APPLICABLE CODES/STANDARDS: .....INTERNATIONAL BUILDING CODE - 2018 .....ASCE 7-16 MIN DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE/SEI

STRUCTURAL DESIGN STANDARDS (DESIGN SHALL CONFORM TO THE CURRENT EDITION UNDER THE APPLICABLE CODE)

.....ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY ....ACI 530/530.1 BLDG CODE REQUIREMENTS AND SPECS FOR MASONRY STRUCTURES (AND RELATED COMMENTARIES)

...ANSI/AISC 360-16 SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS ....AWS D1.1/D1.1M STRUCTURAL WELDING CODE-STEEL

.....FLOOR FRAMING (RETAIL, OFFICE, RESTAURANT, RECREATIONAL)

DESIGN LIVE LOADS:

...RISK CATEGORY II

...MEAN ROOF HEIGHT

....DESIGN PROCEDURE

....SOIL UNIT WEIGHT

....WIND EXPOSURE CATEGORY

....TOPOGRAPHIC FACTOR (Kzt)

...WIND EXPOSURE CLASSIFICATION

...VELOCITY EXPOSURE COEFFICIENT KZ

...BASIC WIND SPEED (3-SECOND GUST, ULTIMATE)

...BASIC WIND SPEED (3-SECOND GUST, NOMINAL)

## **BUILDING DESIGN LOADS/CRITERIA**

LOOK TRAINING (KETALE, OF FIGE, KESTAGRANT, KESKEATIONAL)	100 psi
FLOOR FRAMING (RESIDENTIAL AREAS)	40 psf
STAIRWAYS, EXITSBALCONIESPRIVATE GARAGES (PASSENGER VEHICLES ONLY)INTERIOR PARTITION WALLS (UNIFORMLY DISTRIBUTED WEIGHT)CORRIDORS FIRST FLOORCORRIDORS 2 <sup>nd</sup> 3 <sup>rd</sup> FLOORSCORNICES	100 psf 40 psf 40 psf 15 psf 100 psf 40 psf 60 psf
SNOW LOADS & DESIGN DATA:DESIGN SNOW LOADFLAT ROOF SNOW LOAD (Pf) = (0.7*Ce*Ct*Is*Pg)SNOW EXPOSURE FACTOR (Ce)SNOW LOAD IMPORTANCE FACTOR (Is)ROOF THERMAL FACTOR (Ct)ROUND SNOW (Pg)SLOPED ROOF FACTOR (Cs)	42 psf (BALANCED SNOW LOAD) 42 psf 1.0 1.0 1.0 60 psf 1.0
VIND DESIGN DATA: WIND IMPORTANCE FACTOR (Iw)	1.0

115 MPH

90 MPH 33 FT

**ENCLOSED** 

METHOD 1 (SIMPLIFIED PROCEDURE)

0.720

1.0

NET PRESSURE COEFFICIENTS C <sub>net</sub>		
AREA	C + INTERNAL	C - INTERNAL net
	PRESSURE	PRESURE
WINDWARD WALL	0,43	0,73
LEEWARD WALL	-0,51	-0,21
SIDEWALL	-0,66	-0,35
PARAPET WINDWARD WALL	L 1,28	
PARAPET LEEWARD WALL	-0,85	
FLAT ROOF	-1,09	-0,79
	•	

DESIGN WIND PRESSURES Pnet		
AREA	P + INTERNAL net	P - INTERNAL net
, <del></del> .	PRESSURE	PRESURE
WINDWARD WALL	10.5 psf	17.8 psf
LEEWARD WALL	-12.4 psf	-5.1 psf
SIDEWALL	-16.1 psf	-8.5 psf
PARAPET WINDWARD WALL	31.2 psf	
PARAPET LEEWARD WALL	-20	0.7 psf
FLAT ROOF	-26.6 psf	-19.3 psf

