

CERTIFICATION

August 21, 2023

The Building Department
Stamford Government Center
888 Washington Boulevard, 7th Floor
Stamford, CT 06901

**RE: RETAINING WALLS INSPECTION
83 CAMP AVENUE
STAMFORD, CT**

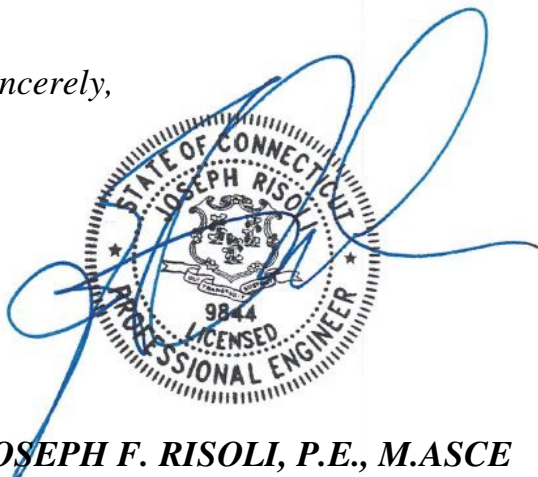
To whom it may concern,

At the request of Steve Mickels of Mickels Landscape, Risoli Planning and Engineering (RPE) - Division of A.I. Engineers, has inspected the retaining walls at the above the referenced address. Attached is the final inspection report dated September 2, 2022 together with calculations to verify the integrity of the existing retaining walls (see attached). The retaining walls have been designed in accordance with Stamford's Flood Prone Area Regulations (Section 15B of the Zoning Regulations) and is capable of withstanding the flood depths, pressures, velocities, impact and uplift forces and other factors associated with the base flood.

The retaining walls are deemed structurally stable based on the results of the analysis if used solely for the purpose of temporary stockpiling of top soil and mulch. It is the responsibility of Mickels Landscape to ensure that all limits and recommendations are complied with.

Please contact our office for any questions.

Sincerely,



JOSEPH F. RISOLI, P.E., M.ASCE

Risoli Planning and Engineering

Division of  Engineers

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Structural Inspection Report

Project Name: Mickels Retaining Walls	Inspection Done By: Risoli Engineering
Project Address: 83 Camp Avenue, Stamford, CT	Inspection Date: Sept. 2, 2022
Current Weather: <input checked="" type="checkbox"/> Clear <input type="checkbox"/> Cloudy <input type="checkbox"/> Rain <input type="checkbox"/> Wind <input type="checkbox"/> Fog <input type="checkbox"/> Snow <input type="checkbox"/> Other	
Temperature: 80 °F	
Purpose of Inspection: <input type="checkbox"/> Final Inspection <input type="checkbox"/> Foundation/Footing <input type="checkbox"/> Framing <input type="checkbox"/> Connection <input type="checkbox"/> Roofing <input checked="" type="checkbox"/> Other – Retaining Wall Inspection	
General Comments:	

An inspection of the existing retaining wall at 83 Camp Avenue was conducted on September 2, 2022 with the following aspects noted:

1. The retaining walls are made of concrete blocks with the dimensions of 2'x3'x6'.
2. Photo 2 shows the retaining wall in the area use for storage of mulch.
3. Photos 3 and 4 shows the wall by the northwest area with an approximate 6ft height of 6 feet. This area is use for storage of top soil.

Any questions regarding the above should be addressed to Joseph Risoli, P.E. or Jose Villaluz, P.E.

