

SCENARIO 1

WALL TREATED AS SINGLE PANEL

LATERAL EARTH PRESSURE APPLIED TO ENTIRE PANEL

HEAVY EQUIPMENT SURCHARGE LOAD APPLIED TO ENTIRE PANEL

CRITERIA

Code : **ACI 318-11**
 Design Rule : **LNG Containment Wall**
 Loc of r/f : **Each Face**
 Outer Bars : **Vertical**

Vert Bar Size : **#8**
 Horz Bar Size : **#8**

Vert Bar Spac : **7 in**
 Horz Bar Spac : **7 in**
 Group Wall? : **Yes**

MATERIALS

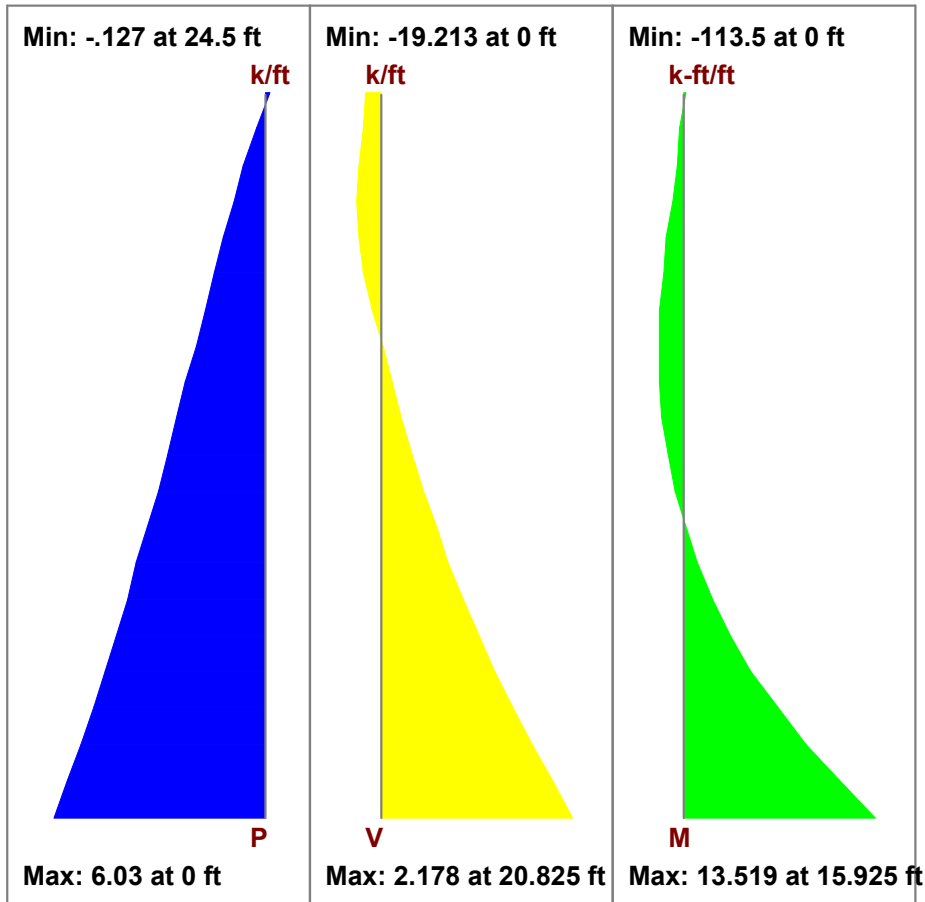
Material Set : **Conc4500NW**
 Concrete f'c : **4.5 ksi**
 Concrete E : **3824 ksi**
 Concrete G : **1680 ksi**
 Conc Density : **.145 k/ft^3**
 Lambda : **1**
 Conc Str Blk : **Rectangular**

Vert Bar Fy : **60 ksi**
 Horz Bar Fy : **60 ksi**
 Steel E : **29000 ksi**

GEOMETRY

Total Height : **24.5 ft**
 Total Length : **53 ft**
 Thickness : **24 in**
 Int Cover (-z) : **2 in**
 Ext Cover (+z) : **2 in**
 Cover Open/Edge : **2 in**
 K : **1**
 Use Cracked? : **Yes**
 Icr Factor : **.35**

