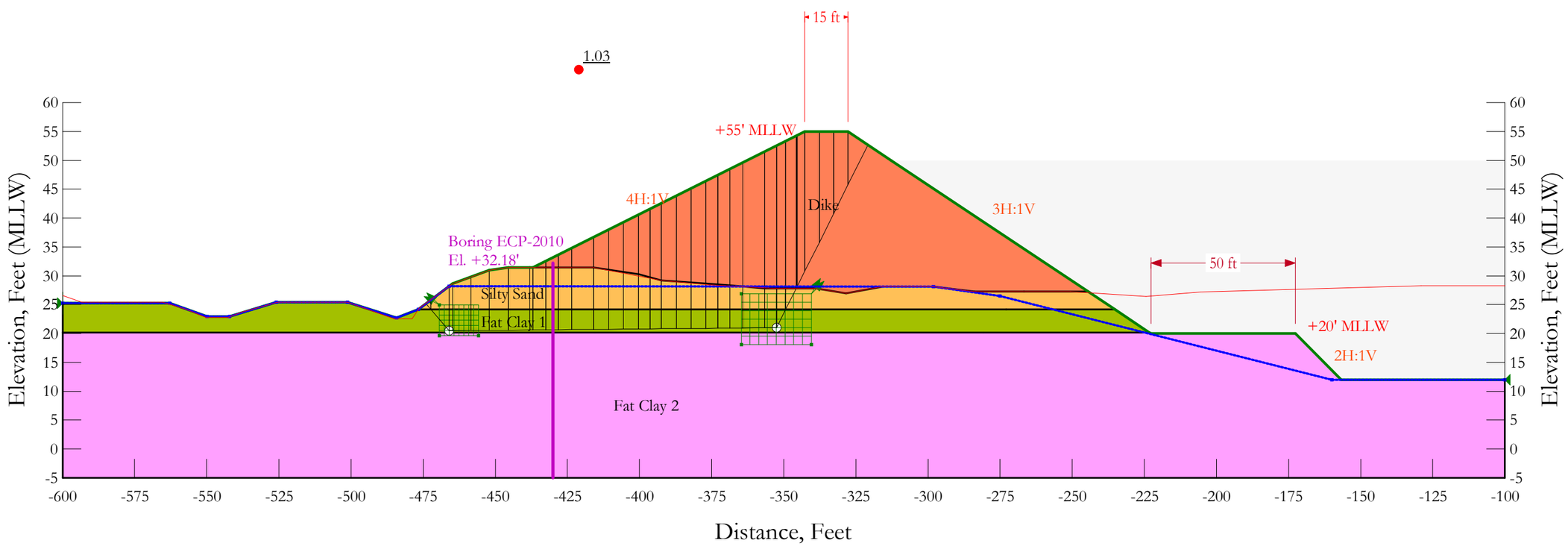



| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 110 | | 200 |
| | Fat Clay 2(U) | 125 | | 2,000 |
| | Silty Sand | 100 | 26 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 0+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2010**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

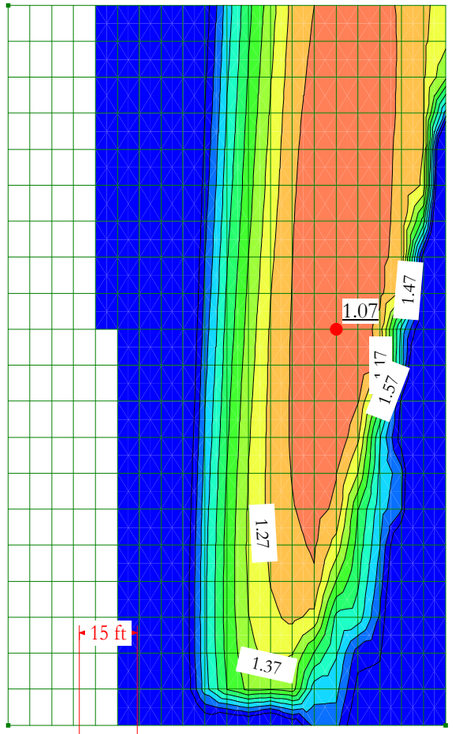
| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 110 | | 200 |
| | Fat Clay 2(U) | 125 | | 2,000 |
| | Silty Sand | 100 | 26 | |

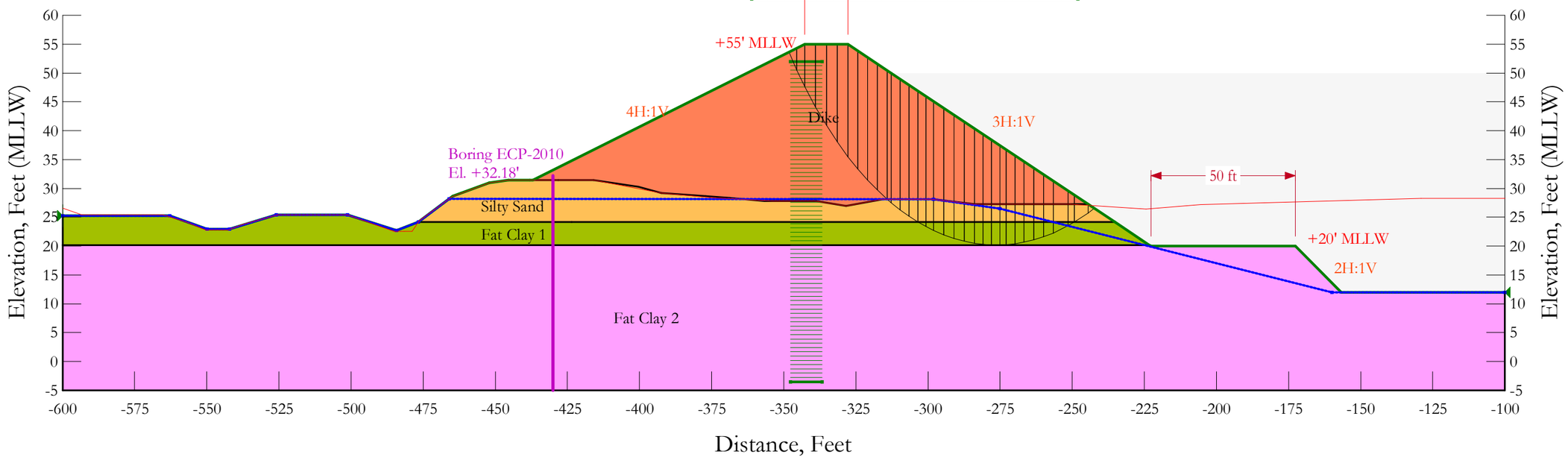


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 0+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2010**

**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 110 | | 200 |
| | Fat Clay 2(U) | 125 | | 2,000 |
| | Silty Sand | 100 | 26 | |

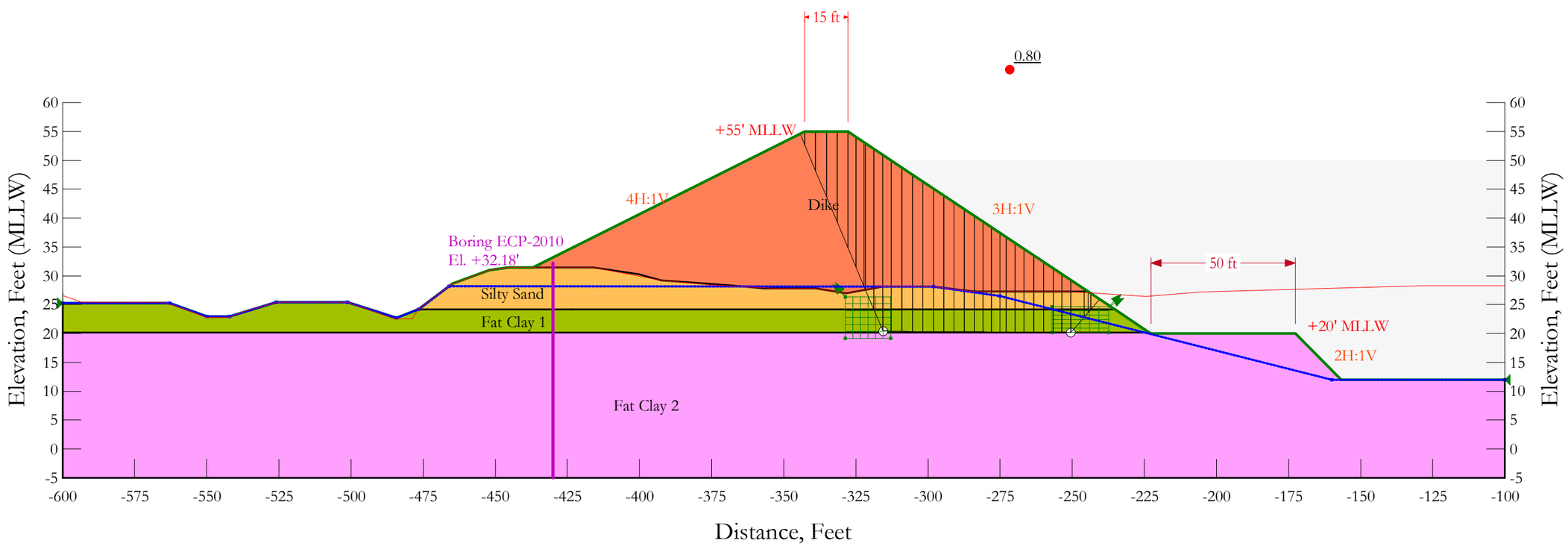


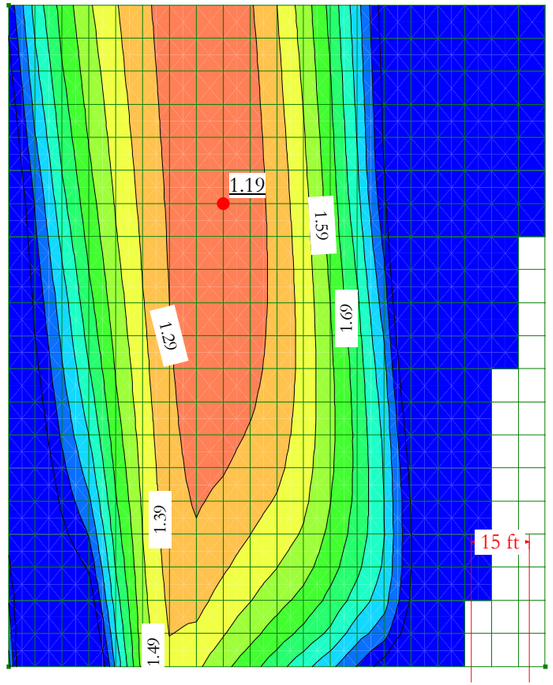
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 0+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2010**

**Loading Condition: Short Term - Interior**
**Slip Surface: Block**

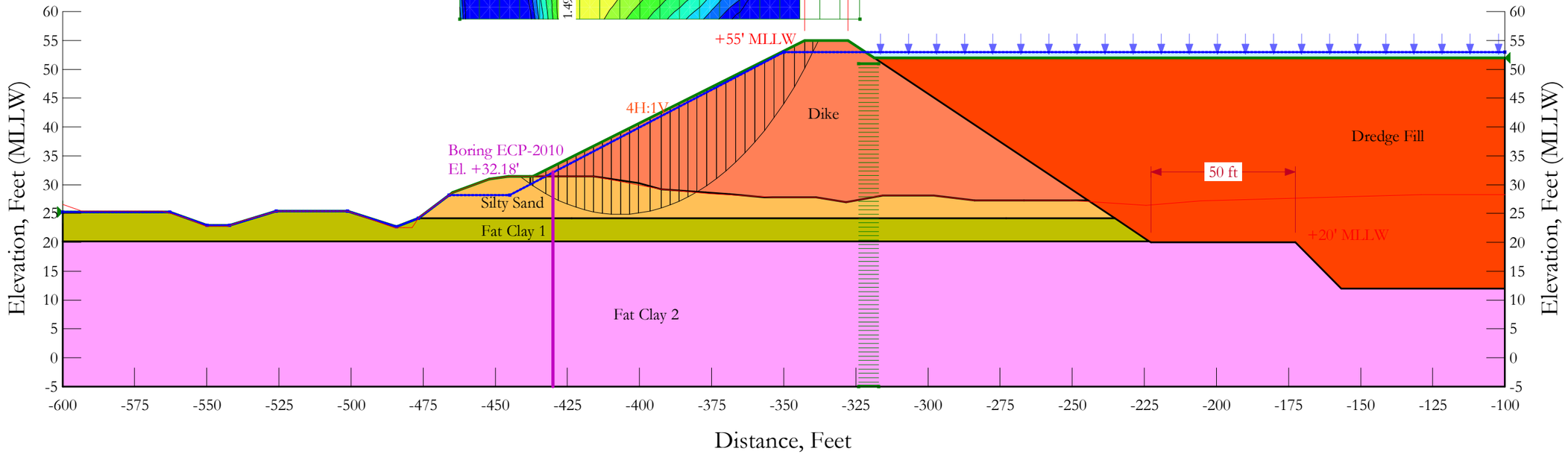
| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 110 | | 200 |
| | Fat Clay 2(U) | 125 | | 2,000 |
| | Silty Sand | 100 | 26 | |



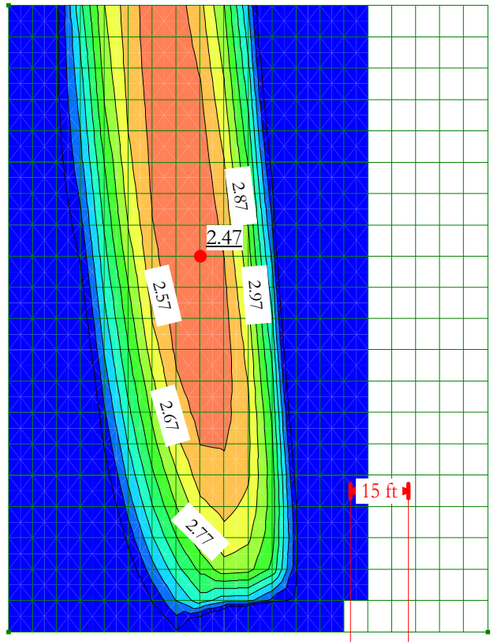
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 0+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2010**
**Loading Condition: Long Term**
**Slip Surface: Circular**



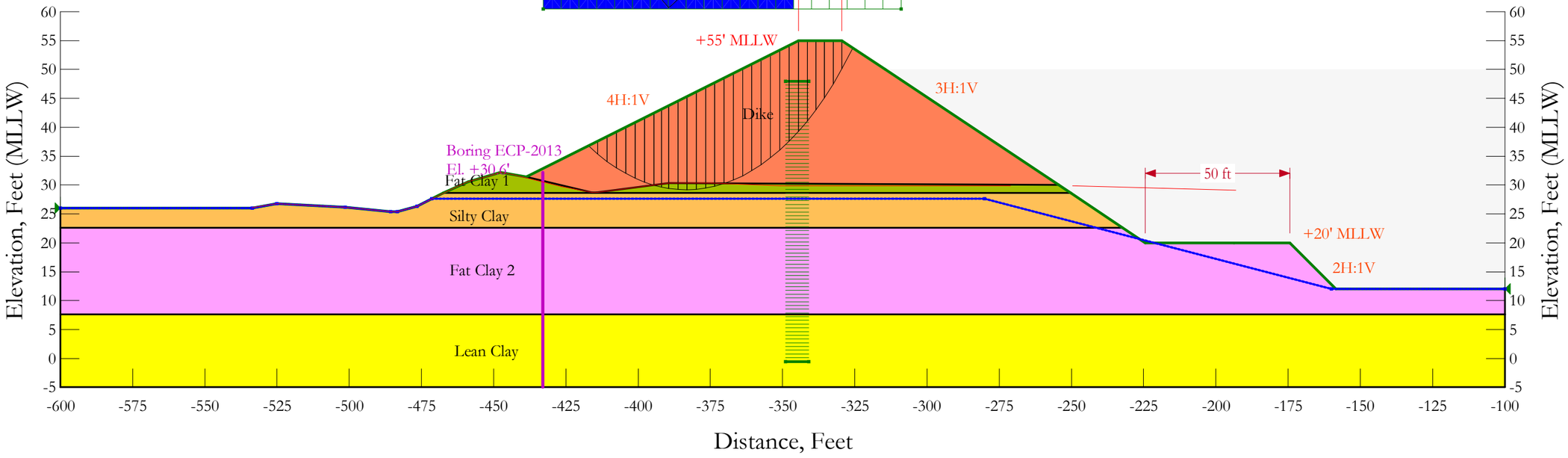

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 115 | 100 | 23 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay 1 | 110 | 185 | 23 |
| | Fat Clay 2 | 125 | 185 | 23 |
| | Silty Sand | 100 | 0 | 26 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 20+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2013**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

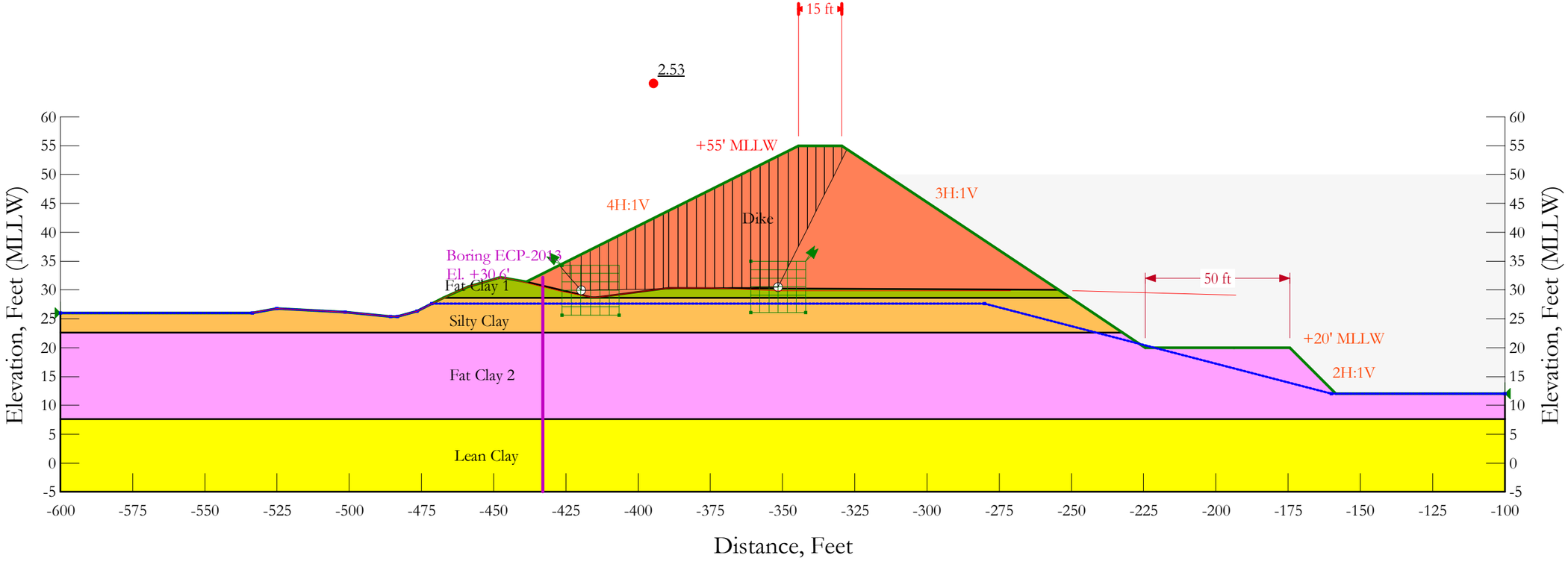



| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1(U) | 110 | 660 |
| | Fat Clay 2(U) | 125 | 1,680 |
| | Lean Clay (U) | 125 | 2,600 |
| | Silty Clay (U) | 125 | 1,080 |



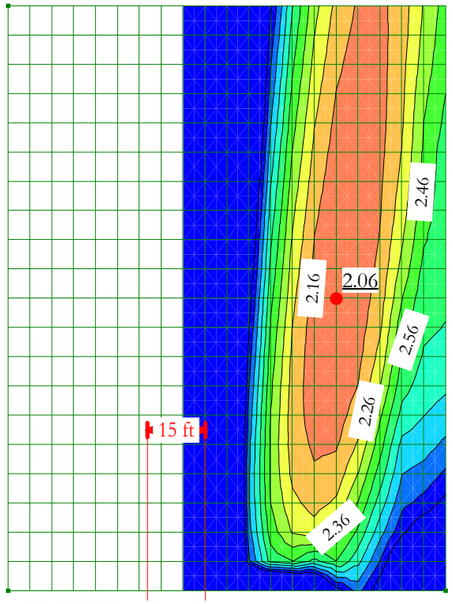
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 20+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2013**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1(U) | 110 | 660 |
| | Fat Clay 2(U) | 125 | 1,680 |
| | Lean Clay (U) | 125 | 2,600 |
| | Silty Clay (U) | 125 | 1,080 |

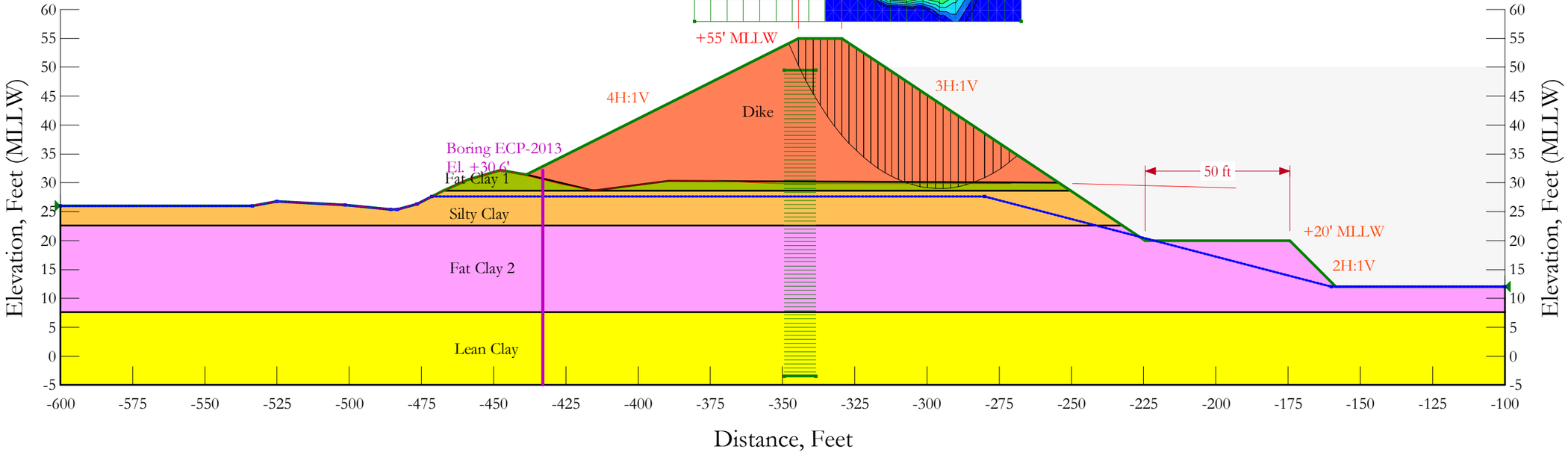


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 20+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2013**

**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**



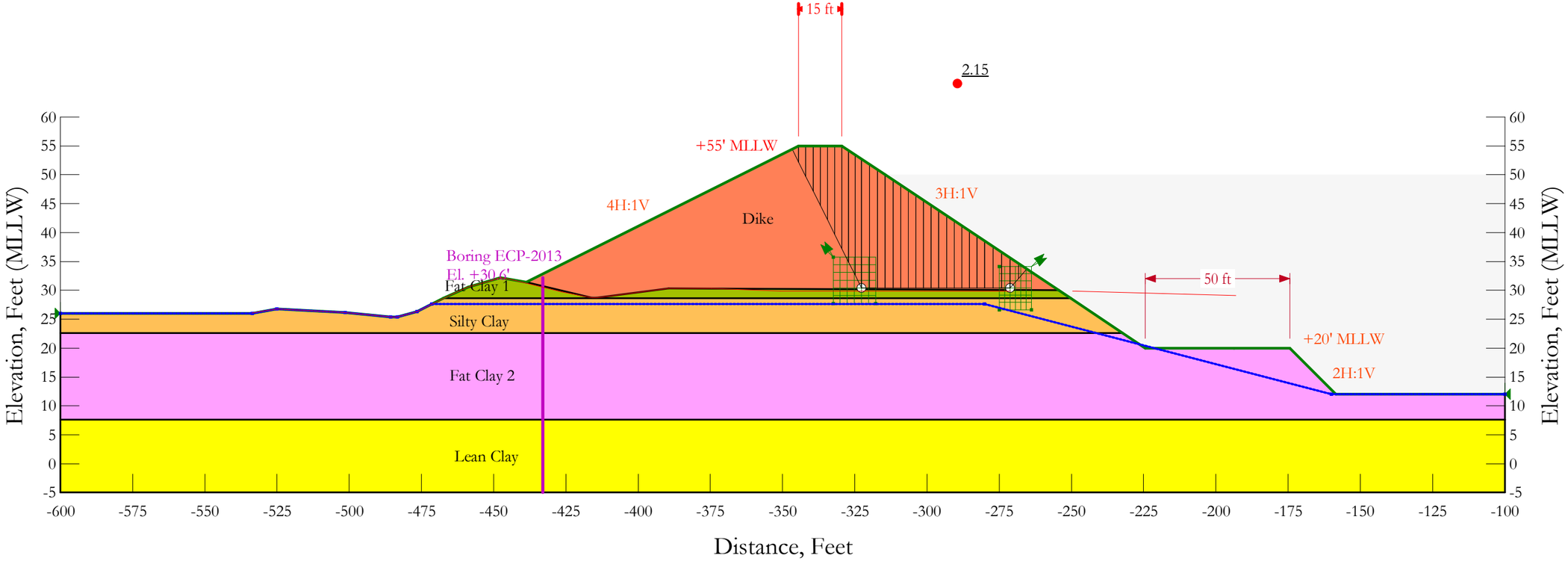

| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1(U) | 110 | 660 |
| | Fat Clay 2(U) | 125 | 1,680 |
| | Lean Clay (U) | 125 | 2,600 |
| | Silty Clay (U) | 125 | 1,080 |



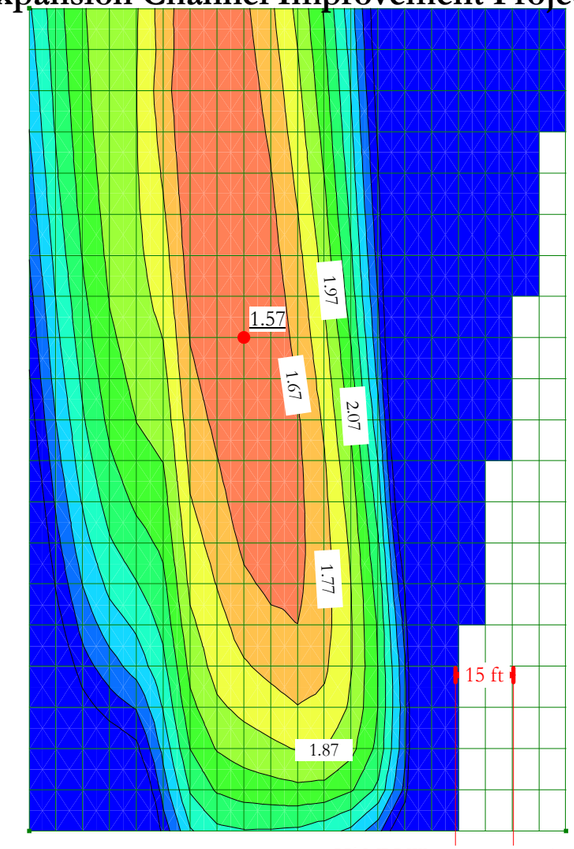
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 20+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2013**

**Loading Condition: Short Term - Interior**
**Slip Surface: Block**

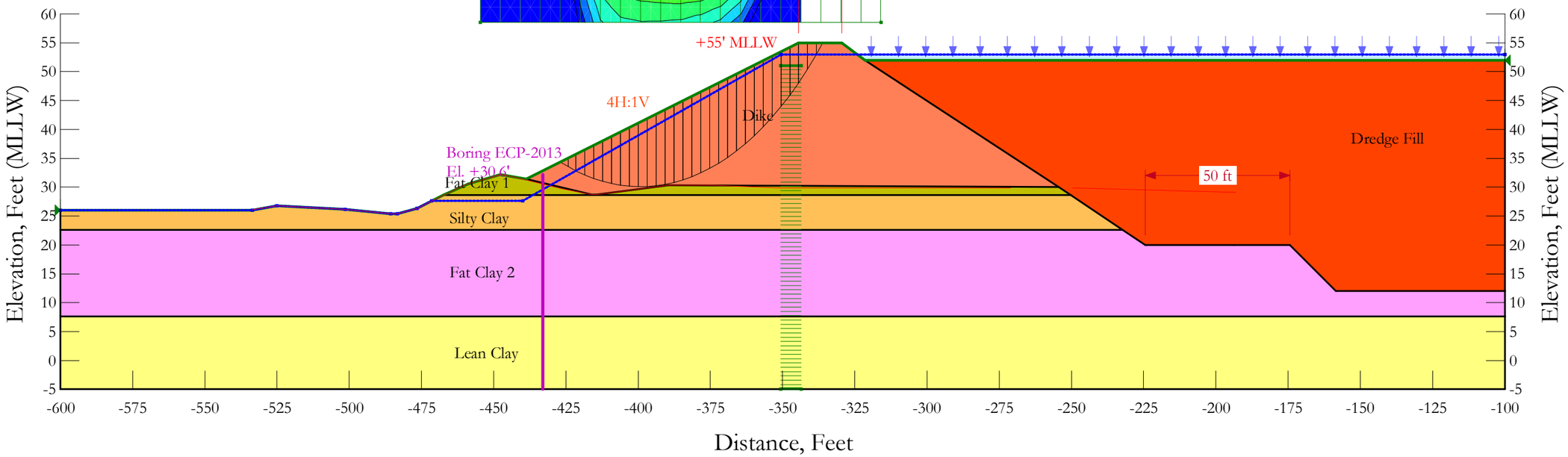
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1(U) | 110 | 660 |
| | Fat Clay 2(U) | 125 | 1,680 |
| | Lean Clay (U) | 125 | 2,600 |
| | Silty Clay (U) | 125 | 1,080 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 20+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2013**
**Loading Condition: Long Term**
**Slip Surface: Circular**



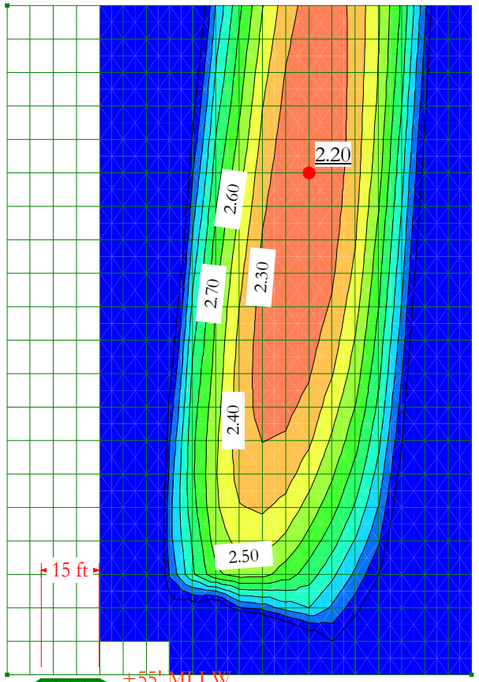

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 115 | 100 | 23 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay 1 | 110 | 185 | 23 |
| | Fat Clay 2 | 125 | 185 | 23 |
| | Lean Clay | 125 | 230 | 27 |
| | Silty Clay | 125 | 230 | 27 |

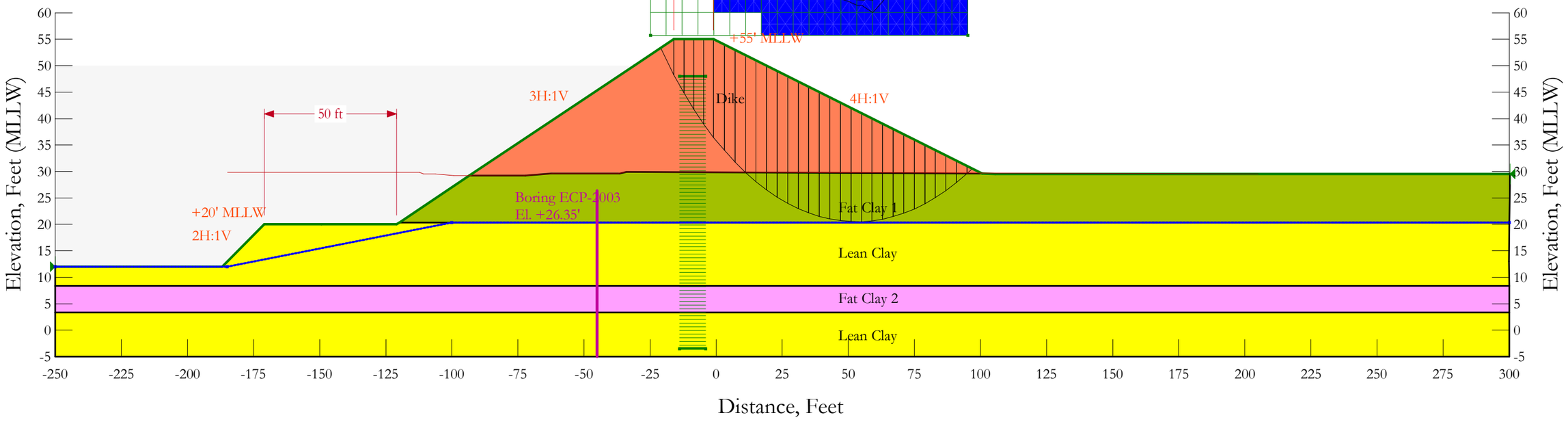


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 34+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2003**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1(U) | 120 | 800 |
| | Fat Clay 2(U) | 125 | 3,000 |
| | Lean Clay (U) | 130 | 2,800 |

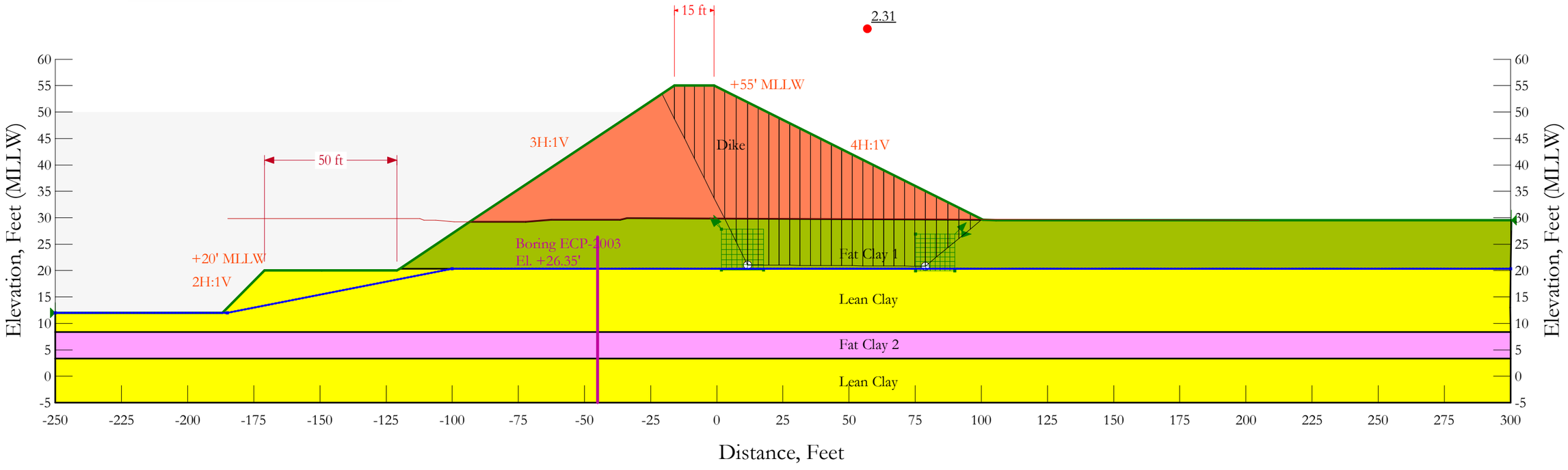


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 34+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2003**

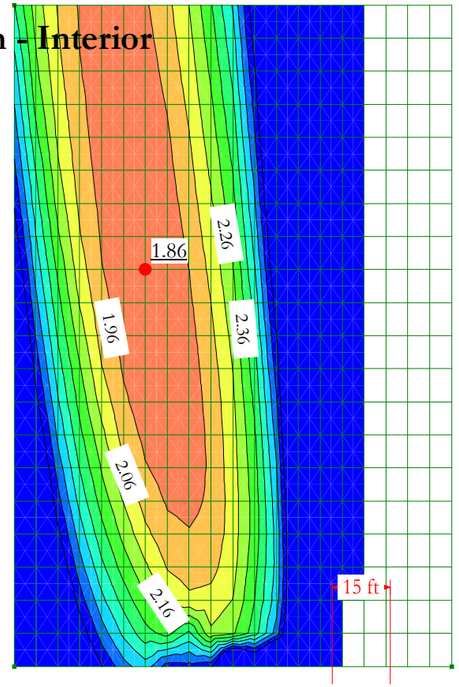
**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

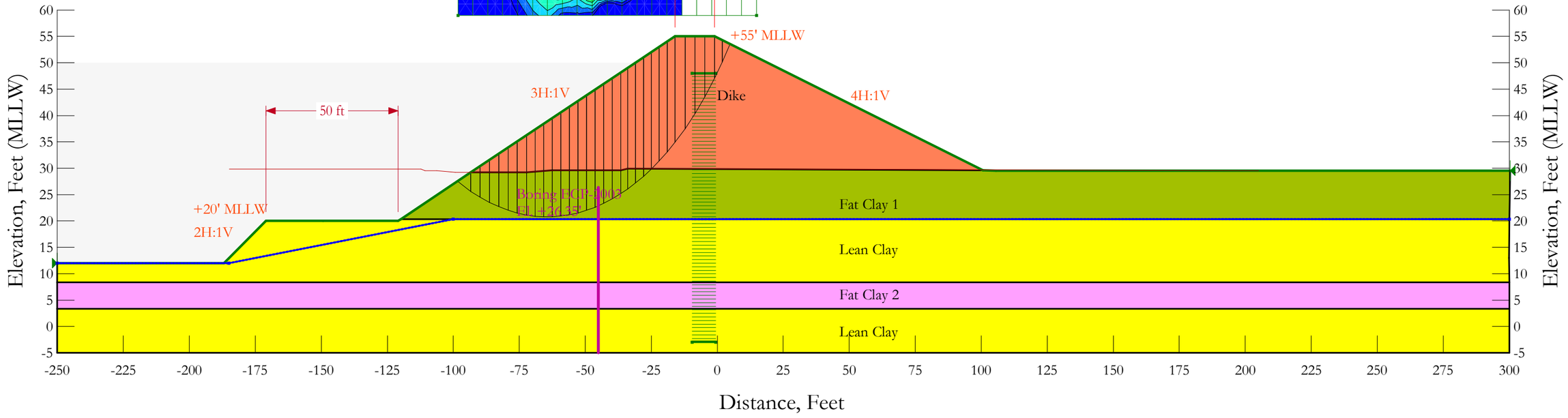
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1(U) | 120 | 800 |
| | Fat Clay 2(U) | 125 | 3,000 |
| | Lean Clay (U) | 130 | 2,800 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 34+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2003**
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1(U) | 120 | 800 |
| | Fat Clay 2(U) | 125 | 3,000 |
| | Lean Clay (U) | 130 | 2,800 |

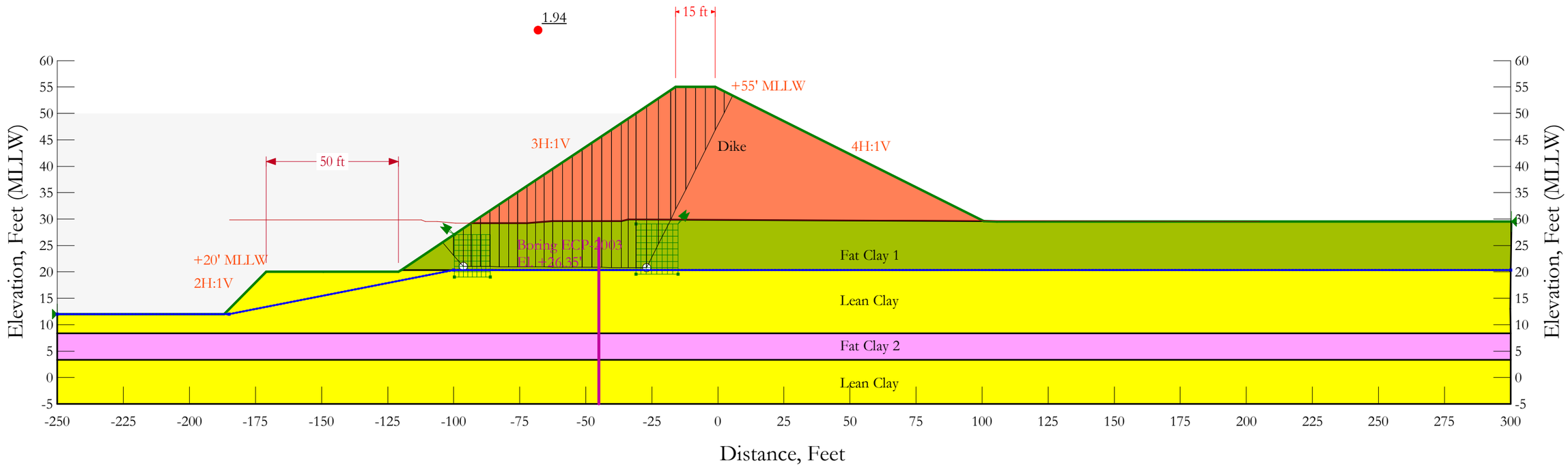


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 34+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2003**

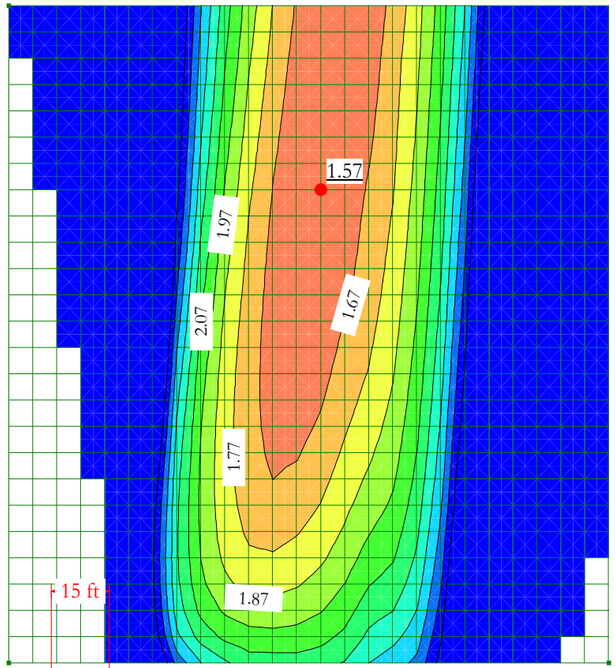
**Loading Condition: Short Term - Interior**
**Slip Surface: Block**

| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1(U) | 120 | 800 |
| | Fat Clay 2(U) | 125 | 3,000 |
| | Lean Clay (U) | 130 | 2,800 |