Cc: Steve Mickels
Anita Mickels



Photo 1. Retaining wall and Railroad Tie Wall



Photo 2. Wall retaining mulch



Photo 3. Wall by the northwest area, soil storage



Photo 4. Wall by the northwest area, soil storage

Description Mickels - 83 Camp Ave (Retaining Wall for Top soil)

Criteria

Retained Height	=	5.50 ft
Wall height above soil	=	0.50 ft
Slope Behind Wall	=	0.00 : 1
Height of Soil over Toe	=	0.00 in
Soil Density	=	90.00 pcf
Wind on Stem	=	0.0 psf

Soil Data

Allow Soil Bearing	=	1,500.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	30.0
Toe Active Pressure	=	0.0
Passive Pressure	=	0.0
Water height over heel	=	0.0 ft
Footing Soil Friction	=	0.300
Soil height to ignore for passive pressure	=	0.00 in

Footing Strengths & Dimensions

f'c =	3,000 psi	Fy =	60,000 psi
Min. As %	=		0.0014
Toe Width	=		0.00 ft
Heel Width	=		6.00
Total Footing Width	=		6.00
Footing Thickness	=		12.00 in
Key Width	=		0.00 in
Key Depth	=		0.00 in
Key Distance from Toe	=		0.00 ft
Cover @ Top	=	3.00 in	@ Btm.= 3.00 in

Design Summary

Total Bearing Load	=	6,290 lbs
...resultant ecc.	=	1.65 in
Soil Pressure @ Toe	=	1,192 psf OK
Soil Pressure @ Heel	=	904 psf OK
Allowable	=	1,500 psf
Soil Pressure Less Than Allowable		
ACI Factored @ Toe	=	1,624 psf
ACI Factored @ Heel	=	1,232 psf
Footing Shear @ Toe	=	0.0 psi OK
Footing Shear @ Heel	=	0.0 psi OK
Allowable	=	93.1 psi

Wall Stability Ratios

Overturning	=	14.11 OK
Sliding	=	2.98 OK

Sliding Calcs (Vertical Component Used)

Lateral Sliding Force	=	633.8 lbs
less 100% Passive Force	=	0.0 lbs
less 100% Friction Force	=	1,886.9 lbs
Added Force Req'd	=	0.0 lbs OK
....for 1.5 : 1 Stability	=	0.0 lbs OK

Footing Design Results

	Toe	Heel
Factored Pressure	= 1,624	1,232 psf
Mu' : Upward	= 0	0 ft-#
Mu' : Downward	= 0	0 ft-#
Mu: Design	= 0	0 ft-#
Actual 1-Way Shear	= 0.00	0.00 psi
Allow 1-Way Shear	= 0.00	0.00 psi
Toe Reinforcing	=	None Spec'd
Heel Reinforcing	=	None Spec'd
Key Reinforcing	=	None Spec'd

Stem Construction

Design height	ft =	0.00
Wall Material Above "Ht"	=	Concrete
Thickness	=	72.00
Rebar Size	=	# 3
Rebar Spacing	=	16.00
Rebar Placed at	=	Edge

Design Data

fb/FB + fa/Fa	=	0.053
Total Force @ Section	lbs =	771.4
Moment....Actual	ft-# =	1,414.2
Moment.....Allowable	=	26,699.9
Shear.....Actual	psi =	0.9
Shear.....Allowable	psi =	93.1
Bar Develop ABOVE Ht.	in =	12.82
Bar Lap/Hook BELOW Ht.	in =	6.00
Wall Weight	=	870.0
Rebar Depth 'd'	in =	72.00

Masonry Data

f'm	psi =	
Fs	psi =	
Solid Grouting	=	
Special Inspection	=	
Modular Ratio 'n'	=	
Short Term Factor	=	
Equiv. Solid Thick.	=	
Masonry Block Type	=	Normal Weight