ENVELOPE DIAGRAMS



ACI 318-11 Code Check

AXIAL/BENDING DETAILS

UC Max Int (-z) : **.904**
 Location : **0 ft**
 Gov Pu Int (-z) : **0 k/ft**
 phi*Pn Int (-z) : **NC**
 Gov Mu Int (-z) : **-113.506 k-ft/ft**
 phi*Mn Int (-z) : **125.503 k-ft/ft**
 phi eff. Int (-z) : **.9**
 Gov LC Int (-z) : **4**
 UC Max Ext (+z) : **.108**
 Location : **15.925 ft**
 Gov Pu Ext (+z) : **0 k/ft**
 phi*Pn Ext (+z) : **NC**
 Gov Mu Ext (+z) : **13.519 k-ft/ft**
 phi*Mn Ext (+z) : **125.503 k-ft/ft**
 phi eff. Ext (+z) : **.9**
 Gov LC Ext (+z) : **4**

SHEAR DETAILS

UC Max : **.768**
 Location : **0 ft**
 Gov Vu : **-19.213 k/ft**
 phi*Vn : **25.012 k/ft**
 Gov LC : **4**

DEFLECTION DETAILS

Delta max : **0** in

Deflection Ratio : **H/10000**

Location : **22.05** ft

Gov LC : **4**

WALL SEGMENT SECTION PROPERTIES

RESULTS PER C/C OF REINFORCEMENT

Total Width : **7** in r : **4.099** in
 A : **168** in² KL/r : **71.729**
 Igross : **8064** in⁴
 Icracked : **2822.4** in⁴
 Cracked Mom, M_{cr} : **2559.851** k-ft

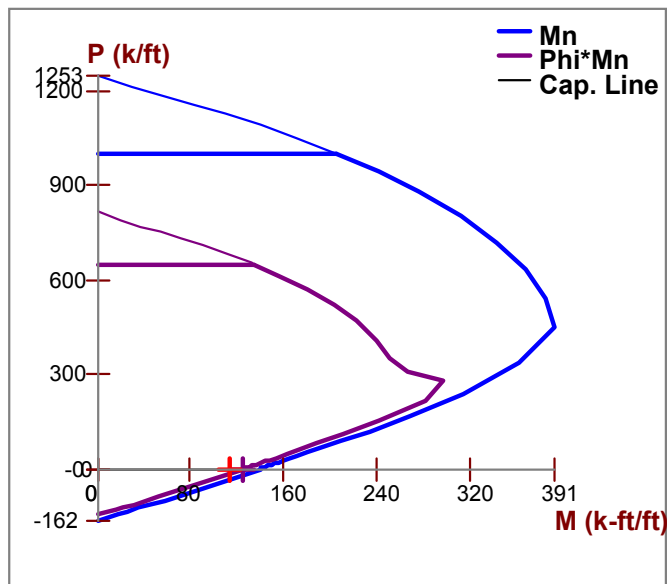
RESULTS FOR FULL WALL SEGMENT

As Provided (V) : **142.942** in²
 rho Provided (V) : **.0094**
 As min (V) : **22.896** in²
 rho min (V) : **.0015**