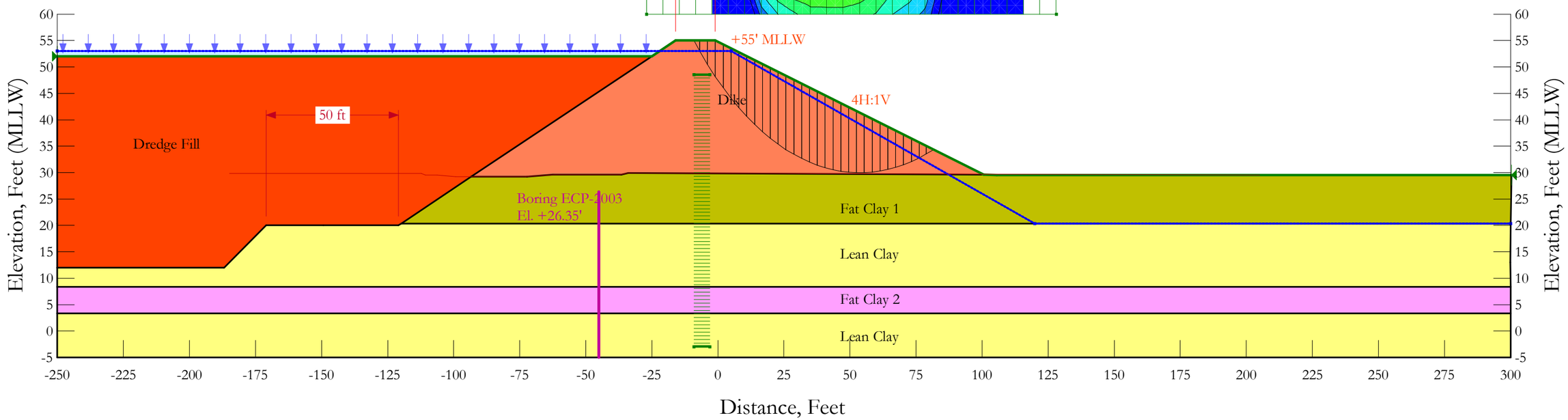


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 34+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2003**

**Loading Condition: Long Term - Exterior**
**Slip Surface: Circular**



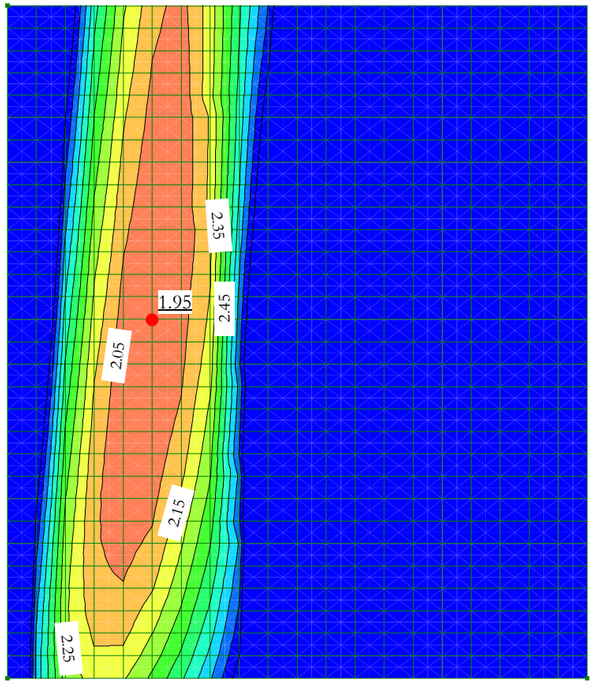

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 115 | 100 | 23 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay 1 | 120 | 185 | 23 |
| | Fat Clay 2 | 125 | 185 | 23 |
| | Lean Clay | 130 | 230 | 27 |

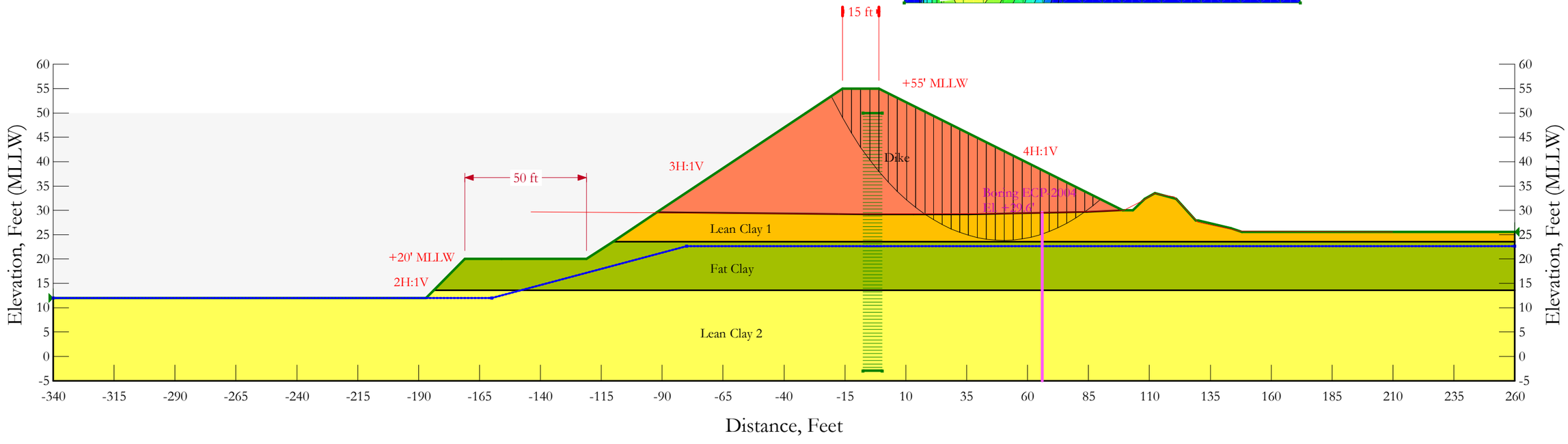


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 45+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2004**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

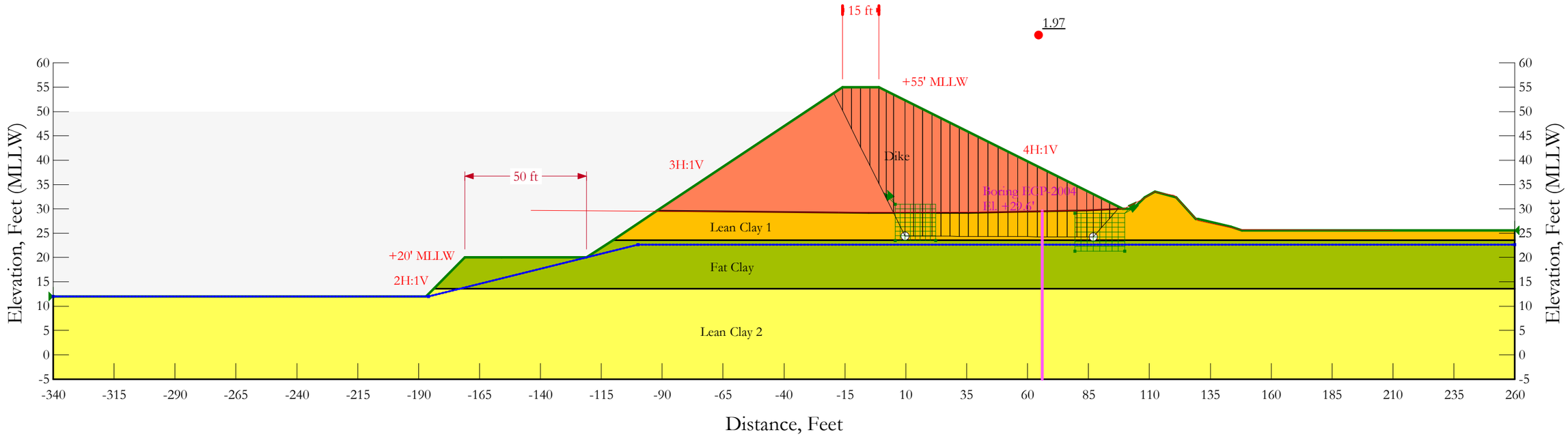
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 125 | 1,880 |
| | Lean Clay 1 (U) | 115 | 580 |
| | Lean Clay 2 (U) | 130 | 2,900 |



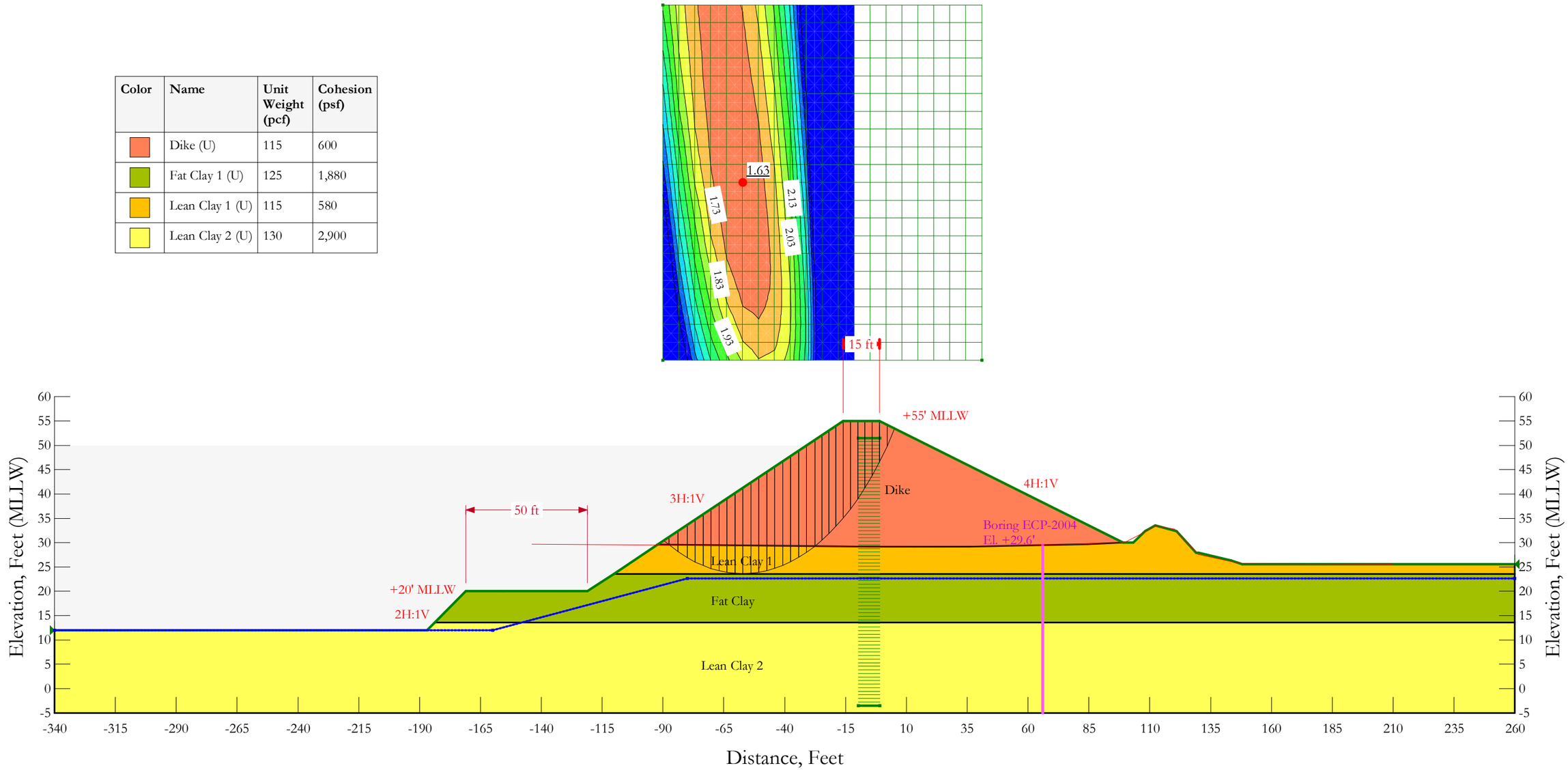
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 45+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2004**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 125 | 1,880 |
| | Lean Clay 1 (U) | 115 | 580 |
| | Lean Clay 2 (U) | 130 | 2,900 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 45+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2004**
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

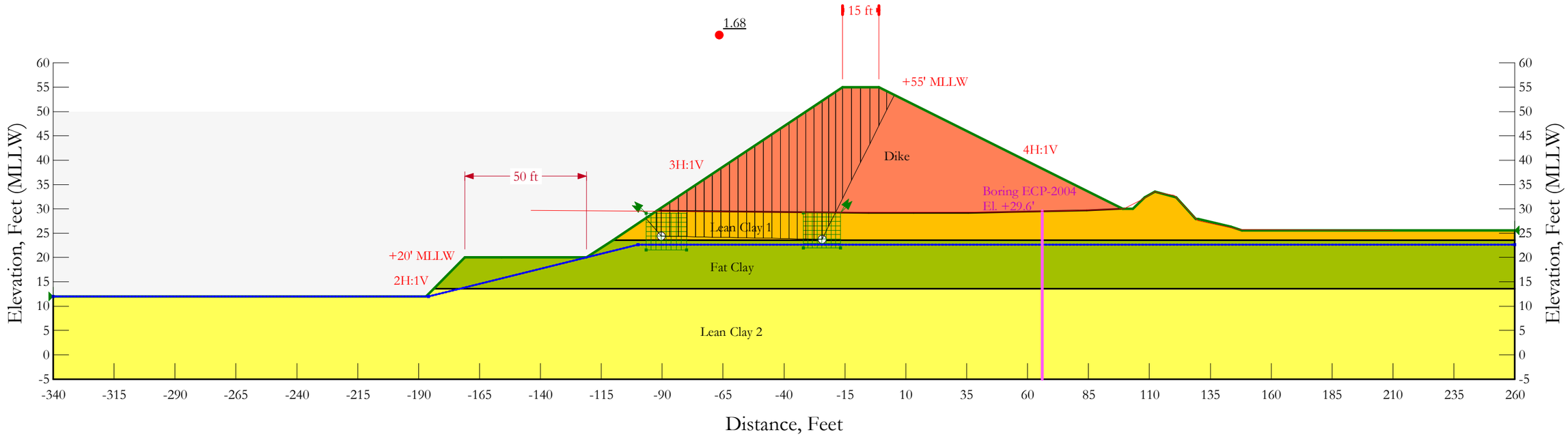
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 125 | 1,880 |
| | Lean Clay 1 (U) | 115 | 580 |
| | Lean Clay 2 (U) | 130 | 2,900 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 45+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2004**

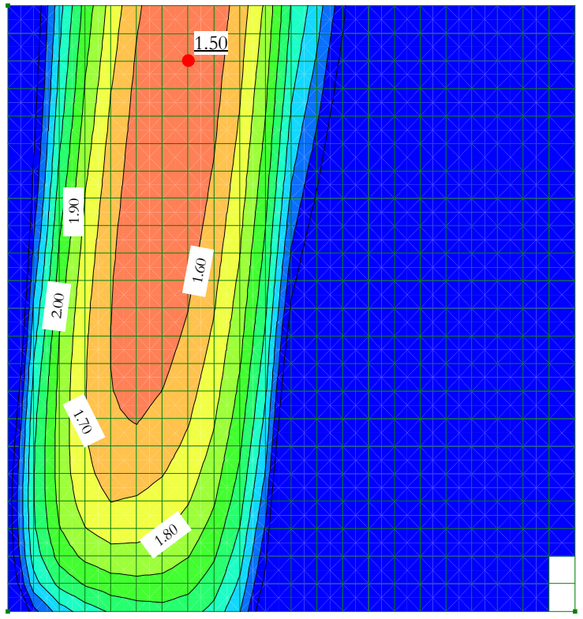
**Loading Condition: Short Term - Interior**
**Slip Surface: Block**

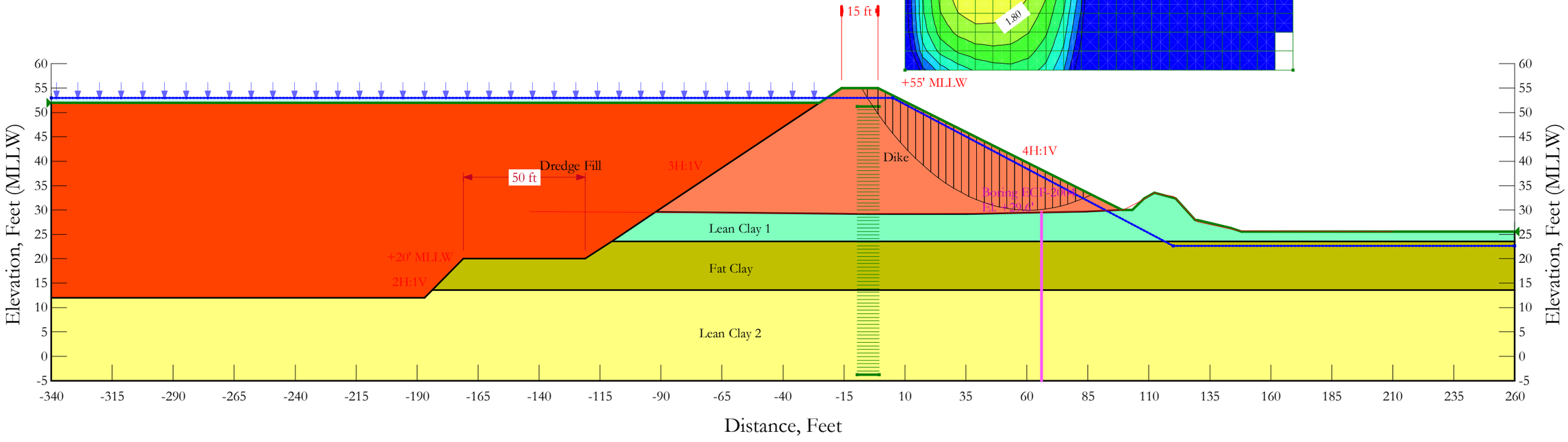
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 125 | 1,880 |
| | Lean Clay 1 (U) | 115 | 580 |
| | Lean Clay 2 (U) | 130 | 2,900 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 45+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2004**
**Loading Condition: Long Term**
**Slip Surface: Circular**

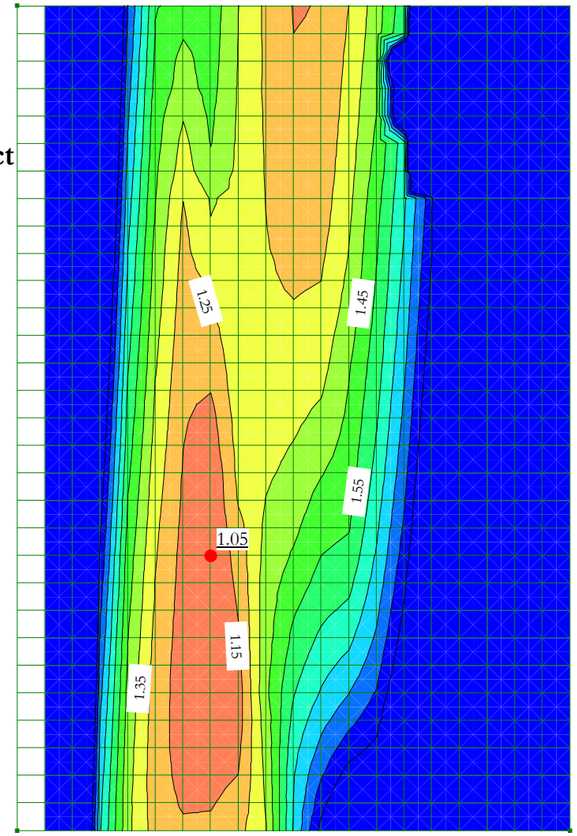
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 115 | 100 | 23 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay 1 | 125 | 185 | 23 |
| | Lean Clay 1 | 115 | 230 | 27 |
| | Lean Clay 2 | 130 | 230 | 27 |



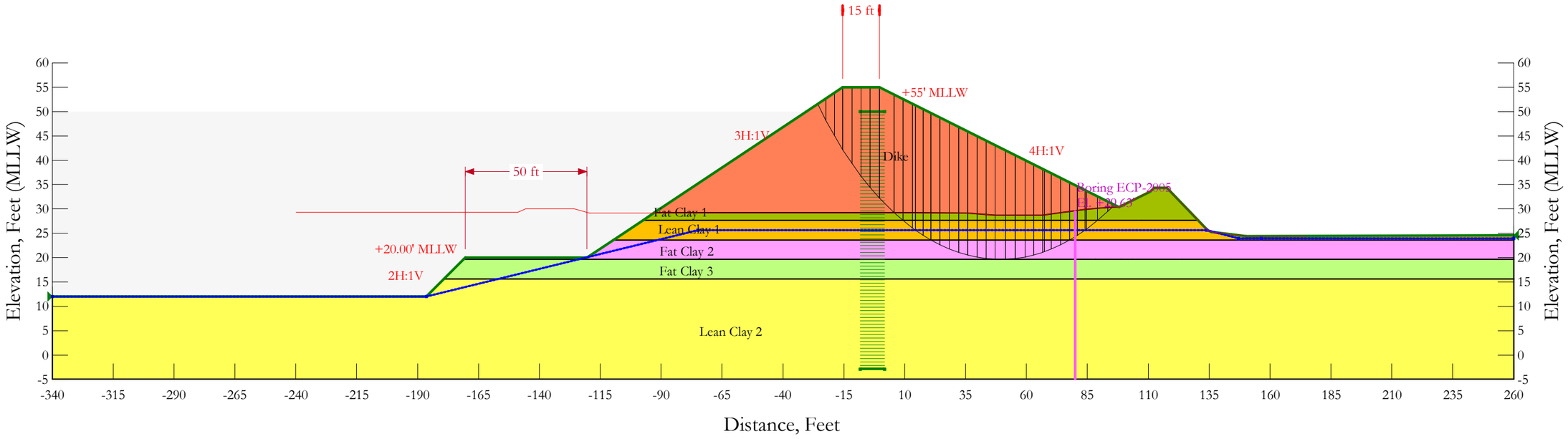



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 54+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2005**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

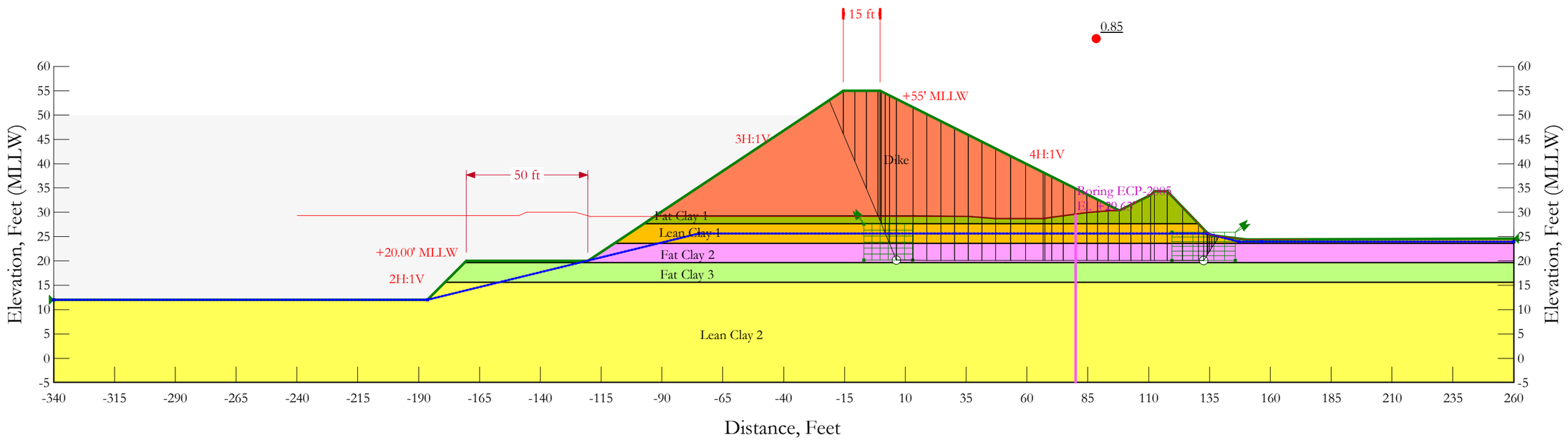



| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 110 | 1,000 |
| | Fat Clay 2(U) | 110 | 160 |
| | Fat Clay 3 (U) | 130 | 2,000 |
| | Lean Clay 1 (U) | 110 | 120 |
| | Lean Clay 2 (U) | 130 | 2,700 |



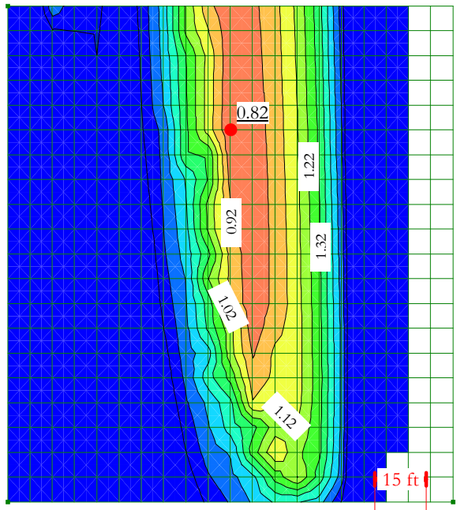
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 54+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2005**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

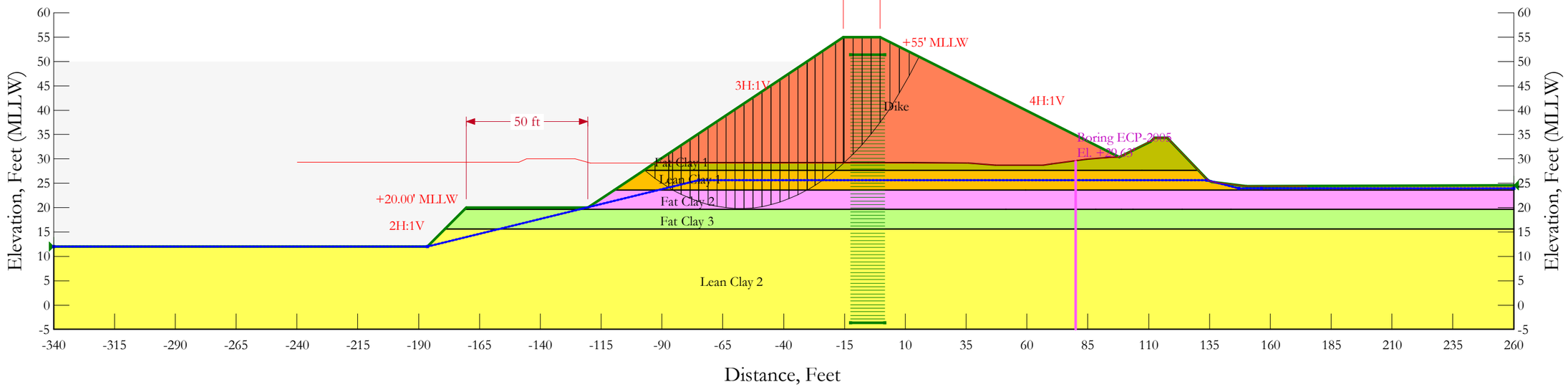
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 110 | 1,000 |
| | Fat Clay 2(U) | 110 | 160 |
| | Fat Clay 3 (U) | 130 | 2,000 |
| | Lean Clay 1 (U) | 110 | 120 |
| | Lean Clay 2 (U) | 130 | 2,700 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 54+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2005**
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 | 110 | |
| | Fat Clay 2(U) | 110 | 160 |
| | Fat Clay 3 (U) | 130 | 2,000 |
| | Lean Clay 1 (U) | 110 | 120 |
| | Lean Clay 2 (U) | 130 | 2,700 |

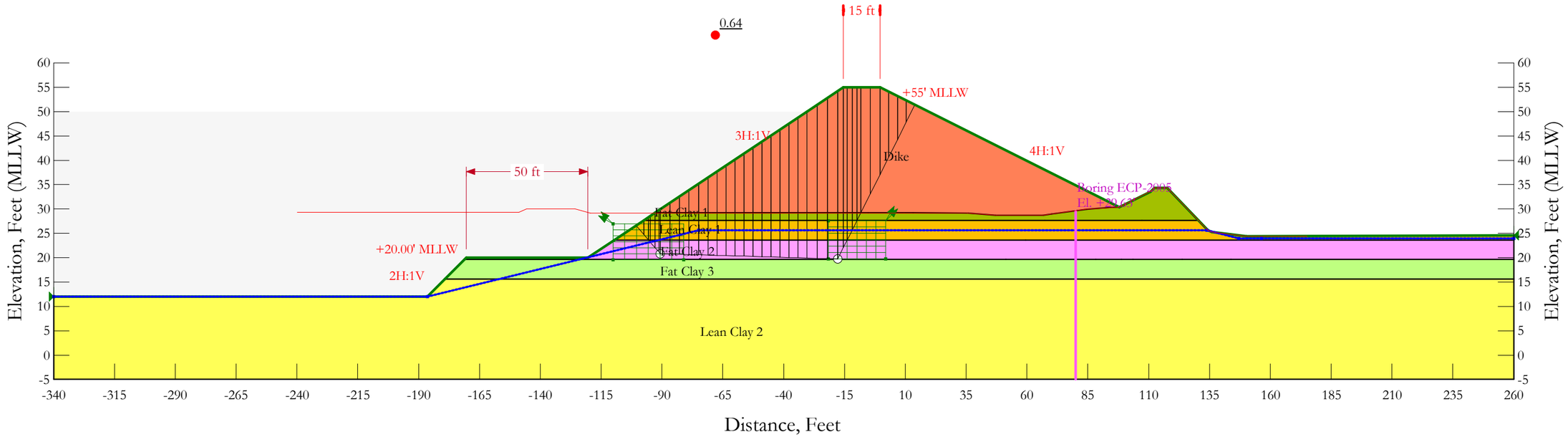


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 54+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2005**

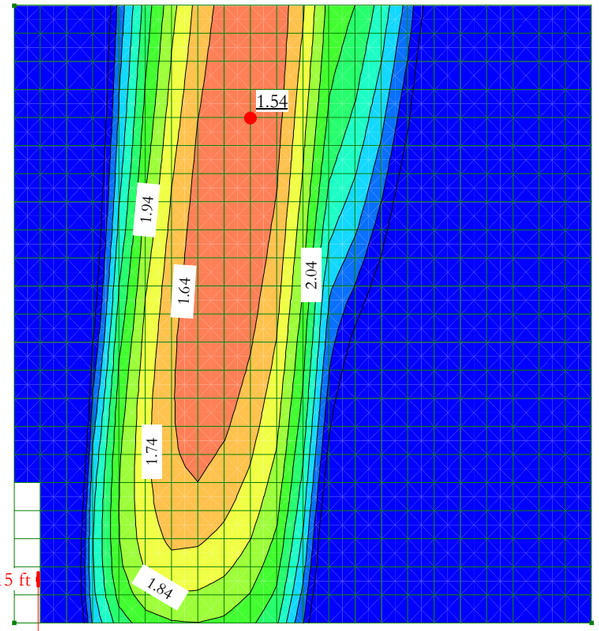
**Loading Condition: Short Term - Interior**
**Slip Surface: Block**

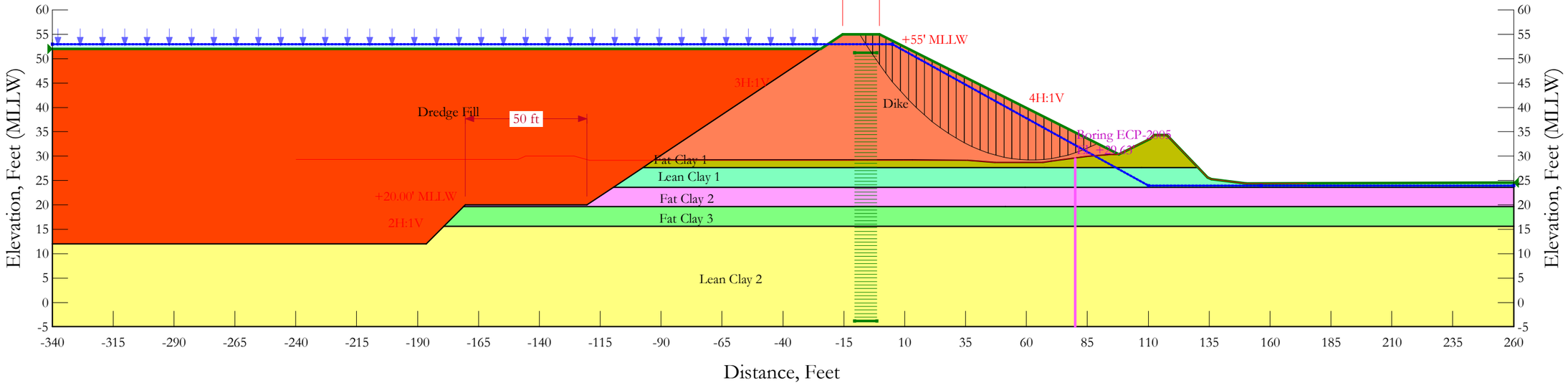
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 110 | 1,000 |
| | Fat Clay 2(U) | 110 | 160 |
| | Fat Clay 3 (U) | 130 | 2,000 |
| | Lean Clay 1 (U) | 110 | 120 |
| | Lean Clay 2 (U) | 130 | 2,700 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 54+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2005**
**Loading Condition: Long Term**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 115 | 100 | 23 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay 1 | 110 | 185 | 23 |
| | Fat Clay 2 | 110 | 185 | 23 |
| | Fat Clay 3 | 130 | 185 | 23 |
| | Lean Clay 1 | 110 | 230 | 27 |
| | Lean Clay 2 | 130 | 230 | 27 |

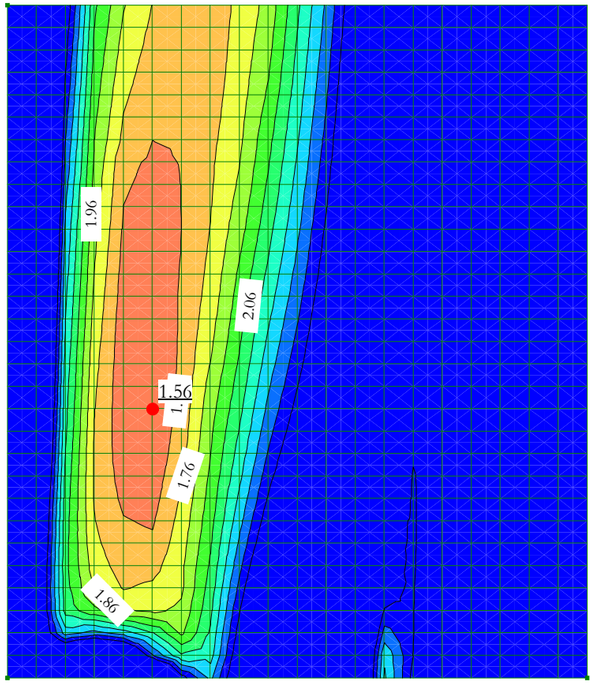


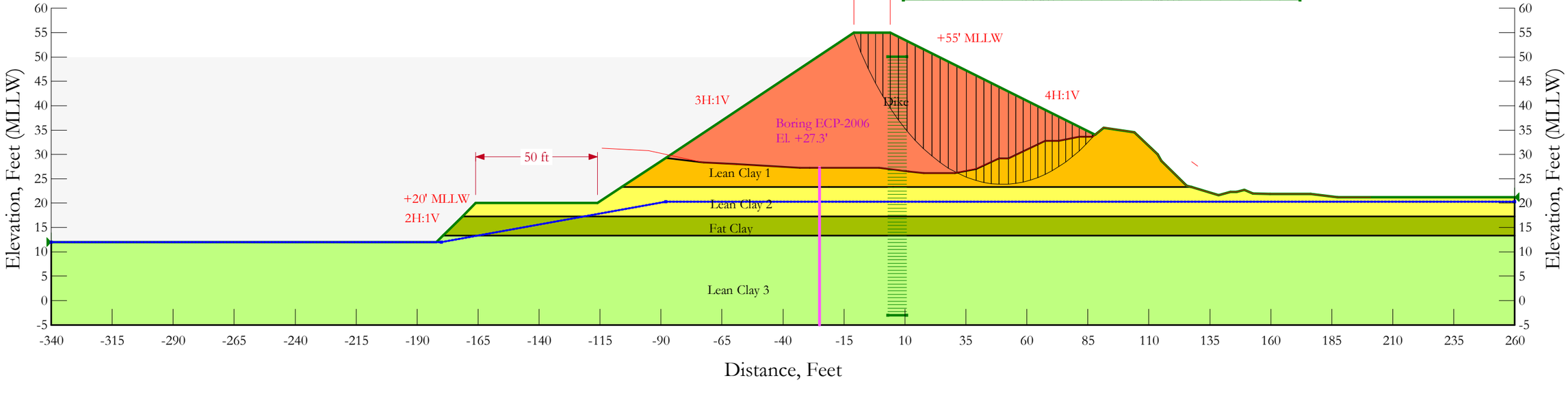



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 62+68**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2006**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

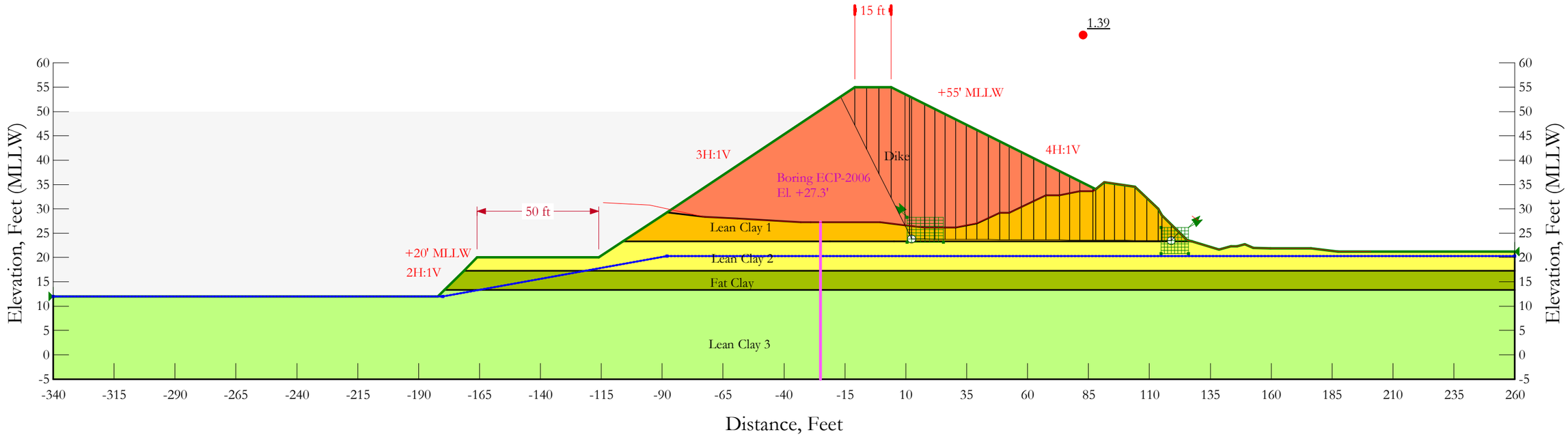
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 130 | 2,340 |
| | Lean Clay 1 (U) | 110 | 340 |
| | Lean Clay 2 (U) | 125 | 1,040 |
| | Lean Clay 3 (U) | 130 | 2,340 |



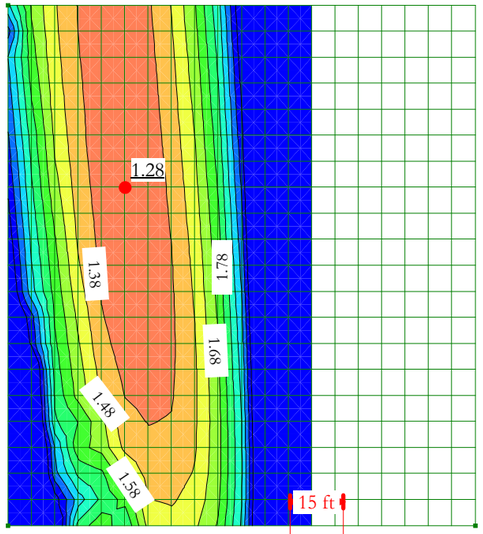
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 62+68**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2006**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

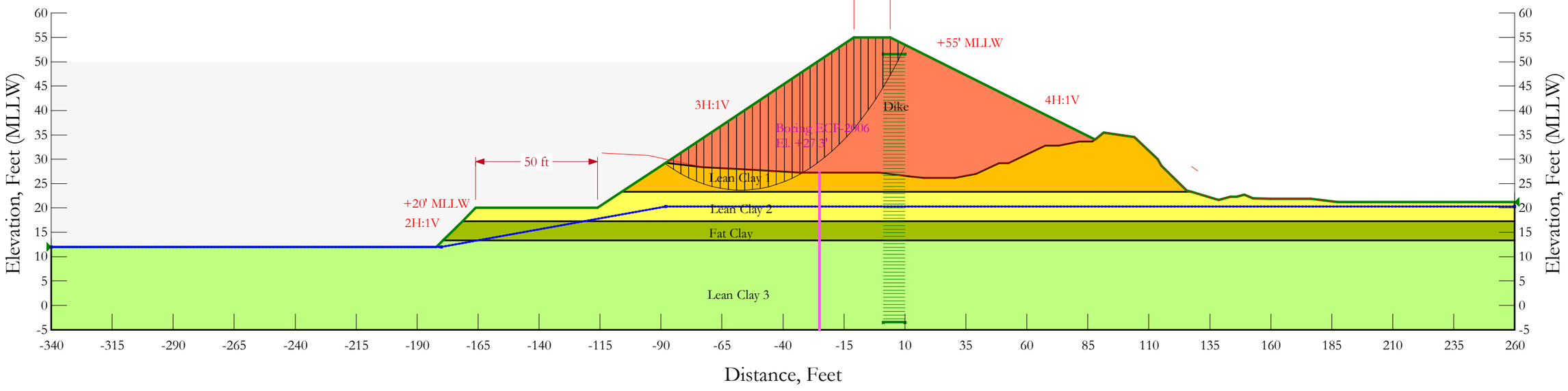
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 130 | 2,340 |
| | Lean Clay 1 (U) | 110 | 340 |
| | Lean Clay 2 (U) | 125 | 1,040 |
| | Lean Clay 3 (U) | 130 | 2,340 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 62+68**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2006**
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 130 | 2,340 |
| | Lean Clay 1 (U) | 110 | 340 |
| | Lean Clay 2 (U) | 125 | 1,040 |
| | Lean Clay 3 (U) | 130 | 2,340 |

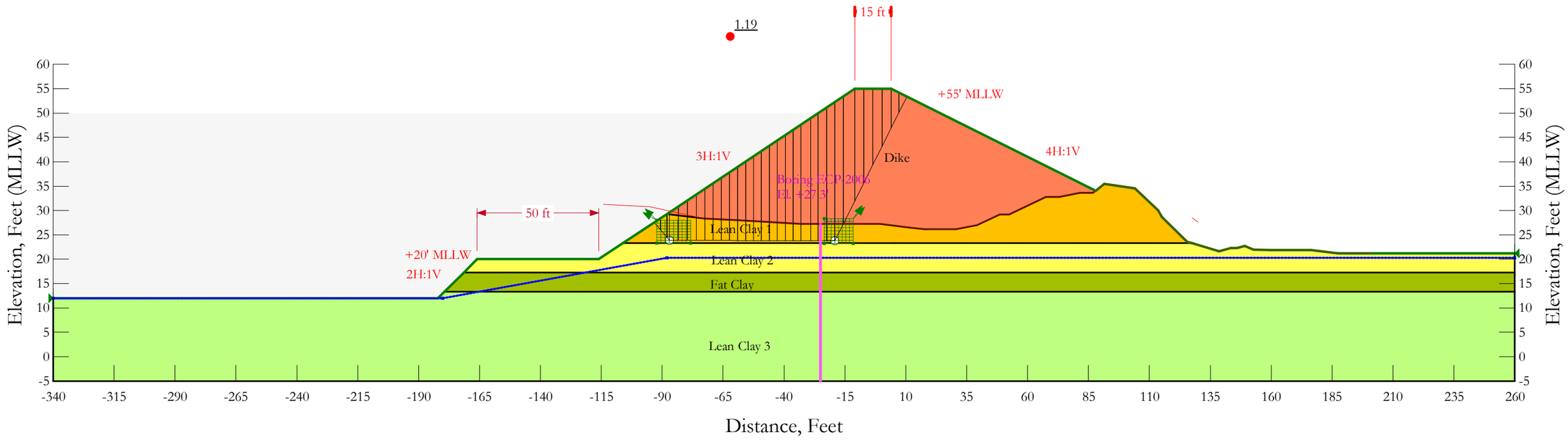


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 62+68**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2006**