EARTHQUAKE DESIGN DATA:		
OCCUPANCY CATEGORY		II
SEISMIC IMPORTANCE FACTOR (Ie)		1
MAPPED SPECTRAL ACCELERATIONS AT SHORT PERIODS (Ss)		0.045 g
MAPPED SPECTRAL ACCELERATIONS AT (1) SECOND PERIODS (	S1)	0.038 g
SITE CLASSIFICATIONS		В
SITE COEFFICIENT (Fa)		1,0
SITE COEFFICIENT (Fv)		1,0
DESIGN SPECTRAL RESPONSE COEFFICIENT AT SHORT PERIOD	S (Sds)	0.030 g
DESIGN SPECTRAL RESPONSE COEFFICIENT AT (1) SECOND PE	RIODS (Sd1)	0.025 g
SEISMIC DESIGN CATEGORY		Α
BASIC SEISMIC-FORCE-RESISTING SYSTEM	LIGHT FRAME W	OOD WALLS WITH
	STRUCTURAL WOO	DD SHEAR PANELS

ANALYSIS PROCEDURE FOR SEISMIC DESIGN	EQUIVALENT LATERAL FORCE ANALYSIS
CON DECIONIVALLIES.	
SOIL DESIGN VALUES:	

LATERAL EARTH PRESSURE	
AT-REST (BASEMENT WALLS)	62,5 PSF/FT OF DEPTH (ASSUME
PASSIVE	340 PSF (ASSUMED)
COEFFICIENT OF SLIDING FRICTION	0.30 (ASSUMED)
SUBGRADE MODULUS	260 PCI (ASSUMED)
ALLOWABLE SOIL BEARING PRESSURE	3000 PSF

REFER TO SOILS REPORT NO. 17002 DATED 2/10/2017 PREPARED BY ITCO ALLIED ENGINEERING CO. FOR DESCRIPTION OF SOIL CONDITIONS, GEOTECHNICAL RECOMMENDATIONS, AND DESIGN VALUES

125 PCF (ASSUMED)

DEFLECTION	ON LIMITS		
MEMBERS	LIVE	SNOW or WIND	DEAD + LIVE or SNOW
ROOF MEMBERS			
SUPPORTING GYPSUM BOARD CEILINGS	L/360	L/360	L/240
SUPPORTING FLEXIBLE CEILINGS	L/360	L/360	L/240
NOT SUPPORTING CEILING	L/240	L/240	L/180
SUPPORTING RIGID MATERIALS (BRICK, MASONRY, ETC.)	L/600	L/600	L/600
FLOOR MEMBERS			
SUPPORTING RIGID MATERIALS (BRICK, MASONRY, ETC.)	L/600	L/600	L/600
SUPPORTING GYPSUM BOARD CEILINGS	L/540	N/A	L/360
SUPPORTING FLEXIBLE MATERIALS	L/540	N/A	L/360
LINTEL/HEADER/BEAM MEMBERS			
SUPPORTING RIGID MATERIALS (BRICK, MASONRY, ETC.)	L/600	L/600	L/600
SUPPORTING FLEXIBLE MATERIALS (EIFS, SIDING, ETC.)	L/360	L/360	L/240
EXTERIOR WALLS			
WITH RIGID FINISHES (BRICK, MASONRY, ETC.)	N/A	L/600	N/A
WITH FLEXIBLE FINISHES (EIFS, SIDING, ETC.)	N/A	L/360	N/A

## MATERIAL STRENGTHS

CAST-IN-PLACE CONCRETE:

ONOT INTERIOR CONTONETS	<b></b> •
FOOTINGS	
MINIMUM COMPRESSIVE STRENGTH AT 28	B DAYS f'c = 3,000 P
MAXIMUM WATER-CEMENTITIOUS RATIO	0.59
MAXIMUM AGGREGATE SIZE	1 1/2"
SLUMP LIMIT	5" +/-1"
AIR CONTENT	NO
EXTERIOR PIERS, WALLS, AND COLUMNS	
MINIMUM COMPRESSIVE STRENGTH AT 28	B DAYS f'c = 4,000 P
MAXIMUM WATER-CEMENTITIOUS RATIO	0.48
MAXIMUM AGGREGATE SIZE	3/4"
SLUMP LIMIT	4" +/-1"
AIR CONTENT	YES 4% to 6%
INTERIOR SLABS ON GRADE	
MINIMUM COMPRESSIVE STRENGTH AT 28	B DAYS fc = 4,000 P
MAXIMUM WATER-CEMENTITIOUS RATIO	0.48
MAXIMUM AGGREGATE SIZE	3/4"
SLUMP LIMIT	4" +/-1"
AIR CONTENT	NO
CONCRETE TOPPING	
MINIMUM COMPRESSIVE STRENGTH AT 28	B DAYS f'c = 4,000 PS
MAXIMUM WATER-CEMENTITIOUS RATIO	0.48
MAXIMUM AGGREGATE SIZE	3/4"
SLUMP LIMIT	4" +/-1"
AIR CONTENT	NO
STAIR LANDINGS AND TREADS	
MINIMUM COMPRESSIVE STRENGTH AT 28	B DAYS $f'c = 4,000 PS$
MAXIMUM WATER-CEMENTITIOUS RATIO	0.48
MAXIMUM AGGREGATE SIZE	3/4"
SLUMP LIMIT	4" +/-1"
AIR CONTENT	NO
EXTERIOR SLABS ON GRADE	
MINIMUM COMPRESSIVE STRENGTH AT 28	B DAYS $f'c = 4,000 Ps$
MAXIMUM WATER-CEMENTITIOUS RATIO	0.48
MAXIMUM AGGREGATE SIZE	3/4"
SLUMP LIMIT	4" +/-1"
AIR CONTENT	YES 4% to 6%
SLURRY	
MINIMUM COMPRESSIVE STRENGTH AT 28	B DAYS f'c = 1,000 P
MAXIMUM WATER-CEMENTITIOUS RATIO	0.55
MAXIMUM AGGREGATE SIZE	1 1/2"
SLUMP LIMIT	6" +/-1"
AIR CONTENT	NO

## STEEL/METAL:

REINFORCING STEEL:	
ALL ASTM A615, GRADE 60, DEFORMED	Fy = 60,000 PSI
STEEL WELDED WIRE REINFORCEMENT	, FLAT SHEETS Fy = 60,000 P

STRUCTURAL STEEL:	
ROLLED WIDE FLANGE SHAPES, ASTM A	1992 GRADE 50 Fy = 50,000 PSI
CHANNELS, ANGLES, AND S SHAPES, AS	STM A3 <b>6</b> y = 36,000 PSI
PLATE AND BAR, ASTM A36	Fy = 36,000 PSI
TUBE SHAPES, ASTM A500 GRADE B	Fy = 46,000 PSI
PIPE ASTM A53, TYPE E or S, GRADE B	Fy = 46,000 PSI
ALL OTHER ROLLED SHAPES, ASTM A36	Fy = 36,000 PSI

STRUCTURAL BOLTS:HIGH STRENGTH BOLTS, NUTS, & WASHERZINC-COATED HIGH STRENGTH BOLTS, NUT WASHERS	
STAINLESS STEEL BOLTS, NUTS, & WASHE	RS ASTM F593
SHEAR CONNECTORS (GRADES 1015 THRU	10240\$TM A108
THREADED RODS	ASTM A36
CLEVIS & TURNBUCKLES (GRADE 1035)	ASTM A108
EYE BOLTS & NUTS (GRADE 1030)	ASTM A108