Concrete Data

f'c	psi =	3,000.0
Fy	psi =	60,000.0

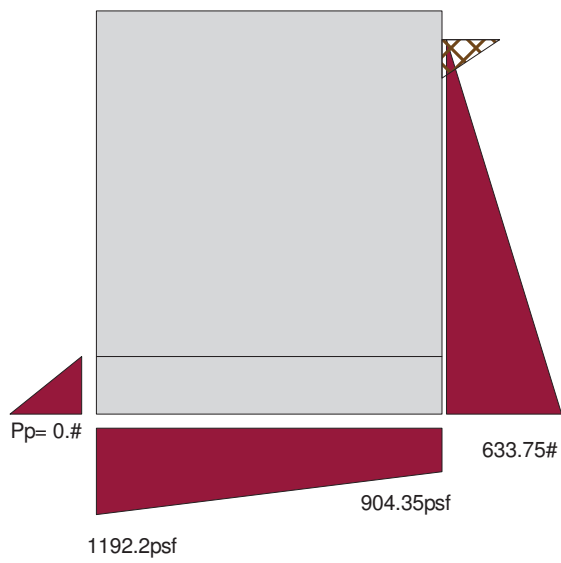
Other Acceptable Sizes & Spacings

Toe: Not req'd, Mu < S * Fr	
Heel: Not req'd, Mu < S * Fr	
Key: No key defined	

Description Mickels - 83 Camp Ave (Retaining Wall for Top soil)

Summary of Overturning & Resisting Forces & Moments

ItemOVERTURNING.....		RESISTING.....		
	Force lbs	Distance ft	Moment ft-#	Force lbs	Distance ft	Moment ft-#
Heel Active Pressure	= 633.8	2.17	1,373.1	Soil Over Heel	= 6.00	
Toe Active Pressure	=			Sloped Soil Over Heel	=	
Surcharge Over Toe	=			Surcharge Over Heel	=	
Adjacent Footing Load	=			Adjacent Footing Load	=	
Added Lateral Load	=			Axial Dead Load on Stem	= 0.00	
Load @ Stem Above Soil	=			Soil Over Toe	=	
SeismicLoad	=			Surcharge Over Toe	=	
Total	= 633.8	O.T.M.	= 1,373.1	Stem Weight(s)	= 5,220.0	3.00 15,660.0
Resisting/Overturning Ratio		=	14.11	Earth @ Stem Transitions	=	
Vertical Loads used for Soil Pressure	= 6,289.8	lbs		Footing Weight	= 900.0	3.00 2,700.0
Vertical component of active pressure used for soil pressure				Key Weight	=	
				Vert. Component	= 169.8	6.00 1,018.9
				Total =	6,289.8 lbs	R.M.= 19,378.9



Description Mickels - 83 Camp Ave (Retaining Wall for Mulch)

Criteria

Retained Height	=	5.50 ft
Wall height above soil	=	0.50 ft
Slope Behind Wall	=	0.00 : 1
Height of Soil over Toe	=	0.00 in
Soil Density	=	60.00 pcf
Wind on Stem	=	0.0 psf

Soil Data

Allow Soil Bearing	=	1,500.0 psf
Equivalent Fluid Pressure Method		
Heel Active Pressure	=	15.0
Toe Active Pressure	=	0.0
Passive Pressure	=	0.0
Water height over heel	=	0.0 ft
Footing Soil Friction	=	0.300
Soil height to ignore for passive pressure	=	0.00 in

Footing Strengths & Dimensions

f'c =	3,000 psi	Fy =	60,000 psi
Min. As %	=		0.0014
Toe Width	=		0.00 ft
Heel Width	=		3.00
Total Footing Width	=		3.00
Footing Thickness	=		12.00 in
Key Width	=		0.00 in
Key Depth	=		0.00 in
Key Distance from Toe	=		0.00 ft
Cover @ Top	=	3.00 in	@ Btm.= 3.00 in

Design Summary

Total Bearing Load	=	3,166 lbs
...resultant ecc.	=	2.00 in
Soil Pressure @ Toe	=	1,407 psf OK
Soil Pressure @ Heel	=	703 psf OK
Allowable	=	1,500 psf
Soil Pressure Less Than Allowable		
ACI Factored @ Toe	=	1,904 psf
ACI Factored @ Heel	=	952 psf
Footing Shear @ Toe	=	0.0 psi OK
Footing Shear @ Heel	=	0.0 psi OK
Allowable	=	93.1 psi