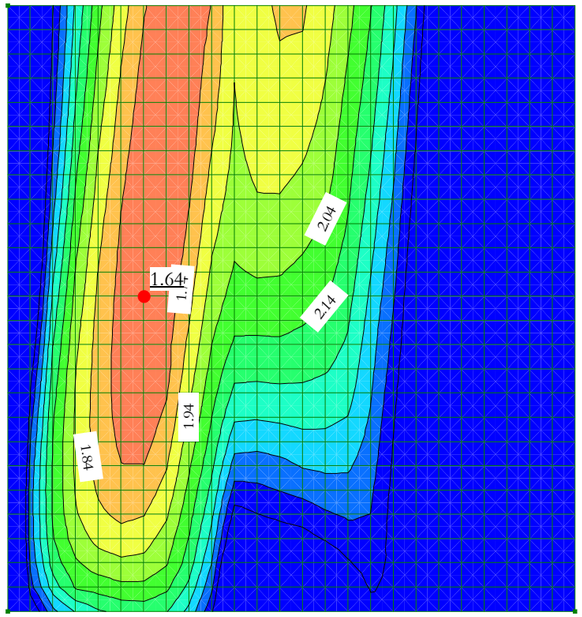
**Loading Condition: Short Term - Interior**
**Slip Surface: Block**

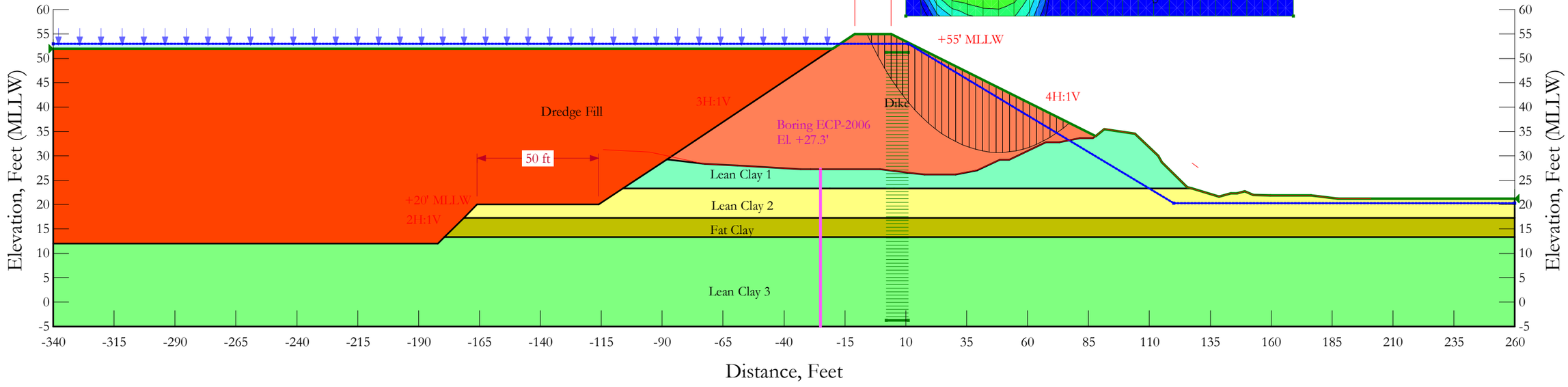
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 130 | 2,340 |
| | Lean Clay 1 (U) | 110 | 340 |
| | Lean Clay 2 (U) | 125 | 1,040 |
| | Lean Clay 3 (U) | 130 | 2,340 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 62+68**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2006**
**Loading Condition: Long Term**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 115 | 100 | 23 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay 1 | 130 | 185 | 23 |
| | Lean Clay 1 | 110 | 230 | 27 |
| | Lean Clay 2 | 125 | 230 | 27 |
| | Lean Clay 3 | 130 | 230 | 27 |

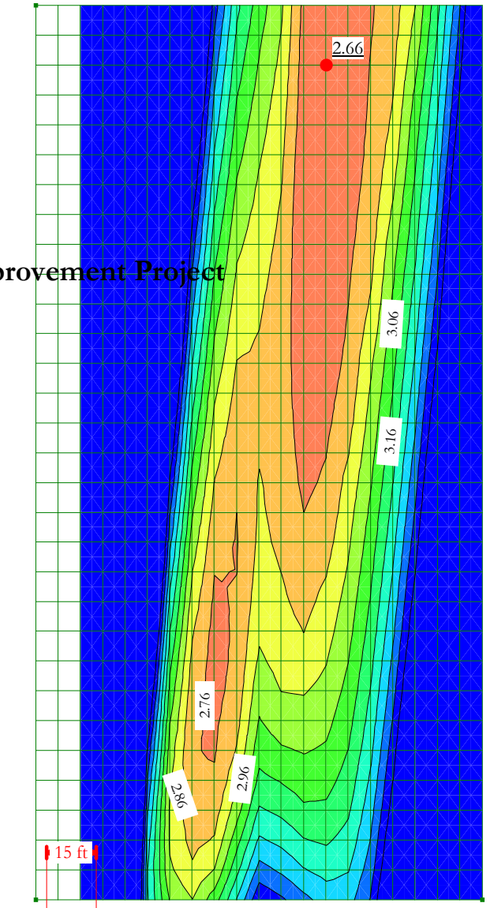


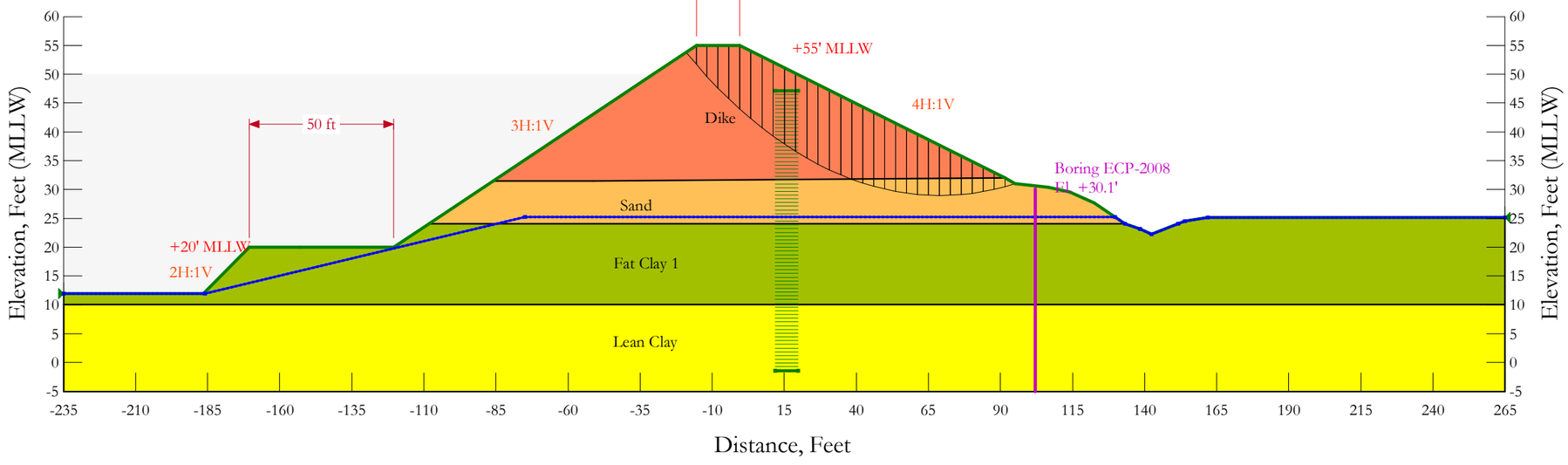



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 78+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2008**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 130 | | 1,800 |
| | Lean Clay (U) | 130 | | 3,000 |
| | Sand | 110 | 31 | |

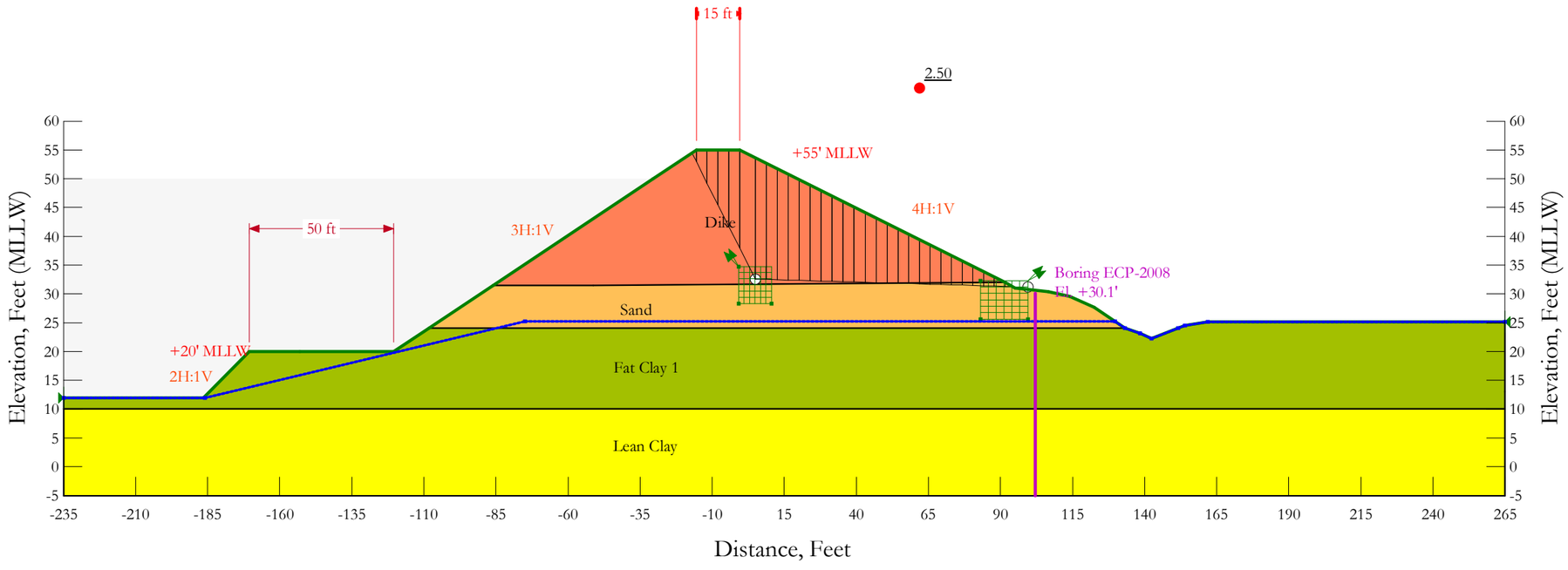


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 78+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2008**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

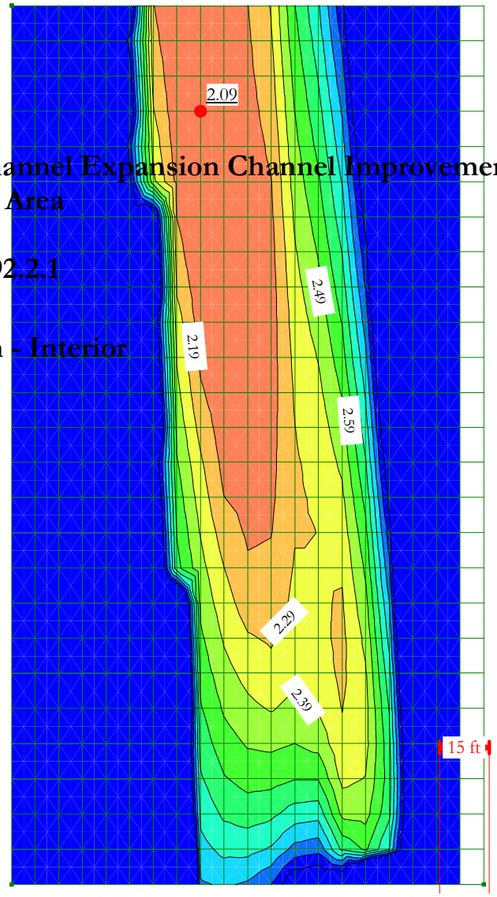
| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 130 | | 1,800 |
| | Lean Clay (U) | 130 | | 3,000 |
| | Sand | 110 | 31 | |

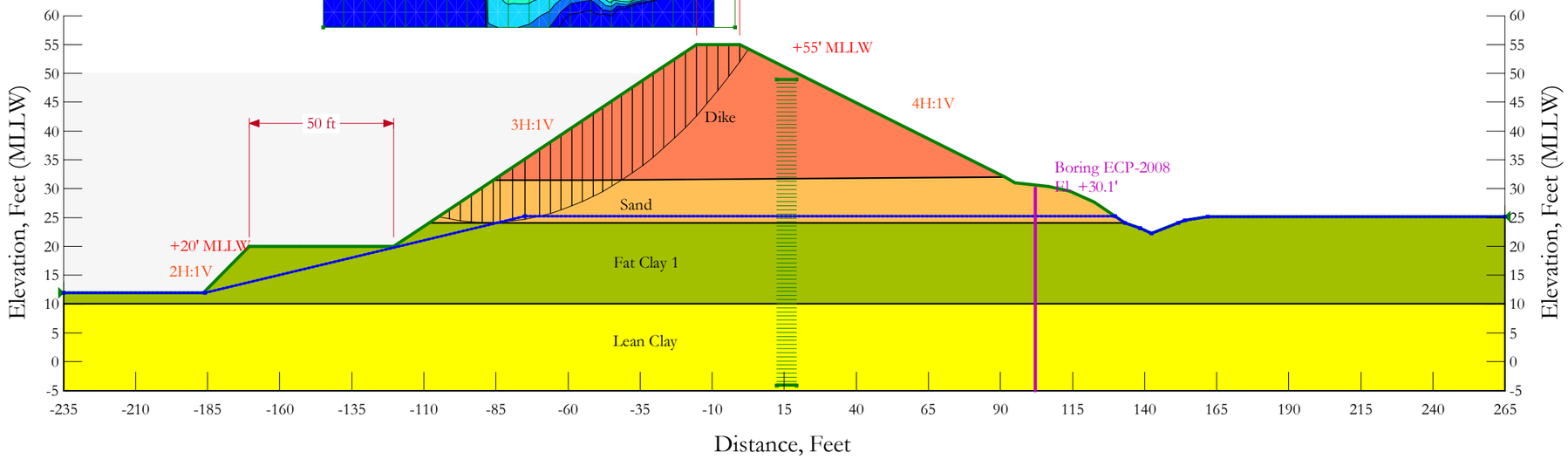


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 78+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2008**

**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 130 | | 1,800 |
| | Lean Clay (U) | 130 | | 3,000 |
| | Sand | 110 | 31 | |

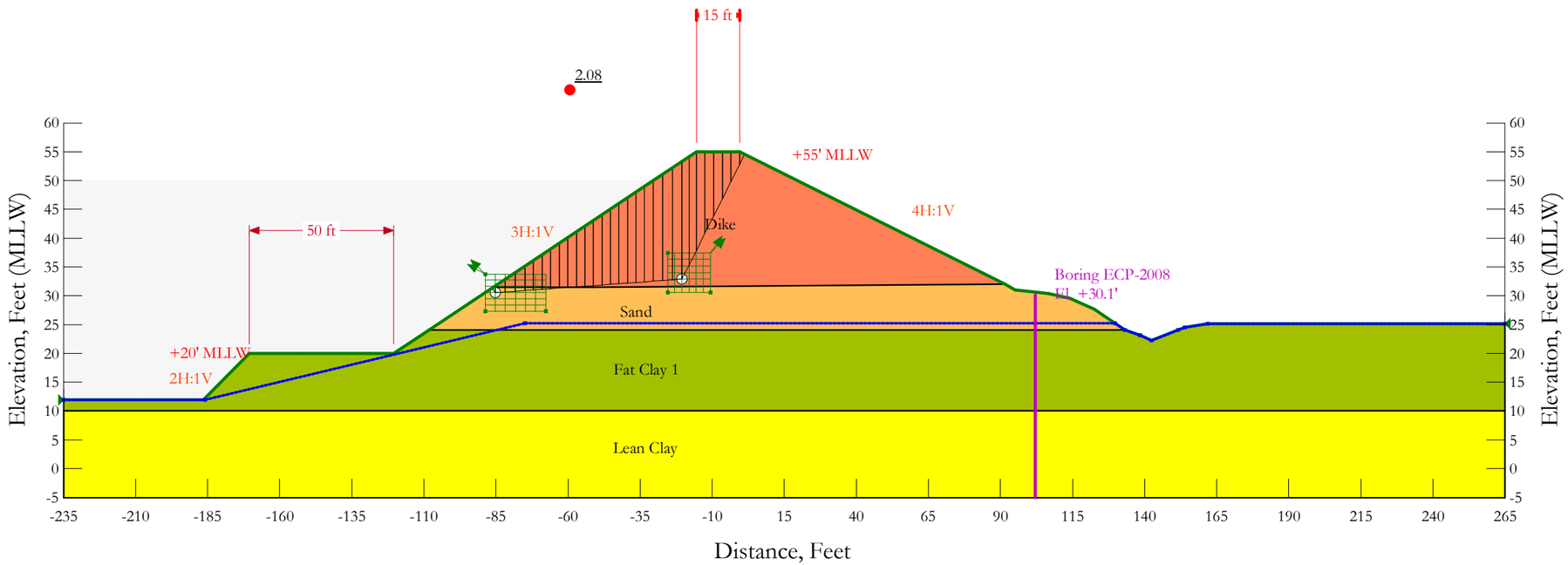


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 78+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2008**

**Loading Condition: Short Term - Interior**
**Slip Surface: Block**

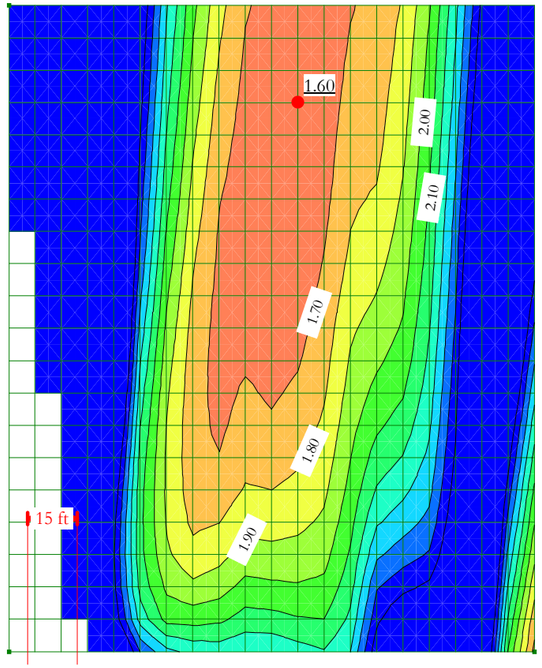
| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 130 | | 1,800 |
| | Lean Clay (U) | 130 | | 3,000 |
| | Sand | 110 | 31 | |

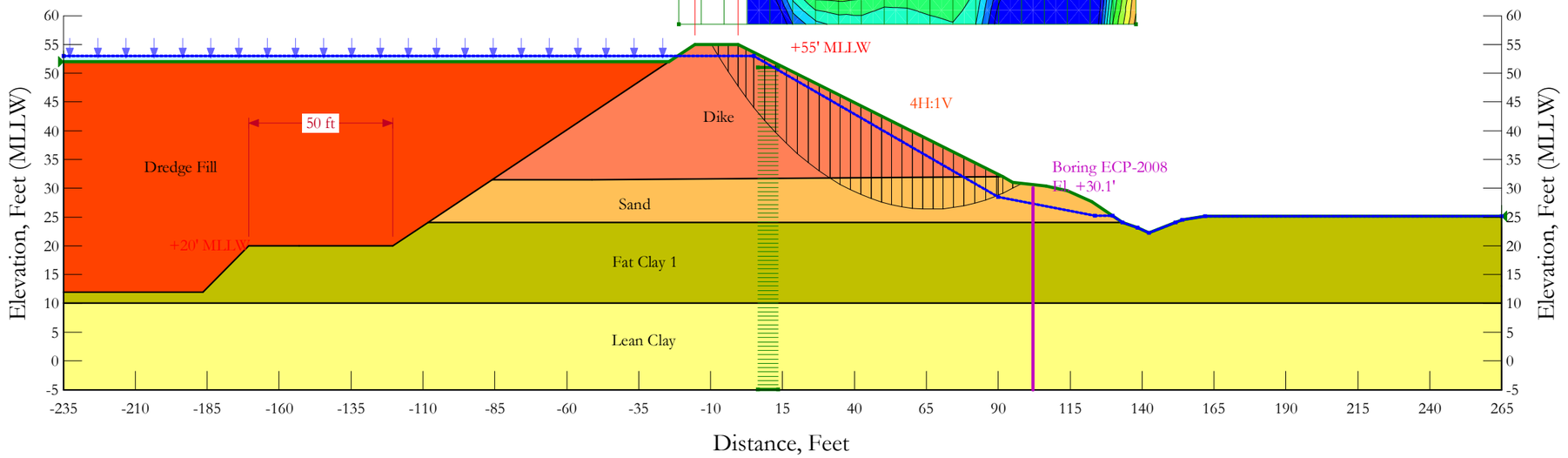


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 78+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2008**

**Loading Condition: Long Term**
**Slip Surface: Circular**

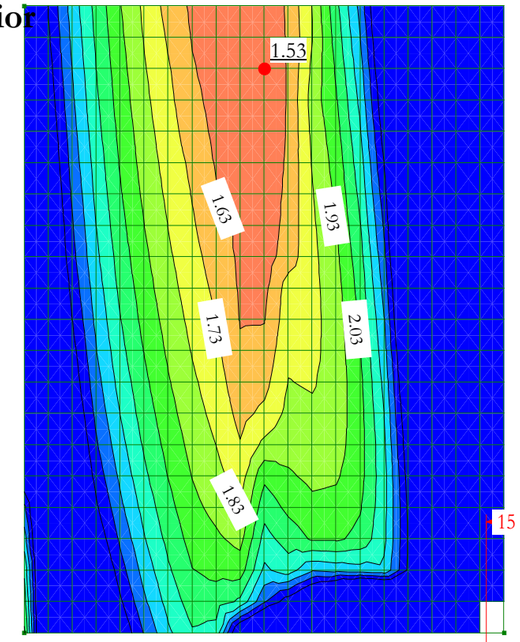
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Dike | 115 | 100 | 23 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay 1 | 130 | 185 | 23 |
| | Lean Clay | 130 | 230 | 27 |
| | Sand | 110 | 0 | 31 |



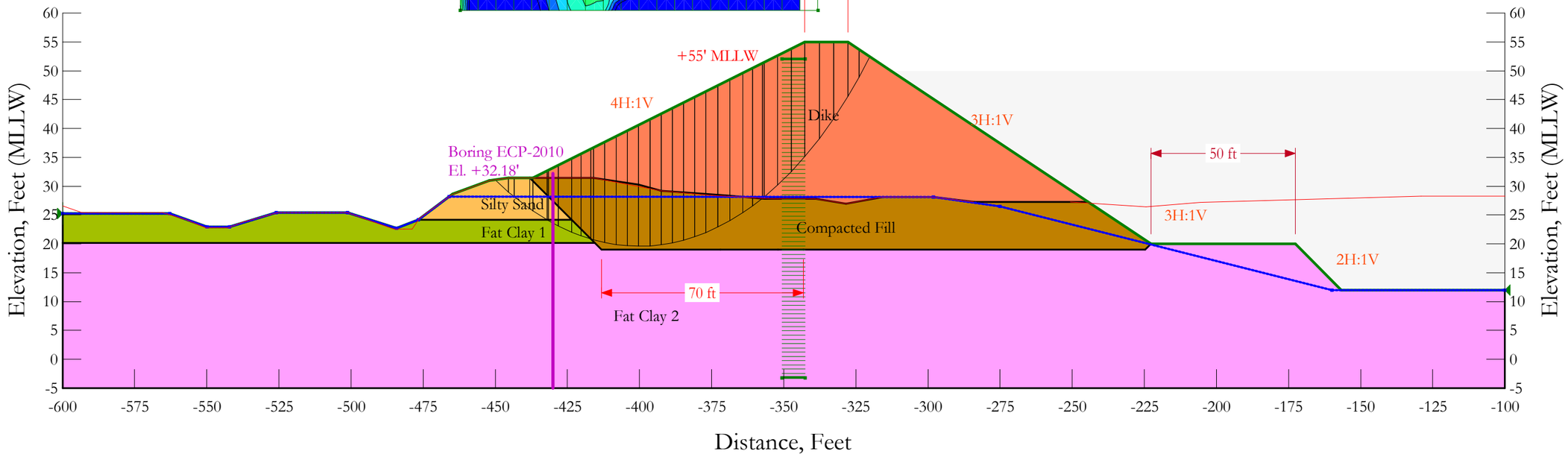



# SLOPE STABILITY ANALYSIS: RECOMMENDED SLOPE NEAR ECP-2005, ECP-2006 AND ECP-2010

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 0+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2010**
**Recommended Section: Compacted Fill**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

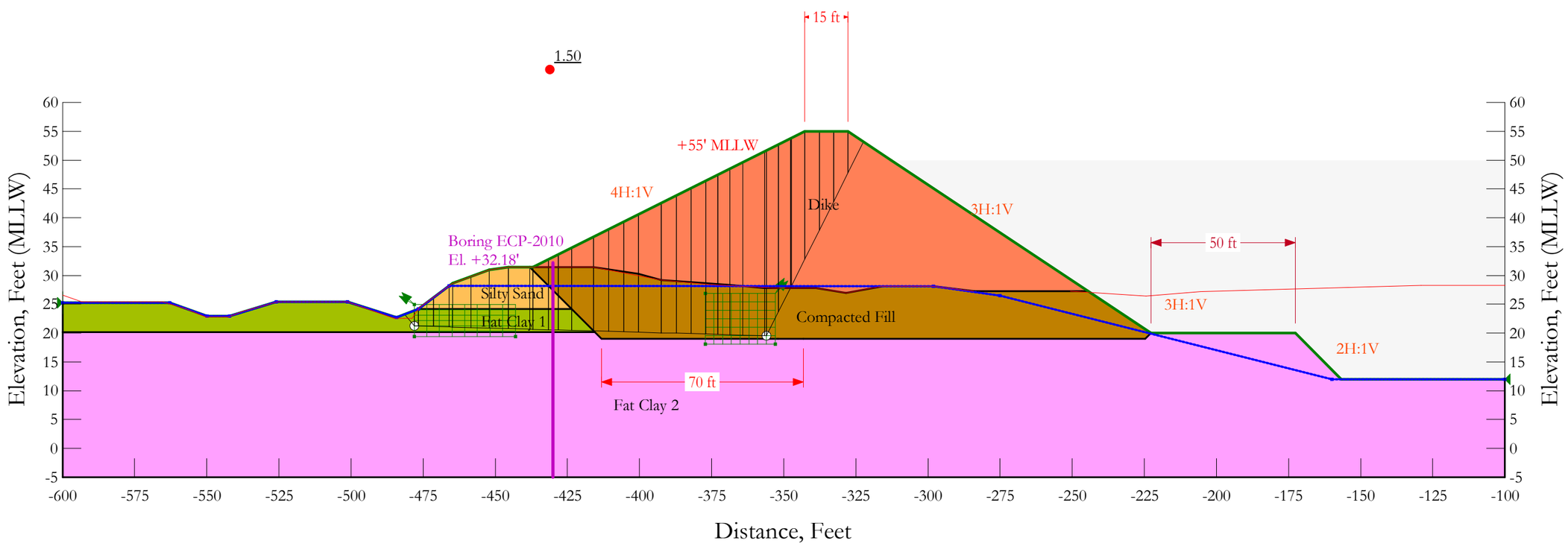



| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Compacted Fill (U) | 115 | | 600 |
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 110 | | 200 |
| | Fat Clay 2(U) | 125 | | 2,000 |
| | Silty Sand | 100 | 26 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 0+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2010**
**Recommended Section: Compacted Fill**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

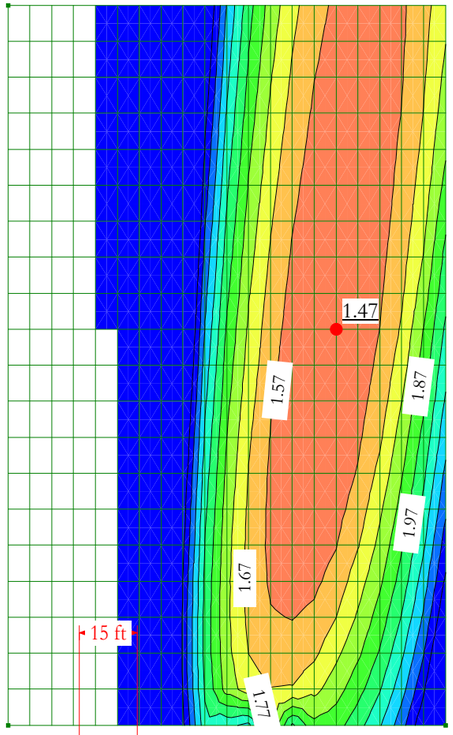
| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Compacted Fill (U) | 115 | | 600 |
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 110 | | 200 |
| | Fat Clay 2(U) | 125 | | 2,000 |
| | Silty Sand | 100 | 26 | |

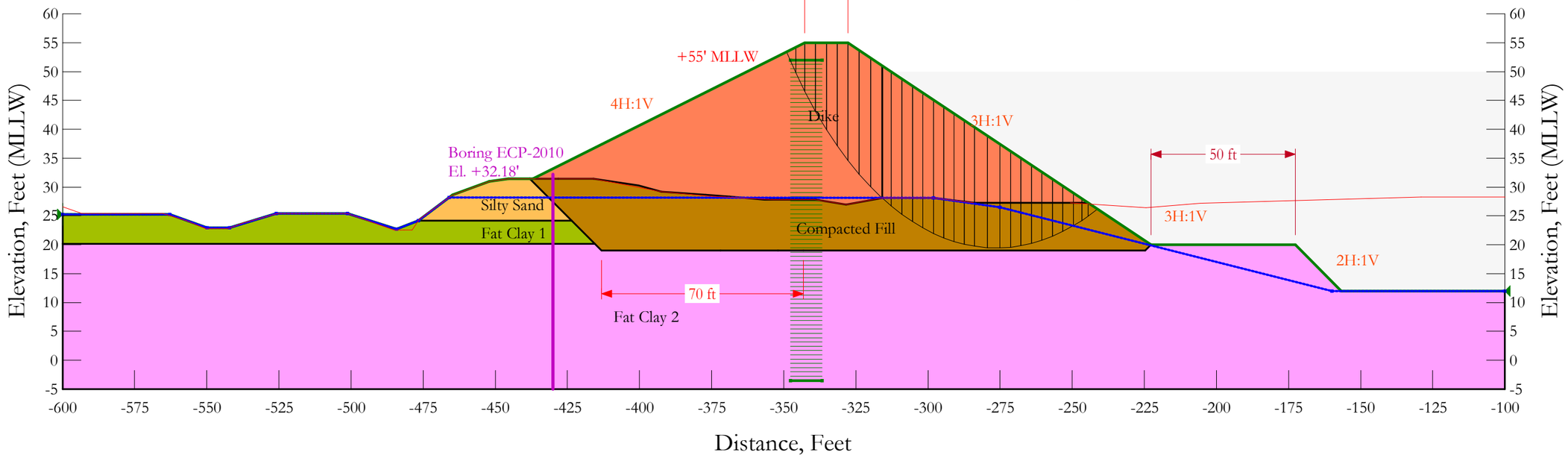


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 0+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2010**
**Recommended Section: Compacted Fill**

**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Compacted Fill (U) | 115 | | 600 |
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 110 | | 200 |
| | Fat Clay 2(U) | 125 | | 2,000 |
| | Silty Sand | 100 | 26 | |

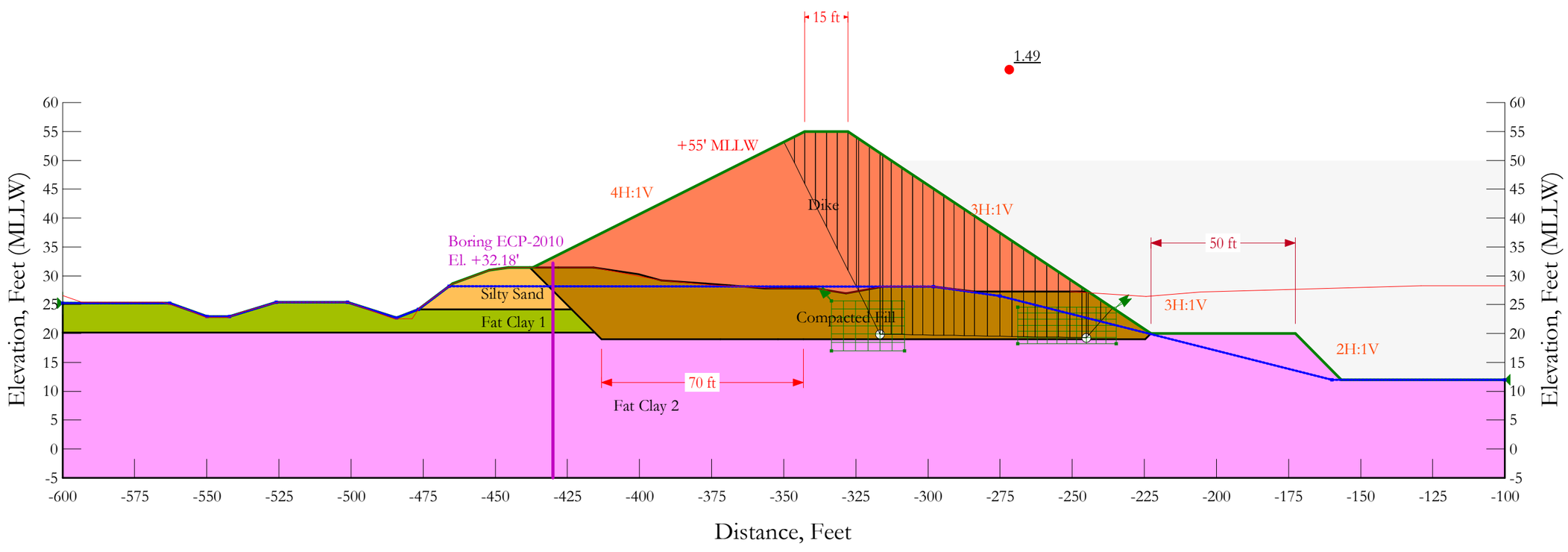


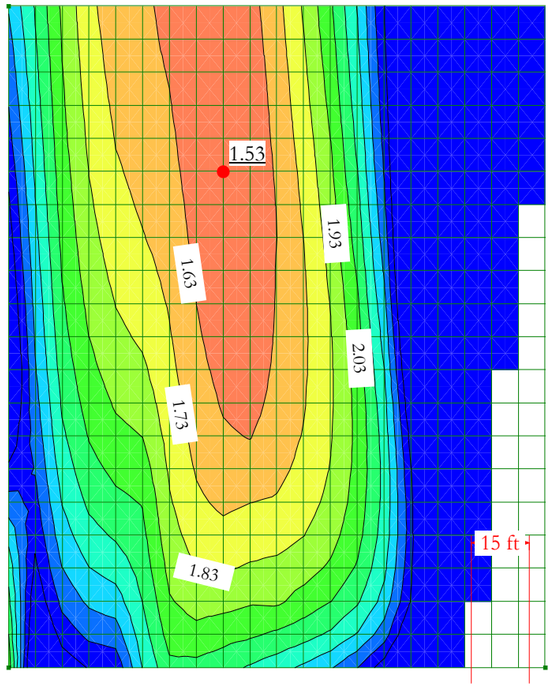
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 0+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2010**
**Recommended Section: Compacted Fill**

**Loading Condition: Short Term - Interior**
**Slip Surface: Block**

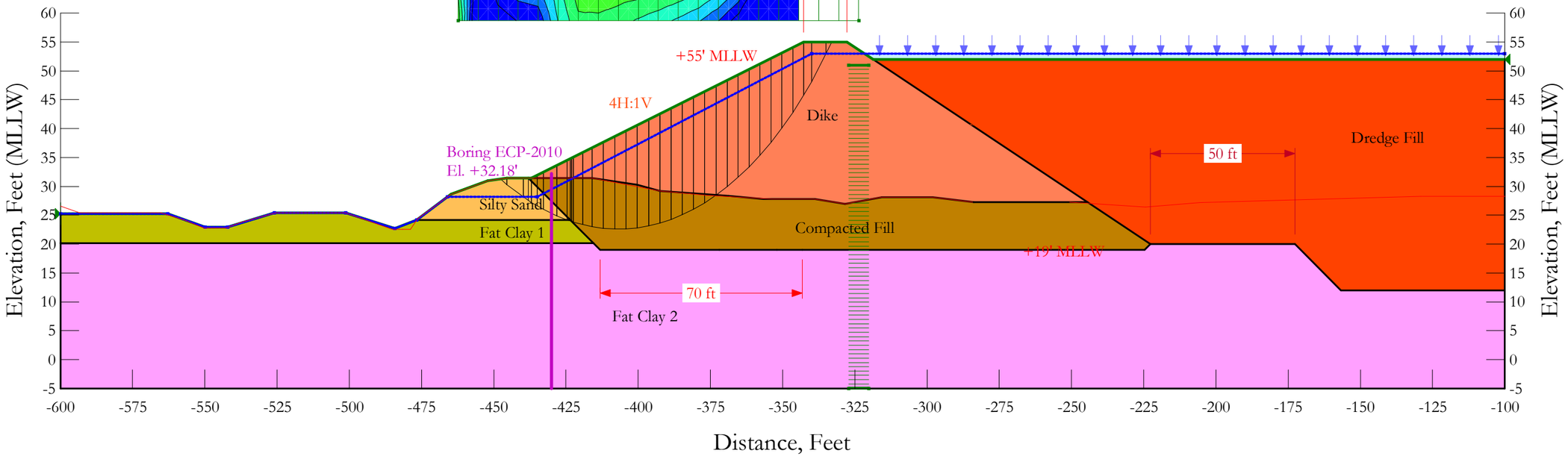
| Color | Name | Unit Weight (pcf) | Phi' (°) | Cohesion (psf) |
|---|---|---|---|---|
| | Compacted Fill (U) | 115 | | 600 |
| | Dike (U) | 115 | | 600 |
| | Fat Clay 1(U) | 110 | | 200 |
| | Fat Clay 2(U) | 125 | | 2,000 |
| | Silty Sand | 100 | 26 | |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 0+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2010**
**Recommended Section: Compacted Fill**
**Loading Condition: Long Term**
**Slip Surface: Circular**



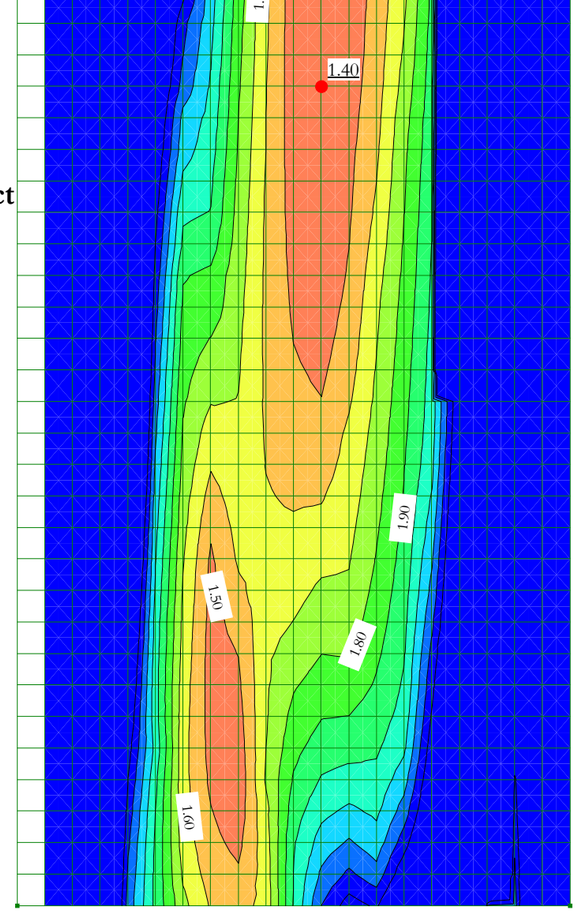

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Compacted Fill | 115 | 100 | 23 |
| | Dike | 115 | 100 | 23 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay 1 | 110 | 185 | 23 |
| | Fat Clay 2 | 125 | 185 | 23 |
| | Silty Sand | 100 | 0 | 26 |

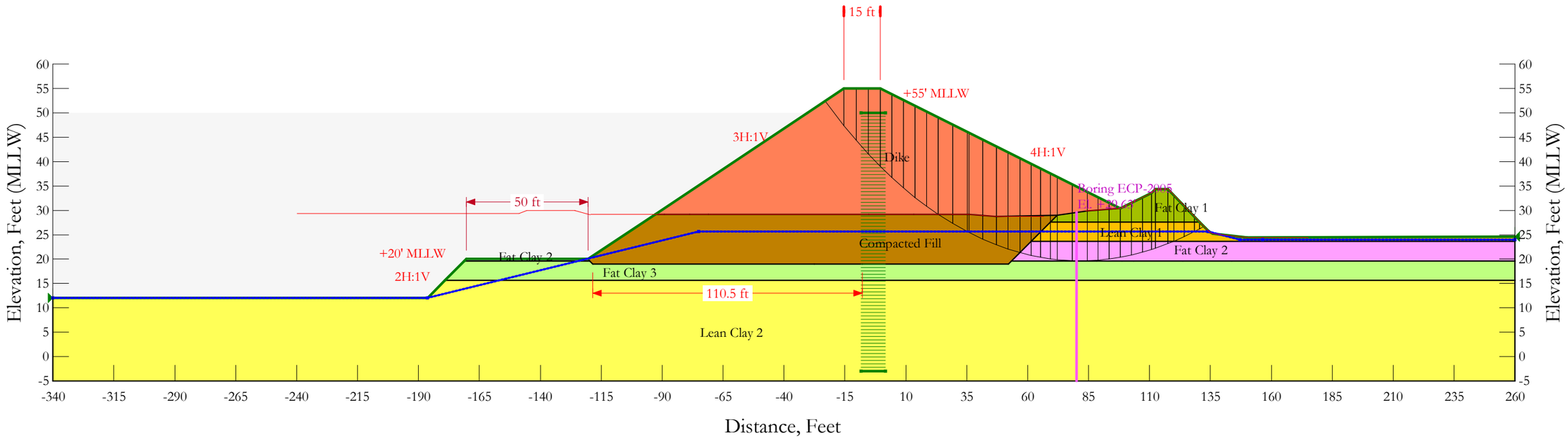


**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 54+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2005**
**Recommended Section: Compacted Fill**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

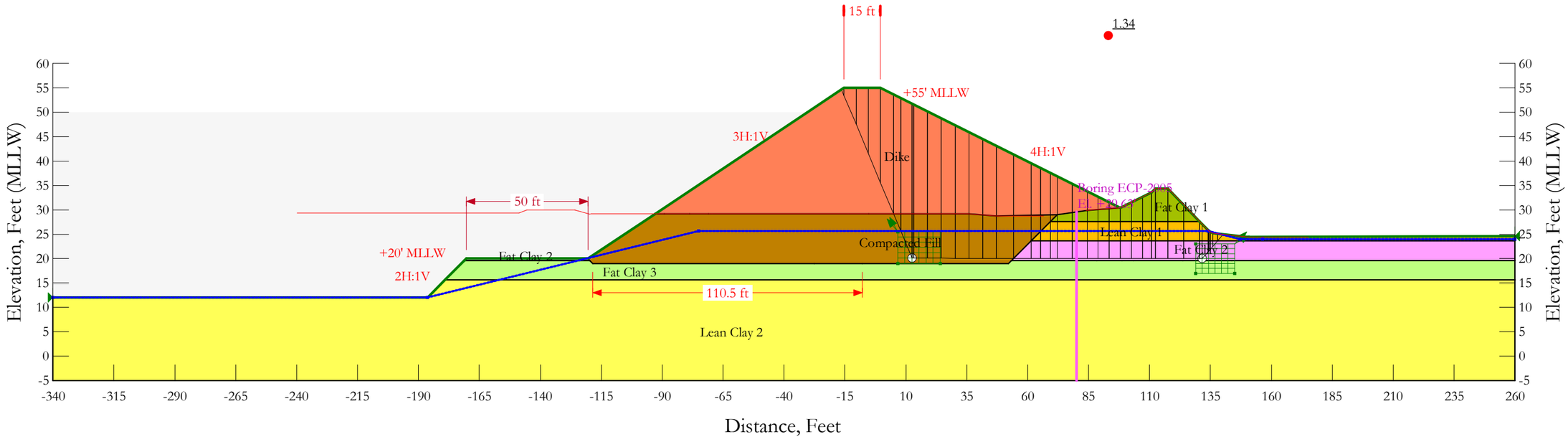
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Compacted Fill (U) | 115 | 600 |
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 110 | 1,000 |
| | Fat Clay 2(U) | 110 | 160 |
| | Fat Clay 3 (U) | 130 | 2,000 |
| | Lean Clay 1 (U) | 110 | 120 |
| | Lean Clay 2 (U) | 130 | 2,700 |