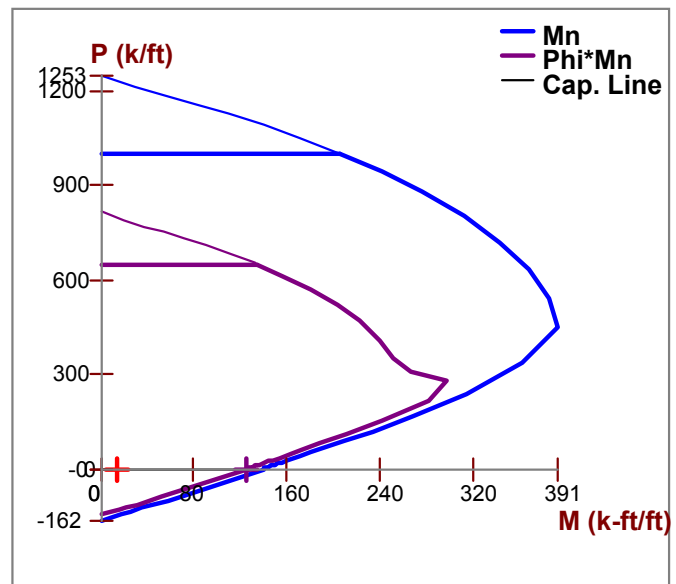
SLENDER BENDING SPAN RESULTS

	KL/r out	Cm out	Lu out (ft)	Pc (k/ft)	deltaNS	M act (k-ft/ft)	M2 min (k-ft/ft)	Mc out (k-ft/ft)
Interior	71.729	1	24.5	1509.026	1.005	113.506	.663	113.506
Exterior				1509.026	1.005	13.519	.663	13.519

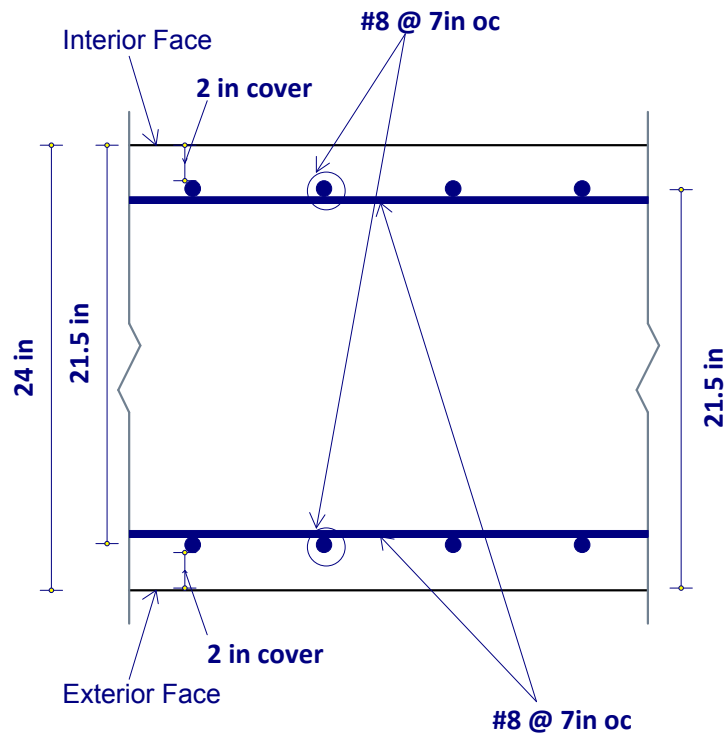
Interior (-z) Face Wall Interaction Diagram