ANCHOR BOLTS (GRADE 36)	ASTM F1554
WELDED CONNECTIONS:	
WELDING ELECTRODES	E70XX
	E80XX FOR
	WEI DING REI

WELDING REINF MASONRY: f'm = 2,000 PSI

MASONRY MORTAR: .....TYPE "M" MORTAR BELOW GRADE .....TYPE "M" or "S" ABOVE GRADE

GROUT BELOW BASE PLATES & BEARING PLATES: ....NONMETALLIC, SHRINKAGE-RESISTANT ASTM C1107 **FOUNDATION AND EARTHWORK:** 

1. ALL EXTERIOR FOOTINGS MUST BEAR BELOW LOCAL FROST LINE RELATIVE TO ADJACENT FINISH EXTERIOR GRADE.

2. DO NOT PLACE ANY FOOTINGS ON FROZEN SUBGRADE.

3. BACK FILLING SHALL BE DONE SIMULTANEOUSLY ON BOTH SIDES OF FOUNDATION WALLS.

4. DO NOT PLACE BACK FILL AGAINST BASEMENT WALLS UNTIL THE TOP AND BOTTOM OF THE WALL ARE ADEQUATELY BRACED BY THE SLAB ON GRADE AND THE FLOOR FRAMING AT THE TOP OF THE WALL.

5. REMOVE ANY EXISTING CONCRETE 2'-0" BELOW NEW CONCRETE FOOTINGS AND SLABS ON GRADE, UNLESS NOTED OTHERWISE.

6. SHORING/OR UNDERPINNING SHALL BE DESIGNED TO LIMIT HORIZONTAL AND VERTICAL MOVEMENT OF EXISTING CONSTRUCTION TO 1/4" MAXIMUM IN ANY DIRECTION.

7. CENTER PIER AND COLUMN FOOTINGS ON COLUMN CENTERLINES AND WALL FOOTINGS ON WALL CENTERLINES UNLESS SPECIFICALLY NOTED

8. ALL BACK FILL WITHIN 3'-0" OF RETAINING WALLS AND BASEMENT WALLS SHALL BE FREE DRAINING GRANULAR MATERIAL APPROVED BY A SOILS ENGINEER AND COMPACTED TO 90% STANDARD PROCTOR.

9. TOP OF FOOTING ELEVATIONS SHOWN ON THESE CONSTRUCTION DOCUMENTS REPRESENT MINIMUM FOOTING DEPTHS FOR FROST PROTECTION AND BEST JUDGMENT OF A SUITABLE BEARING STRATUM. ACTUAL GRADE CONDITIONS AND SUITABLE BEARING STRATUM MUST BE VERIFIED BY THE CONTRACTOR AND A SOILS ENGINEER AT THE TIME OF EXCAVATION.

10.FOOTING EXCAVATIONS MUST EXTEND TO COMPETENT BEARING MATERIAL. CONTRACTOR SHALL HIRE A SOILS ENGINEER TO FIELD VERIFY NET ALLOWABLE SOIL BEARING CAPACITY STATED ON THESE CONSTRUCTION DOCUMENTS AND IN GEOTECHNICAL REPORT FOR THIS PROJECT. IF SUITABLE BEARING STRATUM DOES NOT EXIST AT FOOTING ELEVATIONS STATED ON CONSTRUCTION DOCUMENTS, EXCAVATIONS SHALL BE EXTENDED UNTIL SOIL WITH STATED BEARING CAPACITY IS REACHED. PLACE COMPACTED FILL BELOW FOOTINGS OR EXTEND FOOTINGS DOWN TO SUITABLE BEARING STRATUM. ENGINEERED FILL BELOW SLABS ON GRADE AND FOOTINGS SHALL BE FREE DRAINING GRANULAR MATERIAL COMPACTED TO 95% MODIFIED PROCTOR AND PLACED PER THE SOIL ENGINEERS RECOMMENDATIONS. ALL FIELD CONDITIONS THAT WILL AFFECT DESIGN AS PRESENTED MUST BE COORDINATED WITH STRUCTURAL ENGINEER.

11.REFER TO DESIGN DATA FOR DESCRIPTION OF SOIL CONDITIONS, GEOTECHNICAL RECOMMENDATIONS, AND DESIGN VALUES.