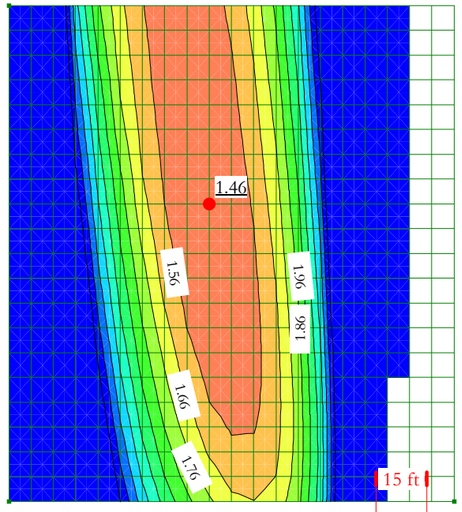
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 54+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2005**
**Recommended Section: Compacted Fill**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

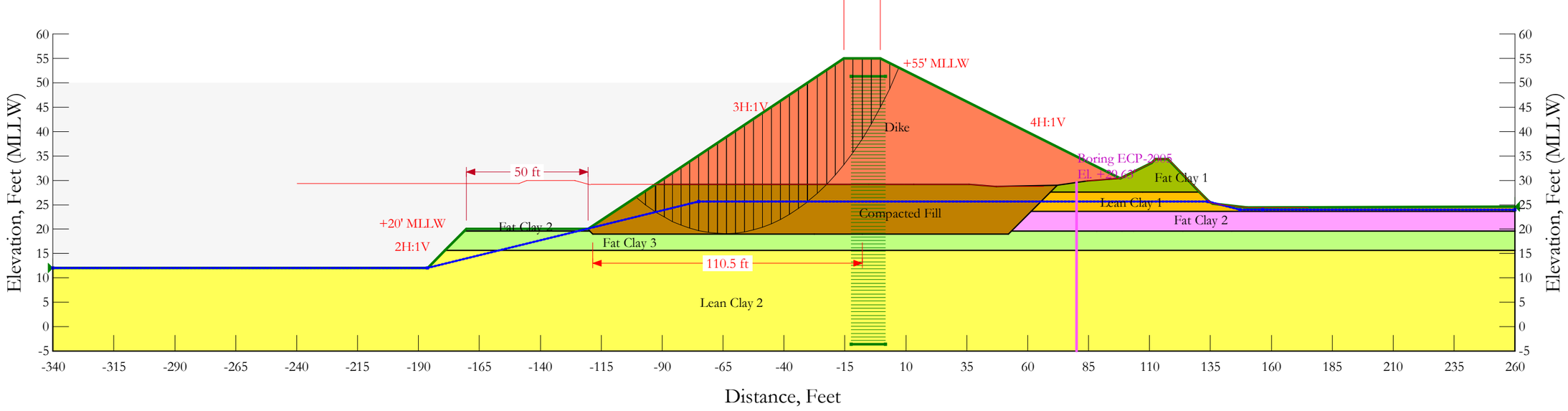
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Compacted Fill (U) | 115 | 600 |
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 110 | 1,000 |
| | Fat Clay 2(U) | 110 | 160 |
| | Fat Clay 3 (U) | 130 | 2,000 |
| | Lean Clay 1 (U) | 110 | 120 |
| | Lean Clay 2 (U) | 130 | 2,700 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 54+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2005**
**Recommended Section: Compacted Fill**
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

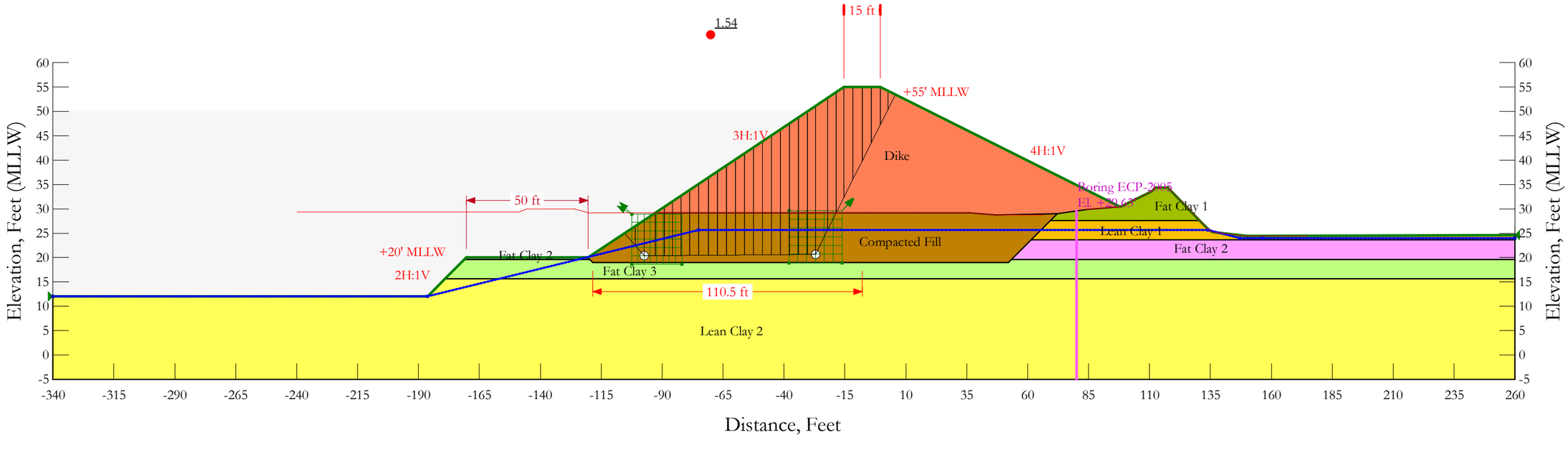
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Compacted Fill (U) | 115 | 600 |
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 110 | 1,000 |
| | Fat Clay 2(U) | 110 | 160 |
| | Fat Clay 3 (U) | 130 | 2,000 |
| | Lean Clay 1 (U) | 110 | 120 |
| | Lean Clay 2 (U) | 130 | 2,700 |



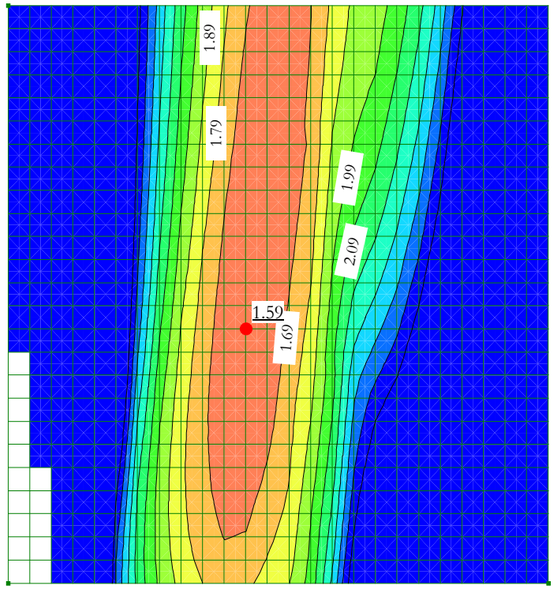
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 54+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2005**
**Recommended Section: Compacted Fill**
**Loading Condition: Short Term - Interior**
**Slip Surface: Block**

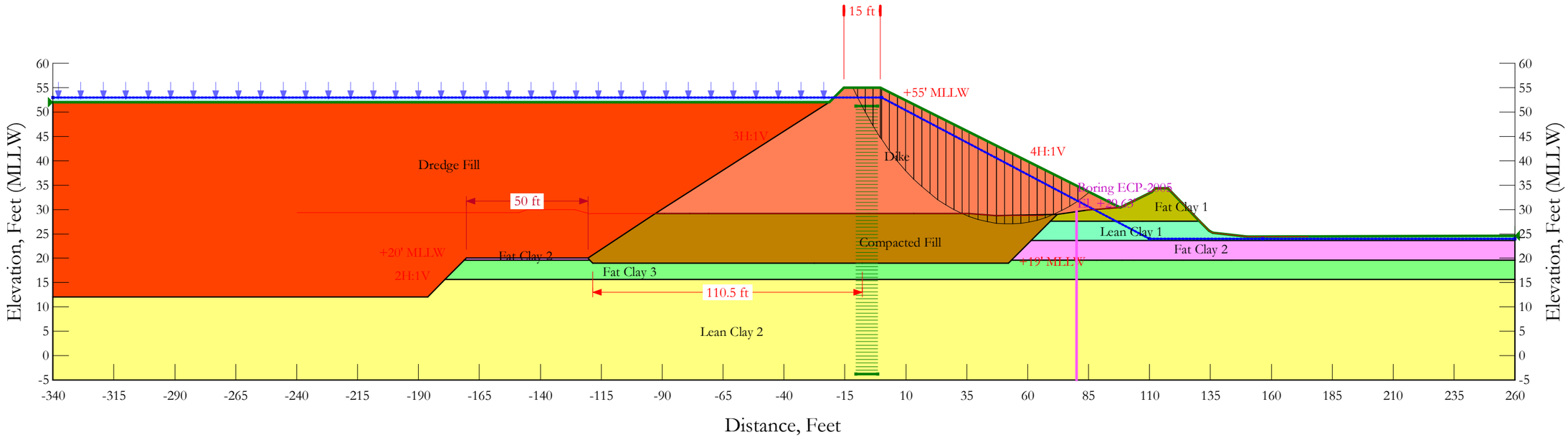
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Compacted Fill (U) | 115 | 600 |
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 110 | 1,000 |
| | Fat Clay 2(U) | 110 | 160 |
| | Fat Clay 3 (U) | 130 | 2,000 |
| | Lean Clay 1 (U) | 110 | 120 |
| | Lean Clay 2 (U) | 130 | 2,700 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 54+50**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2005**
**Recommended Section: Compacted Fill**
**Loading Condition: Long Term**
**Slip Surface: Circular**

| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Compacted Fill | 115 | 100 | 23 |
| | Dike | 115 | 100 | 23 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay 1 | 110 | 185 | 23 |
| | Fat Clay 2 | 110 | 185 | 23 |
| | Fat Clay 3 | 130 | 185 | 23 |
| | Lean Clay 1 | 110 | 230 | 27 |
| | Lean Clay 2 | 130 | 230 | 27 |

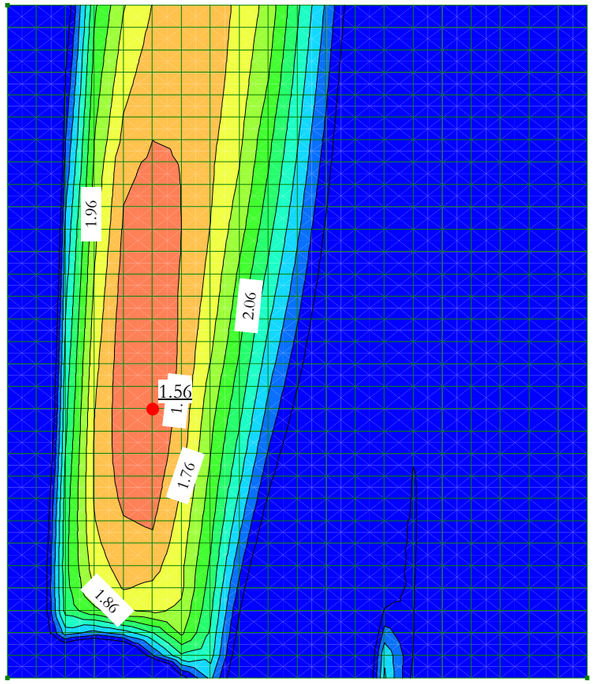


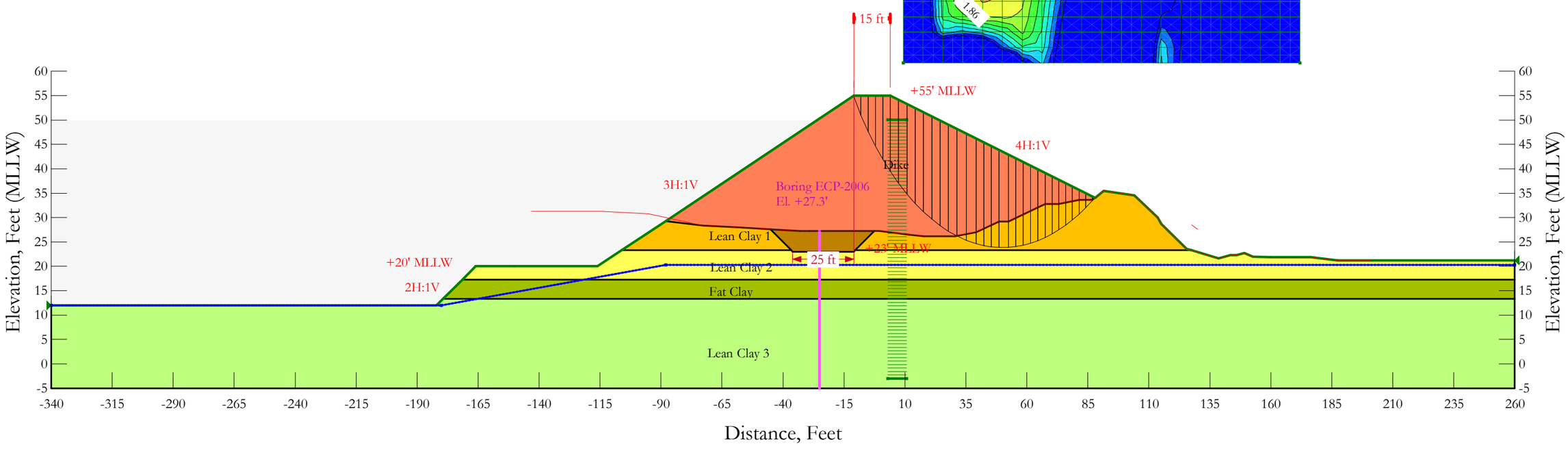



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 62+68**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2006**
**Recommended Section: Compacted Fill**

**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**

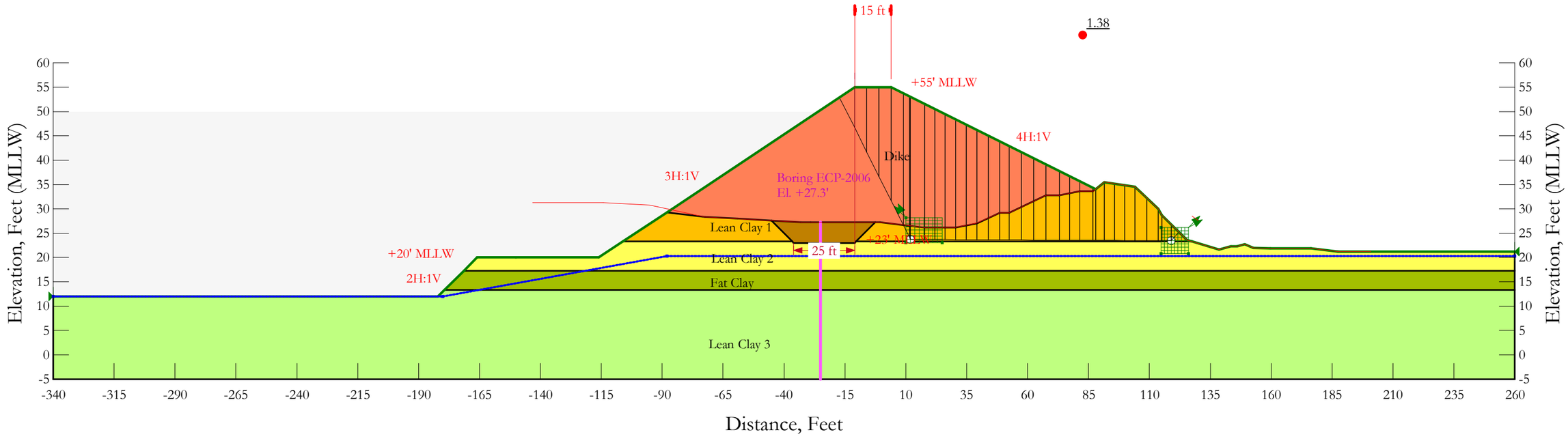
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Compacted Fill (U) | 115 | 600 |
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 130 | 2,340 |
| | Lean Clay 1 (U) | 110 | 340 |
| | Lean Clay 2 (U) | 125 | 1,040 |
| | Lean Clay 3 (U) | 130 | 2,340 |



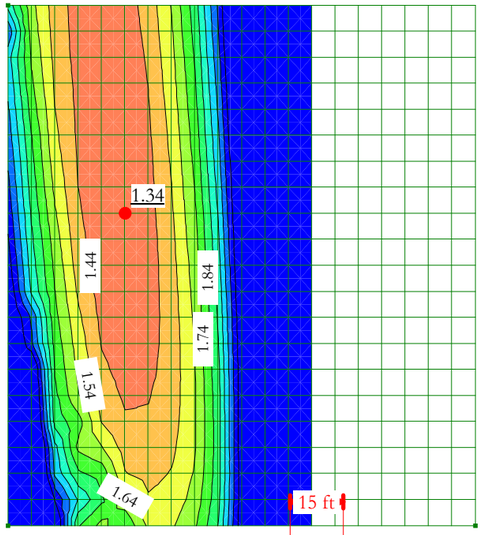
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 62+68**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2006**
**Recommended Section: Compacted Fill**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

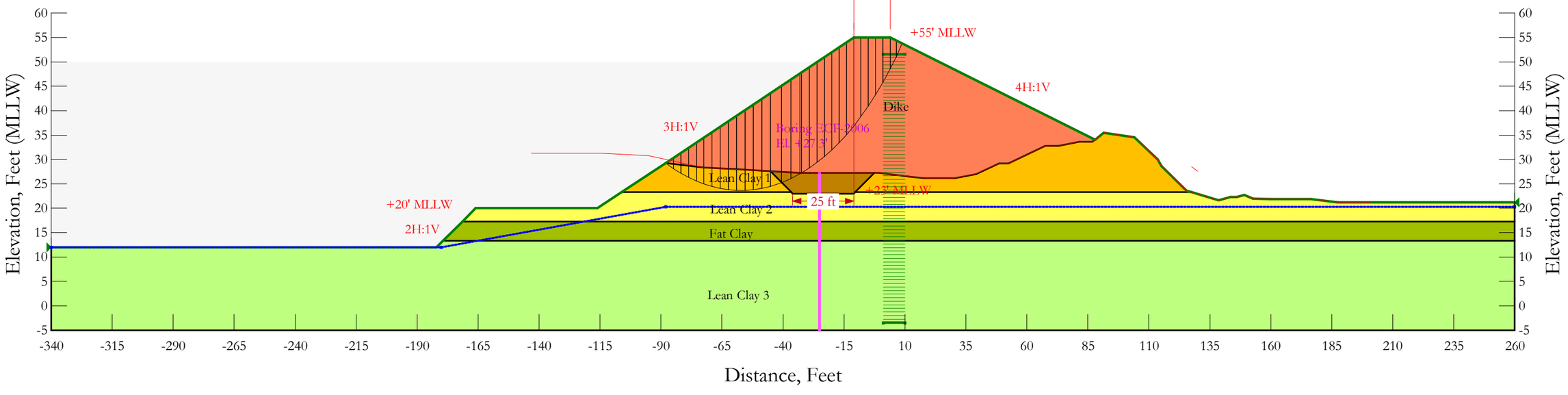
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Compacted Fill (U) | 115 | 600 |
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 130 | 2,340 |
| | Lean Clay 1 (U) | 110 | 340 |
| | Lean Clay 2 (U) | 125 | 1,040 |
| | Lean Clay 3 (U) | 130 | 2,340 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 62+68**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2006**
**Recommended Section: Compacted Fill**
**Loading Condition: Short Term - Interior**
**Slip Surface: Circular**

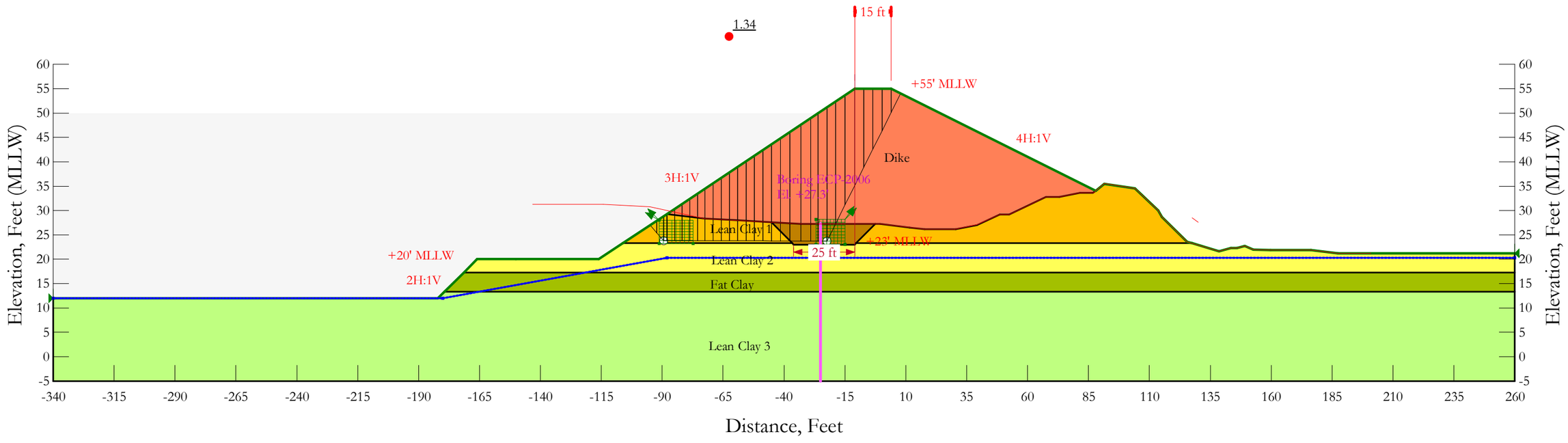
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Compacted Fill (U) | 115 | 600 |
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 130 | 2,340 |
| | Lean Clay 1 (U) | 110 | 340 |
| | Lean Clay 2 (U) | 125 | 1,040 |
| | Lean Clay 3 (U) | 130 | 2,340 |



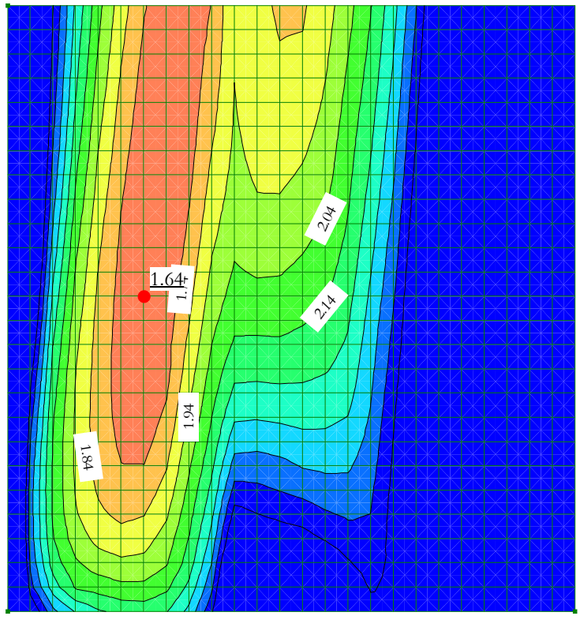
**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 62+68**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2006**
**Recommended Section: Compacted Fill**
**Loading Condition: Short Term - Interior**
**Slip Surface: Block**

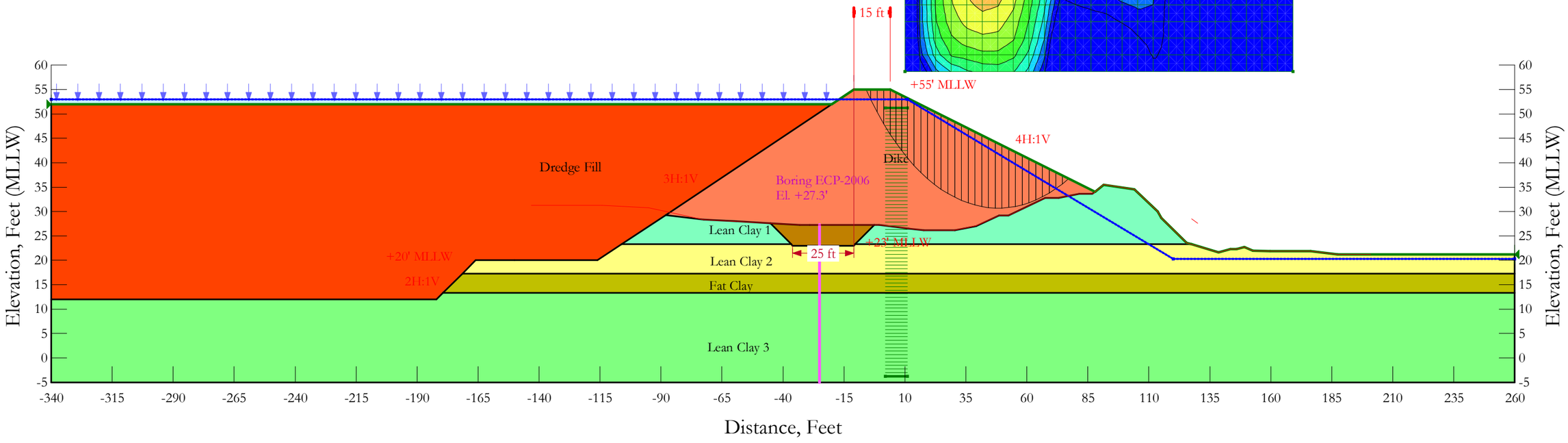
| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Compacted Fill (U) | 115 | 600 |
| | Dike (U) | 115 | 600 |
| | Fat Clay 1 (U) | 130 | 2,340 |
| | Lean Clay 1 (U) | 110 | 340 |
| | Lean Clay 2 (U) | 125 | 1,040 |
| | Lean Clay 3 (U) | 130 | 2,340 |



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location: E2 Clinton Placement Area**
**Station: 62+68**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2006**
**Recommended Section: Compacted Fill**
**Loading Condition: Long Term**
**Slip Surface: Circular**

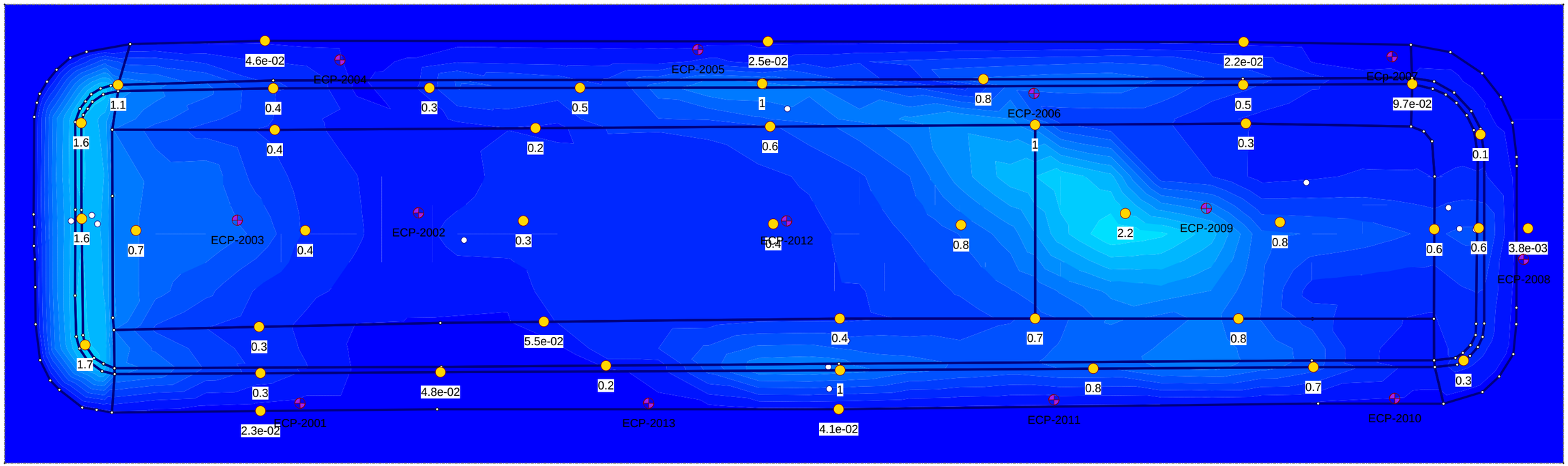
| Color | Name | Unit Weight (pcf) | Cohesion' (psf) | Phi' (°) |
|---|---|---|---|---|
| | Compacted Fill | 115 | 100 | 23 |
| | Dike | 115 | 100 | 23 |
| | Dredge Fill | 90 | 25 | 20 |
| | Fat Clay 1 | 130 | 185 | 23 |
| | Lean Clay 1 | 110 | 230 | 27 |
| | Lean Clay 2 | 125 | 230 | 27 |
| | Lean Clay 3 | 130 | 230 | 27 |



Project: E2 Clinton
Project No.HG1910092.1.1
Consolidation Settlement Analysis
Settlement occurred after 1 year
Proposed Fill Elevation at +55 Feet

| Material Name | Color | Unit Weight (kips/ft3) | Cc | Cr | Pc (ksf) | e0 | Cv (ft2/y) |
|---|---|---|---|---|---|---|---|
| Lean Clay(1) | | 0.127 | 0.102 | 0.028 | 6 | 0.559 | 1.3 |
| Fat Clay (1) | | 0.126 | 0.17 | 0.096 | 20 | 0.774 | 1.3 |
| Clayey/Silty Clayey Sand/Silty Sand/Silt | | 0.12 | - | - | - | - | - |
| Compacted Fill | | 0.125 | - | - | - | - | - |

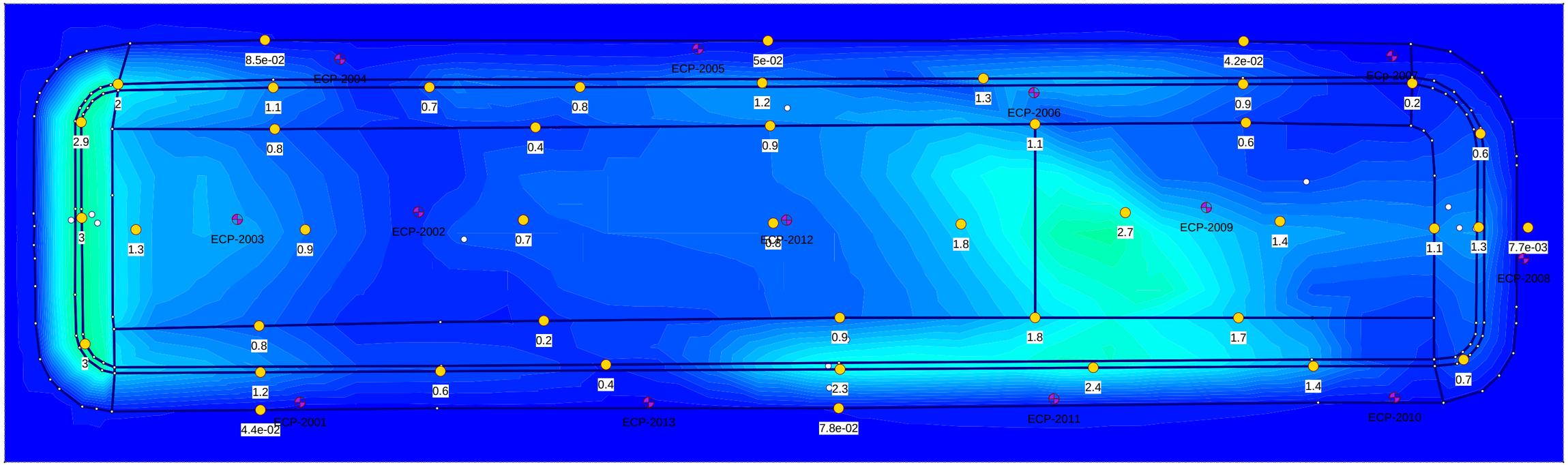



| | | | |
|---|---|---|---|
| HVJ ASSOCIATES | *Project* | E2 Clinton | |
| | *Analysis Description* | Settlement | |
| | *Drawn By* | NK | *Company* HVJ Associates, Inc. |
| | *Date* | 1/31/2020, 4:34:32 PM | *File Name* E2C.s3z |

SETTLE3 5.006

Project: E2 Clinton
Project No.HG1910092.1.1
Consolidation Settlement Analysis
Settlement occurred after 5 years
Proposed Fill Elevation at +55 Feet

| Material Name | Color | Unit Weight (kips/ft3) | Cc | Cr | Pc (ksf) | e0 | Cv (ft2/y) |
|---|---|---|---|---|---|---|---|
| Lean Clay(1) | | 0.127 | 0.102 | 0.028 | 6 | 0.559 | 1.3 |
| Fat Clay (1) | | 0.126 | 0.17 | 0.096 | 20 | 0.774 | 1.3 |
| Clayey/Silty Clayey Sand/Silty Sand/Silt | | 0.12 | - | - | - | - | - |
| Compacted Fill | | 0.125 | - | - | - | - | - |

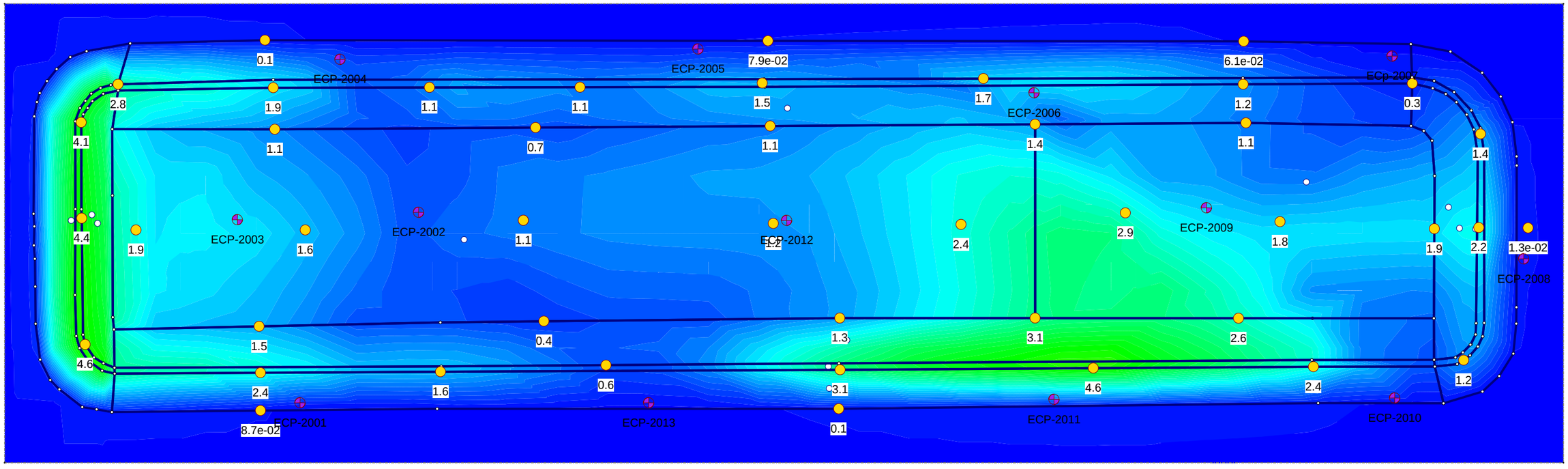



| | | | |
|---|---|---|---|
| HVJ ASSOCIATES | Project | E2 Clinton | |
| | Analysis Description | Settlement | |
| | Drawn By | NK | Company HVJ Associates, Inc. |
| | Date | 1/31/2020, 4:34:32 PM | File Name E2C.s3z |

SETTLE3 5.006

Project: E2 Clinton
Project No.HG1910092.1.1
Consolidation Settlement Analysis
Settlement occurred after 20 years
Proposed Fill Elevation at +55 Feet

| Material Name | Color | Unit Weight (kips/ft3) | Cc | Cr | Pc (ksf) | e0 | Cv (ft2/y) |
|---|---|---|---|---|---|---|---|
| Lean Clay(1) | | 0.127 | 0.102 | 0.028 | 6 | 0.559 | 1.3 |
| Fat Clay (1) | | 0.126 | 0.17 | 0.096 | 20 | 0.774 | 1.3 |
| Clayey/Silty Clayey Sand/Silty Sand/Silt | | 0.12 | - | - | - | - | - |
| Compacted Fill | | 0.125 | - | - | - | - | - |

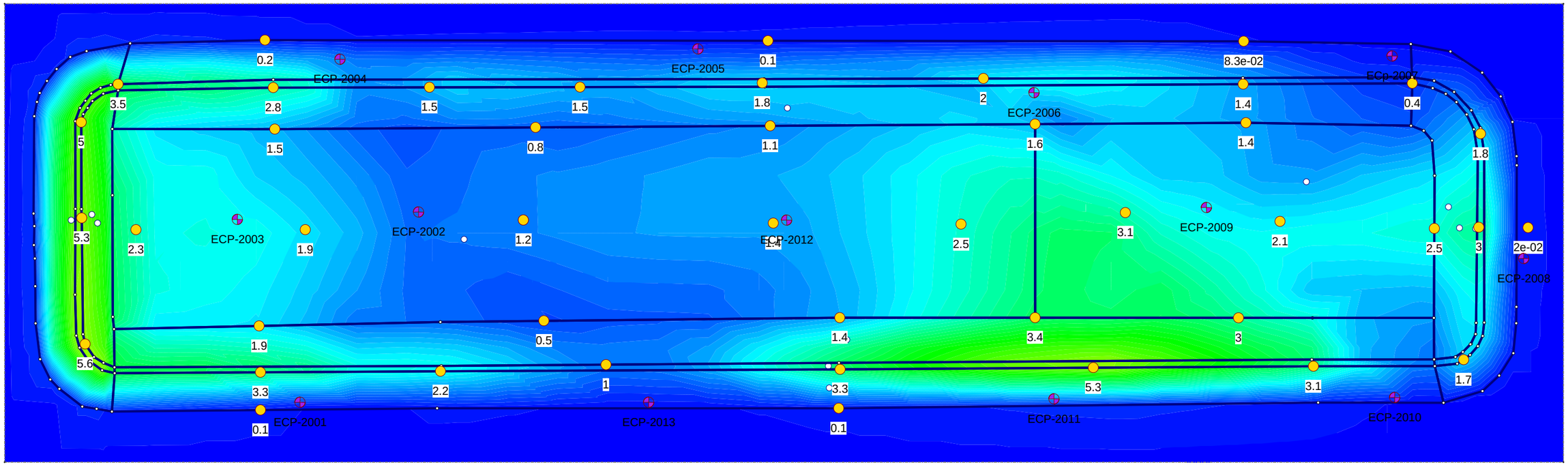



| | | | |
|---|---|---|---|
| HVJ ASSOCIATES | *Project* | E2 Clinton | |
| | *Analysis Description* | Settlement | |
| | *Drawn By* | NK | *Company* HVJ Associates, Inc. |
| | *Date* | 1/31/2020, 4:34:32 PM | *File Name* E2C.s3z |

SETTLE3 5.006

Project: E2 Clinton
Project No.HG1910092.1.1
Consolidation Settlement Analysis
Settlement occurred after 50 years
Proposed Fill Elevation at +55 Feet

| Material Name | Color | Unit Weight (kips/ft3) | Cc | Cr | Pc (ksf) | e0 | Cv (ft2/y) |
|---|---|---|---|---|---|---|---|
| Lean Clay(1) | | 0.127 | 0.102 | 0.028 | 6 | 0.559 | 1.3 |
| Fat Clay (1) | | 0.126 | 0.17 | 0.096 | 20 | 0.774 | 1.3 |
| Clayey/Silty Clayey Sand/Silty Sand/Silt | | 0.12 | - | - | - | - | - |
| Compacted Fill | | 0.125 | - | - | - | - | - |




| | | | |
|---|---|---|---|
| HVJ ASSOCIATES | *Project* | E2 Clinton | |
| | *Analysis Description* | Settlement | |
| | *Drawn By* | NK | *Company* HVJ Associates, Inc. |
| | *Date* | 1/31/2020, 4:34:32 PM | *File Name* E2C.s3z |

SETTLE3 5.006

# Settle3 Analysis Information
# E2 Clinton

## Project Settings

| | |
|---|---|
| Document Name | E2C |
| Project Title | E2 Clinton |
| Analysis | Settlement |
| Author | NK |
| Company | HVJ Associates, Inc. |
| Date Created | 1/31/2020, 4:34:32 PM |
| Stress Computation Method | Boussinesq |
| Time-dependent Consolidation Analysis | |
| Time Units | years |
| Permeability Units | feet/year |
| Minimum settlement ratio for subgrade modulus | 0.9 |

Use average properties to calculate layered stresses

Improve consolidation accuracy

Ignore negative effective stresses in settlement calculations

## Stage Settings

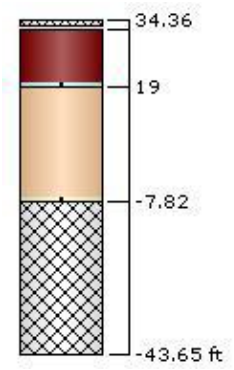
| Stage # | Name | Time [years] |
|---|---|---|
| 1 | Stage 1 | 0 |
| 2 | Stage 2 | 1 |
| 3 | Stage 3 | 5 |
| 4 | Stage 4 | 20 |
| 5 | Stage 5 | 50 |

## Soil Layers

Ground Surface Drained: Yes

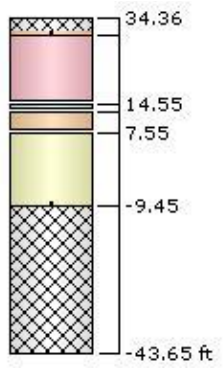
### ECP-2010: (2778.46, -100.838)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 13.18 | -32.18 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -19 | No |
| 3 | Fat Clay (1) | 26.82 | -19 | No |
| 4 | Fat Clay (2) | 0 | 7.82 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 7.82 | No |
| 6 | Fat Clay (1) | 0 | 7.82 | No |
| 7 | Lean Clay(1) | 0 | 7.82 | No |
| 8 | Lean Clay(2) | 0 | 7.82 | Yes |
| 9 | Fat Clay (1) | 0 | 7.82 | No |
| 10 | Lean Clay(1) | 0 | 7.82 | No |
| 11 | Fat Clay (1) | 0 | 7.82 | No |
| 12 | Fat Clay (2) | 0 | 7.82 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 7.82 | No |
| 14 | Lean Clay(1) | 0 | 7.82 | No |
| 15 | Fat Clay (1) | 0 | 7.82 | No |
| 16 | Lean Clay(1) | 0 | 7.82 | No |