Exterior (+z) Face Wall Interaction Diagram



CROSS SECTION DETAILING

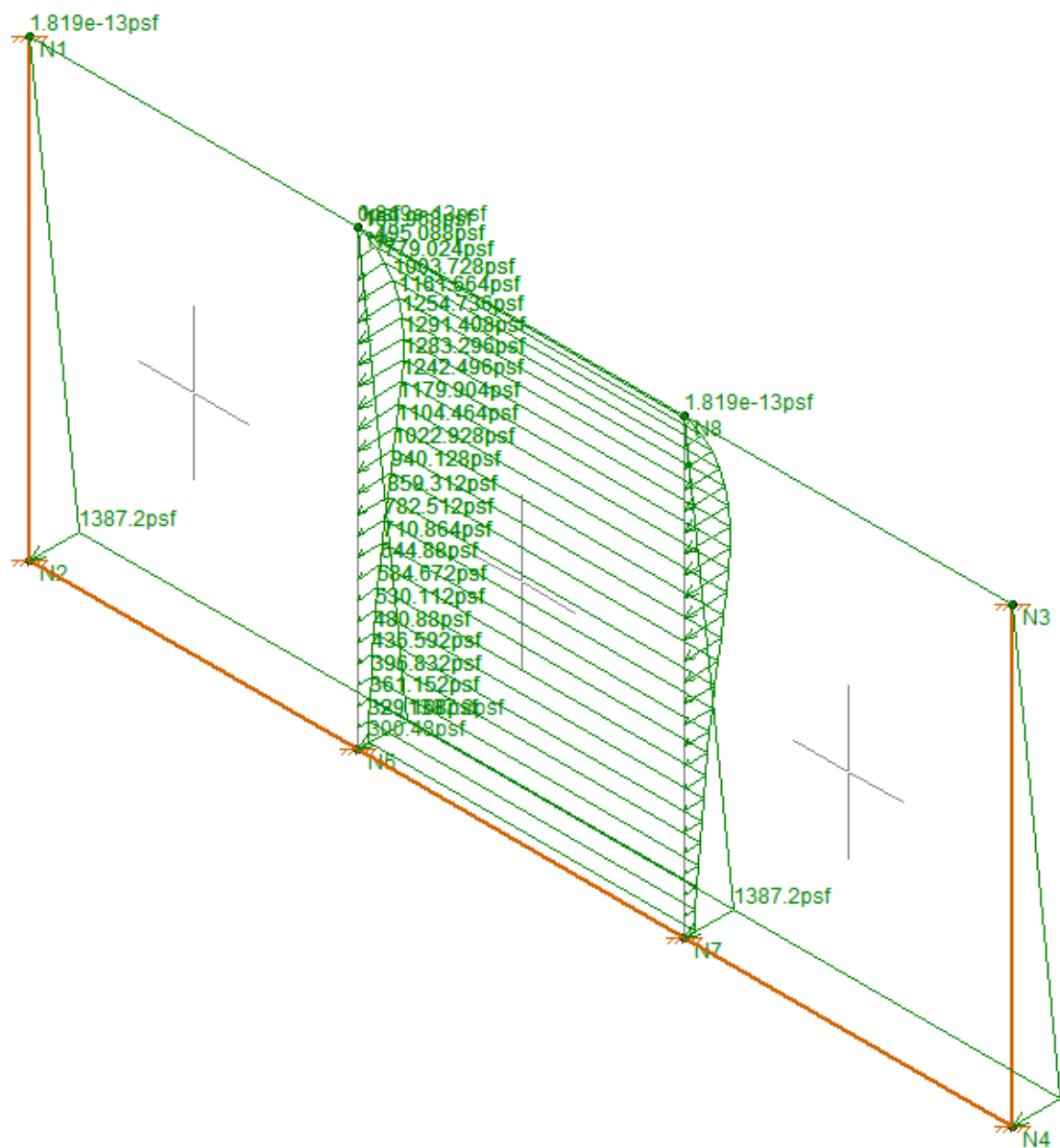


SCENARIO 2

WALL BROKEN INTO 3 PANELS

LATERAL EARTH PRESSURE APPLIED TO ALL 3 PANELS

HEAVY EQUIPMENT SURCHARGE LOAD APPLIED TO CENTER PANEL



Wall Panel	Region	Max UC	LC	Shear UC	LC	Pn*phi[k/ft]	Mn*phi[k-ft/ft]	Vn*phi[k/ft]
WP1	R1	.396 (Int)	4	.379	4	NC	131.896	24.976
WP2	R1	1.169 (Int)	4	1.039	4	NC	124.262	25.086
WP3	R1	.396 (Int)	4	.379	4	NC	131.896	24.976

CRITERIA

Code : **ACI 318-11**
 Design Rule : **LNG Containment Wall**
 Loc of r/f : **Each Face**
 Outer Bars : **Vertical**