## **CONTINUITY:**

ALL REINFORCING SHALL BE CONTINUOUS UNLESS NOTED OTHERWISE. CONTINUITY AT CORNERS AND INTERSECTIONS SHALL BE ACHIEVED USING CORNER BARS AND CONTACT LAP SPLICES, SEE TYPICAL DETAIL. CONTINUITY AT OTHER LOCATIONS MAY BE ACHIEVED USING CONTACT LAP SPLICES SHOWN ON APPROVED SHOP DRAWINGS. LOCATION OF LAP SPLICES SHALL BE SHOWN ON THE SHOP DRAWINGS. UNLESS NOTED OTHERWISE, THE FOLLOWING LAP SPLICES SHALL BE USED: (ALL LAP SPLICES ARE CLASS B SPLICES)

#3	#4	#5	#6	#7	#8	#9	#10	#11
21"	19"	35"	46"	71"	93"	118"	149"	184"
16"	22"(**)	27"	35"	55"	71"	91"	115"	142"
16"	19"	25"	36"	61"		102"	129"	159"
16"	16"(**)	19"	28"	47"	62"	78"	99"	123"
	21" 16"	21" 19" 16" 22"(**)	21" 19" 35" 16" 22"(**) 27" 16" 19" 25"	21" 19" 35" 46" 16" 22"(**) 27" 35" 16" 19" 25" 36"	21" 19" 35" 46" 71" 16" 22"(**) 27" 35" 55" 16" 19" 25" 36" 61"	21" 19" 35" 46" 71" 93" 16" 22"(**) 27" 35" 55" 71" 16" 19" 25" 36" 61" 80"	21" 19" 35" 46" 71" 93" 118" 16" 22"(**) 27" 35" 55" 71" 91" 16" 19" 25" 36" 61" 80" 102"	21" 19" 35" 46" 71" 93" 118" 149" 16" 22"(**) 27" 35" 55" 71" 91" 115" 16" 19" 25" 36" 61" 80" 102" 129"

FOR MECHANICAL SPLICE PRODUCTS WITH SHOP DRAWINGS.

(\*) TOP BARS ARE HORIZONTAL REINFORCING WHERE MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE

(\*\*) FOR #4 EPOXY COATED REBAR, USE 27" SPLICE LENGTH AT 3,000 AND 3,500 PSI CONC. AND 19" AT 4,000 AND 4,500 PSI.

MECHANICAL CONNECTIONS MAY BE USED IN LIEU OF LAP SPLICES PROVIDED APPROVAL IS OBTAINED FROM THE ARCHITECT/ENGINEER. CONNECTIONS SHALL DEVELOP IN TENSION 125 PERCENT OF THE SPECIFIED YIELD STRENGTH OF THE BAR. ALL MECHANICAL CONNECTIONS SHALL BE SHOWN ON THE SHOP DRAWINGS AND BE INSTALLED IN ACCORDANCE WITH THE MECHANICAL SPLICE PROPRIES. WITH SHOP DRAWINGS.

CAPITAL GROUP Developer: W Capital Group tyler@wcapitalgroupre.com | 608.345.9848

Architect: OpeningDesign 316 W Washington Ave | Suite 675 Madison, WI 53703 ryan@openingdesign.com | 773.425.6456



General Contractor: ROYAL CONSTRUCTION

3653 Greenway Street | Eau Claire, WI 54701 jim@royalbuilt.com | 715-225-6377







Structural Engineer: Structural Engineering Calle Apolonio Morales, 628036 Madrid, I.pereztato@xcengineering.xyz | +34 610 56 26 37



Structural Engineer: Structural Engineering 4729 Dale-Curtain Dr, McFarland, WI 53558 kfrey@ennovationbuilt.com



jhansen@hovlands-inc.com | 715.552.5595 Electrical Engineer: PRISM DESIGN ELECTRICAL

CONSULTANS INC E8403 State Rd 85 | Mondovi, WI 54755 bhalgren@prismdesign-electrical.com | 715.797.0602



Plumbing Engineer: TAILORED ENGINEERING 1600 Aspen Commons | Ste 210 | Middleton, WI bnovak@tailoredeng.com | 608.209.7500

Description 07.08.2019 Footing and Foundation Plan