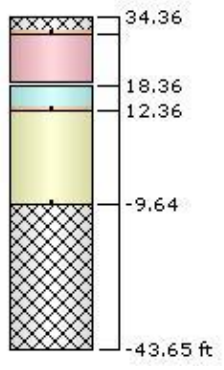

## ECP-2011: (1943.53, -104.144)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 0 | -30.55 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -30.55 | No |
| 3 | Fat Clay (1) | 0 | -30.55 | No |
| 4 | Fat Clay (2) | 16 | -30.55 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 2 | -14.55 | No |
| 6 | Fat Clay (1) | 5 | -12.55 | No |
| 7 | Lean Clay(1) | 17 | -7.55 | No |
| 8 | Lean Clay(2) | 0 | 9.45 | Yes |
| 9 | Fat Clay (1) | 0 | 9.45 | No |
| 10 | Lean Clay(1) | 0 | 9.45 | No |
| 11 | Fat Clay (1) | 0 | 9.45 | No |
| 12 | Fat Clay (2) | 0 | 9.45 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 9.45 | No |
| 14 | Lean Clay(1) | 0 | 9.45 | No |
| 15 | Fat Clay (1) | 0 | 9.45 | No |
| 16 | Lean Clay(1) | 0 | 9.45 | No |



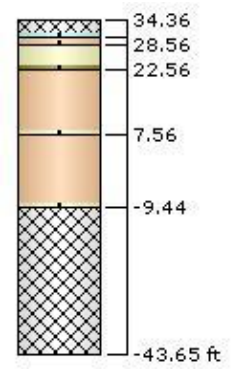

## ECP-2012: (1288.35, 333.745)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 0 | -30.36 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -30.36 | No |
| 3 | Fat Clay (1) | 0 | -30.36 | No |
| 4 | Fat Clay (2) | 12 | -30.36 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 6 | -18.36 | No |
| 6 | Fat Clay (1) | 0 | -12.36 | No |
| 7 | Lean Clay(1) | 22 | -12.36 | No |
| 8 | Lean Clay(2) | 0 | 9.64 | Yes |
| 9 | Fat Clay (1) | 0 | 9.64 | No |
| 10 | Lean Clay(1) | 0 | 9.64 | No |
| 11 | Fat Clay (1) | 0 | 9.64 | No |
| 12 | Fat Clay (2) | 0 | 9.64 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 9.64 | No |
| 14 | Lean Clay(1) | 0 | 9.64 | No |
| 15 | Fat Clay (1) | 0 | 9.64 | No |
| 16 | Lean Clay(1) | 0 | 9.64 | No |



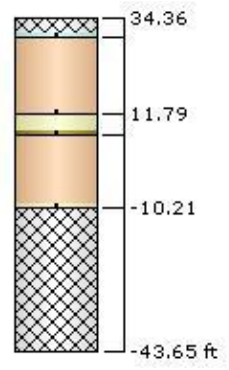

## ECP-2013: (950.04, -112.722)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 0 | -30.56 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -30.56 | No |
| 3 | Fat Clay (1) | 2 | -30.56 | No |
| 4 | Fat Clay (2) | 0 | -28.56 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -28.56 | No |
| 6 | Fat Clay (1) | 0 | -28.56 | No |
| 7 | Lean Clay(1) | 6 | -28.56 | No |
| 8 | Lean Clay(2) | 0 | -22.56 | Yes |
| 9 | Fat Clay (1) | 15 | -22.56 | No |
| 10 | Lean Clay(1) | 0 | -7.56 | No |
| 11 | Fat Clay (1) | 17 | -7.56 | No |
| 12 | Fat Clay (2) | 0 | 9.44 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 9.44 | No |
| 14 | Lean Clay(1) | 0 | 9.44 | No |
| 15 | Fat Clay (1) | 0 | 9.44 | No |
| 16 | Lean Clay(1) | 0 | 9.44 | No |



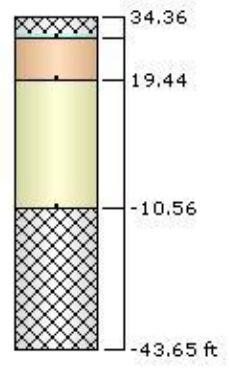

## ECP-2001: (95.624, -112.73)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 0 | -29.79 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -29.79 | No |
| 3 | Fat Clay (1) | 18 | -29.79 | No |
| 4 | Fat Clay (2) | 0 | -11.79 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -11.79 | No |
| 6 | Fat Clay (1) | 0 | -11.79 | No |
| 7 | Lean Clay(1) | 5 | -11.79 | No |
| 8 | Lean Clay(2) | 0 | -6.79 | Yes |
| 9 | Fat Clay (1) | 17 | -6.79 | No |
| 10 | Lean Clay(1) | 0 | 10.21 | No |
| 11 | Fat Clay (1) | 0 | 10.21 | No |
| 12 | Fat Clay (2) | 0 | 10.21 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 10.21 | No |
| 14 | Lean Clay(1) | 0 | 10.21 | No |
| 15 | Fat Clay (1) | 0 | 10.21 | No |
| 16 | Lean Clay(1) | 0 | 10.21 | No |



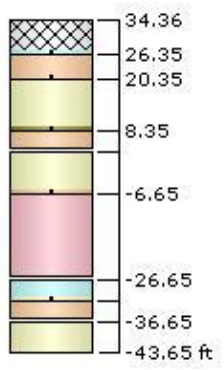

## ECP-2002: (386.069, 353.579)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 0 | -29.44 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -29.44 | No |
| 3 | Fat Clay (1) | 10 | -29.44 | No |
| 4 | Fat Clay (2) | 0 | -19.44 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -19.44 | No |
| 6 | Fat Clay (1) | 0 | -19.44 | No |
| 7 | Lean Clay(1) | 30 | -19.44 | No |
| 8 | Lean Clay(2) | 0 | 10.56 | Yes |
| 9 | Fat Clay (1) | 0 | 10.56 | No |
| 10 | Lean Clay(1) | 0 | 10.56 | No |
| 11 | Fat Clay (1) | 0 | 10.56 | No |
| 12 | Fat Clay (2) | 0 | 10.56 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 10.56 | No |
| 14 | Lean Clay(1) | 0 | 10.56 | No |
| 15 | Fat Clay (1) | 0 | 10.56 | No |
| 16 | Lean Clay(1) | 0 | 10.56 | No |



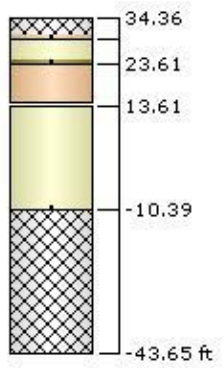

## ECP-2003: (-58.027, 335.549)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 0 | -26.35 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -26.35 | No |
| 3 | Fat Clay (1) | 6 | -26.35 | No |
| 4 | Fat Clay (2) | 0 | -20.35 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -20.35 | No |
| 6 | Fat Clay (1) | 0 | -20.35 | No |
| 7 | Lean Clay(1) | 12 | -20.35 | No |
| 8 | Lean Clay(2) | 0 | -8.35 | Yes |
| 9 | Fat Clay (1) | 5 | -8.35 | No |
| 10 | Lean Clay(1) | 10 | -3.35 | No |
| 11 | Fat Clay (1) | 0 | 6.65 | No |
| 12 | Fat Clay (2) | 20 | 6.65 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 5 | 26.65 | No |
| 14 | Lean Clay(1) | 0 | 31.65 | No |
| 15 | Fat Clay (1) | 5 | 31.65 | No |
| 16 | Lean Clay(1) | 7 | 36.65 | No |



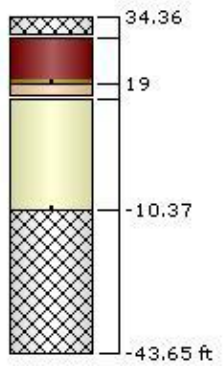

## ECP-2004: (193.369, 728.416)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 0 | -29.61 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -29.61 | No |
| 3 | Fat Clay (1) | 0 | -29.61 | No |
| 4 | Fat Clay (2) | 0 | -29.61 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -29.61 | No |
| 6 | Fat Clay (1) | 0 | -29.61 | No |
| 7 | Lean Clay(1) | 6 | -29.61 | No |
| 8 | Lean Clay(2) | 0 | -23.61 | Yes |
| 9 | Fat Clay (1) | 10 | -23.61 | No |
| 10 | Lean Clay(1) | 24 | -13.61 | No |
| 11 | Fat Clay (1) | 0 | 10.39 | No |
| 12 | Fat Clay (2) | 0 | 10.39 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 10.39 | No |
| 14 | Lean Clay(1) | 0 | 10.39 | No |
| 15 | Fat Clay (1) | 0 | 10.39 | No |
| 16 | Lean Clay(1) | 0 | 10.39 | No |



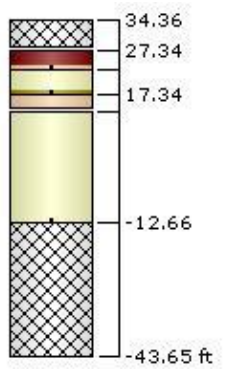

## ECP-2005: (1070.65, 753.803)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 10.63 | -29.63 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -19 | No |
| 3 | Fat Clay (1) | 0 | -19 | No |
| 4 | Fat Clay (2) | 0 | -19 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -19 | No |
| 6 | Fat Clay (1) | 0 | -19 | No |
| 7 | Lean Clay(1) | 0 | -19 | No |
| 8 | Lean Clay(2) | 0 | -19 | Yes |
| 9 | Fat Clay (1) | 3.37 | -19 | No |
| 10 | Lean Clay(1) | 26 | -15.63 | No |
| 11 | Fat Clay (1) | 0 | 10.37 | No |
| 12 | Fat Clay (2) | 0 | 10.37 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 10.37 | No |
| 14 | Lean Clay(1) | 0 | 10.37 | No |
| 15 | Fat Clay (1) | 0 | 10.37 | No |
| 16 | Lean Clay(1) | 0 | 10.37 | No |



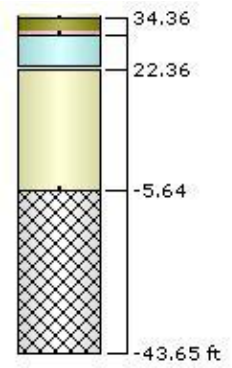

## ECP-2006: (1894.36, 646.531)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 4.34 | -27.34 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -23 | No |
| 3 | Fat Clay (1) | 0 | -23 | No |
| 4 | Fat Clay (2) | 0 | -23 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -23 | No |
| 6 | Fat Clay (1) | 0 | -23 | No |
| 7 | Lean Clay(1) | 5.66 | -23 | No |
| 8 | Lean Clay(2) | 0 | -17.34 | Yes |
| 9 | Fat Clay (1) | 4 | -17.34 | No |
| 10 | Lean Clay(1) | 26 | -13.34 | No |
| 11 | Fat Clay (1) | 0 | 12.66 | No |
| 12 | Fat Clay (2) | 0 | 12.66 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 12.66 | No |
| 14 | Lean Clay(1) | 0 | 12.66 | No |
| 15 | Fat Clay (1) | 0 | 12.66 | No |
| 16 | Lean Clay(1) | 0 | 12.66 | No |



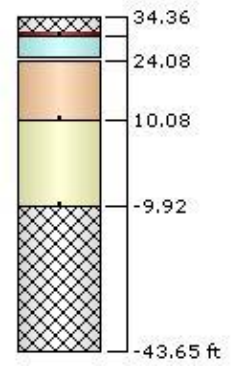

## ECp-2007: (2772.33, 736.417)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 0 | -34.36 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -34.36 | No |
| 3 | Fat Clay (1) | 0 | -34.36 | No |
| 4 | Fat Clay (2) | 0 | -34.36 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -34.36 | No |
| 6 | Fat Clay (1) | 0 | -34.36 | No |
| 7 | Lean Clay(1) | 0 | -34.36 | No |
| 8 | Lean Clay(2) | 4 | -34.36 | Yes |
| 9 | Fat Clay (1) | 0 | -30.36 | No |
| 10 | Lean Clay(1) | 0 | -30.36 | No |
| 11 | Fat Clay (1) | 0 | -30.36 | No |
| 12 | Fat Clay (2) | 0 | -30.36 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 8 | -30.36 | No |
| 14 | Lean Clay(1) | 28 | -22.36 | No |
| 15 | Fat Clay (1) | 0 | 5.64 | No |
| 16 | Lean Clay(1) | 0 | 5.64 | No |



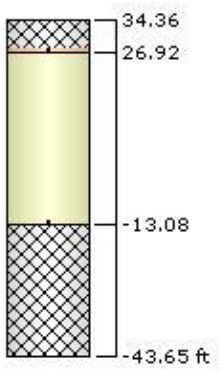

## ECP-2008: (3094.88, 239.697)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 0 | -30.08 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 6 | -30.08 | No |
| 3 | Fat Clay (1) | 14 | -24.08 | No |
| 4 | Fat Clay (2) | 0 | -10.08 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -10.08 | No |
| 6 | Fat Clay (1) | 0 | -10.08 | No |
| 7 | Lean Clay(1) | 20 | -10.08 | No |
| 8 | Lean Clay(2) | 0 | 9.92 | Yes |
| 9 | Fat Clay (1) | 0 | 9.92 | No |
| 10 | Lean Clay(1) | 0 | 9.92 | No |
| 11 | Fat Clay (1) | 0 | 9.92 | No |
| 12 | Fat Clay (2) | 0 | 9.92 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 9.92 | No |
| 14 | Lean Clay(1) | 0 | 9.92 | No |
| 15 | Fat Clay (1) | 0 | 9.92 | No |
| 16 | Lean Clay(1) | 0 | 9.92 | No |




## ECP-2009: (2317.25, 364.638)

| Layer # | Type | Thickness [ft] | Depth [ft] | Drained at Bottom |
|---|---|---|---|---|
| 1 | Compacted Fill | 0 | -26.92 | No |
| 2 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -26.92 | No |
| 3 | Fat Clay (1) | 0 | -26.92 | No |
| 4 | Fat Clay (2) | 0 | -26.92 | Yes |
| 5 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | -26.92 | No |
| 6 | Fat Clay (1) | 0 | -26.92 | No |
| 7 | Lean Clay(1) | 40 | -26.92 | No |
| 8 | Lean Clay(2) | 0 | 13.08 | Yes |
| 9 | Fat Clay (1) | 0 | 13.08 | No |
| 10 | Lean Clay(1) | 0 | 13.08 | No |
| 11 | Fat Clay (1) | 0 | 13.08 | No |
| 12 | Fat Clay (2) | 0 | 13.08 | Yes |
| 13 | Clayey/Silty Clayey Sand/Silty Sand/Silt | 0 | 13.08 | No |
| 14 | Lean Clay(1) | 0 | 13.08 | No |
| 15 | Fat Clay (1) | 0 | 13.08 | No |
| 16 | Lean Clay(1) | 0 | 13.08 | No |



# Soil Properties

| Property | Lean Clay(1) | Fat Clay (1) | Clayey/Silty Clayey Sand/Silty Sand/Silt | Compacted Fill |
|---|---|---|---|---|
| Color | | | | |
| Unit Weight [kips/ft$^3$] | 0.127 | 0.126 | 0.12 | 0.125 |
| Saturated Unit Weight [kips/ft$^3$] | 0.127 | 0.126 | 0.12 | 0.125 |
| K0 | 1 | 1 | 1 | 1 |
| | | | | |
| Primary Consolidation | Enabled | Enabled | Disabled | Disabled |
| Material Type | Non-Linear | Non-Linear | | |
| Cc | 0.102 | 0.17 | - | - |
| Cr | 0.028 | 0.096 | - | - |
| e0 | 0.559 | 0.774 | - | - |
| Pc [ksf] | 6 | 20 | - | - |
| Cv [ft$^2$/y] | 1.3 | 1.3 | - | - |
| Cvr [ft$^2$/y] | 1.3 | 1.3 | - | - |
| B-bar | 1 | 1 | - | - |
| | | | | |
| Undrained Su A [kips/ft2] | 0 | 0 | 0 | 0 |
| Undrained Su S | 0.2 | 0.2 | 0.2 | 0.2 |
| Undrained Su m | 0.8 | 0.8 | 0.8 | 0.8 |
| Piezo Line ID | 1 | 1 | 1 | 1 |

| Property | Fat Clay (2) | Lean Clay(2) |
|---|---|---|
| Color | | |
| Unit Weight [kips/ft$^3$] | 0.126 | 0.127 |
| Saturated Unit Weight [kips/ft$^3$] | 0.126 | 0.127 |
| K0 | 1 | 1 |
| | | |
| Primary Consolidation | Enabled | Enabled |
| Material Type | Non-Linear | Non-Linear |
| Cc | 0.17 | 0.102 |
| Cr | 0.096 | 0.028 |
| e0 | 0.096 | 0.559 |
| Pc [ksf] | 20 | 6 |
| Cv [ft$^2$/y] | 1.3 | 1.3 |
| Cvr [ft$^2$/y] | 1.3 | 1.3 |
| B-bar | 1 | 1 |
| | | |
| Undrained Su A [kips/ft2] | 0 | 0 |
| Undrained Su S | 0.2 | 0.2 |
| Undrained Su m | 0.8 | 0.8 |
| Piezo Line ID | 1 | 1 |

# Groundwater

| | |
|---|---|
| Groundwater method | Piezometric Lines |
| Water Unit Weight | 0.0624 kips/ft$^3$ |
| Generating excess pore pressure above water table | |

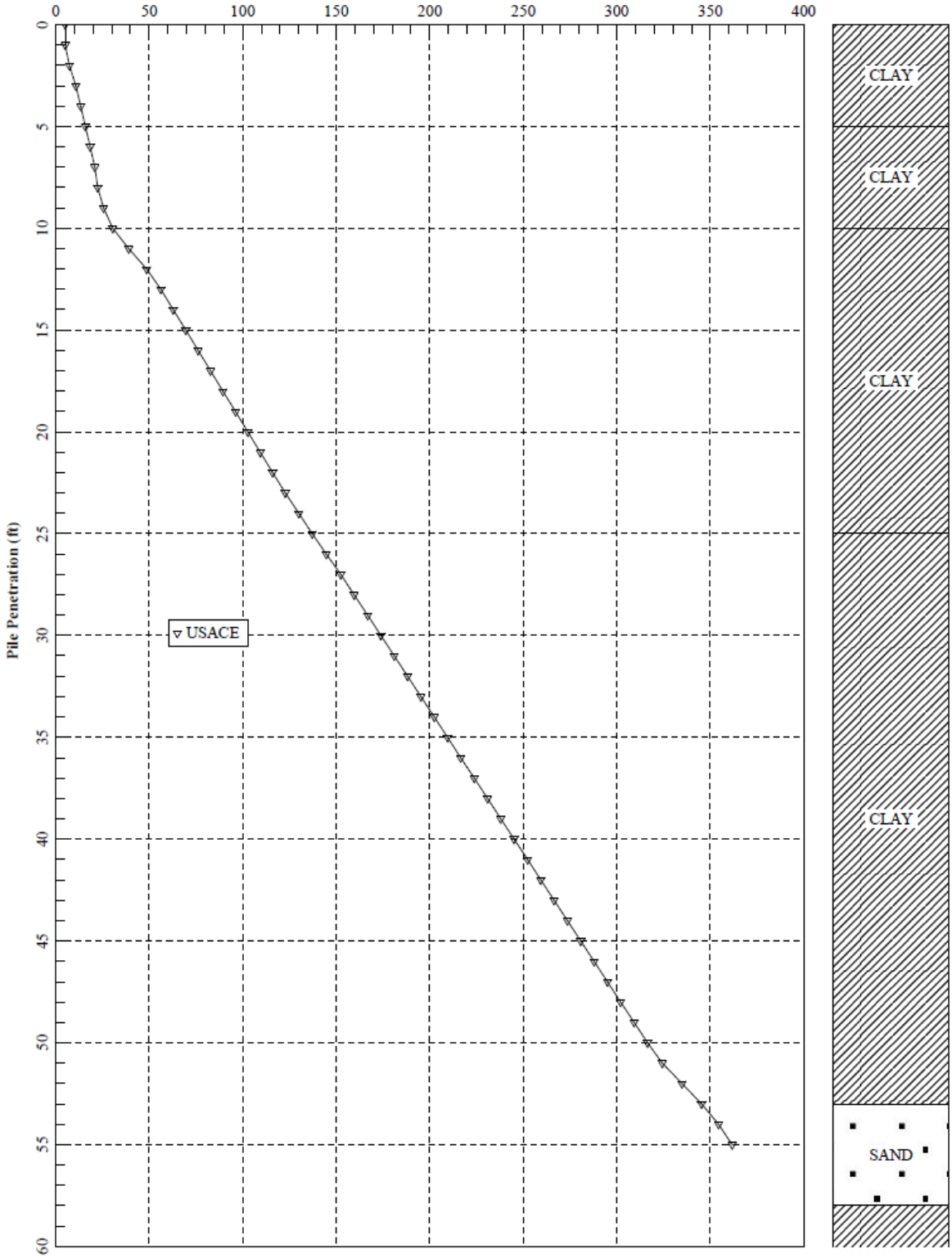
## Piezometric Line Entities

| ID | Depth (ft) |
|---|---|
| 1 | -28.18 ft |

# APPENDIX G

## DRIVEN PILE AXIAL CAPACITY CURVES: E2CLINTON PA

**Ultimate Compressive Capacity for HP14X89 Steel H-Pile Near Dike CL Sta. 35+76, Boring ECP-2003**
**Total Capacity (kips)**




Notes:

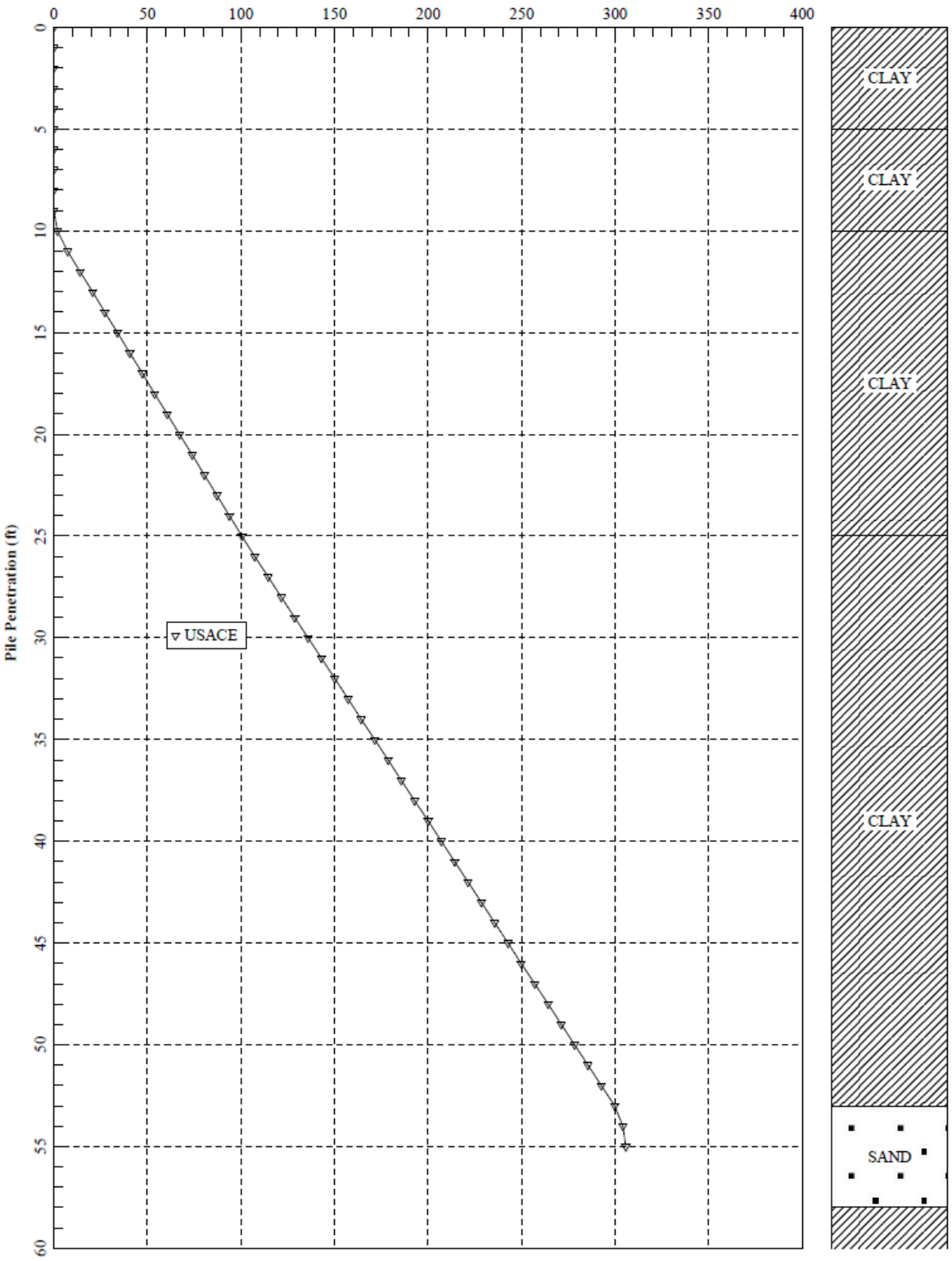
* Allowable axial compressive capacity can be calculated by applying a factor of safety to the total ultimate capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.


HVJ ASSOCIATES
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281.933.7293 Fax


| DATE: 10/9/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE COMPRESSIVE CAPACITY
OF HP14X89 STEEL H-PILE AT DIKE CL STA.35+76
BORING ECP-2003, E2 CLINTON PLACEMENT AREA

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE G-1 |




Notes:

* Allowable axial tension capacity can be calculated by applying a factor of safety to the ultimate skin friction capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

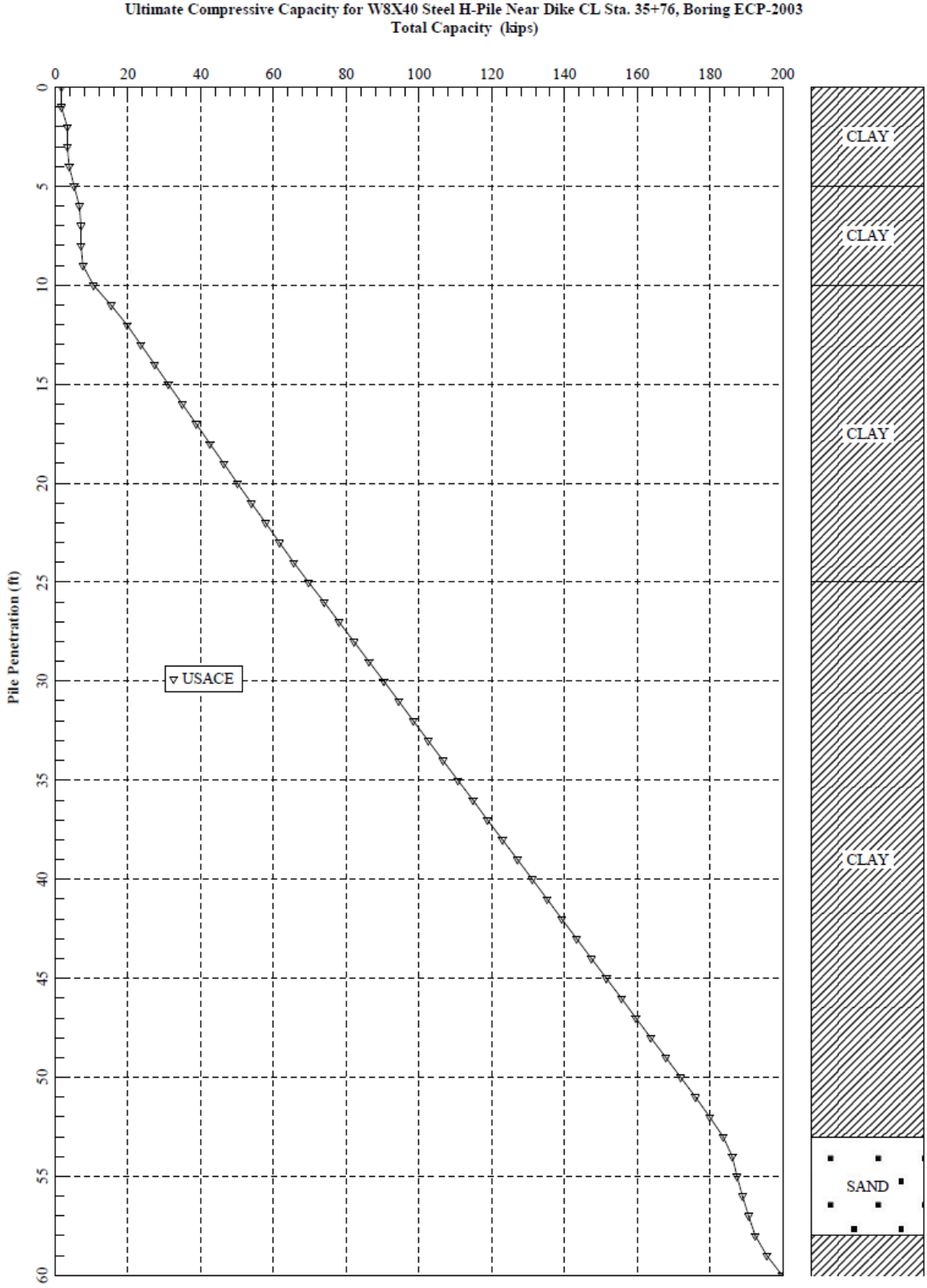

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|---|---|---|

ULTIMATE AXIAL TENSION CAPACITY
OF HP14X89 STEEL H-PILE AT DIKE CL STA.35+76
BORING ECP-2003, E2 CLINTON PLACEMENT AREA

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE G-2 |




Notes:

* Allowable axial compressive capacity can be calculated by applying a factor of safety to the total ultimate capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.

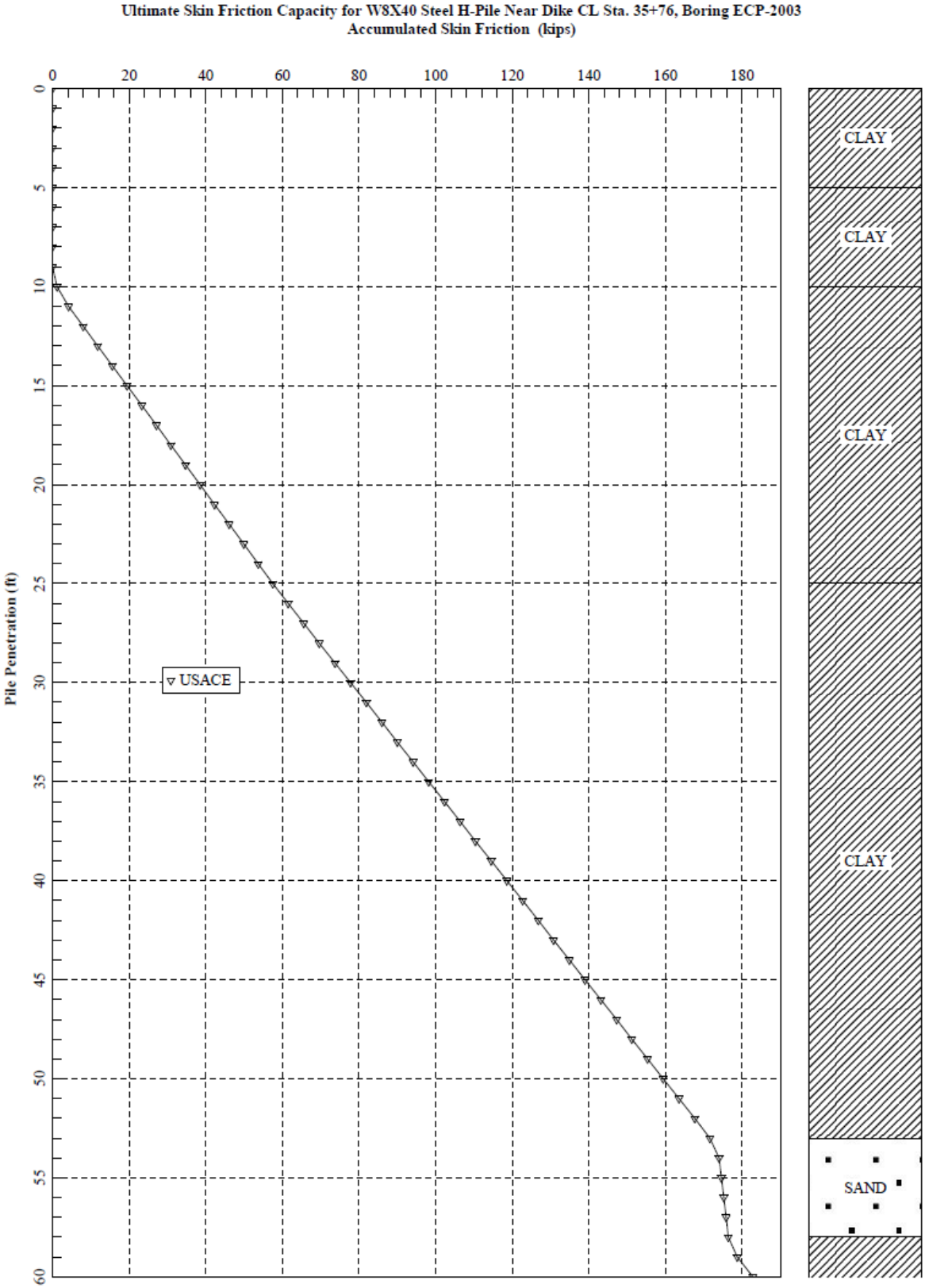

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|---|---|---|

ULTIMATE COMPRESSIVE CAPACITY
OF W8X40 STEEL H-PILE AT DIKE CL STA.35+76
BORING ECP-2003, E2 CLINTON PLACEMENT AREA

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE G-3 |




Notes:

* Allowable axial tension capacity can be calculated by applying a factor of safety to the ultimate skin friction capacity. Factors of safety should be determined based on USACE EM1110-2-2906 Design of Pile Foundations.


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| DATE: 10/9/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

ULTIMATE AXIAL TENSION CAPACITY
OF W8X40 STEEL H-PILE AT DIKE CL STA.35+76
BORING ECP-2003, E2 CLINTON PLACEMENT AREA

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE G-4 |

# APPENDIX H

SETTLE AND PSDDF ANALYSIS: E2C PA

# RESULTS OF THE SETTLING ANALYSIS

TITLE: E2C Disposal Area Capacity, Boring AM-5 Data

Initial storage results using compression settling test data:

Maximum in situ volume 1482550.62 cu yd

Clarification results using zone settling test data:

No calculations were made.

Effluent quality results using flocculent settling test data:

No calculations were made.

Compression settling calculations for maximum in situ volume of material that can be disposed at the specified rate into a given CDF:

$$VOL = AREA * [DH - FB - (PD * \%P / 100\%)]$$

Assume a NTIME, iteratively solve for DTIME and substitute it for NTIME.

$$CEND = A * (NTIME / 2.0)^{B}$$

$$VOLF = \frac{DTIME * OPHR * OPD * PRATE * CSITU * FFRAC}{7 * CEND * 100\%}$$

$$VOLC = \frac{DTIME * OPHR * OPD * PRATE * CSITU * (100\% - FFRAC)}{7 * CSAND * 100\%}$$

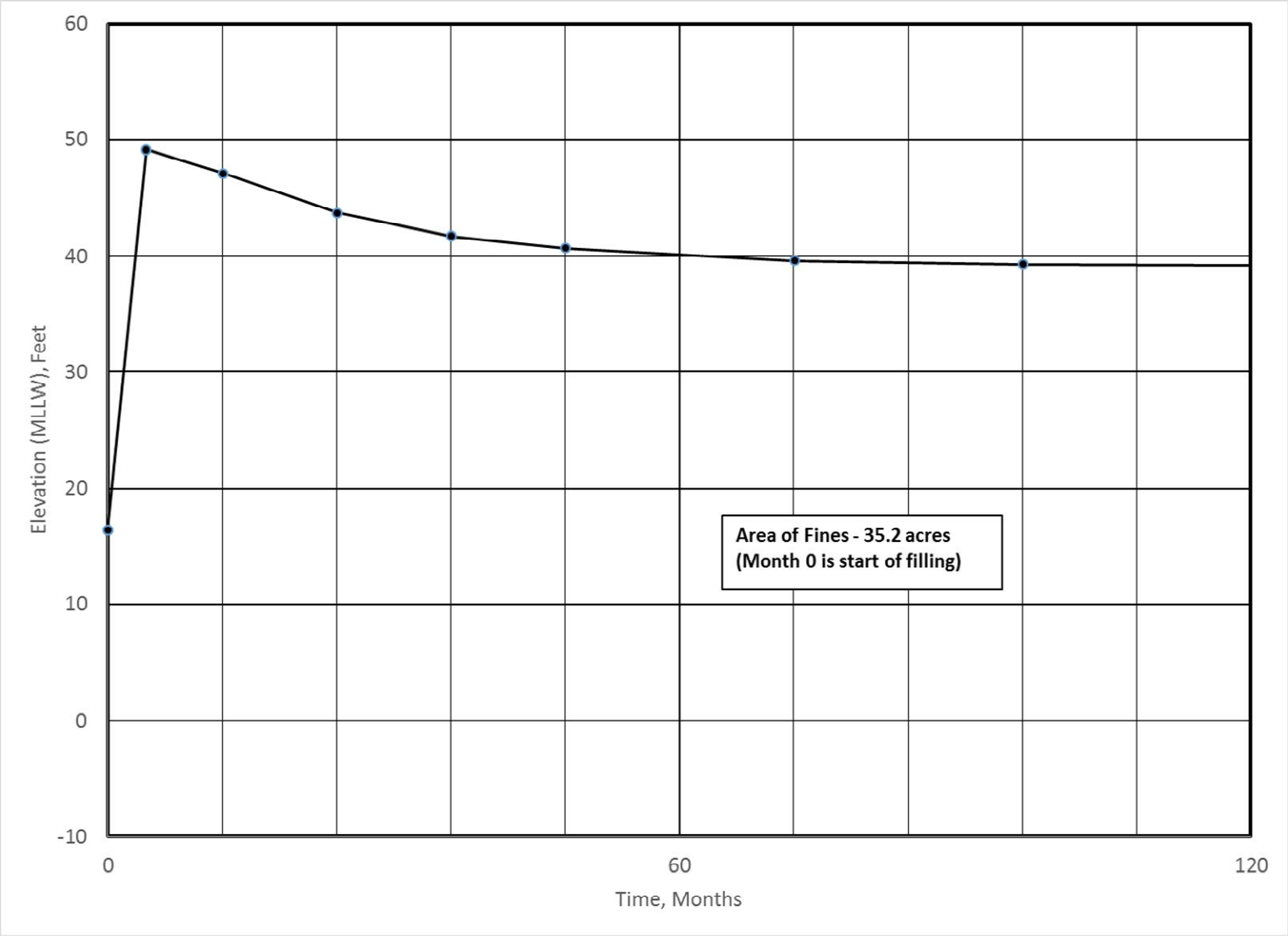
$$NVOL = VOLF + VOLC \qquad DTIME = \frac{VOL}{NVOL} * NTIME$$

After convergence,

$$DVOL = PRATE * DTIME * OPHR * OPD / 7$$

where

| | | |
|---|---|---|
| AREA | = minimum area required for initial storage (acres) = | 50.90 |
| DH | = average dike height or CDF depth (ft) = | 35.80 |
| FB | = depth of freeboard (ft) = | 2.00 |
| PD | = average depth of ponding in ponded area (ft) = | 1.00 |
| %P | = percent of storage area ponded = | 100.00 |
| VOL | = available storage volume (acre ft), [NVOL is used.] = | 1669.52 |
| A, B | = compression settling curve coefficients = 198.17, | 0.1975 |
| DTIME | = disposal period (days), [NTIME is an estimate,] = | 98.88 |
| CEND | = concentration of fines at end of disposal (g/l) = | 428.18 |
| OPHR | = operating hours per day of active disposal = | 17.00 |
| OPD | = average number of days of operation per week = | 7.00 |
| PRATE | = dredge production rate (cu yd/hr) = | 882.00 |
| CSITU | = solids concentration of the in situ material (g/l) = | 1223.02 |
| FFRAC | = fine-grained fraction (percent by weight) = | 44.00 |
| VOLC | = volume of sands at end of disposal (cu yd) = | 830374. |
| VOLF | = volume of fines at end of disposal (cu yd) = | 1863592. |
| CSAND | = solids concentration of settled sands (g/l) = | 1223.02 |
| DVOL | = in situ volume of the material (cu yd) | 1482551. |




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| DATE: 11/12/2020 | APPROVED BY: MH | PREPARED BY: AR |
|---|---|---|

SITE CAPACITY
E2 CLINTON PLACEMENT AREA
HOUSTON SHIP CHANNEL EXPANSION CHANNEL
IMPROVEMENT PROJECT

| PROJECT NO.: | DRAWING NO.: |
|---|---|
| HG1910092.2.1 | PLATE H-1 |

**********
Consolidation and desiccation of soft layers---dredged fill
**********

Problem E2 Clinton Settlement

**********Soil data for compressible foundation**********

| Material Type | Layer Thickness | Numbers of Sub-layers | Ca/Cc | Cr/Cc |
|---|---|---|---|---|
| 1 | 25.00 | 4 | .040 | .150 |

Material type : 1 Specific Gravity of Solids: 2.70

| I | Void Ratio | Effective Stress | Perm-eability | k/1+e PK | Beta | Dsde | Alpha |
|---|---|---|---|---|---|---|---|
| 1 | .466 | .000E+00 | .133E-05 | .907E-06 | -.619E-06 | -.250E+06 | -.227E+00 |
| 2 | .464 | .500E+03 | .133E-05 | .908E-06 | -.116E-03 | -.167E+06 | -.151E+00 |
| 3 | .460 | .100E+04 | .234E-05 | .160E-05 | -.328E-03 | -.167E+06 | -.267E+00 |
| 4 | .455 | .200E+04 | .562E-05 | .386E-05 | -.175E-03 | -.231E+06 | -.891E+00 |
| 5 | .447 | .400E+04 | .562E-05 | .388E-05 | -.269E-05 | -.286E+06 | -.111E+01 |
| 6 | .434 | .800E+04 | .562E-05 | .392E-05 | -.274E-05 | -.375E+06 | -.147E+01 |
| 7 | .415 | .160E+05 | .562E-05 | .397E-05 | -.277E-05 | -.421E+06 | -.167E+01 |

**********Soil data for dredged fill**********

| Material Type | Specific Gravity | Ca/Cc | Cr/Cc | Saturation Limit | Disication Limit |
|---|---|---|---|---|---|
| 2 | 2.690 | .040 | .150 | 3.400 | 2.500 |

Material type : 2

| I | Void Ratio | Effective Stress | Perm-eability | k/1+e PK | Beta | Dsde | Alpha |
|---|---|---|---|---|---|---|---|
| 1 | 10.000 | .000E+00 | .240E+00 | .218E-01 | .182E-02 | -.150E+00 | -.327E-02 |
| 2 | 9.000 | .150E+00 | .200E+00 | .200E-01 | .258E-02 | -.200E+00 | -.400E-02 |
| 3 | 8.000 | .400E+00 | .150E+00 | .167E-01 | .437E-02 | -.275E+00 | -.458E-02 |
| 4 | 7.000 | .700E+00 | .900E-01 | .113E-01 | .448E-02 | -.550E+00 | -.619E-02 |
| 5 | 6.000 | .150E+01 | .540E-01 | .771E-02 | .313E-02 | -.165E+01 | -.127E-01 |
| 6 | 5.000 | .400E+01 | .300E-01 | .500E-02 | .367E-02 | -.143E+02 | -.712E-01 |
| 7 | 4.000 | .300E+02 | .190E-02 | .380E-03 | .247E-02 | -.198E+03 | -.752E-01 |
| 8 | 3.000 | .400E+03 | .200E-03 | .500E-04 | .188E-03 | -.249E+04 | -.124E+00 |
| 9 | 2.000 | .500E+04 | .100E-04 | .333E-05 | .467E-04 | -.460E+04 | -.153E-01 |