Vert Bar Size : **#8**
 Horz Bar Size : **#8**

Vert Bar Spac : **7 in**
 Horz Bar Spac : **7 in**
 Group Wall? : **Yes**

MATERIALS

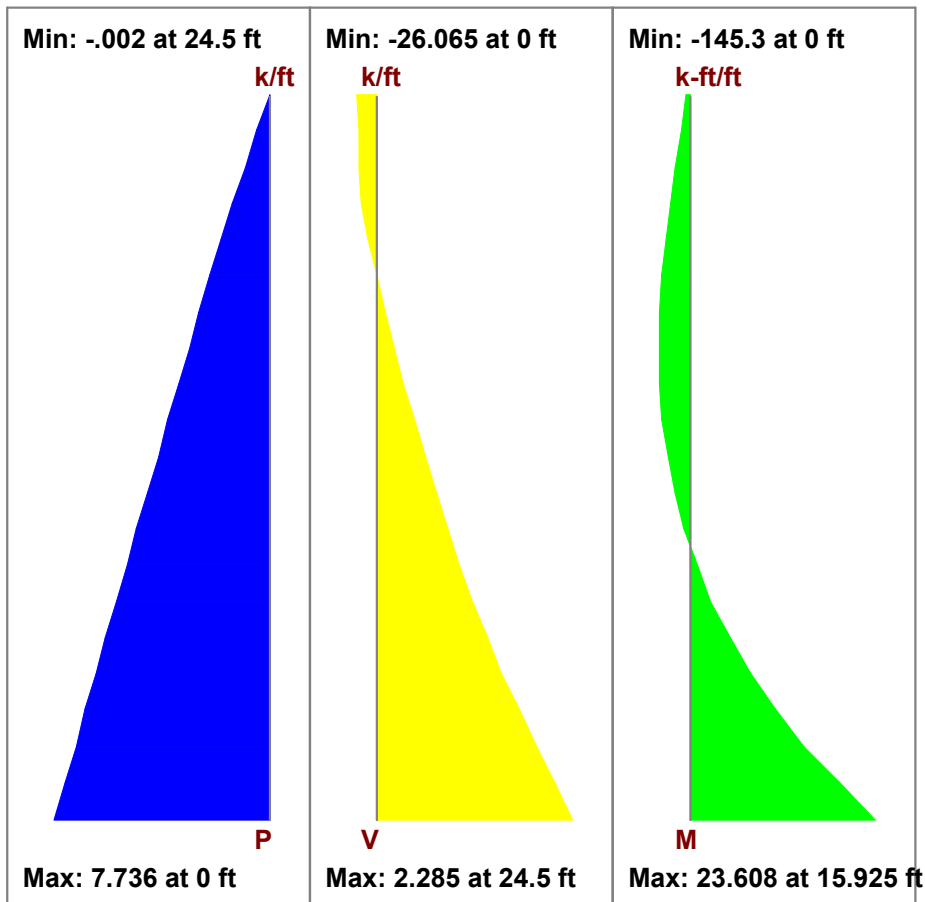
Material Set : **Conc4500NW**
 Concrete f'c : **4.5 ksi**
 Concrete E : **3824 ksi**
 Concrete G : **1680 ksi**
 Conc Density : **.145 k/ft^3**
 Lambda : **1**
 Conc Str Blk : **Rectangular**

Vert Bar Fy : **60 ksi**
 Horz Bar Fy : **60 ksi**
 Steel E : **29000 ksi**

GEOMETRY

Total Height : **24.5 ft**
 Total Length : **17.66 ft**
 Thickness : **24 in**
 Int Cover (-z) : **2 in**
 Ext Cover (+z) : **2 in**
 Cover Open/Edge : **2 in**
 K : **1**
 Use Cracked? : **Yes**
 Icr Factor : **.35**

ENVELOPE DIAGRAMS



ACI 318-11 Code Check

AXIAL/BENDING DETAILS

UC Max Int (-z) : **1.169 ft**
 Location : **0 ft**
 Gov Pu Int (-z) : **0 k/ft**
 phi*Pn Int (-z) : **NC**
 Gov Mu Int (-z) : **-145.258 k-ft/ft**
 phi*Mn Int (-z) : **124.262 k-ft/ft**
 phi eff. Int (-z) : **.9**
 Gov LC Int (-z) : **4**
 UC Max Ext (+z) : **.19 ft**
 Location : **15.925 ft**
 Gov Pu Ext (+z) : **0 k/ft**
 phi*Pn Ext (+z) : **NC**
 Gov Mu Ext (+z) : **23.608 k-ft/ft**
 phi*Mn Ext (+z) : **124.262 k-ft/ft**
 phi eff. Ext (+z) : **.9**
 Gov LC Ext (+z) : **4**

