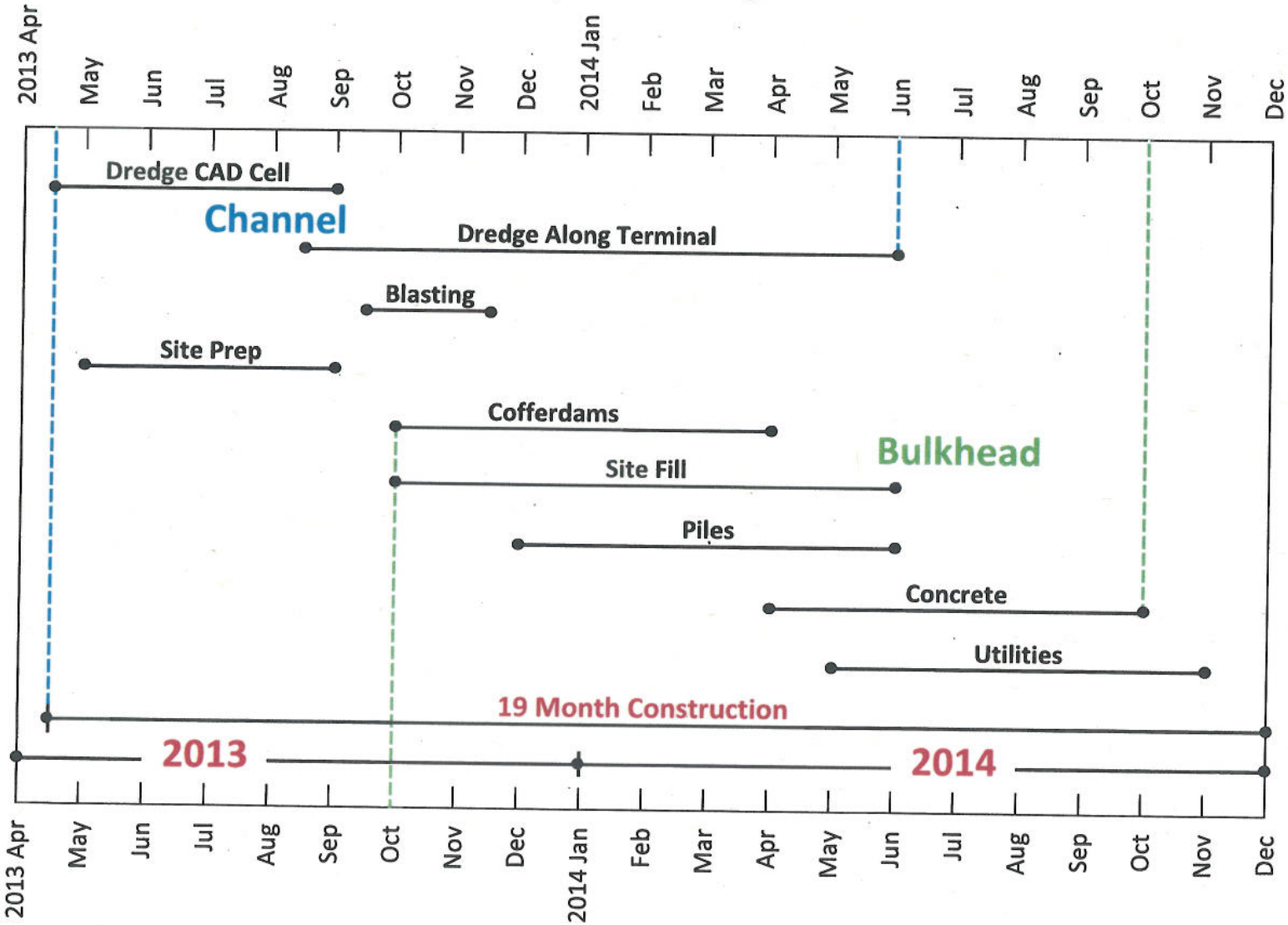
Cc handout 8/27/13

New Bedford Marine Commerce Terminal
Construction Schedule
(Rev. 8-23-2013)



SDMS Doc ID 552909

CEC handout 8/27/13

New Bedford South Terminal
File No. 33734.03
File Name: J:\Geo\33734.03.dyb\Work\Slope Stability-Blasting\33734.00_Secton A-A'_BLASTING_HORIZONTAI

Name: DUMPED EARTH FILL Model: Mohr-Coulomb Unit Weight: 100 Cohesion: 0 Phi: 30 Phi-B: 0 Piezometric Line: 1
Name: BEDROCK Model: Bedrock (Impenetrable) Piezometric Line: 1
Name: SAND AND GRAVEL Model: Mohr-Coulomb Unit Weight: 125 Cohesion: 0 Phi: 33 Phi-B: 0 Piezometric Line: 1
Name: ORGANIC SILT Model: Undrained (Phi=0) Unit Weight: 110 Cohesion: 500 Piezometric Line: 1
Name: ARMOR STONE Model: Mohr-Coulomb Unit Weight: 100 Cohesion: 0 Phi: 41 Phi-B: 0 Piezometric Line: 1
Name: Embankment Fill (Rock Fill) Model: Mohr-Coulomb Unit Weight: 115 Cohesion: 0 Phi: 45 Phi-B: 0 Piezometric Line: 1
Name: Glacial Till Model: Mohr-Coulomb Unit Weight: 135 Cohesion: 0 Phi: 38 Phi-B: 0 Piezometric Line: 1
Name: Protection Stone Model: Mohr-Coulomb Unit Weight: 100 Cohesion: 0 Phi: 40 Phi-B: 0 Piezometric Line: 1
Name: COMPACTED EARTH FILL Model: Mohr-Coulomb Unit Weight: 123 Cohesion: 0 Phi: 35 Phi-B: 0 Piezometric Line: 1