Summary of lifts and print detail

| Time days | Material Type | Fill Height | # Sub-layers | Void ratio | Start Day | Dessic. Month | Print detai |
|---|---|---|---|---|---|---|---|
| 0. | 2 | 33.7 | 50 | 5.20 | 180. | 1 | 1 |
| 120. | | | | | 180. | 1 | 1 |
| 365. | | | | | 180. | 1 | 1 |
| 730. | | | | | 180. | 1 | 1 |
| 1095. | | | | | 180. | 1 | 1 |
| 1460. | | | | | 180. | 1 | 1 |
| 2190. | | | | | 180. | 1 | 2 |
| 2920. | | | | | 180. | 1 | 2 |
| 3650. | | | | | 180. | 1 | 2 |
| 8760. | | | | | 180. | 1 | 2 |

Summary of monthly rainfall and evaporation potential

| Month | Rainfall | Evaporation |
|---|---|---|
| 1 | .250 | .340 |
| 2 | .200 | .330 |
| 3 | .180 | .470 |

| | | |
|---|---|---|
| 4 | .220 | .580 |
| 5 | .280 | .670 |
| 6 | .290 | .800 |
| 7 | .310 | .780 |
| 8 | .370 | .800 |
| 9 | .490 | .600 |
| 10 | .220 | .520 |
| 11 | .270 | .350 |
| 12 | .300 | .280 |

**********Calculation data**********

| tau | Lower layer Void ratio | Lower layer Permeability | drainage path Length |
|---|---|---|---|
| 2.97 | .900 | .10000E-01 | z = 2.77 |

Summary of desiccation parameters

| Parameter | Value |
|---|---|
| Surface Drainage Efficiency | .70 |
| maximum evaporation efficiency | .50 |
| saturation at desiccation limit | .50 |
| maximum crust thickness | 1.50 |
| time to desic. after initial fill | 180.00 |
| month of initial desiccation | 1 |
| elevation of fixed water table | -10.00 |
| elevation of top of incompres. found. | -8.60 |

**********Initial Conditions in Compressible Foundation**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 25.00 | 25.00 | 17.11 | .47 | .47 | .46 | 1 |
| 18.73 | 18.73 | 12.83 | .46 | .46 | .46 | 1 |
| 12.48 | 12.48 | 8.56 | .46 | .46 | .46 | 1 |
| 6.23 | 6.23 | 4.28 | .46 | .46 | .46 | 1 |
| .00 | .00 | .00 | .46 | .46 | .45 | 1 |

| ***** Stresses ***** | | | ***** Pore Pressures ***** | | | |
|---|---|---|---|---|---|---|
| XI | Total | Effective | Total | Static | Excess | Material |
| 25.00 | 2701.82 | .00 | 2701.82 | 2123.10 | 578.72 | 1 |
| 18.73 | 3554.88 | 458.14 | 3096.74 | 2518.03 | 578.71 | 1 |
| 12.48 | 4407.09 | 916.27 | 3490.83 | 2912.11 | 578.72 | 1 |
| 6.23 | 5258.50 | 1374.40 | 3884.10 | 3305.39 | 578.72 | 1 |
| .00 | 6109.28 | 1832.53 | 4276.75 | 3698.03 | 578.72 | 1 |

Time = 0. Degree of Consolidation = 0.%

Total Settlement = .000

Settlement at End of Primary Consolidation = .058

Settlement caused by Primary Consolidation at time 0. = .000

Settlement caused by Secondary Compression at time 0. = .000

**********Initial Conditions in Dredged Fill**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 33.70 | 33.70 | 5.44 | 5.20 | 5.20 | 10.00 | 2 |
| 33.03 | 33.03 | 5.33 | 5.20 | 5.20 | 4.71 | 2 |
| 32.35 | 32.35 | 5.22 | 5.20 | 5.20 | 4.26 | 2 |
| 31.68 | 31.68 | 5.11 | 5.20 | 5.20 | 3.99 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 31.00 | 31.00 | 5.00 | 5.20 | 5.20 | 3.96 | 2 |
| 30.33 | 30.33 | 4.89 | 5.20 | 5.20 | 3.92 | 2 |
| 29.66 | 29.66 | 4.78 | 5.20 | 5.20 | 3.89 | 2 |
| 28.98 | 28.98 | 4.67 | 5.20 | 5.20 | 3.86 | 2 |
| 28.31 | 28.31 | 4.57 | 5.20 | 5.20 | 3.83 | 2 |
| 27.63 | 27.63 | 4.46 | 5.20 | 5.20 | 3.80 | 2 |
| 26.96 | 26.96 | 4.35 | 5.20 | 5.20 | 3.77 | 2 |
| 26.29 | 26.29 | 4.24 | 5.20 | 5.20 | 3.74 | 2 |
| 25.61 | 25.61 | 4.13 | 5.20 | 5.20 | 3.71 | 2 |
| 24.94 | 24.94 | 4.02 | 5.20 | 5.20 | 3.67 | 2 |
| 24.26 | 24.26 | 3.91 | 5.20 | 5.20 | 3.64 | 2 |
| 23.59 | 23.59 | 3.80 | 5.20 | 5.20 | 3.61 | 2 |
| 22.92 | 22.92 | 3.70 | 5.20 | 5.20 | 3.58 | 2 |
| 22.24 | 22.24 | 3.59 | 5.20 | 5.20 | 3.55 | 2 |
| 21.57 | 21.57 | 3.48 | 5.20 | 5.20 | 3.52 | 2 |
| 20.89 | 20.89 | 3.37 | 5.20 | 5.20 | 3.49 | 2 |
| 20.22 | 20.22 | 3.26 | 5.20 | 5.20 | 3.46 | 2 |
| 19.55 | 19.55 | 3.15 | 5.20 | 5.20 | 3.42 | 2 |
| 18.87 | 18.87 | 3.04 | 5.20 | 5.20 | 3.39 | 2 |
| 18.20 | 18.20 | 2.94 | 5.20 | 5.20 | 3.36 | 2 |
| 17.52 | 17.52 | 2.83 | 5.20 | 5.20 | 3.33 | 2 |
| 16.85 | 16.85 | 2.72 | 5.20 | 5.20 | 3.30 | 2 |
| 16.18 | 16.18 | 2.61 | 5.20 | 5.20 | 3.27 | 2 |
| 15.50 | 15.50 | 2.50 | 5.20 | 5.20 | 3.24 | 2 |
| 14.83 | 14.83 | 2.39 | 5.20 | 5.20 | 3.21 | 2 |
| 14.15 | 14.15 | 2.28 | 5.20 | 5.20 | 3.17 | 2 |
| 13.48 | 13.48 | 2.17 | 5.20 | 5.20 | 3.14 | 2 |
| 12.81 | 12.81 | 2.07 | 5.20 | 5.20 | 3.11 | 2 |
| 12.13 | 12.13 | 1.96 | 5.20 | 5.20 | 3.08 | 2 |
| 11.46 | 11.46 | 1.85 | 5.20 | 5.20 | 3.05 | 2 |
| 10.78 | 10.78 | 1.74 | 5.20 | 5.20 | 3.02 | 2 |
| 10.11 | 10.11 | 1.63 | 5.20 | 5.20 | 3.00 | 2 |
| 9.44 | 9.44 | 1.52 | 5.20 | 5.20 | 3.00 | 2 |
| 8.76 | 8.76 | 1.41 | 5.20 | 5.20 | 2.99 | 2 |
| 8.09 | 8.09 | 1.30 | 5.20 | 5.20 | 2.99 | 2 |
| 7.41 | 7.41 | 1.20 | 5.20 | 5.20 | 2.99 | 2 |
| 6.74 | 6.74 | 1.09 | 5.20 | 5.20 | 2.99 | 2 |
| 6.07 | 6.07 | .98 | 5.20 | 5.20 | 2.98 | 2 |
| 5.39 | 5.39 | .87 | 5.20 | 5.20 | 2.98 | 2 |
| 4.72 | 4.72 | .76 | 5.20 | 5.20 | 2.98 | 2 |
| 4.04 | 4.04 | .65 | 5.20 | 5.20 | 2.98 | 2 |
| 3.37 | 3.37 | .54 | 5.20 | 5.20 | 2.97 | 2 |
| 2.70 | 2.70 | .43 | 5.20 | 5.20 | 2.97 | 2 |
| 2.02 | 2.02 | .33 | 5.20 | 5.20 | 2.97 | 2 |
| 1.35 | 1.35 | .22 | 5.20 | 5.20 | 2.97 | 2 |
| .67 | .67 | .11 | 5.20 | 5.20 | 2.96 | 2 |
| .00 | .00 | .00 | 5.20 | 5.20 | 2.96 | 2 |

***** Stresses *****  ***** Pore Pressures *****

| XI | Total | Effective | Total | Static | Excess | Material |
|---|---|---|---|---|---|---|
| 33.70 | .00 | .00 | .00 | .00 | .00 | 2 |
| 33.03 | 54.04 | .00 | 54.04 | 42.46 | 11.57 | 2 |
| 32.35 | 108.07 | .00 | 108.07 | 84.92 | 23.15 | 2 |
| 31.68 | 162.11 | .00 | 162.11 | 127.39 | 34.72 | 2 |
| 31.00 | 216.15 | .00 | 216.15 | 169.85 | 46.30 | 2 |
| 30.33 | 270.18 | .00 | 270.18 | 212.31 | 57.87 | 2 |
| 29.66 | 324.22 | .00 | 324.22 | 254.77 | 69.45 | 2 |
| 28.98 | 378.25 | .00 | 378.25 | 297.23 | 81.02 | 2 |
| 28.31 | 432.29 | .00 | 432.29 | 339.70 | 92.59 | 2 |
| 27.63 | 486.33 | .00 | 486.33 | 382.16 | 104.17 | 2 |
| 26.96 | 540.36 | .00 | 540.36 | 424.62 | 115.74 | 2 |
| 26.29 | 594.40 | .00 | 594.40 | 467.08 | 127.32 | 2 |
| 25.61 | 648.44 | .00 | 648.44 | 509.54 | 138.89 | 2 |
| 24.94 | 702.47 | .00 | 702.47 | 552.01 | 150.47 | 2 |
| 24.26 | 756.51 | .00 | 756.51 | 594.47 | 162.04 | 2 |
| 23.59 | 810.54 | .00 | 810.54 | 636.93 | 173.61 | 2 |
| 22.92 | 864.58 | .00 | 864.58 | 679.39 | 185.19 | 2 |
| 22.24 | 918.62 | .00 | 918.62 | 721.85 | 196.76 | 2 |
| 21.57 | 972.65 | .00 | 972.65 | 764.32 | 208.34 | 2 |
| 20.89 | 1026.69 | .00 | 1026.69 | 806.78 | 219.91 | 2 |
| 20.22 | 1080.73 | .00 | 1080.73 | 849.24 | 231.49 | 2 |
| 19.55 | 1134.76 | .00 | 1134.76 | 891.70 | 243.06 | 2 |
| 18.87 | 1188.80 | .00 | 1188.80 | 934.16 | 254.64 | 2 |
| 18.20 | 1242.84 | .00 | 1242.84 | 976.63 | 266.21 | 2 |
| 17.52 | 1296.87 | .00 | 1296.87 | 1019.09 | 277.78 | 2 |
| 16.85 | 1350.91 | .00 | 1350.91 | 1061.55 | 289.36 | 2 |
| 16.18 | 1404.94 | .00 | 1404.94 | 1104.01 | 300.93 | 2 |
| 15.50 | 1458.98 | .00 | 1458.98 | 1146.47 | 312.51 | 2 |
| 14.83 | 1513.02 | .00 | 1513.02 | 1188.94 | 324.08 | 2 |
| 14.15 | 1567.05 | .00 | 1567.05 | 1231.40 | 335.66 | 2 |
| 13.48 | 1621.09 | .00 | 1621.09 | 1273.86 | 347.23 | 2 |
| 12.81 | 1675.13 | .00 | 1675.13 | 1316.32 | 358.80 | 2 |
| 12.13 | 1729.16 | .00 | 1729.16 | 1358.78 | 370.38 | 2 |
| 11.46 | 1783.20 | .00 | 1783.20 | 1401.25 | 381.95 | 2 |
| 10.78 | 1837.23 | .00 | 1837.23 | 1443.71 | 393.53 | 2 |
| 10.11 | 1891.27 | .00 | 1891.27 | 1486.17 | 405.10 | 2 |
| 9.44 | 1945.31 | .00 | 1945.31 | 1528.63 | 416.68 | 2 |
| 8.76 | 1999.34 | .00 | 1999.34 | 1571.09 | 428.25 | 2 |
| 8.09 | 2053.38 | .00 | 2053.38 | 1613.56 | 439.82 | 2 |
| 7.41 | 2107.42 | .00 | 2107.42 | 1656.02 | 451.40 | 2 |
| 6.74 | 2161.45 | .00 | 2161.45 | 1698.48 | 462.97 | 2 |
| 6.07 | 2215.49 | .00 | 2215.49 | 1740.94 | 474.55 | 2 |
| 5.39 | 2269.52 | .00 | 2269.52 | 1783.40 | 486.12 | 2 |
| 4.72 | 2323.56 | .00 | 2323.56 | 1825.87 | 497.70 | 2 |
| 4.04 | 2377.60 | .00 | 2377.60 | 1868.33 | 509.27 | 2 |
| 3.37 | 2431.63 | .00 | 2431.63 | 1910.79 | 520.84 | 2 |
| 2.70 | 2485.67 | .00 | 2485.67 | 1953.25 | 532.42 | 2 |
| 2.02 | 2539.71 | .00 | 2539.71 | 1995.71 | 543.99 | 2 |
| 1.35 | 2593.74 | .00 | 2593.74 | 2038.18 | 555.57 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| .67 | 2647.78 | .00 | 2647.78 | 2080.64 | 567.14 | 2 |
| .00 | 2701.82 | .00 | 2701.82 | 2123.10 | 578.72 | 2 |

Time = 0. Degree of Consolidation = 0.%

Total Settlement = .000

Settlement at End of Primary Consolidation = 9.632

Settlement caused by Primary Consolidation at time 0. = .000

Settlement caused by Secondary Compression at time 0. = .000

**********Current Conditions in Compressible Foundation**********

***** Coordinates ***** ***** Void Ratios *****

| A | XI | Z | Einitial | E | Eeop | Material |
|---|---|---|---|---|---|---|
| 25.00 | 24.99 | 17.11 | .47 | .47 | .46 | 1 |
| 18.73 | 18.73 | 12.83 | .46 | .46 | .46 | 1 |
| 12.48 | 12.47 | 8.56 | .46 | .46 | .46 | 1 |
| 6.23 | 6.23 | 4.28 | .46 | .46 | .46 | 1 |
| .00 | .00 | .00 | .46 | .45 | .45 | 1 |

***** Stresses ***** ***** Pore Pressures *****

| XI | Total | Effective | Total | Static | Excess | Material |
|---|---|---|---|---|---|---|
| 24.99 | 2643.78 | 37.09 | 2606.69 | 2065.07 | 541.63 | 1 |
| 18.73 | 3496.84 | 462.91 | 3033.93 | 2459.99 | 573.94 | 1 |
| 12.47 | 4349.04 | 916.27 | 3432.77 | 2854.05 | 578.72 | 1 |
| 6.23 | 5200.45 | 1411.87 | 3788.58 | 3247.33 | 541.24 | 1 |
| .00 | 6050.94 | 2411.25 | 3639.69 | 3639.69 | .00 | 1 |

Time = 122. Degree of Consolidation = 9.%

Total Settlement = .005

Settlement at End of Primary Consolidation = .058

Settlement caused by Primary Consolidation at time 122. = .005

Settlement caused by Secondary Compression at time 122. = .000

**********Current Conditions in Dredged Fill**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 33.70 | 32.78 | 5.44 | 5.20 | 5.20 | 10.00 | 2 |
| 33.03 | 32.10 | 5.33 | 5.20 | 5.20 | 4.71 | 2 |
| 32.35 | 31.43 | 5.22 | 5.20 | 5.20 | 4.26 | 2 |
| 31.68 | 30.76 | 5.11 | 5.20 | 5.20 | 3.99 | 2 |
| 31.00 | 30.08 | 5.00 | 5.20 | 5.20 | 3.96 | 2 |
| 30.33 | 29.41 | 4.89 | 5.20 | 5.20 | 3.92 | 2 |
| 29.66 | 28.73 | 4.78 | 5.20 | 5.20 | 3.89 | 2 |
| 28.98 | 28.06 | 4.67 | 5.20 | 5.20 | 3.86 | 2 |
| 28.31 | 27.39 | 4.57 | 5.20 | 5.20 | 3.83 | 2 |
| 27.63 | 26.71 | 4.46 | 5.20 | 5.20 | 3.80 | 2 |
| 26.96 | 26.04 | 4.35 | 5.20 | 5.20 | 3.77 | 2 |
| 26.29 | 25.36 | 4.24 | 5.20 | 5.20 | 3.74 | 2 |
| 25.61 | 24.69 | 4.13 | 5.20 | 5.20 | 3.71 | 2 |
| 24.94 | 24.02 | 4.02 | 5.20 | 5.20 | 3.67 | 2 |
| 24.26 | 23.34 | 3.91 | 5.20 | 5.20 | 3.64 | 2 |
| 23.59 | 22.67 | 3.80 | 5.20 | 5.20 | 3.61 | 2 |
| 22.92 | 21.99 | 3.70 | 5.20 | 5.20 | 3.58 | 2 |
| 22.24 | 21.32 | 3.59 | 5.20 | 5.20 | 3.55 | 2 |
| 21.57 | 20.65 | 3.48 | 5.20 | 5.20 | 3.52 | 2 |
| 20.89 | 19.97 | 3.37 | 5.20 | 5.20 | 3.49 | 2 |
| 20.22 | 19.30 | 3.26 | 5.20 | 5.20 | 3.46 | 2 |
| 19.55 | 18.62 | 3.15 | 5.20 | 5.20 | 3.42 | 2 |
| 18.87 | 17.95 | 3.04 | 5.20 | 5.20 | 3.39 | 2 |
| 18.20 | 17.28 | 2.94 | 5.20 | 5.20 | 3.36 | 2 |
| 17.52 | 16.60 | 2.83 | 5.20 | 5.20 | 3.33 | 2 |
| 16.85 | 15.93 | 2.72 | 5.20 | 5.20 | 3.30 | 2 |
| 16.18 | 15.25 | 2.61 | 5.20 | 5.20 | 3.27 | 2 |
| 15.50 | 14.58 | 2.50 | 5.20 | 5.20 | 3.24 | 2 |
| 14.83 | 13.91 | 2.39 | 5.20 | 5.20 | 3.21 | 2 |
| 14.15 | 13.23 | 2.28 | 5.20 | 5.20 | 3.17 | 2 |
| 13.48 | 12.56 | 2.17 | 5.20 | 5.20 | 3.14 | 2 |
| 12.81 | 11.89 | 2.07 | 5.20 | 5.20 | 3.11 | 2 |
| 12.13 | 11.21 | 1.96 | 5.20 | 5.20 | 3.08 | 2 |
| 11.46 | 10.54 | 1.85 | 5.20 | 5.19 | 3.05 | 2 |
| 10.78 | 9.87 | 1.74 | 5.20 | 5.18 | 3.02 | 2 |
| 10.11 | 9.19 | 1.63 | 5.20 | 5.17 | 3.00 | 2 |
| 9.44 | 8.52 | 1.52 | 5.20 | 5.15 | 3.00 | 2 |
| 8.76 | 7.86 | 1.41 | 5.20 | 5.11 | 2.99 | 2 |
| 8.09 | 7.20 | 1.30 | 5.20 | 5.06 | 2.99 | 2 |
| 7.41 | 6.54 | 1.20 | 5.20 | 5.00 | 2.99 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.74 | 5.89 | 1.09 | 5.20 | 4.92 | 2.99 | 2 |
| 6.07 | 5.25 | .98 | 5.20 | 4.84 | 2.98 | 2 |
| 5.39 | 4.62 | .87 | 5.20 | 4.74 | 2.98 | 2 |
| 4.72 | 4.01 | .76 | 5.20 | 4.63 | 2.98 | 2 |
| 4.04 | 3.40 | .65 | 5.20 | 4.52 | 2.98 | 2 |
| 3.37 | 2.81 | .54 | 5.20 | 4.40 | 2.97 | 2 |
| 2.70 | 2.23 | .43 | 5.20 | 4.30 | 2.97 | 2 |
| 2.02 | 1.66 | .33 | 5.20 | 4.19 | 2.97 | 2 |
| 1.35 | 1.10 | .22 | 5.20 | 4.11 | 2.97 | 2 |
| .67 | .54 | .11 | 5.20 | 4.04 | 2.96 | 2 |
| .00 | .00 | .00 | 5.20 | 3.98 | 2.96 | 2 |

| | ***** Stresses ***** | | ***** Pore Pressures ***** | | | |
|---|---|---|---|---|---|---|
| XI | Total | Effective | Total | Static | Excess | Material |
| 32.78 | .00 | .00 | .00 | .00 | .00 | 2 |
| 32.10 | 54.04 | 3.50 | 50.54 | 42.46 | 8.07 | 2 |
| 31.43 | 108.07 | 3.50 | 104.57 | 84.92 | 19.65 | 2 |
| 30.76 | 162.11 | 3.50 | 158.61 | 127.39 | 31.22 | 2 |
| 30.08 | 216.15 | 3.50 | 212.65 | 169.85 | 42.80 | 2 |
| 29.41 | 270.18 | 3.50 | 266.68 | 212.31 | 54.37 | 2 |
| 28.73 | 324.22 | 3.50 | 320.72 | 254.77 | 65.95 | 2 |
| 28.06 | 378.25 | 3.50 | 374.75 | 297.23 | 77.52 | 2 |
| 27.39 | 432.29 | 3.50 | 428.79 | 339.70 | 89.09 | 2 |
| 26.71 | 486.33 | 3.50 | 482.83 | 382.16 | 100.67 | 2 |
| 26.04 | 540.36 | 3.50 | 536.86 | 424.62 | 112.24 | 2 |
| 25.36 | 594.40 | 3.50 | 590.90 | 467.08 | 123.82 | 2 |
| 24.69 | 648.44 | 3.50 | 644.94 | 509.54 | 135.39 | 2 |
| 24.02 | 702.47 | 3.50 | 698.97 | 552.01 | 146.97 | 2 |
| 23.34 | 756.51 | 3.50 | 753.01 | 594.47 | 158.54 | 2 |
| 22.67 | 810.54 | 3.50 | 807.04 | 636.93 | 170.11 | 2 |
| 21.99 | 864.58 | 3.50 | 861.08 | 679.39 | 181.69 | 2 |
| 21.32 | 918.62 | 3.50 | 915.12 | 721.85 | 193.26 | 2 |
| 20.65 | 972.65 | 3.50 | 969.15 | 764.32 | 204.84 | 2 |
| 19.97 | 1026.69 | 3.50 | 1023.19 | 806.78 | 216.41 | 2 |
| 19.30 | 1080.73 | 3.50 | 1077.23 | 849.24 | 227.99 | 2 |
| 18.62 | 1134.76 | 3.50 | 1131.26 | 891.70 | 239.56 | 2 |
| 17.95 | 1188.80 | 3.50 | 1185.30 | 934.16 | 251.14 | 2 |
| 17.28 | 1242.84 | 3.50 | 1239.34 | 976.63 | 262.71 | 2 |
| 16.60 | 1296.87 | 3.50 | 1293.37 | 1019.09 | 274.28 | 2 |
| 15.93 | 1350.91 | 3.50 | 1347.41 | 1061.55 | 285.86 | 2 |
| 15.25 | 1404.94 | 3.50 | 1401.44 | 1104.01 | 297.43 | 2 |
| 14.58 | 1458.98 | 3.50 | 1455.48 | 1146.47 | 309.01 | 2 |
| 13.91 | 1513.02 | 3.50 | 1509.52 | 1188.94 | 320.58 | 2 |
| 13.23 | 1567.05 | 3.50 | 1563.55 | 1231.40 | 332.15 | 2 |
| 12.56 | 1621.08 | 3.50 | 1617.58 | 1273.85 | 343.73 | 2 |
| 11.89 | 1675.11 | 3.50 | 1671.61 | 1316.31 | 355.30 | 2 |
| 11.21 | 1729.13 | 3.51 | 1725.62 | 1358.75 | 366.87 | 2 |
| 10.54 | 1783.13 | 3.52 | 1779.60 | 1401.17 | 378.43 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9.87 | 1837.08 | 3.54 | 1833.54 | 1443.55 | 389.99 | 2 |
| 9.19 | 1890.95 | 3.58 | 1887.38 | 1485.85 | 401.52 | 2 |
| 8.52 | 1944.70 | 3.64 | 1941.07 | 1528.03 | 413.04 | 2 |
| 7.86 | 1998.25 | 3.73 | 1994.52 | 1570.00 | 424.52 | 2 |
| 7.20 | 2051.51 | 3.85 | 2047.66 | 1611.68 | 435.98 | 2 |
| 6.54 | 2104.39 | 4.04 | 2100.35 | 1652.99 | 447.36 | 2 |
| 5.89 | 2156.79 | 5.98 | 2150.82 | 1693.82 | 456.99 | 2 |
| 5.25 | 2208.65 | 8.25 | 2200.39 | 1734.10 | 466.29 | 2 |
| 4.62 | 2259.86 | 10.83 | 2249.03 | 1773.74 | 475.29 | 2 |
| 4.01 | 2310.36 | 13.63 | 2296.73 | 1812.67 | 484.07 | 2 |
| 3.40 | 2360.11 | 16.56 | 2343.55 | 1850.84 | 492.71 | 2 |
| 2.81 | 2409.08 | 19.50 | 2389.58 | 1888.23 | 501.35 | 2 |
| 2.23 | 2457.29 | 22.33 | 2434.96 | 1924.87 | 510.09 | 2 |
| 1.66 | 2504.78 | 24.93 | 2479.84 | 1960.78 | 519.06 | 2 |
| 1.10 | 2551.62 | 27.21 | 2524.41 | 1996.05 | 528.36 | 2 |
| .54 | 2597.92 | 29.08 | 2568.84 | 2030.78 | 538.06 | 2 |
| .00 | 2643.78 | 37.09 | 2606.69 | 2065.07 | 541.63 | 2 |

Time = 122. Degree of Consolidation = 10.%

Total Settlement = .921

Settlement at End of Primary Consolidation = 9.632

Settlement caused by Primary Consolidation at time 122. = .921

Settlement caused by Secondary Compression at time 122. = .000

Surface Elevation = 49.17

**********Current Conditions in Compressible Foundation**********

***** Coordinates ***** ***** Void Ratios *****

| A | XI | Z | Einitial | E | Eeop | Material |
|---|---|---|---|---|---|---|
| 25.00 | 24.99 | 17.11 | .47 | .47 | .46 | 1 |
| 18.73 | 18.72 | 12.83 | .46 | .46 | .46 | 1 |
| 12.48 | 12.47 | 8.56 | .46 | .46 | .46 | 1 |
| 6.23 | 6.23 | 4.28 | .46 | .46 | .46 | 1 |
| .00 | .00 | .00 | .46 | .45 | .45 | 1 |

***** Stresses ***** ***** Pore Pressures *****

| XI | Total | Effective | Total | Static | Excess |
|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| 24.99 | 2515.96 | 102.76 | 2413.21 | 1937.25 | 475.96 | 1 |
| 18.72 | 3368.97 | 473.52 | 2895.45 | 2332.12 | 563.33 | 1 |
| 12.47 | 4221.18 | 917.84 | 3303.34 | 2726.20 | 577.14 | 1 |
| 6.23 | 5072.54 | 1481.95 | 3590.60 | 3119.43 | 471.17 | 1 |
| .00 | 5922.95 | 2411.25 | 3511.71 | 3511.70 | .00 | 1 |

Material

Time = 368. Degree of Consolidation = 13.%

Total Settlement = .008

Settlement at End of Primary Consolidation = .058

Settlement caused by Primary Consolidation at time 368. = .008

Settlement caused by Secondary Compression at time 368. = .000

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

| A | XI | Z | Einitial | E | Eeop | Material |
|---|---|---|---|---|---|---|
| 33.70 | 30.75 | 5.44 | 5.20 | 3.40 | 10.00 | 2 |
| 33.03 | 30.27 | 5.33 | 5.20 | 3.87 | 4.71 | 2 |
| 32.35 | 29.67 | 5.22 | 5.20 | 5.02 | 4.26 | 2 |
| 31.68 | 29.00 | 5.11 | 5.20 | 5.15 | 3.99 | 2 |
| 31.00 | 28.33 | 5.00 | 5.20 | 5.19 | 3.96 | 2 |
| 30.33 | 27.66 | 4.89 | 5.20 | 5.20 | 3.92 | 2 |
| 29.66 | 26.99 | 4.78 | 5.20 | 5.20 | 3.89 | 2 |
| 28.98 | 26.31 | 4.67 | 5.20 | 5.20 | 3.86 | 2 |
| 28.31 | 25.64 | 4.57 | 5.20 | 5.20 | 3.83 | 2 |
| 27.63 | 24.96 | 4.46 | 5.20 | 5.20 | 3.80 | 2 |
| 26.96 | 24.29 | 4.35 | 5.20 | 5.19 | 3.77 | 2 |
| 26.29 | 23.62 | 4.24 | 5.20 | 5.19 | 3.74 | 2 |
| 25.61 | 22.94 | 4.13 | 5.20 | 5.19 | 3.71 | 2 |
| 24.94 | 22.27 | 4.02 | 5.20 | 5.18 | 3.67 | 2 |
| 24.26 | 21.60 | 3.91 | 5.20 | 5.17 | 3.64 | 2 |
| 23.59 | 20.93 | 3.80 | 5.20 | 5.16 | 3.61 | 2 |
| 22.92 | 20.26 | 3.70 | 5.20 | 5.15 | 3.58 | 2 |
| 22.24 | 19.59 | 3.59 | 5.20 | 5.13 | 3.55 | 2 |
| 21.57 | 18.93 | 3.48 | 5.20 | 5.11 | 3.52 | 2 |
| 20.89 | 18.26 | 3.37 | 5.20 | 5.09 | 3.49 | 2 |
| 20.22 | 17.60 | 3.26 | 5.20 | 5.06 | 3.46 | 2 |
| 19.55 | 16.95 | 3.15 | 5.20 | 5.03 | 3.42 | 2 |
| 18.87 | 16.29 | 3.04 | 5.20 | 5.00 | 3.39 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 18.20 | 15.64 | 2.94 | 5.20 | 4.96 | 3.36 | 2 |
| 17.52 | 15.00 | 2.83 | 5.20 | 4.92 | 3.33 | 2 |
| 16.85 | 14.36 | 2.72 | 5.20 | 4.88 | 3.30 | 2 |
| 16.18 | 13.72 | 2.61 | 5.20 | 4.83 | 3.27 | 2 |
| 15.50 | 13.09 | 2.50 | 5.20 | 4.78 | 3.24 | 2 |
| 14.83 | 12.46 | 2.39 | 5.20 | 4.73 | 3.21 | 2 |
| 14.15 | 11.84 | 2.28 | 5.20 | 4.68 | 3.17 | 2 |
| 13.48 | 11.23 | 2.17 | 5.20 | 4.63 | 3.14 | 2 |
| 12.81 | 10.62 | 2.07 | 5.20 | 4.58 | 3.11 | 2 |
| 12.13 | 10.02 | 1.96 | 5.20 | 4.52 | 3.08 | 2 |
| 11.46 | 9.42 | 1.85 | 5.20 | 4.47 | 3.05 | 2 |
| 10.78 | 8.83 | 1.74 | 5.20 | 4.42 | 3.02 | 2 |
| 10.11 | 8.24 | 1.63 | 5.20 | 4.37 | 3.00 | 2 |
| 9.44 | 7.66 | 1.52 | 5.20 | 4.32 | 3.00 | 2 |
| 8.76 | 7.08 | 1.41 | 5.20 | 4.27 | 2.99 | 2 |
| 8.09 | 6.51 | 1.30 | 5.20 | 4.22 | 2.99 | 2 |
| 7.41 | 5.95 | 1.20 | 5.20 | 4.18 | 2.99 | 2 |
| 6.74 | 5.39 | 1.09 | 5.20 | 4.13 | 2.99 | 2 |
| 6.07 | 4.83 | .98 | 5.20 | 4.09 | 2.98 | 2 |
| 5.39 | 4.28 | .87 | 5.20 | 4.05 | 2.98 | 2 |
| 4.72 | 3.73 | .76 | 5.20 | 4.02 | 2.98 | 2 |
| 4.04 | 3.19 | .65 | 5.20 | 3.98 | 2.98 | 2 |
| 3.37 | 2.65 | .54 | 5.20 | 3.95 | 2.97 | 2 |
| 2.70 | 2.11 | .43 | 5.20 | 3.92 | 2.97 | 2 |
| 2.02 | 1.58 | .33 | 5.20 | 3.89 | 2.97 | 2 |
| 1.35 | 1.05 | .22 | 5.20 | 3.86 | 2.97 | 2 |
| .67 | .52 | .11 | 5.20 | 3.83 | 2.96 | 2 |
| .00 | .00 | .00 | 5.20 | 3.80 | 2.96 | 2 |

| | ***** Stresses ***** | | ***** Pore Pressures ***** | | | |
|---|---|---|---|---|---|---|
| XI | Total | Effective | Total | Static | Excess | Material |
| 30.75 | .00 | .00 | .00 | .00 | .00 | 2 |
| 30.27 | 41.67 | 11.57 | 30.10 | 30.10 | .00 | 2 |
| 29.67 | 91.40 | 3.94 | 87.46 | 68.25 | 19.21 | 2 |
| 29.00 | 144.77 | 3.62 | 141.15 | 110.05 | 31.11 | 2 |
| 28.33 | 198.62 | 3.53 | 195.09 | 152.32 | 42.76 | 2 |
| 27.66 | 252.60 | 3.51 | 249.09 | 194.73 | 54.36 | 2 |
| 26.99 | 306.62 | 3.50 | 303.12 | 237.17 | 65.94 | 2 |
| 26.31 | 360.65 | 3.50 | 357.14 | 279.63 | 77.52 | 2 |
| 25.64 | 414.67 | 3.51 | 411.16 | 322.07 | 89.09 | 2 |
| 24.96 | 468.68 | 3.51 | 465.17 | 364.52 | 100.66 | 2 |
| 24.29 | 522.69 | 3.51 | 519.17 | 406.95 | 112.23 | 2 |
| 23.62 | 576.68 | 3.52 | 573.15 | 449.36 | 123.80 | 2 |
| 22.94 | 630.64 | 3.53 | 627.11 | 491.75 | 135.36 | 2 |
| 22.27 | 684.57 | 3.55 | 681.03 | 534.11 | 146.92 | 2 |
| 21.60 | 738.46 | 3.57 | 734.89 | 576.42 | 158.47 | 2 |
| 20.93 | 792.28 | 3.59 | 788.69 | 618.66 | 170.02 | 2 |
| 20.26 | 846.02 | 3.62 | 842.40 | 660.83 | 181.56 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19.59 | 899.66 | 3.67 | 896.00 | 702.90 | 193.10 | 2 |
| 18.93 | 953.18 | 3.72 | 949.46 | 744.84 | 204.62 | 2 |
| 18.26 | 1006.54 | 3.78 | 1002.76 | 786.63 | 216.13 | 2 |
| 17.60 | 1059.72 | 3.85 | 1055.87 | 828.23 | 227.64 | 2 |
| 16.95 | 1112.70 | 3.93 | 1108.77 | 869.64 | 239.14 | 2 |
| 16.29 | 1165.45 | 4.12 | 1161.34 | 910.82 | 250.52 | 2 |
| 15.64 | 1217.97 | 5.08 | 1212.89 | 951.76 | 261.13 | 2 |
| 15.00 | 1270.21 | 6.12 | 1264.09 | 992.43 | 271.66 | 2 |
| 14.36 | 1322.17 | 7.24 | 1314.94 | 1032.82 | 282.12 | 2 |
| 13.72 | 1373.83 | 8.42 | 1365.41 | 1072.90 | 292.51 | 2 |
| 13.09 | 1425.17 | 9.66 | 1415.51 | 1112.67 | 302.84 | 2 |
| 12.46 | 1476.18 | 10.95 | 1465.23 | 1152.10 | 313.13 | 2 |
| 11.84 | 1526.84 | 12.28 | 1514.56 | 1191.19 | 323.37 | 2 |
| 11.23 | 1577.15 | 13.64 | 1563.50 | 1229.92 | 333.59 | 2 |
| 10.62 | 1627.09 | 15.02 | 1612.07 | 1268.29 | 343.78 | 2 |
| 10.02 | 1676.67 | 16.40 | 1660.27 | 1306.30 | 353.98 | 2 |
| 9.42 | 1725.89 | 17.78 | 1708.11 | 1343.94 | 364.17 | 2 |
| 8.83 | 1774.75 | 19.14 | 1755.61 | 1381.22 | 374.39 | 2 |
| 8.24 | 1823.25 | 20.48 | 1802.77 | 1418.15 | 384.62 | 2 |
| 7.66 | 1871.40 | 21.78 | 1849.62 | 1454.73 | 394.89 | 2 |
| 7.08 | 1919.22 | 23.04 | 1896.18 | 1490.97 | 405.21 | 2 |
| 6.51 | 1966.71 | 24.26 | 1942.45 | 1526.88 | 415.57 | 2 |
| 5.95 | 2013.88 | 25.42 | 1988.46 | 1562.49 | 425.98 | 2 |
| 5.39 | 2060.76 | 26.53 | 2034.23 | 1597.79 | 436.44 | 2 |
| 4.83 | 2107.35 | 27.59 | 2079.76 | 1632.80 | 446.96 | 2 |
| 4.28 | 2153.67 | 28.59 | 2125.08 | 1667.55 | 457.53 | 2 |
| 3.73 | 2199.73 | 29.54 | 2170.19 | 1702.04 | 468.15 | 2 |
| 3.19 | 2245.55 | 36.32 | 2209.23 | 1736.28 | 472.95 | 2 |
| 2.65 | 2291.14 | 48.42 | 2242.72 | 1770.30 | 472.43 | 2 |
| 2.11 | 2336.51 | 59.90 | 2276.61 | 1804.09 | 472.52 | 2 |
| 1.58 | 2381.67 | 70.93 | 2310.74 | 1837.68 | 473.06 | 2 |
| 1.05 | 2426.63 | 81.67 | 2344.96 | 1871.07 | 473.90 | 2 |
| .52 | 2471.40 | 92.24 | 2379.15 | 1904.25 | 474.90 | 2 |
| .00 | 2515.96 | 102.76 | 2413.21 | 1937.25 | 475.96 | 2 |

Time = 368. Degree of Consolidation = 28.%

Total Settlement = 2.950

Settlement at End of Primary Consolidation = 9.632

Settlement caused by Primary Consolidation at time 368. = 2.707

Settlement caused by Secondary Compression at time 368. = .000

Settlement Due to Desiccation = .243

Surface Elevation = 47.14

**********Current Conditions in Compressible Foundation**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 25.00 | 24.99 | 17.11 | .47 | .47 | .46 | 1 |
| 18.73 | 18.72 | 12.83 | .46 | .46 | .46 | 1 |
| 12.48 | 12.47 | 8.56 | .46 | .46 | .46 | 1 |
| 6.23 | 6.22 | 4.28 | .46 | .46 | .45 | 1 |
| .00 | .00 | .00 | .46 | .45 | .45 | 1 |

| ***** Stresses ***** | | | ***** Pore Pressures ***** | | | |
|---|---|---|---|---|---|---|
| XI | Total | Effective | Total | Static | Excess | Material |
| 24.99 | 2312.57 | 220.34 | 2092.23 | 1643.73 | 448.50 | 1 |
| 18.72 | 3165.50 | 494.56 | 2670.94 | 2038.53 | 632.41 | 1 |
| 12.47 | 4017.71 | 927.61 | 3090.09 | 2432.60 | 657.49 | 1 |
| 6.22 | 4868.99 | 1572.38 | 3296.61 | 2825.76 | 470.85 | 1 |
| .00 | 5719.29 | 2466.65 | 3252.64 | 3217.92 | 34.72 | 1 |

Time = 733. Degree of Consolidation = 19.%

Total Settlement = .012

Settlement at End of Primary Consolidation = .062

Settlement caused by Primary Consolidation at time 733. = .012

Settlement caused by Secondary Compression at time 733. = .000

**********Current Conditions in Dredged Fill**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 33.70 | 27.32 | 5.44 | 5.20 | 2.50 | 2.50 | 2 |
| 33.03 | 26.92 | 5.33 | 5.20 | 2.50 | 2.50 | 2 |
| 32.35 | 26.56 | 5.22 | 5.20 | 2.50 | 2.50 | 2 |
| 31.68 | 26.09 | 5.11 | 5.20 | 3.84 | 3.84 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 31.00 | 25.55 | 5.00 | 5.20 | 4.19 | 3.81 | 2 |
| 30.33 | 24.97 | 4.89 | 5.20 | 4.42 | 3.77 | 2 |
| 29.66 | 24.37 | 4.78 | 5.20 | 4.56 | 3.74 | 2 |
| 28.98 | 23.76 | 4.67 | 5.20 | 4.63 | 3.71 | 2 |
| 28.31 | 23.15 | 4.57 | 5.20 | 4.66 | 3.68 | 2 |
| 27.63 | 22.53 | 4.46 | 5.20 | 4.66 | 3.65 | 2 |
| 26.96 | 21.92 | 4.35 | 5.20 | 4.64 | 3.62 | 2 |
| 26.29 | 21.30 | 4.24 | 5.20 | 4.62 | 3.59 | 2 |
| 25.61 | 20.70 | 4.13 | 5.20 | 4.59 | 3.56 | 2 |
| 24.94 | 20.09 | 4.02 | 5.20 | 4.56 | 3.52 | 2 |
| 24.26 | 19.49 | 3.91 | 5.20 | 4.53 | 3.49 | 2 |
| 23.59 | 18.89 | 3.80 | 5.20 | 4.50 | 3.46 | 2 |
| 22.92 | 18.29 | 3.70 | 5.20 | 4.46 | 3.43 | 2 |
| 22.24 | 17.70 | 3.59 | 5.20 | 4.43 | 3.40 | 2 |
| 21.57 | 17.11 | 3.48 | 5.20 | 4.40 | 3.37 | 2 |
| 20.89 | 16.53 | 3.37 | 5.20 | 4.36 | 3.34 | 2 |
| 20.22 | 15.94 | 3.26 | 5.20 | 4.33 | 3.31 | 2 |
| 19.55 | 15.37 | 3.15 | 5.20 | 4.29 | 3.27 | 2 |
| 18.87 | 14.79 | 3.04 | 5.20 | 4.26 | 3.24 | 2 |
| 18.20 | 14.22 | 2.94 | 5.20 | 4.23 | 3.21 | 2 |
| 17.52 | 13.66 | 2.83 | 5.20 | 4.20 | 3.18 | 2 |
| 16.85 | 13.09 | 2.72 | 5.20 | 4.16 | 3.15 | 2 |
| 16.18 | 12.53 | 2.61 | 5.20 | 4.13 | 3.12 | 2 |
| 15.50 | 11.98 | 2.50 | 5.20 | 4.10 | 3.09 | 2 |
| 14.83 | 11.42 | 2.39 | 5.20 | 4.07 | 3.06 | 2 |
| 14.15 | 10.87 | 2.28 | 5.20 | 4.04 | 3.02 | 2 |
| 13.48 | 10.33 | 2.17 | 5.20 | 4.01 | 3.00 | 2 |
| 12.81 | 9.79 | 2.07 | 5.20 | 3.98 | 3.00 | 2 |
| 12.13 | 9.24 | 1.96 | 5.20 | 3.96 | 2.99 | 2 |
| 11.46 | 8.71 | 1.85 | 5.20 | 3.93 | 2.99 | 2 |
| 10.78 | 8.17 | 1.74 | 5.20 | 3.90 | 2.99 | 2 |
| 10.11 | 7.64 | 1.63 | 5.20 | 3.88 | 2.99 | 2 |
| 9.44 | 7.11 | 1.52 | 5.20 | 3.85 | 2.98 | 2 |
| 8.76 | 6.59 | 1.41 | 5.20 | 3.83 | 2.98 | 2 |
| 8.09 | 6.06 | 1.30 | 5.20 | 3.80 | 2.98 | 2 |
| 7.41 | 5.54 | 1.20 | 5.20 | 3.78 | 2.98 | 2 |
| 6.74 | 5.02 | 1.09 | 5.20 | 3.75 | 2.97 | 2 |
| 6.07 | 4.51 | .98 | 5.20 | 3.73 | 2.97 | 2 |
| 5.39 | 4.00 | .87 | 5.20 | 3.70 | 2.97 | 2 |
| 4.72 | 3.49 | .76 | 5.20 | 3.68 | 2.97 | 2 |
| 4.04 | 2.98 | .65 | 5.20 | 3.65 | 2.96 | 2 |
| 3.37 | 2.48 | .54 | 5.20 | 3.62 | 2.96 | 2 |
| 2.70 | 1.98 | .43 | 5.20 | 3.60 | 2.96 | 2 |
| 2.02 | 1.48 | .33 | 5.20 | 3.57 | 2.96 | 2 |
| 1.35 | .98 | .22 | 5.20 | 3.54 | 2.95 | 2 |
| .67 | .49 | .11 | 5.20 | 3.51 | 2.95 | 2 |
| .00 | .00 | .00 | 5.20 | 3.49 | 2.95 | 2 |