SHEAR DETAILS

UC Max : **1.039 ft**
 Location : **0 ft**
 Gov Vu : **-26.065 k/ft**
 phi*Vn : **25.086 k/ft**
 Gov LC : **4**

DEFLECTION DETAILS

Delta max : **.844** in

Deflection Ratio : **H/348**

Location : **24.5** ft

Gov LC : **4**

WALL SEGMENT SECTION PROPERTIES

RESULTS PER C/C OF REINFORCEMENT

Total Width : **7** in r : **4.099** in
 A : **168** in² KL/r : **71.729**
 Igross : **8064** in⁴
 Icracked : **2822.4** in⁴
 Cracked Mom, Mcr: **852.962** k-ft

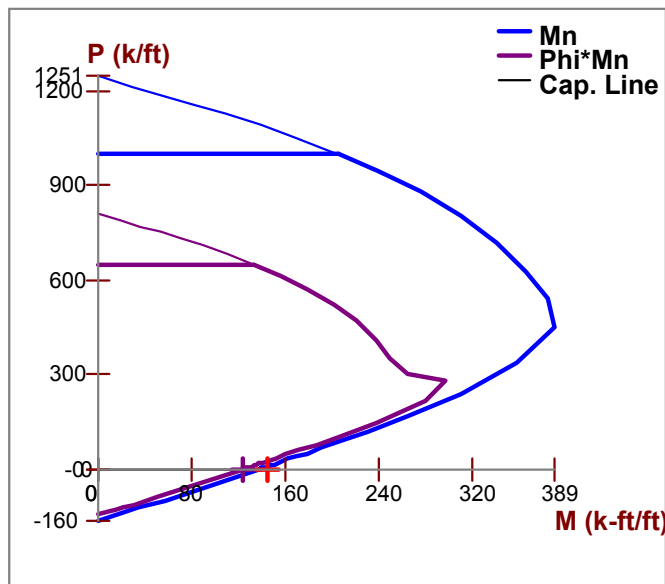
RESULTS FOR FULL WALL SEGMENT

As Provided (V) : **47.124** in²
 rho Provided (V) : **.0093**
 As min (V) : **7.629** in²
 rho min (V) : **.0015**

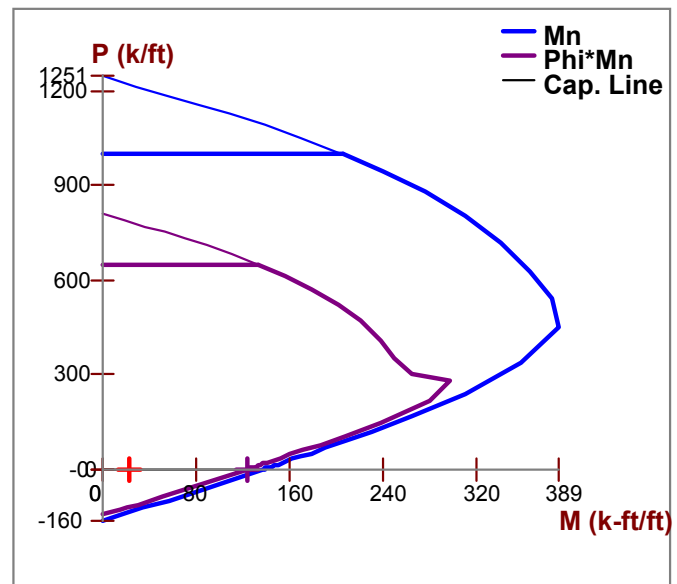
SLENDER BENDING SPAN RESULTS

	KL/r out	Cm out	Lu out (ft)	Pc (k/ft)	deltaNS	M act (k-ft/ft)	M2 min (k-ft/ft)	Mc out (k-ft/ft)
Interior	71.729	1	24.5	1509.026	1.007	145.258	.851	145.258
Exterior				1509.026	1.007	23.608	.851	23.608

Interior (-z) Face Wall Interaction Diagram



Exterior (+z) Face Wall Interaction Diagram



CROSS SECTION DETAILING