Parameter	Range	Current Specification	Proposed Specification	Factor on Acceleration
CAPACITY SIDE				
k, psuedostatic coefficient	0.5-1	1	0.5	2
N-value	4-10	4	4	1
Compounded Factor on Acceleration in Current Spec				2

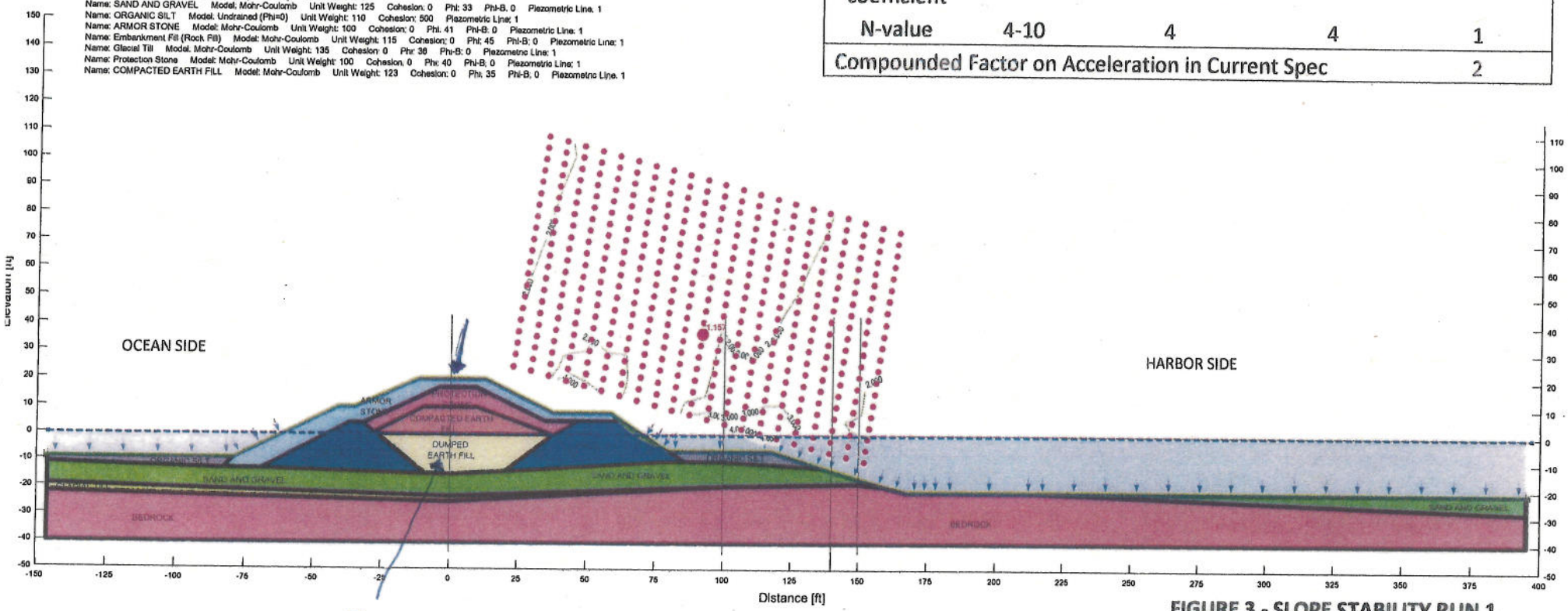


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FIGURE 3 - SLOPE STABILITY RUN 1

DEMAND SIDE

$$Acceleration = H\left[\frac{D}{\sqrt{W}}\right]^{\beta}\left(\frac{2\pi f}{g}\right)$$

Where:

H = Attenuation constant

D = Distance (ft)

W = Weight of charge per delay (lbs)

β = Attenuation slope factor = -1.6

f = frequency

g = gravitational constant = 386.1 in/sec^2

Parameter	Range	Current Specification	Proposed Specification	Factor on Acceleration
DEMAND SIDE				
H	20-50	100	50	2
W		Halved GZA's allowable charge weights	no factor	1.7
f	40-60	60	40 (expanded table)	1.5
CAPACITY SIDE				
k, psuedostatic coefficient	0.5-1	1	0.5	2
N-value	4-10	4	4	1
Compounded Factor on Acceleration in Current Spec				10.2

EXAMPLE AT DISTANCE = 500 FT, FREQUENCY = 40 HZ

$$Acceleration = H\left[\frac{D}{\sqrt{W}}\right]^{\beta}\left(\frac{2\pi f}{g}\right)$$

Where:

H = Attenuation constant = 50

D = Distance (ft) = 500

W = Weight of charge per delay (lbs) = 140 lbs

β = Attenuation slope factor = -1.6

f = frequency = 40 Hz

g = gravitational constant = 386.1 in/sec^2

$$0.081 = 50\left[\frac{500}{\sqrt{140}}\right]^{-1.6}\left(\frac{2\pi(40)}{386.1}\right)$$

Acceleration = 0.081 in/sec^2 for

FS = 1.2 on liquefaction > 1.1 OK

FS = 1.35 on slope stability > 1.15 OK

Weight = 140 lbs