***** Stresses *****  ***** Pore Pressures *****

| XI | Total | Effective | Total | Static | Excess | Material |
|---|---|---|---|---|---|---|
| 27.32 | .00 | .00 | .00 | .00 | .00 | 2 |
| 26.92 | 26.98 | 26.98 | .00 | .00 | .00 | 2 |
| 26.56 | 53.97 | 53.97 | .00 | .00 | .00 | 2 |
| 26.09 | 90.12 | 90.12 | .00 | .00 | .00 | 2 |
| 25.55 | 136.09 | 25.16 | 110.92 | 34.39 | 76.53 | 2 |
| 24.97 | 184.06 | 19.01 | 165.05 | 70.79 | 94.26 | 2 |
| 24.37 | 233.29 | 15.43 | 217.85 | 108.44 | 109.41 | 2 |
| 23.76 | 283.21 | 13.62 | 269.59 | 146.79 | 122.80 | 2 |
| 23.15 | 333.46 | 12.91 | 320.54 | 185.46 | 135.08 | 2 |
| 22.53 | 383.79 | 12.88 | 370.91 | 224.22 | 146.69 | 2 |
| 21.92 | 434.08 | 13.24 | 420.84 | 262.94 | 157.91 | 2 |
| 21.30 | 484.24 | 13.83 | 470.41 | 301.52 | 168.89 | 2 |
| 20.70 | 534.22 | 14.55 | 519.67 | 339.93 | 179.74 | 2 |
| 20.09 | 584.01 | 15.35 | 568.66 | 378.14 | 190.51 | 2 |
| 19.49 | 633.57 | 16.19 | 617.38 | 416.14 | 201.24 | 2 |
| 18.89 | 682.91 | 17.06 | 665.85 | 453.90 | 211.95 | 2 |
| 18.29 | 732.02 | 17.94 | 714.08 | 491.44 | 222.64 | 2 |
| 17.70 | 780.90 | 18.83 | 762.07 | 528.74 | 233.33 | 2 |
| 17.11 | 829.54 | 19.72 | 809.82 | 565.81 | 244.02 | 2 |
| 16.53 | 877.95 | 20.60 | 857.35 | 602.64 | 254.71 | 2 |
| 15.94 | 926.13 | 21.48 | 904.65 | 639.25 | 265.40 | 2 |
| 15.37 | 974.08 | 22.35 | 951.72 | 675.62 | 276.10 | 2 |
| 14.79 | 1021.79 | 23.22 | 998.58 | 711.76 | 286.82 | 2 |
| 14.22 | 1069.29 | 24.07 | 1045.22 | 747.68 | 297.54 | 2 |
| 13.66 | 1116.56 | 24.91 | 1091.65 | 783.37 | 308.27 | 2 |
| 13.09 | 1163.60 | 25.74 | 1137.87 | 818.85 | 319.02 | 2 |
| 12.53 | 1210.44 | 26.55 | 1183.88 | 854.11 | 329.78 | 2 |
| 11.98 | 1257.06 | 27.36 | 1229.70 | 889.15 | 340.55 | 2 |
| 11.42 | 1303.47 | 28.14 | 1275.32 | 923.99 | 351.34 | 2 |
| 10.87 | 1349.67 | 28.92 | 1320.75 | 958.62 | 362.14 | 2 |
| 10.33 | 1395.67 | 29.68 | 1366.00 | 993.05 | 372.95 | 2 |
| 9.79 | 1441.48 | 35.98 | 1405.50 | 1027.28 | 378.22 | 2 |
| 9.24 | 1487.09 | 46.24 | 1440.85 | 1061.32 | 379.54 | 2 |
| 8.71 | 1532.52 | 56.21 | 1476.31 | 1095.17 | 381.14 | 2 |
| 8.17 | 1577.76 | 65.94 | 1511.81 | 1128.83 | 382.98 | 2 |
| 7.64 | 1622.82 | 75.50 | 1547.32 | 1162.32 | 385.00 | 2 |
| 7.11 | 1667.71 | 84.92 | 1582.79 | 1195.64 | 387.15 | 2 |
| 6.59 | 1712.43 | 94.24 | 1618.19 | 1228.78 | 389.41 | 2 |
| 6.06 | 1756.97 | 103.50 | 1653.47 | 1261.75 | 391.73 | 2 |
| 5.54 | 1801.34 | 112.72 | 1688.62 | 1294.54 | 394.07 | 2 |
| 5.02 | 1845.54 | 121.95 | 1723.59 | 1327.17 | 396.42 | 2 |
| 4.51 | 1889.57 | 131.21 | 1758.36 | 1359.63 | 398.73 | 2 |
| 4.00 | 1933.43 | 140.53 | 1792.90 | 1391.91 | 400.99 | 2 |
| 3.49 | 1977.12 | 149.93 | 1827.18 | 1424.02 | 403.16 | 2 |
| 2.98 | 2020.63 | 159.45 | 1861.18 | 1455.96 | 405.22 | 2 |
| 2.48 | 2063.96 | 169.10 | 1894.86 | 1487.72 | 407.14 | 2 |
| 1.98 | 2107.11 | 178.92 | 1928.20 | 1519.29 | 408.90 | 2 |
| 1.48 | 2150.08 | 188.92 | 1961.16 | 1550.69 | 410.47 | 2 |
| .98 | 2192.86 | 199.14 | 1993.72 | 1581.90 | 411.83 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| .49 | 2235.45 | 209.60 | 2025.85 | 1612.91 | 412.94 | 2 |
| .00 | 2277.85 | 220.33 | 2057.51 | 1643.73 | 413.78 | 2 |

Time = 733. Degree of Consolidation = 52.%

Total Settlement = 6.378

Settlement at End of Primary Consolidation = 10.861

Settlement caused by Primary Consolidation at time 733. = 5.641

Settlement caused by Secondary Compression at time 733. = .000

Settlement Due to Desiccation = .737

Surface Elevation = 43.71

**********Current Conditions in Compressible Foundation**********

***** Coordinates ***** ***** Void Ratios *****

| A | XI | Z | Einitial | E | Eeop | Material |
|---|---|---|---|---|---|---|
| 25.00 | 24.98 | 17.11 | .47 | .46 | .46 | 1 |
| 18.73 | 18.72 | 12.83 | .46 | .46 | .46 | 1 |
| 12.48 | 12.46 | 8.56 | .46 | .46 | .46 | 1 |
| 6.23 | 6.22 | 4.28 | .46 | .46 | .45 | 1 |
| .00 | .00 | .00 | .46 | .45 | .45 | 1 |

***** Stresses ***** ***** Pore Pressures *****

| XI | Total | Effective | Total | Static | Excess | Material |
|---|---|---|---|---|---|---|
| 24.98 | 2192.88 | 309.62 | 1883.26 | 1497.64 | 385.62 | 1 |
| 18.72 | 3045.75 | 510.43 | 2535.32 | 1892.37 | 642.94 | 1 |
| 12.46 | 3897.93 | 943.87 | 2954.06 | 2286.42 | 667.64 | 1 |
| 6.22 | 4749.15 | 1641.35 | 3107.81 | 2679.51 | 428.30 | 1 |
| .00 | 5599.38 | 2481.48 | 3117.90 | 3071.60 | 46.30 | 1 |

Time = 1097. Degree of Consolidation = 24.%

Total Settlement = .015

Settlement at End of Primary Consolidation = .064

Settlement caused by Primary Consolidation at time 1097. = .015

Settlement caused by Secondary Compression at time 1097. = .000

**********Current Conditions in Dredged Fill**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 33.70 | 25.34 | 5.44 | 5.20 | 2.50 | 2.50 | 2 |
| 33.03 | 24.97 | 5.33 | 5.20 | 2.50 | 2.50 | 2 |
| 32.35 | 24.58 | 5.22 | 5.20 | 2.50 | 2.50 | 2 |
| 31.68 | 24.24 | 5.11 | 5.20 | 2.50 | 2.50 | 2 |
| 31.00 | 23.77 | 5.00 | 5.20 | 3.77 | 3.77 | 2 |
| 30.33 | 23.25 | 4.89 | 5.20 | 3.90 | 3.73 | 2 |
| 29.66 | 22.71 | 4.78 | 5.20 | 4.00 | 3.70 | 2 |
| 28.98 | 22.16 | 4.67 | 5.20 | 4.06 | 3.67 | 2 |
| 28.31 | 21.61 | 4.57 | 5.20 | 4.10 | 3.64 | 2 |
| 27.63 | 21.05 | 4.46 | 5.20 | 4.11 | 3.61 | 2 |
| 26.96 | 20.50 | 4.35 | 5.20 | 4.12 | 3.58 | 2 |
| 26.29 | 19.94 | 4.24 | 5.20 | 4.11 | 3.55 | 2 |
| 25.61 | 19.39 | 4.13 | 5.20 | 4.10 | 3.52 | 2 |
| 24.94 | 18.83 | 4.02 | 5.20 | 4.08 | 3.48 | 2 |
| 24.26 | 18.28 | 3.91 | 5.20 | 4.06 | 3.45 | 2 |
| 23.59 | 17.73 | 3.80 | 5.20 | 4.04 | 3.42 | 2 |
| 22.92 | 17.19 | 3.70 | 5.20 | 4.02 | 3.39 | 2 |
| 22.24 | 16.64 | 3.59 | 5.20 | 4.00 | 3.36 | 2 |
| 21.57 | 16.10 | 3.48 | 5.20 | 3.97 | 3.33 | 2 |
| 20.89 | 15.56 | 3.37 | 5.20 | 3.95 | 3.30 | 2 |
| 20.22 | 15.02 | 3.26 | 5.20 | 3.93 | 3.27 | 2 |
| 19.55 | 14.49 | 3.15 | 5.20 | 3.91 | 3.23 | 2 |
| 18.87 | 13.96 | 3.04 | 5.20 | 3.89 | 3.20 | 2 |
| 18.20 | 13.43 | 2.94 | 5.20 | 3.87 | 3.17 | 2 |
| 17.52 | 12.90 | 2.83 | 5.20 | 3.84 | 3.14 | 2 |
| 16.85 | 12.37 | 2.72 | 5.20 | 3.82 | 3.11 | 2 |
| 16.18 | 11.85 | 2.61 | 5.20 | 3.80 | 3.08 | 2 |
| 15.50 | 11.33 | 2.50 | 5.20 | 3.78 | 3.05 | 2 |
| 14.83 | 10.81 | 2.39 | 5.20 | 3.76 | 3.02 | 2 |
| 14.15 | 10.29 | 2.28 | 5.20 | 3.74 | 3.00 | 2 |
| 13.48 | 9.78 | 2.17 | 5.20 | 3.72 | 3.00 | 2 |
| 12.81 | 9.27 | 2.07 | 5.20 | 3.70 | 2.99 | 2 |
| 12.13 | 8.76 | 1.96 | 5.20 | 3.68 | 2.99 | 2 |
| 11.46 | 8.25 | 1.85 | 5.20 | 3.66 | 2.99 | 2 |
| 10.78 | 7.74 | 1.74 | 5.20 | 3.64 | 2.99 | 2 |
| 10.11 | 7.24 | 1.63 | 5.20 | 3.62 | 2.98 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9.44 | 6.74 | 1.52 | 5.20 | 3.59 | 2.98 | 2 |
| 8.76 | 6.24 | 1.41 | 5.20 | 3.57 | 2.98 | 2 |
| 8.09 | 5.75 | 1.30 | 5.20 | 3.55 | 2.98 | 2 |
| 7.41 | 5.25 | 1.20 | 5.20 | 3.53 | 2.97 | 2 |
| 6.74 | 4.76 | 1.09 | 5.20 | 3.51 | 2.97 | 2 |
| 6.07 | 4.27 | .98 | 5.20 | 3.48 | 2.97 | 2 |
| 5.39 | 3.79 | .87 | 5.20 | 3.46 | 2.97 | 2 |
| 4.72 | 3.30 | .76 | 5.20 | 3.43 | 2.96 | 2 |
| 4.04 | 2.82 | .65 | 5.20 | 3.41 | 2.96 | 2 |
| 3.37 | 2.35 | .54 | 5.20 | 3.38 | 2.96 | 2 |
| 2.70 | 1.87 | .43 | 5.20 | 3.36 | 2.96 | 2 |
| 2.02 | 1.40 | .33 | 5.20 | 3.33 | 2.95 | 2 |
| 1.35 | .93 | .22 | 5.20 | 3.30 | 2.95 | 2 |
| .67 | .46 | .11 | 5.20 | 3.27 | 2.95 | 2 |
| .00 | .00 | .00 | 5.20 | 3.24 | 2.95 | 2 |

| | ***** Stresses ***** | | ***** Pore Pressures ***** | | | |
|---|---|---|---|---|---|---|
| XI | Total | Effective | Total | Static | Excess | Material |
| 25.34 | .00 | .00 | .00 | .00 | .00 | 2 |
| 24.97 | 26.98 | 26.98 | .00 | .00 | .00 | 2 |
| 24.58 | 53.97 | 53.97 | .00 | .00 | .00 | 2 |
| 24.24 | 80.95 | 80.95 | .00 | .00 | .00 | 2 |
| 23.77 | 116.53 | 116.53 | .00 | .00 | .00 | 2 |
| 23.25 | 161.21 | 67.45 | 93.76 | 33.11 | 60.65 | 2 |
| 22.71 | 206.70 | 30.63 | 176.07 | 67.03 | 109.05 | 2 |
| 22.16 | 252.75 | 28.37 | 224.37 | 101.50 | 122.88 | 2 |
| 21.61 | 299.13 | 27.44 | 271.69 | 136.30 | 135.39 | 2 |
| 21.05 | 345.69 | 27.02 | 318.67 | 171.29 | 147.38 | 2 |
| 20.50 | 392.30 | 26.96 | 365.34 | 206.33 | 159.01 | 2 |
| 19.94 | 438.90 | 27.14 | 411.76 | 241.35 | 170.40 | 2 |
| 19.39 | 485.43 | 27.48 | 457.94 | 276.31 | 181.64 | 2 |
| 18.83 | 531.85 | 27.93 | 503.93 | 311.16 | 192.77 | 2 |
| 18.28 | 578.15 | 28.43 | 549.72 | 345.88 | 203.84 | 2 |
| 17.73 | 624.31 | 28.98 | 595.33 | 380.47 | 214.87 | 2 |
| 17.19 | 670.32 | 29.54 | 640.78 | 414.91 | 225.87 | 2 |
| 16.64 | 716.19 | 31.74 | 684.44 | 449.19 | 235.25 | 2 |
| 16.10 | 761.90 | 39.97 | 721.93 | 483.33 | 238.60 | 2 |
| 15.56 | 807.45 | 48.11 | 759.34 | 517.31 | 242.03 | 2 |
| 15.02 | 852.86 | 56.16 | 796.71 | 551.15 | 245.56 | 2 |
| 14.49 | 898.12 | 64.10 | 834.02 | 584.83 | 249.19 | 2 |
| 13.96 | 943.24 | 71.96 | 871.27 | 618.37 | 252.90 | 2 |
| 13.43 | 988.20 | 79.74 | 908.46 | 651.77 | 256.70 | 2 |
| 12.90 | 1033.03 | 87.46 | 945.57 | 685.02 | 260.55 | 2 |
| 12.37 | 1077.71 | 95.13 | 982.59 | 718.13 | 264.46 | 2 |
| 11.85 | 1122.25 | 102.76 | 1019.50 | 751.09 | 268.40 | 2 |
| 11.33 | 1166.66 | 110.37 | 1056.29 | 783.92 | 272.37 | 2 |
| 10.81 | 1210.92 | 117.97 | 1092.95 | 816.61 | 276.34 | 2 |
| 10.29 | 1255.03 | 125.57 | 1129.46 | 849.15 | 280.31 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 9.78 | 1299.01 | 133.19 | 1165.82 | 881.55 | 284.27 | 2 |
| 9.27 | 1342.85 | 140.85 | 1202.00 | 913.82 | 288.19 | 2 |
| 8.76 | 1386.55 | 148.54 | 1238.00 | 945.94 | 292.07 | 2 |
| 8.25 | 1430.10 | 156.29 | 1273.81 | 977.92 | 295.89 | 2 |
| 7.74 | 1473.51 | 164.11 | 1309.40 | 1009.75 | 299.65 | 2 |
| 7.24 | 1516.77 | 172.00 | 1344.77 | 1041.44 | 303.33 | 2 |
| 6.74 | 1559.88 | 179.99 | 1379.90 | 1072.98 | 306.92 | 2 |
| 6.24 | 1602.85 | 188.08 | 1414.77 | 1104.37 | 310.40 | 2 |
| 5.75 | 1645.67 | 196.28 | 1449.38 | 1135.61 | 313.77 | 2 |
| 5.25 | 1688.33 | 204.62 | 1483.71 | 1166.70 | 317.01 | 2 |
| 4.76 | 1730.84 | 213.10 | 1517.74 | 1197.63 | 320.10 | 2 |
| 4.27 | 1773.19 | 221.74 | 1551.45 | 1228.41 | 323.04 | 2 |
| 3.79 | 1815.37 | 230.55 | 1584.82 | 1259.02 | 325.80 | 2 |
| 3.30 | 1857.40 | 239.55 | 1617.84 | 1289.47 | 328.37 | 2 |
| 2.82 | 1899.25 | 248.76 | 1650.49 | 1319.75 | 330.74 | 2 |
| 2.35 | 1940.93 | 258.20 | 1682.73 | 1349.86 | 332.87 | 2 |
| 1.87 | 1982.44 | 267.89 | 1714.55 | 1379.79 | 334.76 | 2 |
| 1.40 | 2023.76 | 277.85 | 1745.91 | 1409.54 | 336.37 | 2 |
| .93 | 2064.89 | 288.11 | 1776.79 | 1439.10 | 337.69 | 2 |
| .46 | 2105.84 | 298.69 | 1807.15 | 1468.47 | 338.68 | 2 |
| .00 | 2146.58 | 309.63 | 1836.96 | 1497.64 | 339.32 | 2 |

Time = 1097. Degree of Consolidation = 67.%

Total Settlement = 8.360

Settlement at End of Primary Consolidation = 11.173

Settlement caused by Primary Consolidation at time 1097. = 7.478

Settlement caused by Secondary Compression at time 1097. = .000

Settlement Due to Desiccation = .882

Surface Elevation = 41.72

**********Current Conditions in Compressible Foundation**********

***** Coordinates ***** ***** Void Ratios *****

| A | XI | Z | Einitial | E | Eeop | Material |
|---|---|---|---|---|---|---|
| 25.00 | 24.98 | 17.11 | .47 | .46 | .46 | 1 |
| 18.73 | 18.72 | 12.83 | .46 | .46 | .46 | 1 |
| 12.48 | 12.46 | 8.56 | .46 | .46 | .46 | 1 |
| 6.23 | 6.22 | 4.28 | .46 | .46 | .45 | 1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| .00 | .00 | .00 | .46 | .45 | .45 | 1 |

| | ***** Stresses ***** | | ***** Pore Pressures ***** | | | |
|---|---|---|---|---|---|---|
| XI | Total | Effective | Total | Static | Excess | Material |
| 24.98 | 2127.46 | 376.24 | 1751.22 | 1432.22 | 319.00 | 1 |
| 18.72 | 2980.28 | 525.80 | 2454.48 | 1826.91 | 627.57 | 1 |
| 12.46 | 3832.44 | 963.63 | 2868.81 | 2220.93 | 647.88 | 1 |
| 6.22 | 4683.60 | 1691.41 | 2992.18 | 2613.95 | 378.23 | 1 |
| .00 | 5533.78 | 2481.48 | 3052.30 | 3006.00 | 46.30 | 1 |

Time = 1462. Degree of Consolidation = 29.%

Total Settlement = .018

Settlement at End of Primary Consolidation = .064

Settlement caused by Primary Consolidation at time 1462. = .018

Settlement caused by Secondary Compression at time 1462. = .000

**********Current Conditions in Dredged Fill**********

| | ***** Coordinates ***** | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 33.70 | 24.30 | 5.44 | 5.20 | 2.50 | 2.50 | 2 |
| 33.03 | 23.93 | 5.33 | 5.20 | 2.50 | 2.50 | 2 |
| 32.35 | 23.54 | 5.22 | 5.20 | 2.50 | 2.50 | 2 |
| 31.68 | 23.20 | 5.11 | 5.20 | 2.50 | 2.50 | 2 |
| 31.00 | 22.73 | 5.00 | 5.20 | 3.77 | 3.77 | 2 |
| 30.33 | 22.21 | 4.89 | 5.20 | 3.80 | 3.73 | 2 |
| 29.66 | 21.69 | 4.78 | 5.20 | 3.82 | 3.70 | 2 |
| 28.98 | 21.17 | 4.67 | 5.20 | 3.83 | 3.67 | 2 |
| 28.31 | 20.64 | 4.57 | 5.20 | 3.84 | 3.64 | 2 |
| 27.63 | 20.12 | 4.46 | 5.20 | 3.84 | 3.61 | 2 |
| 26.96 | 19.59 | 4.35 | 5.20 | 3.84 | 3.58 | 2 |
| 26.29 | 19.06 | 4.24 | 5.20 | 3.83 | 3.55 | 2 |
| 25.61 | 18.54 | 4.13 | 5.20 | 3.82 | 3.52 | 2 |
| 24.94 | 18.02 | 4.02 | 5.20 | 3.81 | 3.48 | 2 |
| 24.26 | 17.49 | 3.91 | 5.20 | 3.80 | 3.45 | 2 |
| 23.59 | 16.97 | 3.80 | 5.20 | 3.78 | 3.42 | 2 |
| 22.92 | 16.45 | 3.70 | 5.20 | 3.77 | 3.39 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22.24 | 15.94 | 3.59 | 5.20 | 3.75 | 3.36 | 2 |
| 21.57 | 15.42 | 3.48 | 5.20 | 3.73 | 3.33 | 2 |
| 20.89 | 14.91 | 3.37 | 5.20 | 3.72 | 3.30 | 2 |
| 20.22 | 14.40 | 3.26 | 5.20 | 3.70 | 3.27 | 2 |
| 19.55 | 13.89 | 3.15 | 5.20 | 3.69 | 3.23 | 2 |
| 18.87 | 13.38 | 3.04 | 5.20 | 3.67 | 3.20 | 2 |
| 18.20 | 12.87 | 2.94 | 5.20 | 3.65 | 3.17 | 2 |
| 17.52 | 12.37 | 2.83 | 5.20 | 3.63 | 3.14 | 2 |
| 16.85 | 11.86 | 2.72 | 5.20 | 3.62 | 3.11 | 2 |
| 16.18 | 11.36 | 2.61 | 5.20 | 3.60 | 3.08 | 2 |
| 15.50 | 10.86 | 2.50 | 5.20 | 3.58 | 3.05 | 2 |
| 14.83 | 10.37 | 2.39 | 5.20 | 3.56 | 3.02 | 2 |
| 14.15 | 9.87 | 2.28 | 5.20 | 3.54 | 3.00 | 2 |
| 13.48 | 9.38 | 2.17 | 5.20 | 3.53 | 3.00 | 2 |
| 12.81 | 8.89 | 2.07 | 5.20 | 3.51 | 2.99 | 2 |
| 12.13 | 8.40 | 1.96 | 5.20 | 3.49 | 2.99 | 2 |
| 11.46 | 7.91 | 1.85 | 5.20 | 3.47 | 2.99 | 2 |
| 10.78 | 7.43 | 1.74 | 5.20 | 3.45 | 2.99 | 2 |
| 10.11 | 6.94 | 1.63 | 5.20 | 3.43 | 2.98 | 2 |
| 9.44 | 6.46 | 1.52 | 5.20 | 3.41 | 2.98 | 2 |
| 8.76 | 5.99 | 1.41 | 5.20 | 3.39 | 2.98 | 2 |
| 8.09 | 5.51 | 1.30 | 5.20 | 3.37 | 2.98 | 2 |
| 7.41 | 5.04 | 1.20 | 5.20 | 3.34 | 2.97 | 2 |
| 6.74 | 4.57 | 1.09 | 5.20 | 3.32 | 2.97 | 2 |
| 6.07 | 4.10 | .98 | 5.20 | 3.30 | 2.97 | 2 |
| 5.39 | 3.63 | .87 | 5.20 | 3.28 | 2.97 | 2 |
| 4.72 | 3.17 | .76 | 5.20 | 3.25 | 2.96 | 2 |
| 4.04 | 2.71 | .65 | 5.20 | 3.23 | 2.96 | 2 |
| 3.37 | 2.25 | .54 | 5.20 | 3.20 | 2.96 | 2 |
| 2.70 | 1.79 | .43 | 5.20 | 3.18 | 2.96 | 2 |
| 2.02 | 1.34 | .33 | 5.20 | 3.15 | 2.95 | 2 |
| 1.35 | .89 | .22 | 5.20 | 3.12 | 2.95 | 2 |
| .67 | .44 | .11 | 5.20 | 3.09 | 2.95 | 2 |
| .00 | .00 | .00 | 5.20 | 3.06 | 2.95 | 2 |

| | ***** Stresses ***** | | ***** Pore Pressures ***** | | | |
|---|---|---|---|---|---|---|
| XI | Total | Effective | Total | Static | Excess | Material |
| 24.30 | .00 | .00 | .00 | .00 | .00 | 2 |
| 23.93 | 26.98 | 26.98 | .00 | .00 | .00 | 2 |
| 23.54 | 53.97 | 53.97 | .00 | .00 | .00 | 2 |
| 23.20 | 80.95 | 80.95 | .00 | .00 | .00 | 2 |
| 22.73 | 116.53 | 116.53 | .00 | .00 | .00 | 2 |
| 22.21 | 160.85 | 105.61 | 55.24 | 32.75 | 22.49 | 2 |
| 21.69 | 205.34 | 97.72 | 107.62 | 65.67 | 41.95 | 2 |
| 21.17 | 249.96 | 92.67 | 157.29 | 98.71 | 58.58 | 2 |
| 20.64 | 294.65 | 90.10 | 204.54 | 131.82 | 72.72 | 2 |
| 20.12 | 339.36 | 89.62 | 249.74 | 164.96 | 84.78 | 2 |
| 19.59 | 384.06 | 90.81 | 293.26 | 198.09 | 95.17 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 19.06 | 428.73 | 93.30 | 335.43 | 231.19 | 104.25 | 2 |
| 18.54 | 473.35 | 96.79 | 376.56 | 264.23 | 112.33 | 2 |
| 18.02 | 517.89 | 101.03 | 416.87 | 297.20 | 119.67 | 2 |
| 17.49 | 562.35 | 105.82 | 456.53 | 330.08 | 126.45 | 2 |
| 16.97 | 606.72 | 111.02 | 495.70 | 362.88 | 132.82 | 2 |
| 16.45 | 650.99 | 116.53 | 534.46 | 395.57 | 138.89 | 2 |
| 15.94 | 695.15 | 122.25 | 572.90 | 428.16 | 144.74 | 2 |
| 15.42 | 739.21 | 128.15 | 611.06 | 460.64 | 150.42 | 2 |
| 14.91 | 783.15 | 134.18 | 648.98 | 493.01 | 155.97 | 2 |
| 14.40 | 826.99 | 140.30 | 686.68 | 525.27 | 161.41 | 2 |
| 13.89 | 870.70 | 146.52 | 724.19 | 557.41 | 166.77 | 2 |
| 13.38 | 914.31 | 152.81 | 761.50 | 589.44 | 172.06 | 2 |
| 12.87 | 957.79 | 159.16 | 798.63 | 621.35 | 177.28 | 2 |
| 12.37 | 1001.16 | 165.58 | 835.58 | 653.15 | 182.43 | 2 |
| 11.86 | 1044.41 | 172.07 | 872.34 | 684.82 | 187.52 | 2 |
| 11.36 | 1087.54 | 178.62 | 908.92 | 716.38 | 192.54 | 2 |
| 10.86 | 1130.54 | 185.24 | 945.30 | 747.81 | 197.49 | 2 |
| 10.37 | 1173.42 | 191.94 | 981.49 | 779.11 | 202.37 | 2 |
| 9.87 | 1216.18 | 198.71 | 1017.47 | 810.30 | 207.17 | 2 |
| 9.38 | 1258.81 | 205.57 | 1053.24 | 841.36 | 211.88 | 2 |
| 8.89 | 1301.32 | 212.53 | 1088.79 | 872.28 | 216.51 | 2 |
| 8.40 | 1343.69 | 219.58 | 1124.12 | 903.08 | 221.03 | 2 |
| 7.91 | 1385.94 | 226.73 | 1159.20 | 933.75 | 225.45 | 2 |
| 7.43 | 1428.04 | 234.00 | 1194.04 | 964.29 | 229.76 | 2 |
| 6.94 | 1470.02 | 241.39 | 1228.62 | 994.69 | 233.94 | 2 |
| 6.46 | 1511.85 | 248.92 | 1262.93 | 1024.95 | 237.98 | 2 |
| 5.99 | 1553.55 | 256.59 | 1296.96 | 1055.07 | 241.89 | 2 |
| 5.51 | 1595.10 | 264.41 | 1330.69 | 1085.05 | 245.64 | 2 |
| 5.04 | 1636.51 | 272.40 | 1364.10 | 1114.88 | 249.22 | 2 |
| 4.57 | 1677.76 | 280.57 | 1397.19 | 1144.56 | 252.63 | 2 |
| 4.10 | 1718.86 | 288.94 | 1429.93 | 1174.09 | 255.84 | 2 |
| 3.63 | 1759.81 | 297.51 | 1462.30 | 1203.46 | 258.84 | 2 |
| 3.17 | 1800.59 | 306.31 | 1494.28 | 1232.67 | 261.61 | 2 |
| 2.71 | 1841.21 | 315.36 | 1525.85 | 1261.71 | 264.14 | 2 |
| 2.25 | 1881.66 | 324.68 | 1556.98 | 1290.59 | 266.39 | 2 |
| 1.79 | 1921.94 | 334.29 | 1587.65 | 1319.29 | 268.36 | 2 |
| 1.34 | 1962.03 | 344.22 | 1617.81 | 1347.81 | 270.00 | 2 |
| .89 | 2001.94 | 354.50 | 1647.44 | 1376.14 | 271.30 | 2 |
| .44 | 2041.65 | 365.16 | 1676.50 | 1404.28 | 272.21 | 2 |
| .00 | 2081.17 | 376.24 | 1704.93 | 1432.22 | 272.71 | 2 |

Time = 1462. Degree of Consolidation = 76.%

Total Settlement = 9.399

Settlement at End of Primary Consolidation = 11.173

Settlement caused by Primary Consolidation at time 1462. = 8.517

Settlement caused by Secondary Compression at time 1462. = .000

Settlement Due to Desiccation = .882

Surface Elevation = 40.68

**********Current Conditions in Compressible Foundation**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 25.00 | 24.98 | 17.11 | .47 | .46 | .46 | 1 |
| 18.73 | 18.71 | 12.83 | .46 | .46 | .46 | 1 |
| 12.48 | 12.46 | 8.56 | .46 | .46 | .46 | 1 |
| 6.23 | 6.22 | 4.28 | .46 | .46 | .45 | 1 |
| .00 | .00 | .00 | .46 | .45 | .45 | 1 |

Time = 2192. Degree of Consolidation = 36.%

Total Settlement = .023

Settlement at End of Primary Consolidation = .064

Settlement caused by Primary Consolidation at time 2192. = .023

Settlement caused by Secondary Compression at time 2192. = .000

**********Current Conditions in Dredged Fill**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 33.70 | 23.23 | 5.44 | 5.20 | 2.50 | 2.50 | 2 |
| 33.03 | 22.85 | 5.33 | 5.20 | 2.50 | 2.50 | 2 |
| 32.35 | 22.47 | 5.22 | 5.20 | 2.50 | 2.50 | 2 |
| 31.68 | 22.13 | 5.11 | 5.20 | 2.50 | 2.50 | 2 |
| 31.00 | 21.66 | 5.00 | 5.20 | 3.77 | 3.77 | 2 |
| 30.33 | 21.14 | 4.89 | 5.20 | 3.73 | 3.73 | 2 |
| 29.66 | 20.63 | 4.78 | 5.20 | 3.70 | 3.70 | 2 |
| 28.98 | 20.12 | 4.67 | 5.20 | 3.67 | 3.67 | 2 |
| 28.31 | 19.62 | 4.57 | 5.20 | 3.64 | 3.64 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 27.63 | 19.11 | 4.46 | 5.20 | 3.61 | 3.61 | 2 |
| 26.96 | 18.61 | 4.35 | 5.20 | 3.58 | 3.58 | 2 |
| 26.29 | 18.12 | 4.24 | 5.20 | 3.56 | 3.55 | 2 |
| 25.61 | 17.62 | 4.13 | 5.20 | 3.54 | 3.52 | 2 |
| 24.94 | 17.13 | 4.02 | 5.20 | 3.53 | 3.48 | 2 |
| 24.26 | 16.64 | 3.91 | 5.20 | 3.51 | 3.45 | 2 |
| 23.59 | 16.15 | 3.80 | 5.20 | 3.49 | 3.42 | 2 |
| 22.92 | 15.66 | 3.70 | 5.20 | 3.48 | 3.39 | 2 |
| 22.24 | 15.17 | 3.59 | 5.20 | 3.47 | 3.36 | 2 |
| 21.57 | 14.69 | 3.48 | 5.20 | 3.45 | 3.33 | 2 |
| 20.89 | 14.21 | 3.37 | 5.20 | 3.44 | 3.30 | 2 |
| 20.22 | 13.72 | 3.26 | 5.20 | 3.42 | 3.27 | 2 |
| 19.55 | 13.24 | 3.15 | 5.20 | 3.41 | 3.23 | 2 |
| 18.87 | 12.77 | 3.04 | 5.20 | 3.39 | 3.20 | 2 |
| 18.20 | 12.29 | 2.94 | 5.20 | 3.38 | 3.17 | 2 |
| 17.52 | 11.81 | 2.83 | 5.20 | 3.37 | 3.14 | 2 |
| 16.85 | 11.34 | 2.72 | 5.20 | 3.35 | 3.11 | 2 |
| 16.18 | 10.87 | 2.61 | 5.20 | 3.34 | 3.08 | 2 |
| 15.50 | 10.40 | 2.50 | 5.20 | 3.32 | 3.05 | 2 |
| 14.83 | 9.93 | 2.39 | 5.20 | 3.31 | 3.02 | 2 |
| 14.15 | 9.46 | 2.28 | 5.20 | 3.29 | 3.00 | 2 |
| 13.48 | 8.99 | 2.17 | 5.20 | 3.28 | 3.00 | 2 |
| 12.81 | 8.53 | 2.07 | 5.20 | 3.27 | 2.99 | 2 |
| 12.13 | 8.07 | 1.96 | 5.20 | 3.25 | 2.99 | 2 |
| 11.46 | 7.60 | 1.85 | 5.20 | 3.24 | 2.99 | 2 |
| 10.78 | 7.14 | 1.74 | 5.20 | 3.22 | 2.99 | 2 |
| 10.11 | 6.69 | 1.63 | 5.20 | 3.21 | 2.98 | 2 |
| 9.44 | 6.23 | 1.52 | 5.20 | 3.19 | 2.98 | 2 |
| 8.76 | 5.77 | 1.41 | 5.20 | 3.18 | 2.98 | 2 |
| 8.09 | 5.32 | 1.30 | 5.20 | 3.16 | 2.98 | 2 |
| 7.41 | 4.87 | 1.20 | 5.20 | 3.15 | 2.97 | 2 |
| 6.74 | 4.42 | 1.09 | 5.20 | 3.13 | 2.97 | 2 |
| 6.07 | 3.97 | .98 | 5.20 | 3.12 | 2.97 | 2 |
| 5.39 | 3.52 | .87 | 5.20 | 3.11 | 2.97 | 2 |
| 4.72 | 3.08 | .76 | 5.20 | 3.09 | 2.96 | 2 |
| 4.04 | 2.63 | .65 | 5.20 | 3.08 | 2.96 | 2 |
| 3.37 | 2.19 | .54 | 5.20 | 3.06 | 2.96 | 2 |
| 2.70 | 1.75 | .43 | 5.20 | 3.05 | 2.96 | 2 |
| 2.02 | 1.31 | .33 | 5.20 | 3.04 | 2.95 | 2 |
| 1.35 | .87 | .22 | 5.20 | 3.02 | 2.95 | 2 |
| .67 | .44 | .11 | 5.20 | 3.01 | 2.95 | 2 |
| .00 | .00 | .00 | 5.20 | 3.00 | 2.95 | 2 |

Time = 2192. Degree of Consolidation = 86.%

Total Settlement = 10.472

Settlement at End of Primary Consolidation = 11.173

Settlement caused by Primary Consolidation at time 2192. = 9.590

Settlement caused by Secondary Compression at time 2192. = .000

Settlement Due to Desiccation = .882

Surface Elevation = 39.61

**********Current Conditions in Compressible Foundation**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 25.00 | 24.97 | 17.11 | .47 | .46 | .46 | 1 |
| 18.73 | 18.71 | 12.83 | .46 | .46 | .46 | 1 |
| 12.48 | 12.46 | 8.56 | .46 | .46 | .46 | 1 |
| 6.23 | 6.22 | 4.28 | .46 | .46 | .45 | 1 |
| .00 | .00 | .00 | .46 | .45 | .45 | 1 |

Time = 2922. Degree of Consolidation = 42.%

Total Settlement = .027

Settlement at End of Primary Consolidation = .064

Settlement caused by Primary Consolidation at time 2922. = .027

Settlement caused by Secondary Compression at time 2922. = .000

**********Current Conditions in Dredged Fill**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 33.70 | 22.93 | 5.44 | 5.20 | 2.50 | 2.50 | 2 |
| 33.03 | 22.56 | 5.33 | 5.20 | 2.50 | 2.50 | 2 |
| 32.35 | 22.17 | 5.22 | 5.20 | 2.50 | 2.50 | 2 |
| 31.68 | 21.83 | 5.11 | 5.20 | 2.50 | 2.50 | 2 |
| 31.00 | 21.36 | 5.00 | 5.20 | 3.77 | 3.77 | 2 |
| 30.33 | 20.85 | 4.89 | 5.20 | 3.73 | 3.73 | 2 |
| 29.66 | 20.34 | 4.78 | 5.20 | 3.70 | 3.70 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 28.98 | 19.83 | 4.67 | 5.20 | 3.67 | 3.67 | 2 |
| 28.31 | 19.32 | 4.57 | 5.20 | 3.64 | 3.64 | 2 |
| 27.63 | 18.82 | 4.46 | 5.20 | 3.61 | 3.61 | 2 |
| 26.96 | 18.32 | 4.35 | 5.20 | 3.58 | 3.58 | 2 |
| 26.29 | 17.82 | 4.24 | 5.20 | 3.55 | 3.55 | 2 |
| 25.61 | 17.33 | 4.13 | 5.20 | 3.52 | 3.52 | 2 |
| 24.94 | 16.84 | 4.02 | 5.20 | 3.48 | 3.48 | 2 |
| 24.26 | 16.35 | 3.91 | 5.20 | 3.45 | 3.45 | 2 |
| 23.59 | 15.87 | 3.80 | 5.20 | 3.42 | 3.42 | 2 |
| 22.92 | 15.39 | 3.70 | 5.20 | 3.40 | 3.39 | 2 |
| 22.24 | 14.92 | 3.59 | 5.20 | 3.37 | 3.36 | 2 |
| 21.57 | 14.44 | 3.48 | 5.20 | 3.35 | 3.33 | 2 |
| 20.89 | 13.97 | 3.37 | 5.20 | 3.33 | 3.30 | 2 |
| 20.22 | 13.50 | 3.26 | 5.20 | 3.31 | 3.27 | 2 |
| 19.55 | 13.03 | 3.15 | 5.20 | 3.30 | 3.23 | 2 |
| 18.87 | 12.56 | 3.04 | 5.20 | 3.28 | 3.20 | 2 |
| 18.20 | 12.10 | 2.94 | 5.20 | 3.27 | 3.17 | 2 |
| 17.52 | 11.64 | 2.83 | 5.20 | 3.26 | 3.14 | 2 |
| 16.85 | 11.17 | 2.72 | 5.20 | 3.24 | 3.11 | 2 |
| 16.18 | 10.71 | 2.61 | 5.20 | 3.23 | 3.08 | 2 |
| 15.50 | 10.26 | 2.50 | 5.20 | 3.22 | 3.05 | 2 |
| 14.83 | 9.80 | 2.39 | 5.20 | 3.21 | 3.02 | 2 |
| 14.15 | 9.34 | 2.28 | 5.20 | 3.20 | 3.00 | 2 |
| 13.48 | 8.89 | 2.17 | 5.20 | 3.18 | 3.00 | 2 |
| 12.81 | 8.43 | 2.07 | 5.20 | 3.17 | 2.99 | 2 |
| 12.13 | 7.98 | 1.96 | 5.20 | 3.16 | 2.99 | 2 |
| 11.46 | 7.53 | 1.85 | 5.20 | 3.15 | 2.99 | 2 |
| 10.78 | 7.07 | 1.74 | 5.20 | 3.14 | 2.99 | 2 |
| 10.11 | 6.63 | 1.63 | 5.20 | 3.13 | 2.98 | 2 |
| 9.44 | 6.18 | 1.52 | 5.20 | 3.12 | 2.98 | 2 |
| 8.76 | 5.73 | 1.41 | 5.20 | 3.11 | 2.98 | 2 |
| 8.09 | 5.28 | 1.30 | 5.20 | 3.10 | 2.98 | 2 |
| 7.41 | 4.84 | 1.20 | 5.20 | 3.09 | 2.97 | 2 |
| 6.74 | 4.39 | 1.09 | 5.20 | 3.08 | 2.97 | 2 |
| 6.07 | 3.95 | .98 | 5.20 | 3.08 | 2.97 | 2 |
| 5.39 | 3.51 | .87 | 5.20 | 3.07 | 2.97 | 2 |
| 4.72 | 3.06 | .76 | 5.20 | 3.06 | 2.96 | 2 |
| 4.04 | 2.62 | .65 | 5.20 | 3.05 | 2.96 | 2 |
| 3.37 | 2.18 | .54 | 5.20 | 3.04 | 2.96 | 2 |
| 2.70 | 1.75 | .43 | 5.20 | 3.03 | 2.96 | 2 |
| 2.02 | 1.31 | .33 | 5.20 | 3.02 | 2.95 | 2 |
| 1.35 | .87 | .22 | 5.20 | 3.01 | 2.95 | 2 |
| .67 | .44 | .11 | 5.20 | 3.01 | 2.95 | 2 |
| .00 | .00 | .00 | 5.20 | 3.00 | 2.95 | 2 |

Time = 2922. Degree of Consolidation = 88.%

Total Settlement = 10.768

Settlement at End of Primary Consolidation = 11.173

Settlement caused by Primary Consolidation at time 2922. = 9.886

Settlement caused by Secondary Compression at time 2922. = .000

Settlement Due to Desiccation = .882

Surface Elevation = 39.31

**********Current Conditions in Compressible Foundation**********

***** Coordinates ***** ***** Void Ratios *****

| A | XI | Z | Einitial | E | Eeop | Material |
|---|---|---|---|---|---|---|
| 25.00 | 24.97 | 17.11 | .47 | .46 | .46 | 1 |
| 18.73 | 18.71 | 12.83 | .46 | .46 | .46 | 1 |
| 12.48 | 12.46 | 8.56 | .46 | .46 | .46 | 1 |
| 6.23 | 6.22 | 4.28 | .46 | .46 | .45 | 1 |
| .00 | .00 | .00 | .46 | .45 | .45 | 1 |