Wall Stability Ratios

Overturning	=	7.15 OK
Sliding	=	3.00 OK

Sliding Calcs (Vertical Component Used)

Lateral Sliding Force	=	316.9 lbs
less 100% Passive Force	=	0.0 lbs
less 100% Friction Force	=	949.7 lbs
Added Force Req'd	=	0.0 lbs OK
....for 1.5 : 1 Stability	=	0.0 lbs OK

Footing Design Results

	<u>Toe</u>	<u>Heel</u>
Factored Pressure	= 1,904	952 psf
Mu' : Upward	= 0	0 ft-#
Mu' : Downward	= 0	0 ft-#
Mu: Design	= 0	0 ft-#
Actual 1-Way Shear	= 0.00	0.00 psi
Allow 1-Way Shear	= 0.00	0.00 psi
Toe Reinforcing	=	None Spec'd
Heel Reinforcing	=	None Spec'd
Key Reinforcing	=	None Spec'd

Stem Construction

Design height	ft =	Stem OK 0.00
Wall Material Above "Ht"	=	Concrete
Thickness	=	36.00
Rebar Size	=	# 3
Rebar Spacing	=	16.00
Rebar Placed at	=	Edge

Design Data

fb/FB + fa/Fa	=	0.053
Total Force @ Section	lbs =	385.7
Moment....Actual	ft-# =	707.1
Moment.....Allowable	=	13,334.9
Shear.....Actual	psi =	0.9
Shear.....Allowable	psi =	93.1
Bar Develop ABOVE Ht.	in =	12.82
Bar Lap/Hook BELOW Ht.	in =	6.00
Wall Weight	=	435.0
Rebar Depth 'd'	in =	36.00

Masonry Data

f'm	psi =	
Fs	psi =	
Solid Grouting	=	
Special Inspection	=	
Modular Ratio 'n'	=	
Short Term Factor	=	
Equiv. Solid Thick.	=	
Masonry Block Type	=	Normal Weight

Concrete Data

f'c	psi =	3,000.0
Fy	psi =	60,000.0

Other Acceptable Sizes & Spacings

Toe: Not req'd, Mu < S * Fr	
Heel: Not req'd, Mu < S * Fr	
Key: No key defined	

Risoli Planning & Engineering
406 E. Putnam Ave
Cos Cob, CT 06807

Title :
Dsgnr:
Description :

Job #
Date:

Scope :

Rev: 510303
User: KW-0602865, Ver 5.1.3, 22-Jun-1999, Win32
(c) 1983-99 ENERCALC

Cantilevered Retaining Wall Design

Page 2
c:\rpe\jobs\rpe.ecw:Calculations

Description Mickels - 83 Camp Ave (Retaining Wall for Mulch)

Summary of Overturning & Resisting Forces & Moments

.....OVERTURNING.....			RESISTING.....				
Item		Force lbs	Distance ft	Moment ft-#		Force lbs	Distance ft	Moment ft-#
Heel Active Pressure	=	316.9	2.17	686.6	Soil Over Heel	=		3.00
Toe Active Pressure	=				Sloped Soil Over Heel	=		
Surcharge Over Toe	=				Surcharge Over Heel	=		
Adjacent Footing Load	=				Adjacent Footing Load	=		
Added Lateral Load	=				Axial Dead Load on Stem	=	0.00	
Load @ Stem Above Soil	=				Soil Over Toe	=		
SeismicLoad	=				Surcharge Over Toe	=		
Total	=	316.9	O.T.M.	= 686.6	Stem Weight(s)	= 2,610.0	1.50	3,915.0
Resisting/Overturning Ratio			=	7.15	Earth @ Stem Transitions	=		
Vertical Loads used for Soil Pressure	=	3,165.6	lbs		Footing Weight	= 450.0	1.50	675.0
					Key Weight	=		
					Vert. Component	= 105.6	3.00	316.9
Vertical component of active pressure used for soil pressure					Total =	3,165.6	lbs	R.M.= 4,906.9