Time = 3651. Degree of Consolidation = 47.%

Total Settlement = .030

Settlement at End of Primary Consolidation = .064

Settlement caused by Primary Consolidation at time 3651. = .030

Settlement caused by Secondary Compression at time 3651. = .000

**********Current Conditions in Dredged Fill**********

***** Coordinates ***** ***** Void Ratios *****

| A | XI | Z | Einitial | E | Eeop | Material |
|---|---|---|---|---|---|---|
| 33.70 | 22.85 | 5.44 | 5.20 | 2.50 | 2.50 | 2 |
| 33.03 | 22.48 | 5.33 | 5.20 | 2.50 | 2.50 | 2 |
| 32.35 | 22.09 | 5.22 | 5.20 | 2.50 | 2.50 | 2 |
| 31.68 | 21.75 | 5.11 | 5.20 | 2.50 | 2.50 | 2 |
| 31.00 | 21.29 | 5.00 | 5.20 | 3.77 | 3.77 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 30.33 | 20.77 | 4.89 | 5.20 | 3.73 | 3.73 | 2 |
| 29.66 | 20.26 | 4.78 | 5.20 | 3.70 | 3.70 | 2 |
| 28.98 | 19.75 | 4.67 | 5.20 | 3.67 | 3.67 | 2 |
| 28.31 | 19.24 | 4.57 | 5.20 | 3.64 | 3.64 | 2 |
| 27.63 | 18.74 | 4.46 | 5.20 | 3.61 | 3.61 | 2 |
| 26.96 | 18.24 | 4.35 | 5.20 | 3.58 | 3.58 | 2 |
| 26.29 | 17.74 | 4.24 | 5.20 | 3.55 | 3.55 | 2 |
| 25.61 | 17.25 | 4.13 | 5.20 | 3.52 | 3.52 | 2 |
| 24.94 | 16.76 | 4.02 | 5.20 | 3.48 | 3.48 | 2 |
| 24.26 | 16.27 | 3.91 | 5.20 | 3.45 | 3.45 | 2 |
| 23.59 | 15.79 | 3.80 | 5.20 | 3.42 | 3.42 | 2 |
| 22.92 | 15.31 | 3.70 | 5.20 | 3.39 | 3.39 | 2 |
| 22.24 | 14.84 | 3.59 | 5.20 | 3.36 | 3.36 | 2 |
| 21.57 | 14.37 | 3.48 | 5.20 | 3.34 | 3.33 | 2 |
| 20.89 | 13.90 | 3.37 | 5.20 | 3.31 | 3.30 | 2 |
| 20.22 | 13.43 | 3.26 | 5.20 | 3.29 | 3.27 | 2 |
| 19.55 | 12.96 | 3.15 | 5.20 | 3.27 | 3.23 | 2 |
| 18.87 | 12.50 | 3.04 | 5.20 | 3.26 | 3.20 | 2 |
| 18.20 | 12.04 | 2.94 | 5.20 | 3.24 | 3.17 | 2 |
| 17.52 | 11.58 | 2.83 | 5.20 | 3.22 | 3.14 | 2 |
| 16.85 | 11.12 | 2.72 | 5.20 | 3.21 | 3.11 | 2 |
| 16.18 | 10.66 | 2.61 | 5.20 | 3.20 | 3.08 | 2 |
| 15.50 | 10.21 | 2.50 | 5.20 | 3.19 | 3.05 | 2 |
| 14.83 | 9.75 | 2.39 | 5.20 | 3.17 | 3.02 | 2 |
| 14.15 | 9.30 | 2.28 | 5.20 | 3.16 | 3.00 | 2 |
| 13.48 | 8.85 | 2.17 | 5.20 | 3.15 | 3.00 | 2 |
| 12.81 | 8.39 | 2.07 | 5.20 | 3.14 | 2.99 | 2 |
| 12.13 | 7.95 | 1.96 | 5.20 | 3.13 | 2.99 | 2 |
| 11.46 | 7.50 | 1.85 | 5.20 | 3.12 | 2.99 | 2 |
| 10.78 | 7.05 | 1.74 | 5.20 | 3.11 | 2.99 | 2 |
| 10.11 | 6.60 | 1.63 | 5.20 | 3.11 | 2.98 | 2 |
| 9.44 | 6.16 | 1.52 | 5.20 | 3.10 | 2.98 | 2 |
| 8.76 | 5.71 | 1.41 | 5.20 | 3.09 | 2.98 | 2 |
| 8.09 | 5.27 | 1.30 | 5.20 | 3.08 | 2.98 | 2 |
| 7.41 | 4.82 | 1.20 | 5.20 | 3.07 | 2.97 | 2 |
| 6.74 | 4.38 | 1.09 | 5.20 | 3.07 | 2.97 | 2 |
| 6.07 | 3.94 | .98 | 5.20 | 3.06 | 2.97 | 2 |
| 5.39 | 3.50 | .87 | 5.20 | 3.05 | 2.97 | 2 |
| 4.72 | 3.06 | .76 | 5.20 | 3.04 | 2.96 | 2 |
| 4.04 | 2.62 | .65 | 5.20 | 3.04 | 2.96 | 2 |
| 3.37 | 2.18 | .54 | 5.20 | 3.03 | 2.96 | 2 |
| 2.70 | 1.74 | .43 | 5.20 | 3.02 | 2.96 | 2 |
| 2.02 | 1.31 | .33 | 5.20 | 3.02 | 2.95 | 2 |
| 1.35 | .87 | .22 | 5.20 | 3.01 | 2.95 | 2 |
| .67 | .43 | .11 | 5.20 | 3.00 | 2.95 | 2 |
| .00 | .00 | .00 | 5.20 | 3.00 | 2.95 | 2 |

Time = 3651. Degree of Consolidation = 89.%

Total Settlement = 10.846

Settlement at End of Primary Consolidation = 11.173

Settlement caused by Primary Consolidation at time 3651. = 9.964

Settlement caused by Secondary Compression at time 3651. = .000

Settlement Due to Desiccation = .882

Surface Elevation = 39.22

**********Current Conditions in Compressible Foundation**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 25.00 | 24.95 | 17.11 | .47 | .46 | .46 | 1 |
| 18.73 | 18.70 | 12.83 | .46 | .46 | .46 | 1 |
| 12.48 | 12.45 | 8.56 | .46 | .46 | .46 | 1 |
| 6.23 | 6.22 | 4.28 | .46 | .46 | .45 | 1 |
| .00 | .00 | .00 | .46 | .45 | .45 | 1 |

Time = 8762. Degree of Consolidation = 72.%

Total Settlement = .046

Settlement at End of Primary Consolidation = .064

Settlement caused by Primary Consolidation at time 8762. = .046

Settlement caused by Secondary Compression at time 8762. = .000

**********Current Conditions in Dredged Fill**********

| ***** Coordinates ***** | | | ***** Void Ratios ***** | | | |
|---|---|---|---|---|---|---|
| A | XI | Z | Einitial | E | Eeop | Material |
| 33.70 | 22.82 | 5.44 | 5.20 | 2.50 | 2.50 | 2 |
| 33.03 | 22.45 | 5.33 | 5.20 | 2.50 | 2.50 | 2 |
| 32.35 | 22.06 | 5.22 | 5.20 | 2.50 | 2.50 | 2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 31.68 | 21.72 | 5.11 | 5.20 | 2.50 | 2.50 | 2 |
| 31.00 | 21.25 | 5.00 | 5.20 | 3.77 | 3.77 | 2 |
| 30.33 | 20.74 | 4.89 | 5.20 | 3.73 | 3.73 | 2 |
| 29.66 | 20.22 | 4.78 | 5.20 | 3.70 | 3.70 | 2 |
| 28.98 | 19.71 | 4.67 | 5.20 | 3.67 | 3.67 | 2 |
| 28.31 | 19.21 | 4.57 | 5.20 | 3.64 | 3.64 | 2 |
| 27.63 | 18.71 | 4.46 | 5.20 | 3.61 | 3.61 | 2 |
| 26.96 | 18.21 | 4.35 | 5.20 | 3.58 | 3.58 | 2 |
| 26.29 | 17.71 | 4.24 | 5.20 | 3.55 | 3.55 | 2 |
| 25.61 | 17.22 | 4.13 | 5.20 | 3.52 | 3.52 | 2 |
| 24.94 | 16.73 | 4.02 | 5.20 | 3.48 | 3.48 | 2 |
| 24.26 | 16.24 | 3.91 | 5.20 | 3.45 | 3.45 | 2 |
| 23.59 | 15.76 | 3.80 | 5.20 | 3.42 | 3.42 | 2 |
| 22.92 | 15.28 | 3.70 | 5.20 | 3.39 | 3.39 | 2 |
| 22.24 | 14.81 | 3.59 | 5.20 | 3.36 | 3.36 | 2 |
| 21.57 | 14.33 | 3.48 | 5.20 | 3.33 | 3.33 | 2 |
| 20.89 | 13.86 | 3.37 | 5.20 | 3.31 | 3.30 | 2 |
| 20.22 | 13.40 | 3.26 | 5.20 | 3.28 | 3.27 | 2 |
| 19.55 | 12.93 | 3.15 | 5.20 | 3.26 | 3.23 | 2 |
| 18.87 | 12.47 | 3.04 | 5.20 | 3.25 | 3.20 | 2 |
| 18.20 | 12.01 | 2.94 | 5.20 | 3.23 | 3.17 | 2 |
| 17.52 | 11.55 | 2.83 | 5.20 | 3.21 | 3.14 | 2 |
| 16.85 | 11.09 | 2.72 | 5.20 | 3.20 | 3.11 | 2 |
| 16.18 | 10.64 | 2.61 | 5.20 | 3.19 | 3.08 | 2 |
| 15.50 | 10.18 | 2.50 | 5.20 | 3.17 | 3.05 | 2 |
| 14.83 | 9.73 | 2.39 | 5.20 | 3.16 | 3.02 | 2 |
| 14.15 | 9.28 | 2.28 | 5.20 | 3.15 | 3.00 | 2 |
| 13.48 | 8.83 | 2.17 | 5.20 | 3.14 | 3.00 | 2 |
| 12.81 | 8.38 | 2.07 | 5.20 | 3.13 | 2.99 | 2 |
| 12.13 | 7.93 | 1.96 | 5.20 | 3.12 | 2.99 | 2 |
| 11.46 | 7.48 | 1.85 | 5.20 | 3.11 | 2.99 | 2 |
| 10.78 | 7.04 | 1.74 | 5.20 | 3.10 | 2.99 | 2 |
| 10.11 | 6.59 | 1.63 | 5.20 | 3.09 | 2.98 | 2 |
| 9.44 | 6.15 | 1.52 | 5.20 | 3.09 | 2.98 | 2 |
| 8.76 | 5.70 | 1.41 | 5.20 | 3.08 | 2.98 | 2 |
| 8.09 | 5.26 | 1.30 | 5.20 | 3.07 | 2.98 | 2 |
| 7.41 | 4.82 | 1.20 | 5.20 | 3.06 | 2.97 | 2 |
| 6.74 | 4.38 | 1.09 | 5.20 | 3.06 | 2.97 | 2 |
| 6.07 | 3.94 | .98 | 5.20 | 3.05 | 2.97 | 2 |
| 5.39 | 3.50 | .87 | 5.20 | 3.04 | 2.97 | 2 |
| 4.72 | 3.06 | .76 | 5.20 | 3.04 | 2.96 | 2 |
| 4.04 | 2.62 | .65 | 5.20 | 3.03 | 2.96 | 2 |
| 3.37 | 2.18 | .54 | 5.20 | 3.03 | 2.96 | 2 |
| 2.70 | 1.74 | .43 | 5.20 | 3.02 | 2.96 | 2 |
| 2.02 | 1.31 | .33 | 5.20 | 3.01 | 2.95 | 2 |
| 1.35 | .87 | .22 | 5.20 | 3.01 | 2.95 | 2 |
| .67 | .43 | .11 | 5.20 | 3.00 | 2.95 | 2 |
| .00 | .00 | .00 | 5.20 | 3.00 | 2.95 | 2 |

Time = 8762. Degree of Consolidation = 89.%

Total Settlement = 10.878

Settlement at End of Primary Consolidation = 11.173

Settlement caused by Primary Consolidation at time 8762. = 9.997

Settlement caused by Secondary Compression at time 8762. = .000

Settlement Due to Desiccation = .882

Surface Elevation = 39.18

# APPENDIX I

SLOPE STABILITY AND SETTLEMENT ANALYSIS:
BELTWAY 8 PLACEMENT AREA

0 400' 800'

ALPHA TERMINALS B.V.

EXISTING STRUCTURES AND FENCES

CONTANDA JACINTOPORT YARD #3

ECP-2032 ECP-2031 ECP-2034 ECP-2035 ECP-2036 ECP-2030 ECP-2033

BESHERT STEEL

OPD ENTERPRISE

*EXISTING USABLE MATERIAL IS COVERED WITH OVERBURDEN OF UNUSABLE SILT. eXCAVATING AND REMOVING MATERIAL BEYOND 19' ELEVATION WILL YIELD ADDITIONAL "GOOD" MATERIAL WHILE INCREASING DMPA CAPACITY WITHOUT INCREASING UNUSABLE WASTE MATERIAL QUANTITIES. INCREASING THE DEPTH OF EXCAVATED USABLE MATERIAL WILL INCREASE THE QUANTITY OF AVAILABLE USABLE MATERIAL AS WELL AS THE DMPA DREDGING CAPACITY BY THE FOLLOWING:
0.5' DEEPER = 185,000 CY
1.0' DEEPER = 365,000 CY
1.5' DEEPER = 550,000 CY
2.0' DEEPER = 725,000 CY

ECP-2028 ECP-2038

DIKE FILL MATERIAL SOURCE DIVIDING LINE

EL=16.0' FLOOD PLAIN LIMIT

ECP-2039 ECP-2040

1800' CHANNEL SETBACK LINE

HSC CENTERLINE

MEGA LUBRICANTS INC.

ECP-2027

EXCAVATE TO ASSUMED UNSUITABLE MATERIAL LIMITS, THEN EXCAVATE TO ELEVATION = 19' TO YIELD 881,361 CY PRESUMED "GOOD" MATERIAL BACKFILL UNSUITABLE MATERIAL SPOILS TO DMPA FLOOR AT ELEVATION = 22'

ECP-2026 ECP-2016 ECP-2041

JACINTOPORT BLVD

DROP OUTLET STRUCTURE LOCATION TBD

ECP-2042 ECP-2043

BUFFALO BAYOU

AG BLDG

HOUSTON RAIL LOCOMOTIVE

ECP-2025 ECP-2021

EXCAVATE 1.5' DEPTH UNSUITABLE MATERIAL REMOVAL, THEN EXCAVATE TO DMPA FLOOR AT ELEVATION = 22'

ECP-2044

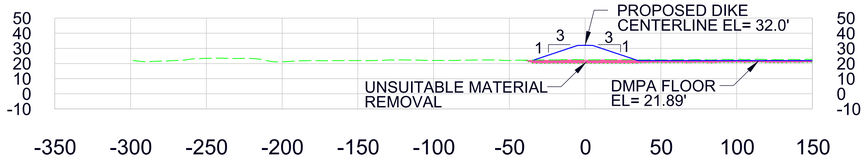
ECP-2024 ECP-2023 ECP-2022 ECP-2020 ECP-2019 ECP-2018 ECP-2017 ECP-2014 ECP-2015

BELTWAY 8

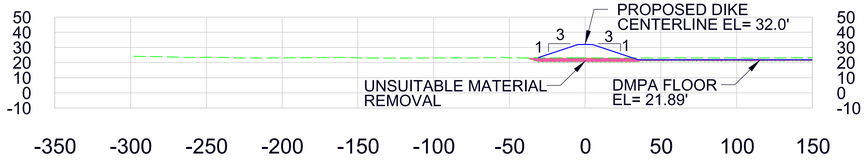
REALIGNED CREEK

DBI

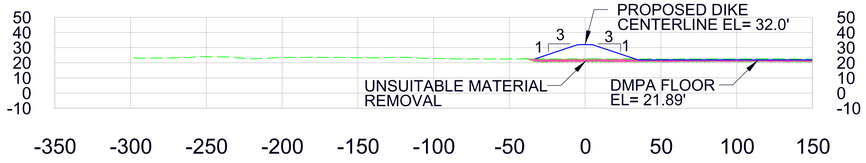
# BELTWAY 8 CROSS SECTIONS FOR GEOTECH- NOVEMBER 2020



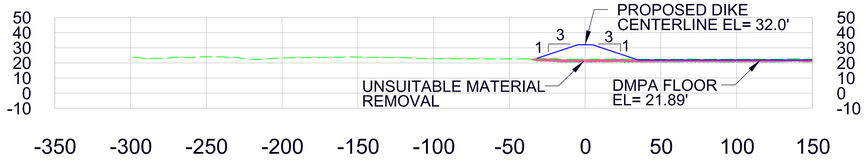

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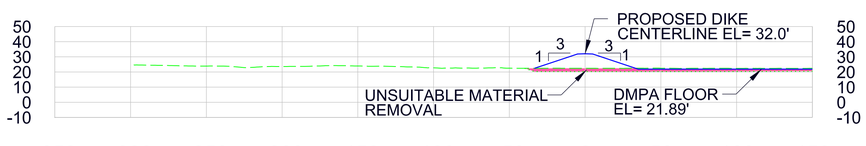

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20+00




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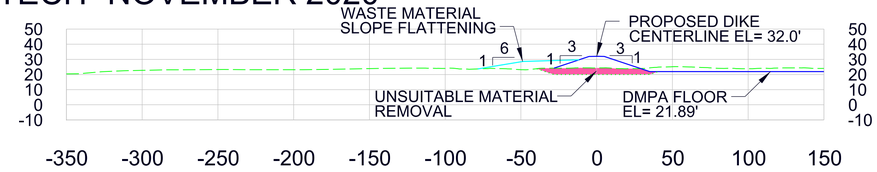

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5+00



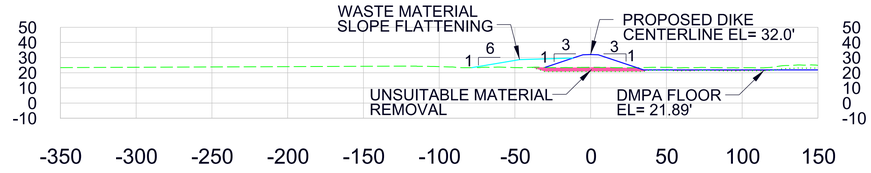

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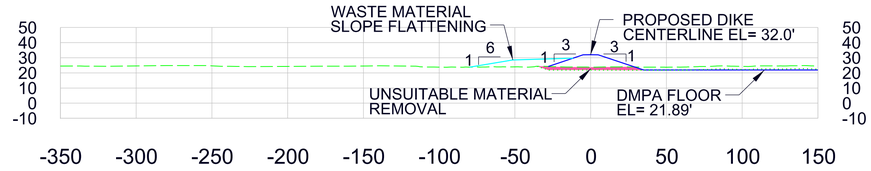

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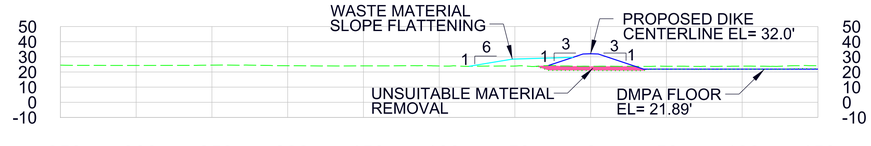

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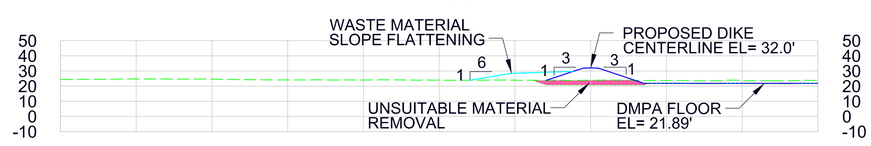

50+00




45+00




40+00



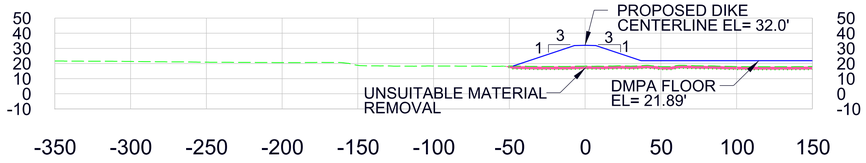

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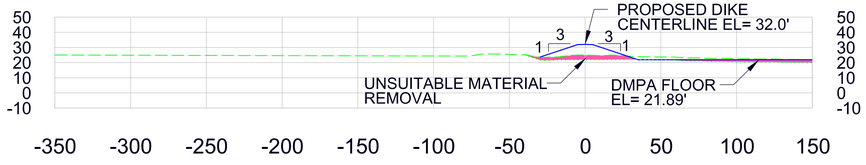

35+00

SHEET 1 OF 4

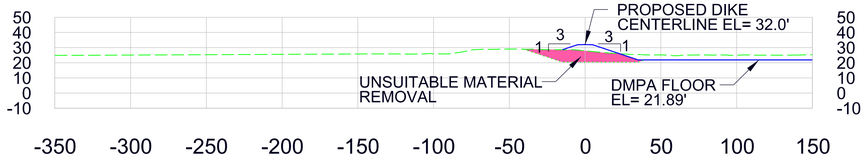
# BELTWAY 8 CROSS SECTIONS FOR GEOTECH- NOVEMBER 2020



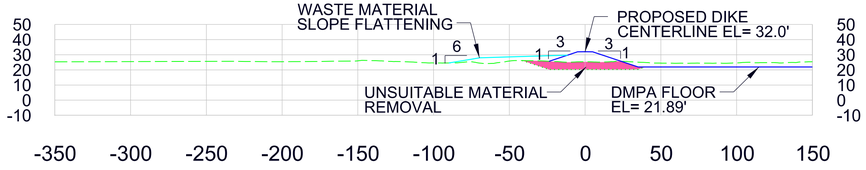

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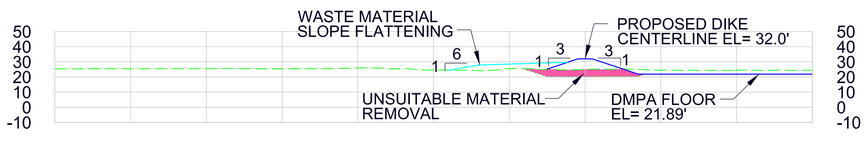

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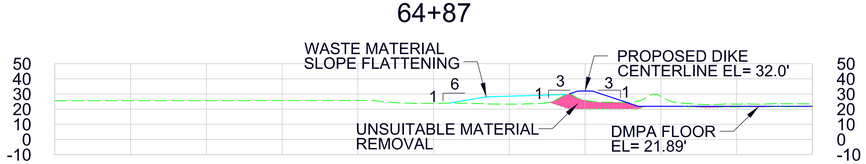

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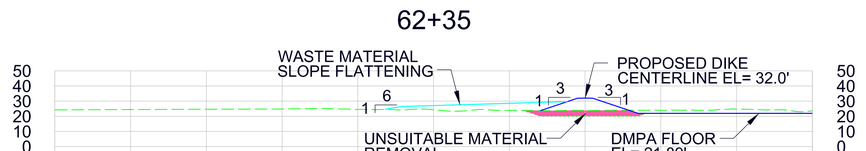

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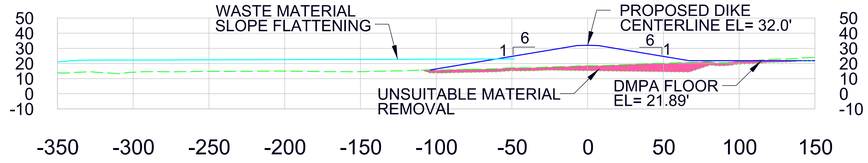

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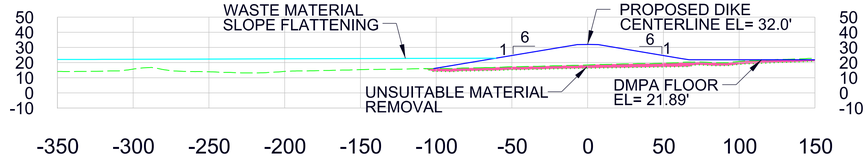

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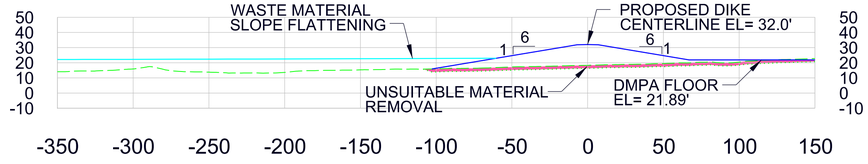

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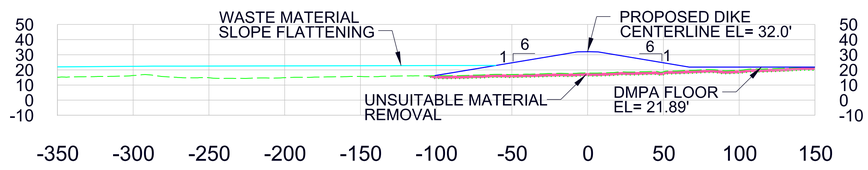

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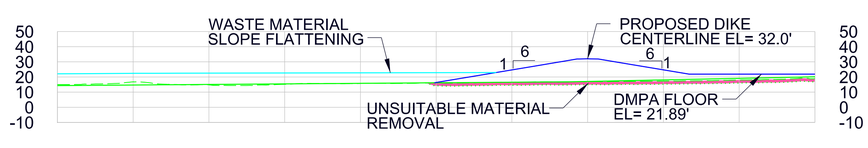

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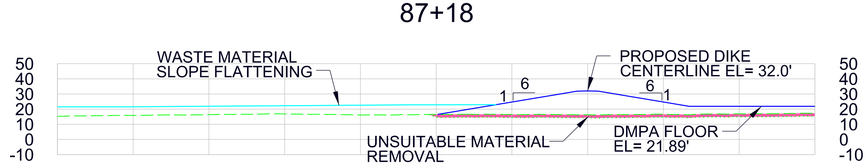

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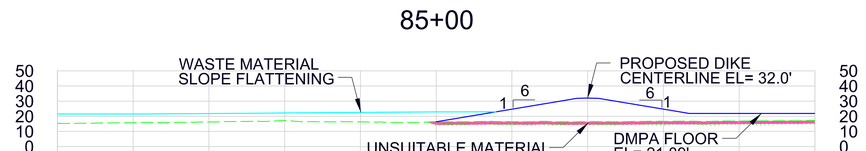

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87+18



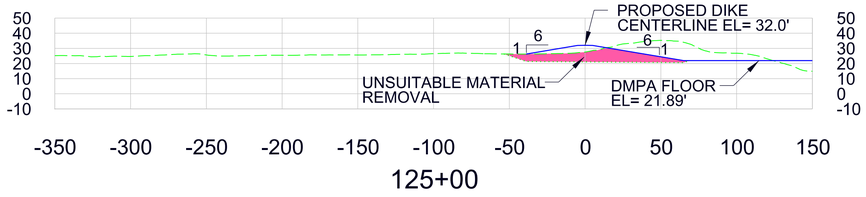

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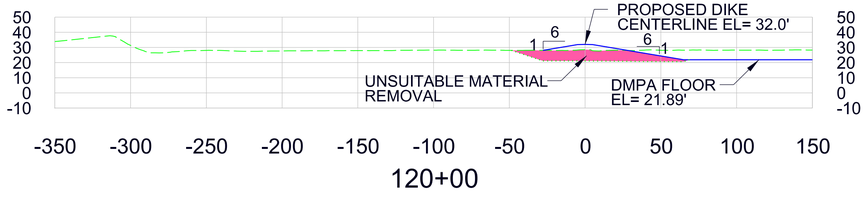

84+81

SHEET 2 OF 4

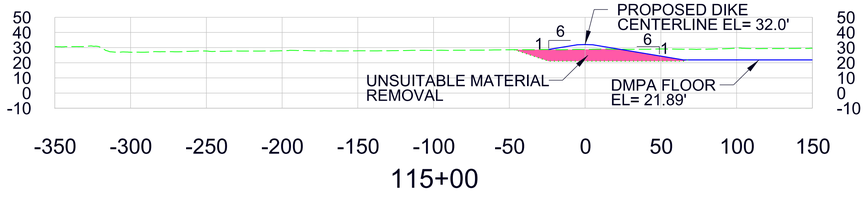
# BELTWAY 8 CROSS SECTIONS FOR GEOTECH- NOVEMBER 2020



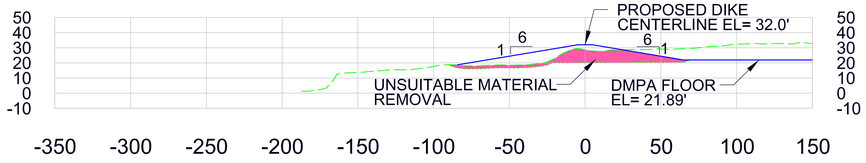

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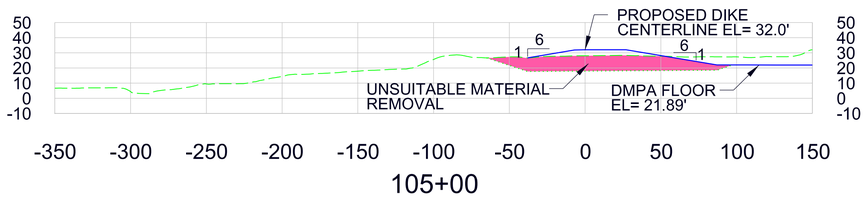

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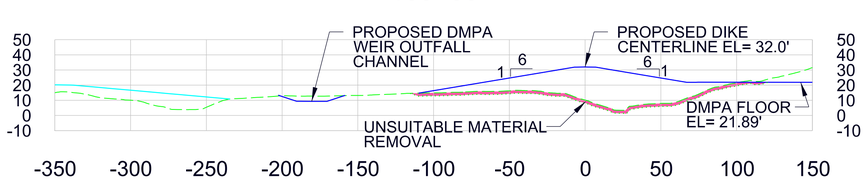

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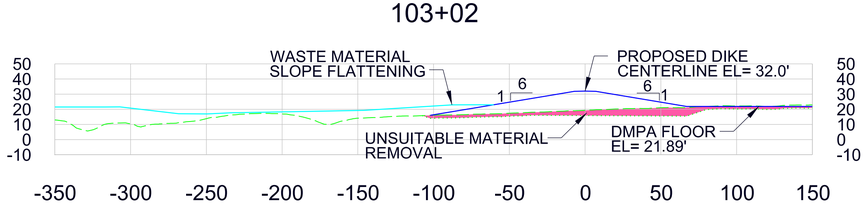

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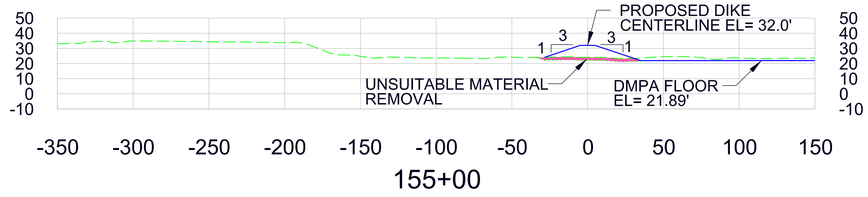

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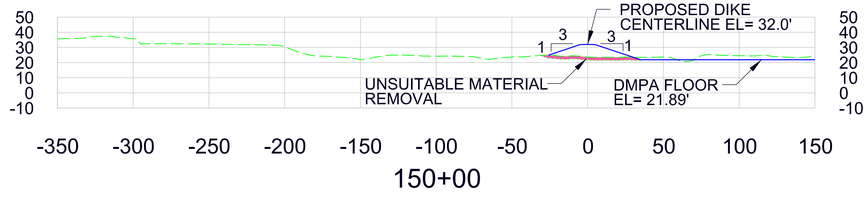

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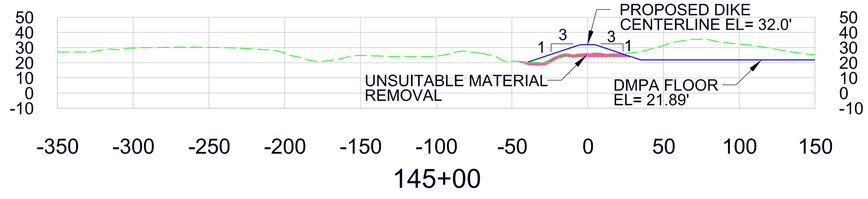

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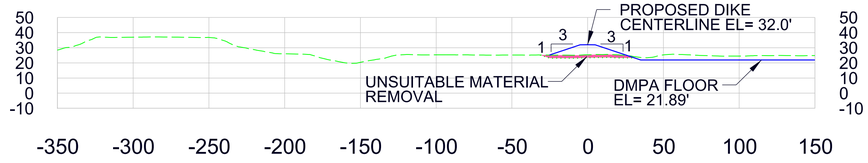

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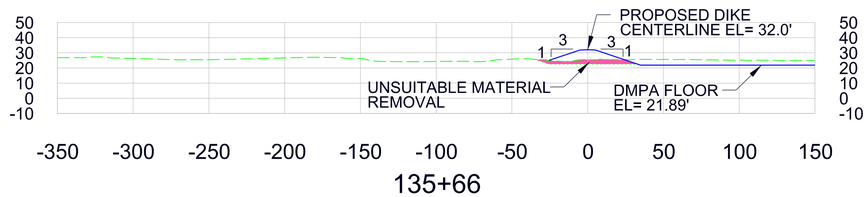

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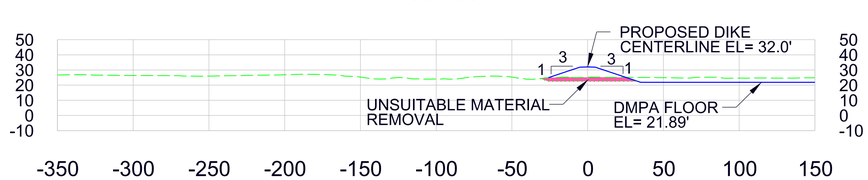

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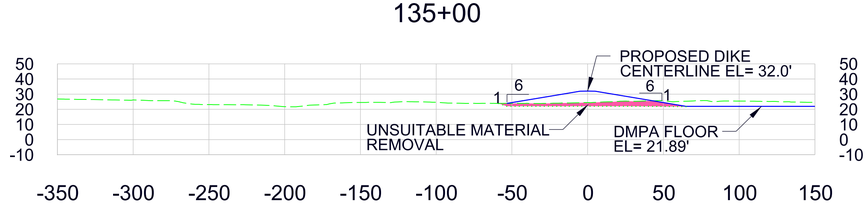

140+00




135+66




135+00

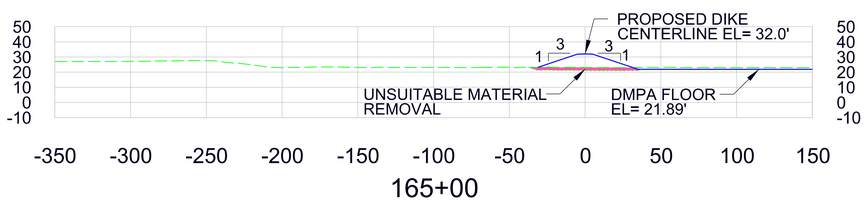



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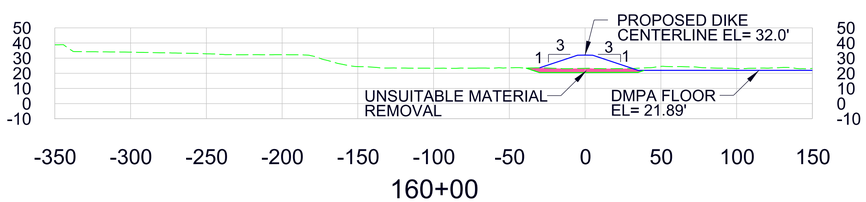
SHEET 3 OF 4

BELTWAY 8 CROSS SECTIONS FOR GEOTECH- NOVEMBER 2020






165+00

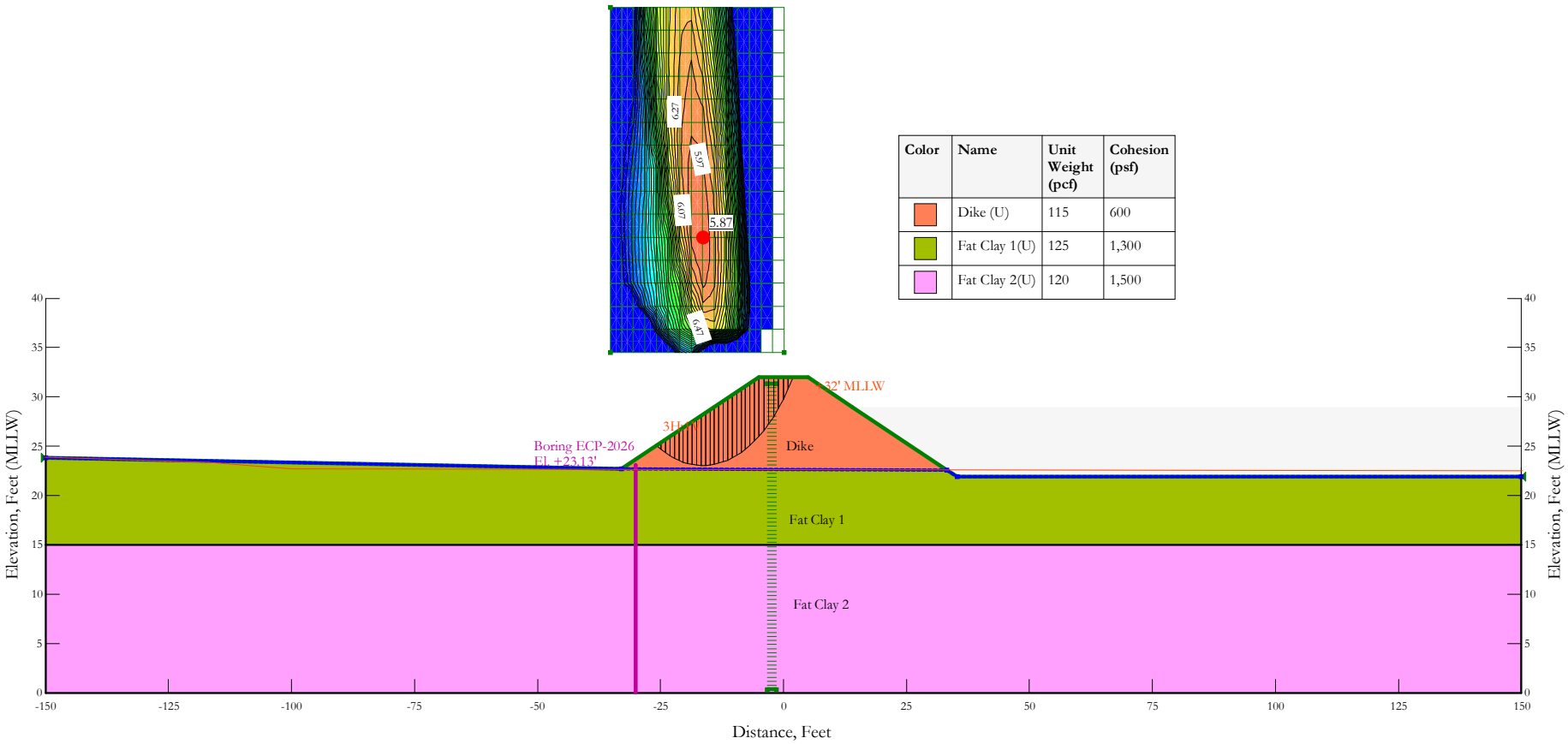



160+00

| Soil Parameters for Slope Stability Analysis – Beltway 8 Placement Area | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Station (Boring)** | **Soil Description** | **Elevation, Feet** | | **Total Unit Weight (γ), pcf** | **Short Term** | **Long Term** | |
| | | **Top** | **Bottom** | | **Undrained Shear Strength, psf** | **Cohesion, psf** | **Friction Angle (ϕ'), degrees** |
| Sta. 10+00 (Boring ECP-2026) | Fat Clay | 23.8 | 15 | 125 | 1,300 | 190 | 16 |
| | Fat Clay | 15 | 0 | 120 | 1,500 | 190 | 16 |
| Sta. 35+00 (Boring ECP-2031) | Silt | 22.7 | 19.5 | 110 | 0 | 0 | 26 |
| | Fat Clay | 19.5 | 0 | 120 | 1,400 | 190 | 16 |
| Sta. 50+00 (Boring ECP-2035) | Fat Clay | 23.5 | 19.4 | 120 | 1,000 | 190 | 16 |
| | Fat Clay | 19.4 | 0 | 125 | 1,620 | 190 | 16 |
| Sta. 70+00 (Boring ECP-2037) | Fat Clay | 24.4 | -5 | 125 | 1,100 | 190 | 16 |
| Sta. 74+00 (Boring ECP-2039) | Sand w/ Organics | 25.6 | 22.9 | 110 | 0 | 0 | 22 |
| | Fat Clay | 22.9 | 16.9 | 125 | 1,600 | 190 | 16 |
| | Lean Clay | 16.9 | 14.9 | 125 | 1,340 | 370 | 17 |
| | Fat Clay | 14.9 | 0 | 120 | 1,540 | 190 | 16 |
| Sta. 87+18 (Boring ECP-2039) | Fat Clay | 20 | 16.9 | 125 | 1,600 | 190 | 16 |
| | Lean Clay | 16.9 | 14.9 | 125 | 1,340 | 370 | 17 |
| | Fat Clay | 14.9 | 0 | 120 | 1,540 | 190 | 16 |
| Sta. 92+00 (Borings ECP-2040 and ECP-2041) | Fat Clay w/ Organics | 22.95 | 13.3 | 120 | 500 | 20 | 14 |
| | Fat Clay | 20.95 | 3.6 | 120 | 1,840 | 190 | 16 |
| | Lean Clay | 3.6 | -5 | 125 | 2,400 | 370 | 17 |
| Sta. 100+00 (Boring ECP-2043) | Fat Clay w/ Organics | 22.9 | 12.1 | 120 | 500 | 20 | 14 |
| | Fat Clay | 20.9 | 0 | 120 | 1,500 | 190 | 16 |
| Sta. 120+00 (Boring ECP-2014) | Sand | 28.5 | 18.5 | 110 | 0 | 0 | 27 |
| | Fat Clay | 18.5 | 0 | 120 | 1,260 | 190 | 16 |

| Soil Parameters for Slope Stability Analysis – Beltway 8 Placement Area | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Station (Boring)** | **Soil Description** | **Elevation, Feet** | | **Total Unit Weight (γ), pcf** | **Short Term** | **Long Term** | |
| | | **Top** | **Bottom** | | **Undrained Shear Strength, psf** | **Cohesion, psf** | **Friction Angle (ϕ'), degrees** |
| Sta. 155+00 (Boring ECP-2022) | Fat Clay | 24 | 20 | 125 | 1,100 | 190 | 16 |
| | Fat Clay | 20 | 16 | 125 | 2,440 | 190 | 16 |
| | Lean Clay | 16 | 12 | 125 | 1,400 | 370 | 17 |
| | Fat Clay | 12 | 0 | 125 | 1,760 | 190 | 16 |

**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location:Beltway 8 Placement Area**
**Station: 10+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2026**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Circular**



**Project Name: Houston Ship Channel Expansion Channel Improvement Project**
**Location:Beltway 8 Placement Area**
**Station: 10+00**
**HVJ Project Number: HG1910092.2.1**
**Boring ECP-2026**
**Loading Condition: Short Term - Exterior**
**Slip Surface: Block**

| Color | Name | Unit Weight (pcf) | Cohesion (psf) |
|---|---|---|---|
| | Dike (U) | 115 | 600 |
| | Fat Clay 1(U) | 125 | 1,300 |
| | Fat Clay 2(U) | 120 | 1,500 |

